

Tanzania Public Health Association (*Chama cha Afya ya Jamii Tanzania*)



Social Determinants of Health and Millennium Development Goals Achievement

Proceedings of the 31st Annual Scientific Conference

**Stella Maris Hotel, Bagamoyo, Tanzania
24th -28th November, 2014**



Editorial Board

Editor in Chief

Dr. Leonard E.G. Mboera

Associate Editors

Dr. Bertha Maegga

Mr. Philbert Nyinondi

Documentarist

Ms. Betty Jayne Humplick

Secretariat

Mr. Erick G. Moshi

Ms. Jerina Ndangwe

Ms. Anna Shitima

Ms. Bernadetha D. Matle

ISBN 978 9987 9352-5-3

© 2015 Tanzania Public Health Association Tanzania, Dar es Salaam

Table of Contents

1. Acknowledgement.....	1
2. Foreword.....	3
3. Welcome statement.....	5
4. Opening speech (<i>Donan W. Mmbando</i>).....	7
5. Keynote address: Social determinants of health and Millennium Development Goals achievements (<i>Elihuruma Nangawe</i>).....	12
6. Community participation in health: Policy implementation challenges and prospects within health systems (<i>Elihuruma Nangawe</i>).....	16
7. Tanzania health worker engagement study: experiences from six regions (<i>Anna Nswilla, Joseph Kundy, Tana Wuliji, Paul Magesa, Datus Rweyemamu</i>).....	29
8. Data management and information use in evidence-based decision making and planning to improve health care systems (<i>Anna Nswilla</i>).....	36
9. Tanzania economic development transformation includes health: an overview of health big results now initiative in Tanzania (<i>Oberlin M.E. Kisanga</i>).....	50
10. Good governance in health care delivery systems (<i>Anna L. Nswilla</i>).....	52
11. Is it cash or card?: a decade of health care financing in Tanzania (<i>Randolph Quaye</i>).....	63
12. Expanding access to HIV diagnostics: costing of point-of-care CD4 testing . using alere PIMA technology in primary health care facilities in Tanzania: Case studies in Iringa and Njombe regions (<i>Hiltruda C. Temba</i>).....	68
13. Enhancing public health advocacy: proposing social media strategy for the Tanzania Public Health Association (<i>Philbert Nyinondi</i>).....	75
14. The use of social media commands the future of public health advocacy in Tanzania (<i>Philbert Nyinondi</i>).....	83
15. Health care financing in public hospitals: experience and challenges of Tumbi Designated Regional Referral Hospital (<i>Peter G. Dattani and Beatrice Byalugaba</i>).....	89
16. Screening for Syphilis, HIV, and Haemoglobin during pregnancy in Moshi municipality, Tanzania: how is the health system performing? (<i>Johnson Katanga, Melina Mgongo, Tamara Hashim, Babill Stray-Pedersen & Sia E. Msuya</i>).....	92
17. Seeking solutions and strategies to adolescent girls' education in Tanzania (<i>Cathleen Sekwao</i>).....	98
18. Exploration of the factors associated with third level delay in receiving care by clients with obstetric/neonate complications Pwani Region, Tanzania (<i>R. Kahwili, J. Gordon & L. Mafole</i>).....	103
19. Market research to overcome barriers to the scale-up of intermittent preventive treatment of malaria in IPTp) pregnant women and the potential role of azithromycin-based combination therapy in IPTp (<i>Catherine Bunga, Joyce Wamoyi and Soori Nnko</i>).....	109
20. The role and contribution of community health workers in improving access and utilization of maternal and reproductive health services in Tabora Region, Tanzania (<i>Ndayani Lukumay</i>).....	115
21. Tanzania Youth Alliance combating HIV/ AIDS (<i>Shareeque A. Sadiq</i>).....	119
22. Double Burden of Diseases (<i>Faustine Njau</i>).....	125
23. Nutrition knowledge, attitudes and practices among healthcare workers in management of chronic kidney diseases in selected hospitals in Dar es Salaam, Tanzania (<i>Adeline E. Munuo, Beatrice Mugendi & Onesmo A. Kisanga</i>).....	132

24. Dengue outbreak in Dar es Salaam, Tanzania, 2014 (Leonard E.G. Mboera, Ndekya Oriyo, Susan F. Rumisha, Clement Mweya, Patrick K. Tungu, Grades Stanley, Athanas Mhina, Francesco Vairo, Pasquale de Nardo, Mariam R. Makange & Gerald Misinzo).....	139
25. Evidence of huge potential of locally available food resource for reducing malnutrition in Kilosa District, Tanzania (Laurent Mselle & Onesmo Mella).....	144
26. Staying abreast with breast and cervical cancer (Carly Lovullo).....	151
27. Overcoming challenges: combating mental illness in Uganda (Shelli L. Reeves).....	158
28. Hypokalaemia and its clinical effects among children treated with nebulised salbutamol in Mulago Hospital - Uganda: A cross – sectional study (David Mnzava, Hellen A. Tukamuhebwa & Sabrina Kitaka)	165
29. Motor traffic accidents in Tanzania (Hipolite T. Tarimo).....	177
30. Regulation of the electronic cigarette (Robert S. Machang’u & Philbert Nyinondi).....	182
31. Baseline survey on the extent of alcohol consumption and abuse (Severine Kessy & Gladness Munuo).....	189
32. Conference Recommendations.....	192
33. List of participants.....	193

Acknowledgements

It has been possible to have this abstract book due to concerted efforts of a number of contributors to whom the TPHA Executive Committee is indebted and holds dear in acknowledgement. The Ministry of Health and Social Welfare remains at the top of the list not only as a key interested stakeholder but from the support and close collaboration we as an Association enjoy from the ministry in the course of our advocacy and public health awareness efforts.

The following Development Partners and Institutions have made financial contributions and some reached out to contribute technically in shaping the content of the conference sub-themes and topics:

- African BarrickGold
- Bagamoyo District Council
- ChemicotexIndustries Limited
- DanishInternational Development Agency
- Development Cooperation Ireland
- Ifakara Health Institute
- Ministry ofHealth andSocialWelfare
- National Health Insurance Fund
- National Institute for Medical Research
- North MaraGoldMine Limited
- Parastatal Pension Fund
- Pwani Regional Commissioner's Office
- SBS Tanzania Limited Corporate Office
- SGS Tanzania Superintendence Company Limited
- StellaMarisHotel, Bagamoyo
- Tanzania BureauofStandards
- Tanzania FoodandDrugsAuthority
- TanzaniaGerman Program to Support Health
- Tumbi Regional Referral Hospital
- United Nations Children Fund, Tanzania Office
- World Health Organization, Tanzania Office

We are also grateful to other institutions and individuals whose contributions have played an important role in making the conference a reality.

To all of them we say thank you very much and please continue to keep the plight of the Tanzanian nation at heart as far as public health protection and promotion is concerned.

The 30th Annual Scientific Conference focused on the Social Determinants of Health from an angle of intersectoral approach: closing the health inequality gaps. Much ground was covered then but it was felt there was so much untouched territory in this vast subject, that another angle to tackle it would shed more light.

All professionals who have invested their time in picking topics and submitting abstracts that address the theme, "*Social Determinants of Health and the Millennium Development Goals Achievement*", deserve congratulations for identifying what is valuable to share from their work and experiences. Pre-conference consultations including an exemplary one where key

stakeholders were invited to contribute ideas moulded the scope as well as actually encouraged this voluntary work to pace up in a self-driven and self-motivated manner. This spirit of partnership was quite beneficial.

The Chief Editor, Dr. Leonard Mboera, working in collaboration with other colleagues led the work of editing and compiling the submitted abstracts and these proceedings to the level of success attained. Other members of the Executive Committee and the Secretariat are acknowledged for their respective contributions to the whole effort and their high level dedication and commitment.

The active participation of members and non-members in this Annual Scientific Conference should see us moving the public health agenda in this country to greater heights. TPHA is multidisciplinary in membership and actually would join the Executive Secretary's exemplary proactive approach to inviting new members to join.

Karibuni sana mkutanoni (Very welcome to the Conference).

Dr. Oberlin M.E. Kisanga
Executive Secretary

Foreword

The 31st Tanzania Public Health Association Annual Scientific Conference was held in Bagamoyo under the conduct of the Coast Region Chapter, from the 24th to 28th November 2014. The theme guiding the Conference was **“Social Determinants of Health and the Millennium Development Goals Achievement”**. The five-day conference, brought together a total of 101 participants not only from all over Tanzania but also from outside our borders. This is with the objective of sharing and exchange experiences on issues related to public health pertinent to the theme. A total of 63 scientific papers were presented on different topics of the main theme which for convenience was categorised into six broad subthemes: These were (i) Governance, Economic, Socio-cultural Factors in Health; (ii) Intersectoral collaboration in addressing social determinants of health; (iii) Environmental health and sanitation; (iv) Non-communicable diseases; (v) Education and Health; and (vi) Mental health. The majority of those papers and conference recommendations form the major part of this report.

TPHA working within the Tanzania Health Policy, Vision 2025, the National Strategy for Growth and Reduction of Poverty (NSGRP), and Health Sector Strategic Plan III 2009-2015 and other sector strategies and guidelines, is playing a part in evaluating the achievements and challenges experienced during implementation of the MDGs as expounded by the World Health Organization. Taking stock of the myriad of factors that contribute to ill health in our communities and bearing in mind that 2015 marks the end of the MDGs, TPHA found it appropriate to address in this conference, the social determinants of health and MDGs achievements, with the aim of drawing from participants, new insights depicting more practical and effective options for public health interventions in the future.

National policies, strategies and programmes adopted by the Ministry of Health and Social Welfare (MoHSW), also have impact to the general public health development in the country. The Tanzania Development Vision 2025 document identifies public health as one of the priority areas contributing to a higher-quality livelihood for all Tanzanians. Furthermore The National Strategy for Growth and Reduction of Poverty, popularly known as *MKUKUTA*, embraces the Ministry's commitment to the implementation of the MDGs. *MKUKUTA* takes on board all cross-cutting issues of gender, environment, HIV/AIDS, disability, children, youth, elderly, employment and settlements, all of which are well spelt out under the MDGs. In this regard, the health of the population depends on multi-sectoral approach; Health in all Policies. TPHA reiterates its commitment to work hand in hand with MOHSW officials and other key actors across the sectors and development partners in accomplishing the concept of Big Results Now. This is with intent to instil accountability and discipline in implementation of public health interventions to meet our intended goals of a healthy nation for economic growth and better livelihood.

The active participation of members and invitees in this Annual Scientific Conference is testimony beyond any doubt that the public health agenda is a pinnacle of change to achieve the health sector goals. The presentations have revealed that after the MDGs, there are still needed extra efforts to obtain community realization and their active engagement in solving public health challenges facing them in their daily life. Sustainable development requires concerted action of us all to address the challenges we are facing.

Whatever perspective, after this Scientific Conference, we hope that the presentations as compiled in these proceedings will increase understanding of public health challenges prevalent in our communities today and the lessons learnt during implementation of the MDGs. The achievements will pave way for TPHA to renew its commitment to marshal through its mission to improve the health of all Tanzanians, especially those at risk, and to increase the life expectancy,

by providing health services that meet the needs of the Tanzanian population. It is our expectation that the students and graduates of public health will find TPHA their forum to engage in the health discipline more effectively to be part of this development. Tanzania needs support to address most of the challenges not only in health but those hampering development agenda.

Elihuruma Nangawe, MD, MPH, Cert. Anthropol
Chairperson, Tanzania Public Health Association
17th November 2014

Welcome Statement by the TPHA National Chairman

ELIHURUMA NANGAWE

Tanzania Public Health Association, Dar es Salaam, Tanzania

Guest of Honour,
Dr. Donan Mmbando,
Permanent Secretary, Ministry of Health and Social Welfare,
Representative of the Regional Commissioner, Pwani,
Your Worship, The Mayor of Bagamoyo Town,
The Regional Medical Officer,
Other Government Leaders here present,
Tanzania Public Health Association (TPHA) Executive Committee Members,
Representatives of Non-Governmental and Civil Society organizations,
Development Partners,
TPHA Members,
Conference Participants,
Ladies and Gentlemen,
Good morning,

Dear Guest of Honour,

We in the Public Health fraternity are deeply touched and highly esteemed by your ascent to the important and critical leadership post of Permanent Secretary of the Ministry of Health and Social Welfare. May I take this opportunity very early in this welcome note to convey our heartfelt congratulations to you Sir.

TPHA values very highly the special relationship and harmony that exists between the MOHSW, her Development Partners and the TPHA, pushing forward a common cause of advancing public health in the country at large as part of a rapidly globalized world. The recent calamities with Ebola in West Africa and its spread elsewhere, Marburg virus in Uganda, are wake-up calls for our systems to be constantly vigilant, prepared and responsive: TPHA reiterates its commitment to work hand in hand with MOHSW officials multilevel in designing the approach and actions to handling the emergency preparedness and response call.

On this note may I introduce the participants to this conference

1. Dodoma Chapter (Dodoma, Tabora, Singida)
2. Mbeya Chapter (Mbeya)
3. Morogoro Chapter
4. Lindi/ Mtwara Chapter in making
5. Tanga Chapter
6. Iringa Chapter (Iringa, Njombe)
7. Kilimanjaro Chapter
8. Arusha/Manyara Chapter
9. Dar-es-Salaam Chapter
10. Shinyanga Chapter
11. Musoma Chapter
12. Mwanza Chapter (Mwanza, Simiyu, Geita, Kagera)
13. Coast Region Chapter

Solicited paper presenters are also amongst us and some will arrive in accordance with their slot in the conference program (63+ papers expected). It is also our tradition to invite individuals with an interest to advance and safeguard public health from various disciplines and from college students as a way to recruit new members. Allow me to express our gratitude for the very positive support we have continued to receive from your Ministry and, the permission to various health officials to participate in this conference. Your valued voice in advocating for public health in general, focus on primary care and unleashing ‘the power of prevention’ gives us the pulse to galvanize towards reaching greater heights in safeguarding the health of the general public in Tanzania in a resource constrained environment.

Last year we tackled the same subject of Social Determinants with a slant of multisectoral action approach in closing health inequality gaps. I welcome you all to this 31st Annual Scientific Conference and Annual General Meeting of the TPHA whose theme this year is dedicated to “Social Determinants of Health and the Millennium Development Goals achievement”.

Looking forward to your fruitful deliberations

Karibuni sana

Opening speech by Dr. Donan W. Mmbando, Permanent Secretary, Ministry of Health and Social Welfare at the 31st Annual Scientific Conference of the Tanzania Public Health Association and Annual General Meeting at the Stella Maris Hotel, Bagamoyo, on November 24, 2014

National Chairperson of Tanzania Public Health Association, Dr. Elihuruma Nangawe,
Regional Commissioner, Pwani Region
Regional Administrative Secretary Pwani
Regional Medical Officer Pwani
District Commissioner, Bagamoyo
District Executive Director, Bagamoyo
District Medical Officer, Bagamoyo
Distinguished Invited Guests
Conference Participants
Ladies and Gentlemen,

May I express my sincere gratitude for the invitation extended to me to officiate at the opening of the Thirty First Annual Scientific Conference and Annual General Meeting of the Tanzania Public Health Association (TPHA).

It is indeed a great pleasure for me to get this wonderful moment to be among fellow public health stakeholders once more. May I therefore take this opportunity, on behalf of the Ministry of Health and Social Welfare and on my own behalf, to thank the Conference Organizers for giving me the privilege and honour to officiate in this important conference!

Mr. Chairperson, I would like to congratulate you, together with your Management Team and the entire membership of the Association for hosting this – your thirty first scientific conference, and especially doing so in Bagamoyo, a famous historical Town, for the first time in the Association’s history. Over the past 33 years your Association has done exceptional work in health promotion, public health awareness raising activities and advocacy work on important issues that challenge the health of Tanzanians. Your Association is unique in Tanzania, as there are scarcely any who can boast of such illustrious achievements for that length of time, and who have endured through tough times along their history of existence. The demand for your kind of work is greater currently, than ever before, especially since the advent of globalization of market forces, and free trade including that of health care and other social services. TPHA should not only extend its work to include rigorous policy analysis, but also that of monitoring and evaluation of health and related policy and programme implementations in this country, to ensure good governance and proper accountability of resources is followed through as planned.

By doing so, your Association will enhance “results based management” in all that we plan and do, and focus on the outcomes and impacts of our efforts, rather than going through the motion of implementation without assessing the direction we are going towards, in efficiency and effectiveness.

Mr. Chairperson,

While in Bagamoyo, I would like to encourage those of you who come from outside this area, to take advantage of your visit here, and explore some local tourist attractions. As you may be aware already, Bagamoyo was a proposed “UNESCO World Heritage Site on the Slave Route” in 2012, an event highlighting its all-time importance in our country’s history. This is a unique location, especially away from the congestion of Dar-es-Salaam. This is indeed a good opportunity to refresh minds, to breath fresher air, and to explore the local features, adorned

with beautiful sandy beaches, arts and crafts and old historical buildings of our historical past. For those history lovers amongst us, you may also recall that Bagamoyo was “famous for its slave and ivory trade, and was also the first capital of Tanganyika under the German colonial rule until 1892, when it was shifted to Dar es Salaam”. I strongly urge you all, to please set aside some time to enjoy the quiet environment, the serene sandy beaches and the tranquillity of the atmosphere to generate new insights and workable proposals for moving public health work to a higher level.

Mr. Chairperson, Distinguished Participants;

I have been informed that this is a five day conference, that brings together stakeholders from all over Tanzania, and even from outside our borders, to share information on many issues related to and inter-linked with public health, and to exchange experiences and ideas on the theme: **“Social Determinants of Health and Millennium Development Goals Achievement”**. Tanzania is currently undergoing radical changes in its socioeconomic development with associated challenges in the health sector. The local prevailing circumstances in Tanzania under which we operate are no longer predictable for long periods, considering the public health policy and practice in the country, the available financial, material and human resources, as well as the competing priorities under which we must deliver public health services. Taking stock of how we are performing is a legitimate desired move to achieve the goals we have set ourselves to accomplish. The myriad of factors that contribute to ill health in our communities are ever changing and not stagnant, just as the world around us is rapidly changing. Your notion of addressing the “Social Determinants of Health and Millennium Development Goals Achievement” is a timely consideration, that would give way to new insights for more viable and effective options to health interventions. I am looking forward to the outcome of this conference, and my Ministry will be keen to get your conference recommendations.

Mr. Chairperson, Distinguished Participants,

I have also been told that TPHA is now thirty-three years old and doing quite well in carrying out its mission and fulfilling its vision of promoting public health and advocating for sound public health policy and good practices. I commend your Association for having weathered the recent economic down turn, and continued its important work even under these constraints, where many local associations have found mere survival quite difficult. The resource competition from International NGOs, who are better provided for by their partners at home, and also better placed in competing for the scarce resources that others are vying for, is formidable, but I urge you to hold fast, and my Ministry will do its level best to assist in any way within our reach.

I have also been informed of your Association’s objectives cut across sectoral boundaries, thus giving you a leverage for furthering collaboration between public and private sectors in health as well as cross-cutting health related issues, like the **“social determinants of health”**. I know that TPHA has always been in the forefront in networking with other NGOs in the health and other sectors, when dealing with policy makers and implementers. I am challenging your Association to take the lead in not only fostering but intensifying **intersectoral collaborative partnerships** and networking with as many key stakeholders as it takes to bring about the necessary change in health outcomes. The social determinants of health, particularly as they contribute to the burden of disease due to Non-communicable and communicable diseases present a formidable challenge, but it is the current prevailing environment in which we must operate, and no matter what the circumstances, I urge TPHA to take up the emerging opportunities to remain abreast.

Mr. Chairperson, Distinguished Participants,

I wish to congratulate your Association for a long list of noteworthy achievements, which include, among others, publications of numerous proceedings from its previous conferences and reports, some of which I have witnessed here. I am duly impressed that you have your latest conference proceedings of last year, held in Mwanza, already printed. This is impressive and I spur you on!

I am aware that TPHA was involved in conducting successful advocacy initiatives towards the signing and ratification of the Framework Convention of Tobacco Control (FCTC) in Tanzania in 2004. I have also learnt with appreciation, that this Association worked very closely with my Ministry while developing the tobacco products regulation act (TPRA) 2003, the implementation of which it has keenly followed in subsequent period, including provision of educational materials and monitoring closely on its review and implementation. On this issue, I have been informed that there is unfinished business of developing of implementation guidelines for the Tobacco Products Control Law (TPRA, 2003) to date. I will personally follow up on this matter, as we know that many young people are enrolling in the undesirable habit of smoking and endanger their young lives, when what they need most is protection from substance abuse. I also challenge TPHA to pursue this issue further, especially since you invested so much time, resources and effort in the advocacy for the law to be enacted. If not enforced, it remains inactive and not protective to the society, while the lives of many vulnerable groups are endangered.

TPHA was also instrumental in helping the Ministry of Health and Social Welfare to clarify on health sector reforms and put in place the Public Private Partnership (PPP) strategy through organizing DMOs meetings and active participation in the PPP Technical Working Group (TWG) activities. In addition, TPHA was instrumental in formulating and finalizing the Service Agreement template which is currently used in the PPP implementation.

I am also glad to learn that TPHA has in the past three years, taken initiatives in alcohol harm reduction public awareness creation work, as well as advocacy for national policy and revival of alcohol law enforcement. My Ministry will be very supportive of these efforts, which will lead to reduction in the disease burden due to NCDs in the long run, and many of the social vices related to alcohol intoxication. These commendable achievements should be intensified to promote healthy life styles throughout our society. I am also aware that a community based approach in the alcohol use harm reduction have been successfully initiated, and I and my Ministry are eager to learn more on the accomplishments of these efforts through your eperiodic reports and dissemination work. The more information we share, the more we shall be able to give whatever support is needed to compliment your efforts.

Mr. Chairperson, Distinguished Participants,

I am glad to be here today, to share this occasion in which your “baby chapter”, of Pwani Region, is hosting your important annual event. May I join the rest of TPHA membership to congratulate you and the new chapter leadership and members for managing to organise your conference in this venue. I do hope that more Chapters will be established in other regions which do not yet have one in the near future. I have also been informed of vigorous membership recruitment efforts in the southern regions of Lindi and Mtwara, and with the recent economic development in those areas, a local chapter will be a fitting extension of TPHA’s growth where it is needed most and at the right time. I am certain that establishing a chapter in that area will help us monitor issues of environmental conservation and the like, in the context of ongoing economic development.

The Association’s advocacy and awareness creation activities are certainly needed most at the community level, and having local chapters is one of the most effective ways of facilitating better interactions with the needy. While I commend this effort, let me challenge you to establish more

regional chapters each year, and instead of just one once in a while, you should intensify efforts to launch more new chapters each passing year, including in the five newly created regions. This way, you can bring public health knowledge and practice closer to the communities in reasonable time, where it is needed most, as that is where the inequality gaps in both access and availability of health care services are more glaring and difficult to bridge. The social determinants of health are inherent part of the social, cultural and economic life of an individual, household and community.

Mr. Chairperson, Distinguished Participants,

All the work TPHA has accomplished and that which is in progress is complementary to what my Ministry does and needs to be done, and these efforts should be intensified to continue bridging the existing gaps where the formal sector has less equitable reach than desired. Having been informed that you have a network of twelve Chapters country-wide, and expecting to establish more is comforting to me. I believe that your Association has a good chance to strengthen community level activities to catalyse behaviour change for healthy life-styles in our society countrywide. I challenge you to raise your visibility so that you are seen country wide, and at all levels of the Tanzanian society.

Mr. Chairperson, Distinguished Participants,

The objective of TPHA's 31st Annual Scientific Conference is to assess the status and scope of the **“Social determinants of health in Tanzania”** and how these affect the Millennium Development Goals Achievement. Your choice of theme and topics for sharing and discussion during the five day event is sobering. I believe this sharing of experiences and cross fertilization of ideas and concepts will bring out inspiring innovative ideas with which to move forward into action. Indeed, community based approach that is coupled with cross-sectoral collaboration geared towards a more holistic approach in addressing the prevalent social determinants of health in any location is the best hope we have in bridging inequalities, which have so far eluded our traditional systems. I understand that some SDH elements demand more radical structural changes, such as formulating evidence based national policies that protect vulnerable groups in the society against the impact of these determinants, my Ministry is at your disposal to work with closely, and as TPHA has the time tested advocacy experience, I trust we shall work together on these issues to bring about change in our lifetime. The socio-cultural elements surrounding reproductive and maternal health need more vivid elaboration if they can benefit our efforts to reduce maternal mortality (MDG5). Malnutrition may be paraded by intrahousehold and community social factors that impede our progress in dealing with the problem, particularly chronic malnutrition (Stunting): and thus sloth in reaching MDG 1 targets. Eating habits of some have started to change the landscape of NCDs (Diabetes, Obesity, Hypertension, CVDs). Our resolve to attain targets on WASH (MDG 7) in both rural and urban areas, require a more careful look at social and cultural factors impeding our progress. The list of social determinants is long.

To me personally, and on behalf of the Ministry of Health and Social Welfare, this forum provides an ideal springboard to jump start the intersectoral collaborations and partnerships, given your association's inherent nature as a multi-disciplinary body, by which status it has already set the right grounds for smooth cross – sectoral dialogue to start the ball rolling immediately, into the awareness raising and advocacy work, and to facilitate the much needed paradigm shift, from the status quo to new mind set, and remove the traditional sectoral barriers among key potential stakeholders.

The formal health sector has been undergoing human and other resource constraints in recent years, and the people of this country deserve better from us public health practitioners. The people of Tanzania expect and the Ministry of Health and Social Welfare to plan strategically, to

make decisions based on scientific evidence and to implement programmes, monitor and evaluate impact based on scientific basis as is the norm. TPHA 's close working relationship with my Ministry continues to provide reliable support and initiatives. In this complex subject of "social determinants of health", not only the ministry of health and social welfare, but also other ministries and various institutions will have to come together to address common issues, by getting outside the traditional boundaries, where initial coordination and bringing together of key stakeholders will be an essential pre-requisite to working together for a common course.

I therefore, challenge you to play your part diligently, and together, let us serve this country well, by ensuring quality service provision and intense and wide dissemination of accurate health information geared towards health promotion and disease prevention as per your mission and vision. More intense advocacy and awareness and IEC activities will be needed to just get the traditional system overhauled, in order to build the needed collaboration and partnerships. Your work is crucial in building up the essential synergies and integration.

The Government will give your association whatever assistance it can in creating conducive environment for your work, and more hand in achieving your goals, which indeed, are our common goals. Together, we need to improve on the disparities of public health care provision between the urban and rural settings, especially reaching the rural communities where the majority of our population live. TPHA, with your net of Chapters, are well placed to take this role effectively. I believe that if TPHA could work very closely with our Department of Health Promotion, Education and Communication, we can enhance own house synergy to enhance effectiveness in reach of our target audience, the community.

Chairperson, Distinguished Participants,

It is my hope that in the next five days that you will be here, you will work hard and come up with sound recommendations that my Ministry can use for improving our current policy decisions and programme implementation that will greatly improve public health practice in Tanzania.

Let me conclude by wishing you fruitful deliberations. With these few remarks, it is now my honour and privilege to declare the 31st Annual Scientific Conference and Annual General Meeting of the Tanzania Public Health Association officially open.

Thank you for your attention

KEYNOTE ADDRESS

Social determinants of health and the Millennium Development Goals achievement: a brief desk survey and environment scan of social ills in search of a way forward

Elihuruma Nangawe

Tanzania Public Health Association, Dar es Salaam, Tanzania

According to the World Health Organization Commission for Social Determinants of Health, extreme poverty and low or lack of education are cardinal drivers of ill-health. These cardinal drivers have indirect influence on diseases since they are precursors of poor living conditions, poor sanitation, unsafe and insufficient water and food, unsafe or lack of transport, poor or risky lifestyle and unsafe environment.

Education policy in Tanzania provides for gender equity to be promoted at all education levels; and for married students, pregnant girls and young mothers to be given opportunities to continue with education. In this way targets on education (MDG 2) would be met with due consideration to the gender (MDG 3) differential.

Women's education has been found to have positive contribution to reduction of infant mortality and hence beneficial to MDG 4. Through social mass media and social gatherings, immunization has been popularised to the extent of attaining impressive immunisation coverage (over 90%). According to the health sector performance analytic report of 2013 more than 90% of children receive pentavalent and measles vaccines, with coverage being high in all socio-economic groups.

RCH and health education

Maternal and child health clinics attendance has improved the ability to screen at risk pregnancies (benefits to MDG 5), identify and act on children experiencing weight faltering, screen and treat children found with illnesses. Through male involvement activities (especially those that socialise clinic attendance and include services beneficial to men) we are beginning to see sharing of roles such as caring children, men supporting their spouses proudly, even though this is still early days. Opportunity to make informed choices on family planning methods, place of delivery, prepare for the delivery and newborn encounter, be counselled and tested to screen for HIV, plan and arrange for male circumcision, are among possible activities through which men contribute to the attainment of MDG 4, 5 and 6.

Educational messages passed on at workshop gatherings, funerals, wedding, and other ceremonies have been a cost-effective way to promote health, prevent diseases, and encourage positive behavioural changes.

Quality of care and access

When patients report to a health facility they expect good quality care; they need assurance they will get treated and the medicines to remedy their ill-health are available. The care they seek should be accessible as well as within their ability to purchase. It is gratifying to note current moves in Health Care Financing Strategy promising to address social exclusion through compulsory National Health Insurance with safeguards for the poor. Hopefully the legislative and financial support for this move shall be actualized, and that shall be a practical move to eliminate inequity of access.

Social ills

While the low social capital of women and children is often encountered in many communities the poor and less educated strata of society tend to be unaware of ill-health due to oppression and abuse suffered by children and women. Gender-based violence (GBV) found to be experienced among 39% of women aged 15-49 years and Violence against Children (VAC) are concrete examples. *Wife beating is a form of physical violence that degrades women's humanity. It is also a violation of women's human rights. Abuse by a husband or partner is one of the most common forms of violence against women worldwide (Heise et al., 1999).* Ironically the DHS (2010) found more than half (54 percent) of women agreeing that wife beating by a husband is justified.

Survey analysis (DHS 2010) has shown the number of reasons that justify wife beating is negatively associated with women's access to antenatal and delivery care by a health professional, while the belief that women can refuse sex with a husband is positively linked with women's access to antenatal and delivery care by a health professional.

The DHS 2010 documented that women with at least some secondary education begin childbearing more than four years after women with no education (23.0 and 18.8 years, respectively). Similarly, women in the highest wealth quintile (20.8 years) delay the onset of childbearing by about one and a half years relative to women in the lower wealth quintiles (19.2 to 19.4 years).

Risk of HIV transmission to women is higher: The DHS 2010 found 26 percent of men with no education have multiple partners compared with 7 percent of men with secondary or higher education. Wealth is negatively correlated with having multiple sexual partners; 17 percent for men in the lowest two quintiles compared with 13 percent or lower for men in the three higher quintiles.

In the TDHS (2010) sample, 20 percent of women report that they have ever experienced sexual violence. The likelihood of experiencing physical violence increases with the woman's age, from 13 percent for women age 15-19 to 25 percent for women age 25-29. Over one third of women who are divorced, separated, or widowed have experienced sexual violence, compared with only 22 percent of women who are currently married and 11 percent of never-married women.

Women who have ever been pregnant were asked about the experience of physical violence during pregnancy. The findings presented indicate that 9 percent of women in Tanzania experienced physical violence during pregnancy.

Teenage pregnancy is a major health concern because of its association with higher morbidity and mortality for both the mother and child. Using information from the 2010 TDHS, 23 percent of women age 15-19 have started childbearing; 17 percent have had a live birth; and 6 percent are pregnant with their first child. While only 5 percent of women age 15 have started childbearing, 44 percent of women are either mothers or are pregnant with their first child by age 19.

Female Genital Cutting (FGC) is still prevalent in some ethnic groups: declining slowly with public education (in Manyara) but increased slightly in Mara.

Social attributes, while sometimes beneficial psychologically, can cause devastating damage to health of individuals or the public at large.

Pointers from the WHO Commission for SDH

According to the fact finding of the Commission for Social Determinants of Health (WHO 2008) the following major pointers were made:

- Inequality in income is increasing in countries that account for more than 80% of the world's population
- Explicit policies for tackling socially determined health inequalities (where these exist) are stifled by free market and liberalized economy.
- Poverty, social exclusion, poor housing and poor health systems are among the main social causes of ill health.
- Differences in the quality of life within and between countries affect how long people live.

Therefore policies and strategies aimed at breaking the vicious circle of poverty and ill-health take a center stage, underlining the importance of taking forward the “Health in All policies” resolve.

- For example evidence is needed to gauge to what extent education policies and strategies have or have not addressed the rights of women and children. Insufficient awareness of these rights in society limits what women and children can achieve as existing peer and socio-cultural influences shape the landscape.
- Benefits of economic growth have not trickled down to alleviate the predicament of the poor – more unequal distribution 25 years on! Some MDG 1 targets will be difficult to attain when households are food insecure and actual wealth creation is not brought up as a trend setting development dialogue, targeted at more actions.
- Gender biases in power, resources, entitlements, norms and values have consequences for child health and survival (of boys and girls). For example when toilet facilities for girls are insufficiently provided at schools the consequence is absenteeism of girls from classes during menstruation period, depriving them of education on an equal footing with boys. Pregnancy to school girls forces them out of school prematurely. Is life skills education compulsory for all at all schools?
- How has *PHC* been revitalized to serve the marginalized and disadvantaged populations? Is quality of care been adhered to by practitioners/ health care providers? Even simply communicating to patients in a respectful and dignified way has become an issue that should be corrected by getting staff to be ‘sensitized’ and ‘trained’ in effective and healthy communication. Rights-based approach is slow to take shape in health systems – what is amiss? Where is ‘Haki Afya?’ How can the attitude towards inculcating these rights be built and extended?
- How is life-long-learning on health matters organized at present? What are the current sources of health education and health facts? How reliable are the sources? Where are the integrated health promotion and educational packages these days? We started well with “Mtu ni Afya” mass media campaign with a lot of dividends; we went to “Facts for Life” then lost steam? Where is our strategic penetration of the plethora of media and

channels available at every corner today? What do people commonly learn from social media or social interactions?

- What program is in place to address socio-cultural attributes of ill-health in a coherent and scientifically sound approach? How best can we facilitate increase people's compliance with programmatic interventions that have been tested and proven to work using socio-cultural entry points?

Unfinished work on MDGs

For MDG 1 we need clear targets on **increasing household income for meeting basic needs** in order to attain household food security, optimal nutrition.

For MDG 2 investment in **quality education** at all levels is vital for long term sustainable results and overall health impact. Quality education should produce a crop of responsible youths that are self-disciplined, self-respecting, that observe civil decorum for environmental preservation and protection, that are proactive in engaging in productive development ventures.

For MDG 3 a faster pace of gender literacy for optimal gender balancing is needed with a **proactive affirmative program against GBV**.

With regard to MDG 4 and 5 it is necessary to adopt comprehensive sets of effective interventions implemented in an integrated manner concurrently with orientation and education of clients on **human rights based approach application in health**.

More **determined actions on WASH and environmental health** including sustaining gains thereof should enable reaching higher MDG 7 targets in both urban and rural areas. Vandalism of planted infrastructure, environmental abuse, indiscriminate disposal of dangerous waste are vivid examples of anti-social behaviours which have to be fought against vehemently.

Identify and address international barriers that impinge on people's health and produce ill-health (application of IHRs, adequately financing emergency preparedness, prices of commodities and medicines) – MDG 8. Partnerships to **mitigate** global/ externally driven **inequalities in health inputs, outputs and impact**.

Community participation in health: Policy implementation challenges and prospects within health systems

Elihuruma Nangawe

Tanzania Public Health Association, Dar-es-Salaam, Tanzania

E-mail: nangawee@gmail.com

Abstract

This desk study reviews the policy implementation challenges of community participation in health drawing from a variety of documented field experiences from some countries in Sub-Saharan Africa taking experiences from Tanzania as illustration examples. A major reveal is the evident validity and power of the participation principle despite its relative slow progress in wide application and failure to reach its goal of empowerment even where steps to achieve authentic participation were observed. Possible alternatives to enable people towards self-actualization in contributing positively to health development are discussed. In particular prospects for innovative approaches from a health systems angle are explored, research questions outlined and a way to stimulate community participation in health on a pragmatic footing is recommended.

Introduction

Community participation is advocated in many country health policies: but its implementation to generate sustained health gains for the population has been flawed. In some cases one encounters manipulation, coercion, or top-down dictation. Underutilization understood as drop in demand for health services or inadequate use, *frivolous use or overuse of health services understood as irrational demand*, have been described in various studies conducted in Sub-Saharan Africa [1,2,3]. These studies identified the most prominent factor affecting utilization to be financing arrangements. Among reasons given in discussion to elaborate on factors, limited participation, involvement or ownership of clients and communities in the management of services is implied but not analysed. It has also been observed that utilization patterns are often not known due to not well developed reporting systems or limited sharing of information on the functioning and provisions of the health system (*evidenced by supervision and monitoring encounters in Tanzania, some studies in Zambia and Kenya as well as sector reviews in Tanzania and Zambia*).

Preventable illnesses and deaths continue to occur; in a number of countries high levels in both parameters have been recorded driven by the negative effects of HIV/AIDS. The World Health Report [4] projects 43% of countries in WHO Africa Region having high child mortality and very high adult mortality; especially those that are going through a very substantial impact of HIV/AIDS. Yet in these countries there are intervention efforts promoted collaboratively between local and international experts in public health. Public information and education through media and other forms of channelling education messages have been used with respect to key health interventions (ITNs promotion, Safe sex education and condoms promotion, extension of Voluntary Counselling and Testing services, home based care for chronically ill, educational messages to improve sanitation, water, nutrition and immunization, CeMONC and BeMONC etc). Despite these measures being supported by concurrent health reforms in countries, a limited set of key health indicators have been improving (Immunization and Child Mortality reductions) (see for example *National Health Systems Profile for Tanzania from 2004, 2006, 2013*) The World Health statistics for 2013 show an impressive decline in Under five and Infant Mortality but Neonatal

Mortality is declining very sluggishly in Tanzania. Demographic and Health Surveys 2004/5, 2010 and recent analytical report of the Health Sector (2013) show slow progress in reducing Maternal Mortality, leaving a begging question, what is lacking in health systems that accounts for a state of dismal performance? A popular excuse for stagnation or slow progress of health indicators is widespread poverty linked to effects of HIV/AIDS. While this obviously cannot be disputed, it is also vital to recognize other factors (e.g. considering malnutrition can occur in a household with food, HIV/AIDS affects better off households as well etc). How can the current state of public health and community health practice be improved in the midst of severe human resources crisis faced in countries? The perceived primary health care system failure [5] in particular calls for thorough examination to understand what is at fault given the elementary nature of the health interventions. In 2008 the World Health Report [6] dedicated its focus on renewal of PHC arguing “..Globalization is putting the social cohesion of many countries under stress, and health systems are clearly not performing as well as they could and should. People are increasingly impatient with the inability of health services to deliver. Few would disagree that health systems need to respond better – and faster – to the challenges of a changing world. PHC reforms can do that.”

Community Based Health Care (CBHC) initiatives (including CHWs, TBAs, THs, CBDs) have been tried with varying degrees of success and some failure. Many got hung up with unresolved problems such as remuneration, weakness in supervision, inability to assure continuity of requisite inputs (basic supplies and logistics), trust with the formal health system, and so on; while other programs experienced a different set of problems such as bureaucratic inertia to respond to community activists, distortions of donor financing [7] and deterioration of professionalism. Low utilization of Community Health Workers for even mild curative care and referral of cases has been documented with a general finding that the family was the main provider of care for mild diseases [8]. In discussing reasons for underutilization of CHWs the Sauerborn study projected lack of community participation as well as difficulties in putting it into practice: However that study noted TBAs were generally better utilized pointing to a higher acceptance of women as community health care providers. *WHO technical reviews and reports on CHWs and Community involvement in health development so far indicate positive contribution where the community agents are utilized and supervised well, policies are equity sensitive, people are perceived as a resource and hence appropriately supported, and community will and values are upheld*[9]. *For example in HIV/AIDS treatment solidarity with communities has been possible with community agents handling tasks such as administration of laboratory monitoring, follow up of patients, nutrition support, organizing transport to clinic appointments etc. In this way the overall treatment programme of TASO-Masaka in Uganda was able to report 97% treatment adherence rate after one year of operation* [10]. *This complementary role of CBHC vis a vis the formal front line health care services has been exploited by faith based organizations in Sub-Saharan Africa but sharing the experience with other providers has often been limited.*

Looking at modern health care, a number of studies point to household income influencing its utilization [4,11,12]. Patient initiation to modern health services has been found to be related to household income, urban residence, type of illness, and education but these factors do not determine patient retention [4]: The latter is determined by perceived quality in line with health belief model. To avoid paying consultation charges at health facilities some potential clients of formal health services have been seen to diverge and purchase prescription drugs on the market with neither professional advice nor formal prescription (random personal observations at Community Pharmacies in Tanzania 2000-2014). With privatization and free market system in health Tanzania has witnessed proliferation of retail drug outlets: Coupled with poor law enforcement it is easy for lay public to source drugs for self-medication or medication of their family members when they succumb to common diseases. Lack of attention to quality at formal health service facilities, deterioration on professionalism in health care practice settings, and a

general lack of client responsiveness was also a frequent observation on supervision in Tanzania, affecting retention of clients. How far such practices manifest in other countries with similar socio-economic conditions is worth finding out.

Three tracks for further investigation arise from the foregoing observations: One is the need to investigate quality and safety of self-care (a sub-domain of CBHC that has been insufficiently exploited in public health advocacy thus far) or family based health care and how this could be put to better use for increased health gains. The second is to investigate formal health services at primary level along similar lines (quality and safety) and identify how they could be made more client-responsive, as well as more effective. The third is to examine relations, communication and exchange at the interface between the two domains of care. In particular cost-effectiveness of the supposedly complementary link of formal health care with CBHC should be determined? Has the content been reviewed to take on board interventions proven to work in an integrated manner? To what level of effectiveness is the link working or not working and why? We need answers to these urgent questions before putting together the jigsaw puzzle. In a bid to examine and shed more light on these questions this paper singles out the principle of community participation for deeper analysis, assuming its potential can more fully be exploited for enhanced results in health on a locally propelled mode.

Difficulty in achieving authentic countrywide community participation may have led to lesser enthusiasm to apply this principle's ideals on a wider scale than is currently witnessed in health development. In fact as a development paradigm, Community Participation (CP) has tended to be characterized more by rhetoric and abuse than actual ideal application. In practice participation as we shall see later, seems to be an elusive and **difficult ideal to achieve on a sustained scale**. Yet its importance cannot be underestimated.

In the International Bill of Human Rights the principle of participation is recognized as imperative both as process and an outcome if the principle of human dignity and subjectivity is respected and if human rights are to be enjoyed sustainably (UN International Bill of Human Rights). The importance of participation cannot be disputed, but understanding it, though seemingly simple, is clouded by conceptual idealism and practice is ephemeral. For this reason it is necessary to embark upon an exercise to gain a better understanding of its stumbling blocks in practice, and *prospects within health systems* to engage afresh.

Conceptual issues and challenges in participation

It has been argued that in the ideal situation community participation in health should begin with an assessment to get to know the community: As one of the ways to fulfil this need 'community diagnosis' came to be, and its appeal went to the extent a manual was developed (Bennett, 1979)(3). One analysis drew attention of scholars on a paradoxical situation that "... there is a need for 'community diagnosis' and whereas implementing 'community diagnosis' (CD) appears to be a delusion." (Koenraadt, 1992)[21]. Who diagnoses whom, why and for whose benefit? How does CD take stock of the past and present experiences of a given community to shape a preferred future? The tendency in many projects has always been stocktaking of the present.

Participation came to receive increasing attention in health development literature after the Alma Ata pronouncement of Primary Health Care in 1978. Much writing on participation in health at that time was prime and speculative given the fluid nature of the concept. Rifkin (1986) [35] argued that a common definition of participation is not possible to fix because it depends on who defines it for whom and for what purpose. She further observed that motivation is the major ingredient for participation. Arguing based on case studies she made the point that what

motivates individuals (to participate) under what circumstances appears to be context specific and not universally defined. The literature also exposes tension in application where some planners take a purely health intervention approach on the one end of spectrum and some who take a community development approach on the other when considering content of participation (Rifkin 1986)[35] (Oakley 1989)[28]. These scholars observe that those that take a health intervention approach, view participation in a narrow sense and are less likely to see clearly its close association with power and politics. Recently a new interpretation of participation in health has been expressed as activism whereby those affected by negative health outcome challenge the medical establishment to obtain a say in planning, health policy formulation, availability of medication and ownership of health care (Zackie Ahmet, AIDS activist, South Africa; Philip Lutaya, Uganda)

The *understanding of community differs* or may shift given variations in ethnic, country, geographic, occupation, or even time settings (what was a fishing community yesterday may be transformed through ecological changes into a different form). From a multilevel angle, variations from grassroots to district, national, regional to international communities may feature depending on one's locus of observation, organizational setting or socio-cultural setting. Likewise Community Participation may differ particularly affected by the tendency for messages to be altered as they transfer through the multilevel cascade (see Van de Geest et al 1990)[47]. In addition, *processes, interrelationships, leadership and timeframes are critical considerations* if one is to generate a fuller understanding of what it takes to achieve a fruitful and developmentally significant degree of participation. Unfortunately, these critical elements are usually *glossed over* in practice, particularly from the grassroots perspective where outsiders may *rush agendas with little introspection and reflection on past experience of the community and immediate let alone long-term consequences*. The main concern of health programmes has often been to influence change and make a difference in a bid to attain better health as rapidly as possible. The relatively slow process of participation is often not conducive to this craving for rapid results; how this problem can be overcome without compromising on the principle remains a challenge.

In a review of case studies it has been argued “the dynamic nature of participation demands flexibility on the part of planners and agencies if participation is to be growing and self-sustaining” and hence the need for evolving analytical tools for the same [13]. This view held substance; but it is equally important, to keep the issue of analysing empowerment (the goal of participation) in focus. At the same time planners and agencies should unmask the dynamism inherent in the environment where participation occurs and the extent of its influence. The environment is constantly an adaptive one as macro phenomena influence the micro (and hopefully vice versa, the scale of influence notwithstanding).

Implementation issues

Problems at initiating and sustaining

Experiences of participation practice reveal that in many instances, participation gets discussed and applied in a *passive condescending* manner towards communities. Often initiators do not give due recognition to *pre-existing community activities or local initiatives for problem solving* as a significant aspect in participation practice. In this sense participation stands to be almost perpetually a practice of people complying with (or in actual fact trying out) ‘outsiders’ agendas [14]. That which people have been preoccupied with becomes either totally marginal or sometimes, unfortunately repeated in the instructions or teaching by the initiator! From experience, this disregard to local effort very commonly characterizes vertically driven programmes and projects on the one hand: Ironically bottom-up initiatives on the other hand may suffer similar contradiction despite being proponents of participation ideals. Bottom-up

initiatives, though not as prolific as top-down ones, often also do not begin with what people actually do. It is sheer reality that the idea for initiation usually mooted by a change agent (often from outside or rarely from inside a given community) may address local issues without necessarily giving due prominence to what people do for their livelihood. For example the early phases of HIV/AIDS work in Africa saw establishment of hospital outreach home-care services and later expansion of NGOs in awareness, prevention, care needs of PLHA and their families including home care with focus on supportive and spiritual care. These developments had drawbacks in not being rooted in the community. Gradually, more community-rooted initiatives have emerged along with initiatives by PLHA themselves, through PLHA support groups that provide counselling and medical care services.

Many well-intended programmes/ projects or initiatives have come and gone; more shall also come and of course live their course. Glancing through recent decades of health development one finds a prolific band (GOBI, UCI –90, Health Reforms and Better Health in Africa, Roll Back Malaria, Polio eradication and other elimination initiatives, TB-DOTS, prevention and control of faecal-oral transmitted diseases, MPS, IMCI and so on). In most of these programmes participation advocacy and engagement is pointed out as an important process in order to register desired change. But to what extent do these programmes *elaborate how participation* shall be achieved in a manner that *empowers people* and actually *action the ‘how’* at least to achieve this ideal? The community-rooted initiatives in HIV/AIDS provide a vivid example of ‘how’ despite their slow take off (given the stigma and fear of discrimination surrounding HIV/AIDS). *Sustaining the empowered status* upon initiating community participation is usually elusive! From experience interested agents tend to be difficult to retain for long and the driving initial energy tends to dissipate after a few years. The policy intent in various programs is clearly supportive towards empowerment; but the reality of practice often reveals relative disempowerment (lethargic implementation of community control over primary health service facilities in Zambia and Tanzania, decline of cooperatives in Kenya and Tanzania, distortions of social development policy in Tanzania, growing inequity in many Sub-Sahara African countries etc). When community members do not know the role and functions of their Health Facility Governing Committee (refer to recent observations by SIKIKA in Tanzania) it is clear testimony of the state of their disempowerment through denied information and lack of or insufficient education.

But fortunately all is not lost; again there are examples in HIV/AIDS empowerment in particular where HIV mortality has decimated communities where people took initiative to change bylaws (wife inheritance in Chikankata Zambia), change behaviour (anti AIDS clubs at schools) or demand medication (TAC South Africa): Lessons should be drawn from these cases. In Tanzania some districts that involve local women in recognizing and monitoring at risk prenatal women have registered a year without a maternal death (information from Press about current status in Mbarali).

Tools and capacity development

Health workers are often deployed with neither an orientation to community participation nor skills for making it happen. Where orientation and skills have been developed staff attrition hampered continuity and sustenance (a common predicament of CBHC projects).

Tools for participatory learning have been developed and tested in many settings. For elaboration of these tools one could refer to specific texts [15-17], with due attention to the context in which they are applied. Mechanical application of the tools achieved short-term objectives but sustained longer-term empowerment often falls short.

Community participation in health does not usually receive exclusive financing. Often it is supported as a process within a given financed programmatic area or health intervention.

Financed aspects of the process could take the shape of developing tools, skill building, or a deliberate social mobilization activity; in other cases it may be a definite input (donation) to motivate or assist local effort. It is now common knowledge that enthusiastic external support, whether an input or a process type may release or kill local initiative and undermine or enable ownership and empowerment depending on degree and application method, as well as interests of the agents.

Experiences favour investing in institution based capacity development linked to operational research in order to generate evidence and knowledge on 'how to' (and 'how not to'). Social Accountability Monitoring (SAM) applied by an NGO - SIKIKA in Tanzania [18] is a practical example of how well designed operational research-linked initiatives yield insights on how communities are empowered or not empowered by health development enthusiasts.

Scepticism and diminishing interest

It is less easy to argue for financing a process; hence in advocating for participation, it is not uncommon to meet with responses such as, 'Where has it worked? Is it not driven by charisma and therefore difficult to sustain?, How does one scale up?, Is it not an ideal beyond reach in practice?' etc. From the trial and error of the 1980s came a mix of scepticism and ambivalence in the 1990s that made it increasingly necessary, if not urgent, to analyse and clarify how to handle and benefit from community participation in health. Debate began to search new understanding [19].

Box 1

In 2011 Sikika did a survey in six districts of Kinondoni, Ilala, Kibaha, Temeke, Kondoia and Mpwapwa to find out the availability and accessibility of HIV&AIDS services, medicines and supplies and functioning of the supportive structures, e.g. Multi-Sectoral AIDS Committees (MACs). The findings showed the following: - More than 50% of MACs members do not know their responsibilities and many committees were formed without following up the national guidelines while 81% of MACs members do not know about the planning and budgeting processes for their communities.

Looking at community involvement in health policy Madan (1987) [24] made an observation that 50 years of experience with community participation in India shows enthusiasm of people generally tends to wane after a short period of time. Amongst a plethora of hampering factors, one of the reasons is deciphered from Brownea's (1987)[4] view, "...that not all cultures place high value on participatory approaches to health decision making". Indeed one could also say not all health development agencies do so. Even among those that do there is very uneven assistance given to enhance capacity development for effective participation.

Treating communities marginally in health decision-making seems to be widespread despite the fact that individual behaviour has a significant part in attaining or breaking health (considering that self-care, according to Kleinmann [20] and Helman [21], is a dominant pattern of resort in health care seeking behaviour for example). Has participation been largely let down by implementers, planners, policy makers, a combination of all three or only some of them? In attempting to answer this question it appears there is a diversity of considerations.

It is prudent to question the adequacy of institutional responses to community felt needs expressed as a result of participatory planning and mobilization encounters. Response to the Community Health Innovation Fund 1997-1999 (CHIF) in Zambia was slow to be promoted by its Central Board of Health. Following mobilization by Kasama Nutrition Research (Northern Zambia 1996-1998)[26] community identified needs could not find timely response. The priority concern of a community in Ketumbeine (Maasai Health Services Project, Tanzania 1985-6) was to reduce deaths through self-help in clearing bush to construct a dirt road that would make the local

population more easily accessible to higher referral health care: Project Management declined to encourage and promote the community resolve because it was not a direct health intervention. Guidance to establish Health Facility Governing Committees was given well before the HSSP III commencement in Tanzania – the intent was to attain accountability, transparency and shared ownership of the Health Facilities agenda with respective communities. As we are about to close the HSSP III period these committees are functioning very sub-optimally, especially where SIKIKA intervention has not been applied.

Box 2

Kiteto citizens have also voiced their concerns on whether the HFGCs are really functioning, as they should; they noted that the committees have not been visibly addressing complaints raised by the citizens and in some areas citizens do not even know their HFGC members.

In Simanjiro district, the council, through the DMO's office was able to re-establish HFGCs in 28 facilities, which were found not to have them during the 2013 SAM. The office has also managed to prepare a training plan for the HFGCs members

Sikika Mid-Year report 2014 pp 2 and 20

Institutional response analysis is perhaps an area that could benefit from systematic study if we have to generate hard evidence to pinpoint the nodes where participation is usually failed or hailed. The research question could then be formulated as ‘What is the pattern of health system responses to community felt needs in health and to what extent do these responses address existing health priorities?’ One could use the outputs and outcomes of MMAM Tanzania (2007-2017) implementation in the context of health systems, as a point of reference to study the foregoing question.

Citing experience from field situations in neighbouring Zimbabwe Tumwine (1989)[44] observed that the concept of participation is often abused, some pay lip service to it, class interests of agents affect practice, and paternalism over communities is manifest. Undoubtedly there will be many experiences that bear testimony to this important observation even today. The research question here is ‘What are the outputs and outcomes of programs and projects focused on community participation as a key principle/approach in implementation?’ Another question is, ‘To what extent have the outputs and outcomes impacted the level of poverty amongst beneficiary communities’. Do these outputs and outcomes have sustained and lasting benefits? Or in other words who benefitted and who lost in the participatory encounter – the people, the change agents, higher level officials, advisors or ‘experts’?

It is too easy to say that because there is often variance of perception of disease causation between health professionals and communities, this may be the reason for difficulties in or a drawback to promoting participation policy practice. Interestingly there is evidence that challenges this perception. From one implementers angle in Benin, [Rashed et al (1999)[33]] a strong association between women's involvement and use of permethrin-impregnated bed nets was experienced even though their economic dependence on their husbands was a frequent obstacle to acquisition: The positive results from Benin were in spite of qualitative data showing variance of perception on cause of Malaria between the informants and bio-medically ascribed causes. Kasama Nutrition Research [22] documented examples of wide variance of perception with respect to causes of malnutrition, but still the researchers were able to identify appropriate entry points for intervention with the communities. Another good example is the ONCHO project in W Africa (Vlassof et al). Variance of perception is from these cases not an obstacle to achieving community response or indeed to community involvement. It is therefore prudent to ask, ‘what opportunities and constraints present in variation of perceptions and practices between communities/clients and formal health service providers? How can the potential of the opportunities be utilized to improve effectiveness of health programs?’

Projects or programs that reach out to communities for outputs and impact may sometimes emerge with experience that is not so encouraging. For example in a study looking at health reforms and the quality of health care in Zambia it was observed that “sometimes participation has been passive and even not recognized by the people whom it is intended to benefit” [18]. How can the intended beneficiaries be made more aware and consequently more active in advancing the cause for better health in their communities? What approach would make the health agenda more interesting, more appealing and worth pursuing by the local population in a manner that is self-sustaining?

Critical questions

Has participation practice been domesticating or enabling?

The advocacy for participation in PHC meant to confer democratization of health services and stimulate an element of community self-reliance on basic health interventions. In practice disempowerment has been observed [47]. Other views [41] contest that there are problems with values of Western individualism advocated considering that in other societies values such as interdependency instead of self-reliance hold.

Public health knowledge informs that the most frequent diseases in Sub-Saharan Africa (Malaria, faecal-oral transmitted diseases, sexually transmitted diseases, Measles, TB etc) are preventable if individuals and communities are educated about them and appropriately sensitized to apply the knowledge. Many health programs are designed with this notion in mind. It is assumed that sensitization and knowledge (from outside) shall enable people to act and free themselves of these ills. Public health/community health practitioners take the position that death from these diseases and from other conditions such as maternity related and malnutrition can be averted if health care professionals and the people play their respective part. We are in countries where reality shows people bombarded with ‘health education’ with little subsequent change in behaviour? Resistance or passive compliance has often been the norm and the cycle of transmissible diseases continues to recur! The health education given is often virtually ineffective considering the evidence at hand (recurrent Cholera, Measles, STIs and continuing spread of HIV/AIDS, high burden of Malaria etc).

Prevention, control and care measures related to the most common diseases are in some instances quite costly and the financial resource base has been constrained due to other major problems facing governments (poverty, ignorance, capacity, inappropriate or frivolous spending).

‘Community participation’ within the context of a liberalized market economy, where competition is unequal and stiff with growing inequity in distribution of wealth and social benefits (such as health and education services) cannot achieve the desired outcome without other measures. A search for new ways of working at the interface in wider application seems to be urgently needed; specifically socio-cultural elements that potentiate or negate desired outcomes of programs call for critical analysis.

In liberalized economies of today the socio-cultural dimension often finds itself engrossed in confusing turbulence. In particular, strengthening existing socio-cultural values and practices does not seem to receive prominence in the liberalizing markets. Sometimes there is total disregard to local norms, traditions, values as well as belief systems, aspects that could be surveyed and weighted in terms of importance to participation and people’s health. It may be useful to determine factors influencing implementation of participation in health within and outside the socio-cultural context, attendant effects etc, to benefit intervention design for better

health outcomes. It is usually the case that manipulative, coercive or handout type of participation is concocted to fulfil the 'project' requirement. The large-scale trial of participation in control of tsetse flies in the Congo (Gouteux and Sinda 1990)(11) illustrates this point. The study registered significant decrease in trypanosome sero-prevalence in the zone where villagers trapped the tsetse flies. Population involvement indicated as related to the size of the tsetse population; the greater the number of bites the more active the participation. The participation decreased markedly with the scarcity of flies posing a problem for any long-term action. A complex of factors including social aspects such as acculturation, loss of traditional values, presence of young unemployed, had negative effect on success in participation. Having recognized that *'..the original perception of participants was too often ignored by health authorities..'*, the authors concluded it is necessary to study more thoroughly the socio-cultural implications of tsetse trapping.

It is common to see governments prescribing solutions and handing down programs with emphasis on 'participation' with hardly any study of the socio-cultural setting. Passive compliance is manifest; sometimes 'silent resistance' projected wrongly as people's concurrence in the eyes of custodians of power. 'People have complied' and therefore "participated" is common surmise! Each key player appeases the interests of the provider/controller of the 'carrot', as the beneficiary target has been 'brought on board'; in other words tamed to the dictates of power brokers. Hardly would agents puzzle about how changes in the local environment (micro) relate to changes in the larger external environment (macro) and vice versa.

What links Participation and poverty?

If we use 'poverty reduction' as an indicator for the variable empowerment, we can and should actually investigate the extent to which the practice of participation has addressed the issue of poverty given participation's empowerment goal. We could find out from existing studies and reports how poverty comes to be, and what sustains it at community level. We need to investigate whether or not participation has reduced poverty (i.e. empowered the community) as well as whether the reverse is true (what influence reduced poverty has on participation) particularly at these times where the gap between the rich and the poor is widening [(Social Science & Medicine, 2000). The call for universal health coverage (World Health Report 2013) illuminates the need to address many unsolved questions on how to provide access to health services and financial risk protection to all people in all settings. For example intentions in the currently advocated health financing arrangements to provide exemptions to the poor are not fulfilled in practice. Policy pronouncements often aspire to reduce in-equity through fairer social service systems and equal opportunities to access economic production ventures and employment. But in practice these aspirations are often not reached. Participation that does not address these fundamental societal development problems is narrow and unlikely to bring about lasting benefit. Many questions about universal coverage require local answers (e.g. how the system should be structured, health-seeking behaviours, how to measure progress). The potential for participation to be applied effectively in a manner that will promote equity needs to be clearly articulated. In the next section I consider briefly practical entry points for reaching this potential.

Is participation a means, precondition, or result of power sharing?

Links between participation and democratization may seem obvious but this analysis shall be insufficient if the link does not receive some examination. Within the relatively new wave of Health Reform significant emphasis has been given to democratization of health services, (people having a role in decision making on health care). Other views see it as people being encouraged to take control of or share in managing health services. This policy often falls short in practice. Power sharing is easier talked about than practiced. A new practical way forward is

needed. Those whose duty it is to share the power they have been allocated ‘conveniently’ forget to share it. A recent initiative outlining use of human rights to promote health equity appears to offer a conducive entry point and generative themes for participatory health action [10]. The place of community involvement in helping people attain their right to good health [23] is an argument that should lead to creating platforms at which communities could explore health and human rights and thus help to chart out a pragmatic way forward if backed up by the emerging efforts on governance as demonstrated by SAM application highlighted earlier [24]. With sensible leadership, the people can self-organize to identify the indigent and poor amongst them so that transparency is achieved on application of waivers or providing the poor with pre or post-paid access to health care. Stigma and discrimination as a result of leprosy in the past and still and in particular nowadays HIV/AIDS have already resulted in collaborations between the health and the judiciary “communities” and their constituency communities resulting in various operational tools and interventions driven by affected communities. The latter have to be sensitized to identify their own ‘flag bearers’; people who will advance local activism and demand their right to quality health care and healthy living.

Should self-care be seen as pre-existing ‘participation’, its beginning point, or none of the two?

As observed earlier, it is known that self-care is widely practiced in health. Its safety could be increasingly questioned given widely spreading privatization of health services, loose state monitoring and control and increasing costs of professional health care. However what place is self-care accorded in conceptualization of participation and its practice? Lessons are to be learned from the application of self-care within community and home based care programmes for HIV/AIDS, which need to be explored in other programs and clarify how safety of self-care is addressed in their respective domains.

What comes out of this desk review?

Relative disharmony between policy intent and practice

Policy intent on empowerment through participation has often been at variance with practice. Whether this is a result of variation in understanding participation, as messages tend to change as they get transferred down the multilevel cascade, is plausible but there could be more to it. This paper has pointed out that participation is a dynamic principle playing within a dynamic environment as different interests shape what can or cannot be achieved.

In order to move forward health care providers and clients have to find common ground at which they could harmonize policy intentions with practice and lessen polarization of interests for mutually beneficial outcomes; otherwise participation shall remain a futile exercise and difficult ideal to reach.

The socio-cultural nexus at interface and self-care

Unsystematic participatory approach, using transactional methods, and measures that are in disharmony with socio-cultural context at the interface, may be a source of (severe) limitation to program outcomes. As communities tend to be treated marginally, self-care continues without a structured infusion of professional advice and hence standing out as an insufficiently attended aspect in health systems and community health practice.

Judging from recent attempts to clarify the link between equity and human rights, it seems an opportunity presents within the health and human rights approach to move participation to demonstrable examples of empowerment if sufficient ground work is done to conceptualize and package it into marketable products. Within such packages identification and guaranteeing access to health care for the vulnerable and indigents would yield dividend to equity.

Critical health systems questions

In addition to questions already raised in this paper critical questions for further pursuit in health systems could be: (i) Which enabling or domesticating factors dominate participation practice (power sharing, power positioning, transactionalism, dole out or what)? How should the enabling factors be promoted and monitored within health systems?; (ii) What practical agenda can be put forward within health systems in order for community participation to address equity in health care and effective utilization? And (iii) In what way can community participation be utilized to contribute significantly to reduction of poverty? How can community participation be utilized to reduce inequalities in distribution of health benefits?

Health systems challenges accruing from this review

‘Whereas community involvement is increasingly influential in other development sectors, in the health sector it has not made a breakthrough with regard to national systems and policy-makers. However there is strong evidence that when communities have a sense of ownership of a development initiative, it has a greater chance of making an impact’. Health systems are therefore challenged to produce guidance on

- How already created structures (HSBs, HFGCs) can be put to better use to advance community voice and attain health benefits to communities
- How to enlist community engagement in self-care safety concerns (self-care is already owned at community anyway).
- How communities can be facilitated to learn about their rights to health and their obligations/responsibilities (given potential to be a generative theme).
- Sensitization of communities to create new understanding on rights and obligations of both patients and providers in the midst of conditioned dependency syndrome.

The insights shared point in the direction to embark on more pragmatic community participation approaches that apply the human rights based approach in health, building on what is already assessed and found to be available and on-going in communities (such as self-care) and optimizing existing structures and institutions at communities with due recognition and adaptations of socio-cultural entry points.

References

1. Agudelo C.A. Community participation in health activities: some concepts and appraisal criteria. Bull. Pan-Am. Health Organization **17**, 375, 1983.
2. Barnabas A. P. Policy and Community Participation in Drinking Water Supply to Rural Areas. Assignment Report. WHO (SEAR). New Delhi, 1982.
3. Bennett, F.J. 1979: Community Diagnosis in Health Action. A manual for tropical and rural areas. Nairobi.
4. Brownea, A. 1987: Participation: Myths, Realities and Prognosis. Soc. Sci. Med 25 No 6 pp 605-614.
5. Chabot J. and Streefland P. (Eds) Implementing Primary Health Care: Experiences since Alma Ata. Cap 7... Royal Tropical Institute, Amsterdam, 1988.
6. Chambers, Robert: Shortcut Methods of Gathering Social Information for Rural Projects; Collection of Social Data. “Rapid Rural Appraisal: Rationale and Repertoire”, Public Administration and Development, vol 1, No 2 (1981),pp95-106.
7. Chambers, Robert. Rural Development, Putting the Last First. Longman. New York. 1983
8. Chirwa, B and Sivile, E. 1988. Enlisting the support of Traditional Healers in an AIDS Education Campaign in Zambia; International Quarterly of community health education. 1988-89, 9, 3, 221-229.

9. DeWalt B.R. and Pelto P.J., *Micro and Macro Levels of Analysis in Anthropology. Issues in Theory and Research. A Westview Special Study.*
10. Equinet 2007. *Reclaiming the Resources for Health. A regional analysis of equity in health in East and Southern Africa.* ISBN (Zimbabwe): 978-1-77922-066-0.
11. Gouteux, J.-P. and Sinda, D. *Community Participation in the control of tsetse flies. Large scale trials using the pyramid trap in the Congo.* *Trop. Med. Parasit.* 41 (1990).
12. Griffiths Marcia 1990, *Using Anthropological Techniques in program design: Successful Nutrition Education in Indonesia; Anthropology and Primary Health Care Cap 8; Westview Press, Oxford.*
13. Hardon, A. et al. 1994 *Applied Health Research Manual. Anthropology of Health and Health Care.* Spinhuis Pub. Amsterdam.
14. Helman, C.G. 1990. *Culture, Health and Illness 2nd Edition.* Butterworth-Heinemann Ltd. Oxford.
15. Heydelberg, E. and Nangawe, E. 1993. *Northern Province PHC Identification Mission.* Lusaka, Amsterdam.
16. Hope A., Timmel S. and Hodzi C. 1984. *Training for Transformation. Books I, II, III,* Mambo Press, Gweru (Zimbabwe).
17. Freire P. 1970. *Pedagogy of the Oppressed.* The Seabury Press. New York.
18. Freire P. 1985. *The Politics of Education: Culture, Power, and Liberation.* Macmillan publishers Ltd. London.
19. Kamwanga J., Macwan'gi M., Van der Geest S. *Health Reforms and the Quality of Health Care in Zambia. A collaborative study between the Institute of Economic and Social Research, University of Zambia and the Medical Anthropology Unit, University of Amsterdam.* Spinhuis Pub. 1999.
20. Kaseje D. C.O, Sempebwa E.K.N and Spencer H.C. *Community leadership and participation in Saradidi. Kenya. Rural Health Development Programme.* *Ann. Trop. Med. Parasit.* **81**, 46, 1987.
21. Koenraad, G. 1992: *Community Diagnosis, Gone Beyond its books.* Kalabo Western Province Zambia.
22. Kokwaro, J.O. 1976. *Medicinal Plants of East Africa.* East African Literature Bureau. Kampala, Nairobi, Dar-es-Salaam.
23. Korten D. *Community organisation and rural development – a learning process approach.* *Publ. Admin. Rev.* **40**, 480, 1980.
24. Madan T.N. *Community involvement in health policy: socio-cultural and dynamic aspects of health beliefs.* *Soc. Sci. Med.* **25**, 615, 1987.
25. Mogensen, Hanne O., and Ngulube, Thabale J. *Unpublished article. Whose Ownership – Which Stakes? Communities and Health Workers Participating in the Zambian Health Reforms.*
26. Nangawe, E; Simwanza, E; Mubanga, F. 1998. *Determinants of Action Against Malnutrition in Children Under five years in Kasama, Northern Zambia.* ZPC Publications, Applied Health Research Series 2. ISBN 9982-9911-4-0. Lusaka.
27. Navarro V. *A critique of the ideological and political positions of the Willy Brandt Report and the WHO Alma Ata Declaration.* *Soc. Sci. Med.* **18**, 467, 1984.
28. Oakley, P. *Community Involvement in Health Development: An analysis of critical issues.* WHO, Geneva, 1989.
29. Ong, Bie Nio. 1996. *Rapid Appraisal and Health Policy.* Chapman & Hall, London.
30. PAHO 1987. *Community Participation in Health in the Americas*
31. Paul B.D. and Demarest W. J. *Citizen Participation Over planned: The case of a health project in the Guatemalan community of San Pedro La Laguna.* *Soc. Sci. Med.* **19**, 185, 1984.
32. Rahman M.A. (Ed) *Grassroots Participation and Self-Reliance.* Oxford and IBH. New Delhi, 1984.

33. Rashed, S; Johnson, H; Dongier, P; Moreau, R; Lee, C; Crepeau, R; Lambert, J; Jefremovas, V; Schaffer, C. 1999: Determinants of the Permethrin Impregnated Bed nets (PIB) in the Republic of Benin: The role of women in the acquisition and utilization of PIBs. *Soc. Sci. Med*
34. Republic of Zambia MOH, 1992. National Health Policies and Strategies (Health Reforms). Lusaka.
35. Rifkin S.B. 1986 Lessons from community participation in health programmes. *Health policy and Planning*; **1**(3): 240-249. Oxford University Press.
36. Rifkin S.B. 1990. Community Participation in maternal and child health/family planning programmes. An analysis based on case study materials. Pub. WHO Geneva.
37. Rifkin S.B. Primary Health Care, community participation and the urban poor: a review of the problems and solutions. *Asia-Pacific J. Publ. Hlth* 1, 57, 1987.
38. Rifkin S.B. Primary Health Care in Southeast Asia: attitudes about community participation in community health programmes. *Soc. Sci. Med.* 17, 1489, 1983.
39. Sofowora, A. 1982. Medicinal Plants and Traditional Medicine in Africa. John Wiley and Sons Ltd., Chichester.
40. Staugard, Frants. 1989. Traditional Medicine in a Transitional Society; Botswana moving towards the year 2000. Ipelegeng pub. Gaborone.
41. Stone L. Cultural influences in community participation in health. *Soc. Sci. Med.* 35, 409, 1992.
42. Stone L. 1989. Cultural Cross Roads of Community Participation in Development:
43. A Case from Nepal. *Human Organisation* 48, No 3.
44. Tumwine J.K. Community Participation as myth or reality: a personal experience from Zimbabwe. *Health Policy and Planning* 4(2): 157-161, 1989.
45. Twumasi, P.A. The Role of Traditional Healers in Primary Health Care in Zambia. Pub. In Kasonde and Martin 1994: Experiences with primary health care in Zambia. WHO Geneva.
46. Ugalde A. Ideological dimensions of community participation in Latin American health programmes. *Soc. Sci. Med.* 21, 41, 1985.
47. Van der Geest S., Speckmann J.D. and Streefland P.H., Primary Health Care in a Multilevel Perspective: Towards a Research Agenda. *Soc. Sci. Med.* 30(9): 1025-1034. 1990.
48. Van der Geest, S. 1985. Integration or Fatal Embrace? The uneasy relationship between Indigenous and Western Medicine. *Curare*, 9-14.
49. Varkevisser, C. et al 1993; Rapid Appraisal of Health and Nutrition in a PHC project in Pahou-Benin, Methods and Results; Centre Re'gionale pour le De'veloppement et la Sante', Cotonou - Royal Tropical Institute, Amsterdam.
50. Werner D and Bower B. 1982. Helping Health Workers Learn. Hesperian Foundation. Palo Alto, California, USA
51. Wiebenga, M.W. van Roosmalen. 1988. Nutrition Rehabilitation in the South Western Highlands of Tanzania, A two way learning process. Drukkerij J.H. Pasmans B.V. 's-Gravenhage.
52. WHO, 1978. Primary Health Care. Report of the international conference on primary health care. Alma Ata. USSR, 6-12 September. Health For All Series no. 1. Geneva: World Health Organisation.
53. WHO SHS, Community Involvement in Health: Challenging Health Services. Technical Report Series 809. WHO, Geneva, 1991.
54. WHO, 2008. World Health Report 2008. Primary Health Care. Now more than ever. <http://www.who.int/whr/2008/en/>
55. WHO 2013. World Health Report 2013. Research for Universal Health Coverage.
56. Woelk G.B. Cultural and structural influences in the creation of and participation in health programmes. *Soc.Sci.Med.* **35**, 419, 1992.
57. United Nations, 1948. International Bill on Human Rights.

Tanzania health worker engagement study: experiences from six regions

Anna Nswila², Joseph Kundy¹, Tana Wuliji¹, Paul Magesa³& Datus Rweyemamu⁴

¹USAID Health Care Improvement Project and USAID Applying Science to Strengthen and Improve Systems Project, University Research Co, USA; ²Ministry of Health and Social Welfare, Dar es Salaam, Tanzania;

³Muhimbili University of Health Alliance Sciences, Tanzania; ⁴Department of Sociology, University of Dar es Salaam, Tanzania

Abstract

The concept of “engaging” employees in their work offers a new way of thinking about managing the health workforce. This study supported by PEPFAR under the USAID HCI and ASSISTS Projects, examined the engagement of health workers providing HIV services and explored the relationship between engagement and performance. Study instruments were developed through literature reviews, assessment of existing tools and focus groups with local stakeholders. Quantitative data was collected at the individual health worker level and health facility level from 1330 staff from 183 health facilities in 27 districts and 6 regions in Tanzania. Individual questionnaires completed by health workers gathered data to assess the characteristics of engagement and factors influencing engagement, retention and performance. Facility level data provided information on available human resources and performance indicators in quality of HIV care and resource management. Qualitative data included semi-structured interviews with 50 health workers that were audio-recorded and transcribed verbatim for analysis. The perceived support health workers felt they received from their immediate supervisor and perceived adequacy of competencies to perform were found to influence engagement. The perceived adequacy of inputs (resources) was not found to influence engagement. Cluster analysis found that health facilities that had health workers with below average levels of engagement had three times the proportion of clients that were lost to follow-up (35%) and lower % of children born to HIV- infected mothers started on co-trimoxazole (44% vs 76%). No relationship was found between health worker engagement and other performance indicators. In conclusion, engagement was not found to be associated with the perceived adequacy of resources and was found to be associated with complex tasks that require problem solving, team work and multiple processes to work together.

Background

The concept of “engaging” employees in their work offers a new way of thinking about managing the health workforce. Research has shown that more engaged workers perform better and is more productive in health and other sectors (Harter et al, 2002; Wellins et al, 2007); however almost all evidence to date has come from middle or high income countries and may not be generalizable to low resource contexts. This study supported by PEPFAR under the USAID HCI and ASSISTS Projects, examined the engagement of health workers providing HIV services and explored the relationship between engagement and performance.

A stakeholder consensus group in Tanzania comprised of health workers, managers, Ministry of Health leaders, and health workforce researchers convened by the study defined an engaged health worker as: “An engaged health worker is one who proactively self-improves and applies their competencies to provide quality services with commitment, ethics and care to achieve organizational goals”.

The objective of this study were to (i) study employee engagement among health workers providing HIV services in a low resource setting; (ii) explore the relationship between

engagement, performance and retention; and (iii) develop and validate a tool to measure the level of engagement of facility-based health workers.

Methods

Study instruments were developed through literature reviews, assessment of existing tools and focus groups with local stakeholders. Quantitative data was collected at the individual health worker level and health facility level from 1330 staff from 183 health facilities in 27 districts and 6 regions in Tanzania.

Regions were selected purposively to reflect a range and diversity of socioeconomic and geographical contexts in Tanzania. Facility lists were obtained for each region and categorized into the main health facility types, these were then randomly sampled. All health workers providing HIV services in randomly selected health facilities were invited to participate in the study along with a quota of health workers that did not provide HIV services (up to 10 per health facility).

Individual questionnaires completed by health workers gathered data to assess the characteristics of engagement and factors influencing engagement, retention and performance. Facility level data provided information on available human resources and performance indicators in quality of HIV care and resource management (eg – supplies and medicines).

Qualitative data included semi-structured interviews with 50 health workers that were audio-recorded and transcribed verbatim for analysis. Questionnaires and interviews tools were developed in English, translated into Kiswahili and back-translated to ensure validity of translation, and administered in Kiswahili.

Quantitative and qualitative data were randomly cross-checked against originals for data entry and transcription validity. Analysis of both quantitative and qualitative data was independently peer reviewed by an external expert for reliability. Quantitative data were analysed in SPSS descriptively, comparatively, and Principal Components analysis was used to identify and validate employee engagement constructs (characteristics) and factors influencing engagement.

Non-linear Principal Components Analysis was also used to identify non-linear relationships between items comprising engagement constructs and factors influencing engagement. Mean engagement scores and factors influencing engagement across all staff in respondent health facilities were computed and analysed against performance indicators to identify relationships between employee engagement, other factors and performance through cluster analysis. Qualitative data were analysed thematically to identify salient issues, patterns and contradictions – the analysis was based around the constructs of employee engagement and factors influencing engagement found in the quantitative analysis. A computer assisted data management program for qualitative data was used (NVIVO 6).

Results

Table 1 describes the key respondent characteristics. Health worker respondents were mostly female (69%) and on average 42 years. Almost a third of respondents came from public health centres, 22% from public dispensaries, 16% from public district hospitals and 9% from public regional hospitals. Ten percent of respondents were from Faith-Based Organization (FBO) hospitals, 3.7% FBO health centre and 2.2% FBO dispensary. Less than 5% of the respondent health workers were from the private sector. About a third of all respondents provided ART and PMTCT

services and half provided out-patient services. Almost two-thirds of respondents were members of a quality improvement (QI) team although only half of the respondents indicated that the teams met regularly.

Table 1: Key respondent characteristics

Gender	31% Male	69% Female		
Age	19-70 years	Mean 42 years		
Health facility type	9% Public regional hospital	16% Public district hospital	30% Public health centre	22% Public dispensary
		10% FBO hospital	3.7% FBO health centre	2.2% FBO dispensary
		3.4% Private hospital	0.8% Private health centre	0.6% Private dispensary
Provide ART and PMTCT services	36% Yes	64% No		
Provide out patients department (OPD) services	47.4% Yes	52.6% No		
Received ART training in the past year	27.6% Yes	72.4% No		
QI team meets regularly	52.6% Yes	42.5% No	4.9% Don't know	
Member of QI team	63.8% Yes	36.2% No		

Four key characteristics of an engaged health care worker were identified as relevant to facility level performance through Principal Components Analysis (PCA) and cluster analysis as described through their definitions in Figure 1 and Table 1 (explaining 50% variance). Non-linear Principal Components Analysis did not yield significantly different characteristics. These included: being a change agent (α 0.75), job satisfaction (α 0.72), accountable (α 0.69), and equitable and client centered care (α 0.58).

What are the characteristics of an engaged health worker?

Change agent

Proactive, focused on improvements, team player, facilitate learning, shared information

"As a centre you look at the gaps in your work and hence you organize yourselves to where improvements are needed"

Assistant Nursing Officer/female

(α 0.799)

Job satisfaction

Pride in work, satisfied with work, employee trust, relationships and work environment

"I like it most because when patients come to me and I serve them, I feel satisfied especially when they recover"

Assistant nursing officer/male

(α 0.715)

Accountable

Answerable to responsibilities, clear understanding of job expectations, practice self-reflection

"We also look at the past [planned actions] how many were implemented and whom we are giving that responsibility [to] and why that is failing to succeed."

Assistant medical officer/male

(α 0.678)

Equitable and client centered

Quality of care does not vary by client characteristics, treat clients respectfully

"We should keep patients privacy and also we should help them on the basis of their needs. For example you may find a person has depression so we try to help."

Nurse midwife/female

(α 0.580)



Explains 50% variance

Figure 1: Characteristics of an engaged health worker

Table2: Engagement characteristics (explains 50% variance)

Label	Description	Chronbach's alpha α	Items
Change agent	Proactive, focused on improvements, team player, facilitate learning	0.746	1. I help my co-workers to learn new skills 2. I encourage my colleagues to discuss challenges 3. When I learn new skills, I apply them in my workplace 4. I suggest solutions when discussing challenges with my co-workers 5. I give feedback to my co-workers on their performance
Job satisfaction	Pride in work, satisfied with work, employee trust, relationships and work environment	0.715	6. I am proud to be part of this facility 7. I feel happy with the work that I do 8. I can interact easily with my co-workers 9. I am known by my co-workers for my reliability
Accountable	Answerable to responsibilities, clear understanding of job expectations, practice self-reflection	0.678	10. I start at work early 11. I stay on the job until I complete my tasks 12. I complete my tasks on time 13. The goals of my job are very clear to me 14. I evaluate my own work performance
Equitable and client cantered	Quality of care does not vary by client characteristics (gender, socioeconomic status, etc), treat clients respectfully	0.580	15. I believe that all clients deserve to be treated respectfully 16. I prefer to give the same quality of care to all clients rather than better care to a few 17. I believe that my male and female patients deserve my equal attention

The perceived support health workers felt they received from their immediate supervisor, in terms of encouragement, supervisory support, and inter-personal relationships, and perceived adequacy of competencies to perform were found to influence engagement of health workers (Figure 2, Table 3). Another factor of perceived adequacy of inputs (resources) was also identified as a potential factor but was not found to influence engagement in cluster analysis.

What influences health worker engagement?

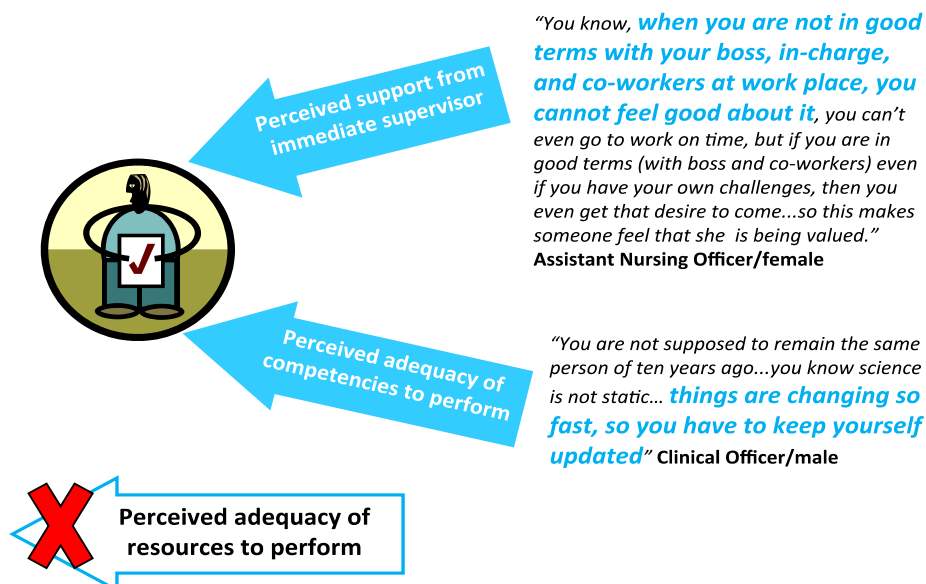


Figure 2: Factors influencing engagement

Table 3: Factors influencing engagement

Label	Description	Chronbach alpha α	Items
Perceived support from immediate supervisor	Perception of the support provided by immediate supervisor to health workers regarding feedback and recognition.	0.696	I receive feedback from my immediate supervisor when I make mistakes. I get feedback from my immediate supervisor on my performance. My supervisor praises good work performance
Perceived adequacy of competencies to perform	Health worker's perception of the adequacy of their competencies to perform.	0.594	I have the knowledge I need to do my job well. I have the skills I need to do my job well.

Cluster analysis identified three main sub-populations of health facilities in the dataset (Figure 3). Two groups (group 1 and 2) had health workers with above average levels of engagement (engagement factors in blue bars) and mostly above average scores for factors influencing engagement (green bars). Cluster analysis found that health facilities that had health workers with below average levels (indicated in group 3 in figure 2) of engagement had three times the proportion of clients that were lost to follow-up (35% vs 10 – 13%) and lower % of children born to HIV- infected mothers started on co-trimoxazole (44% vs 76%).

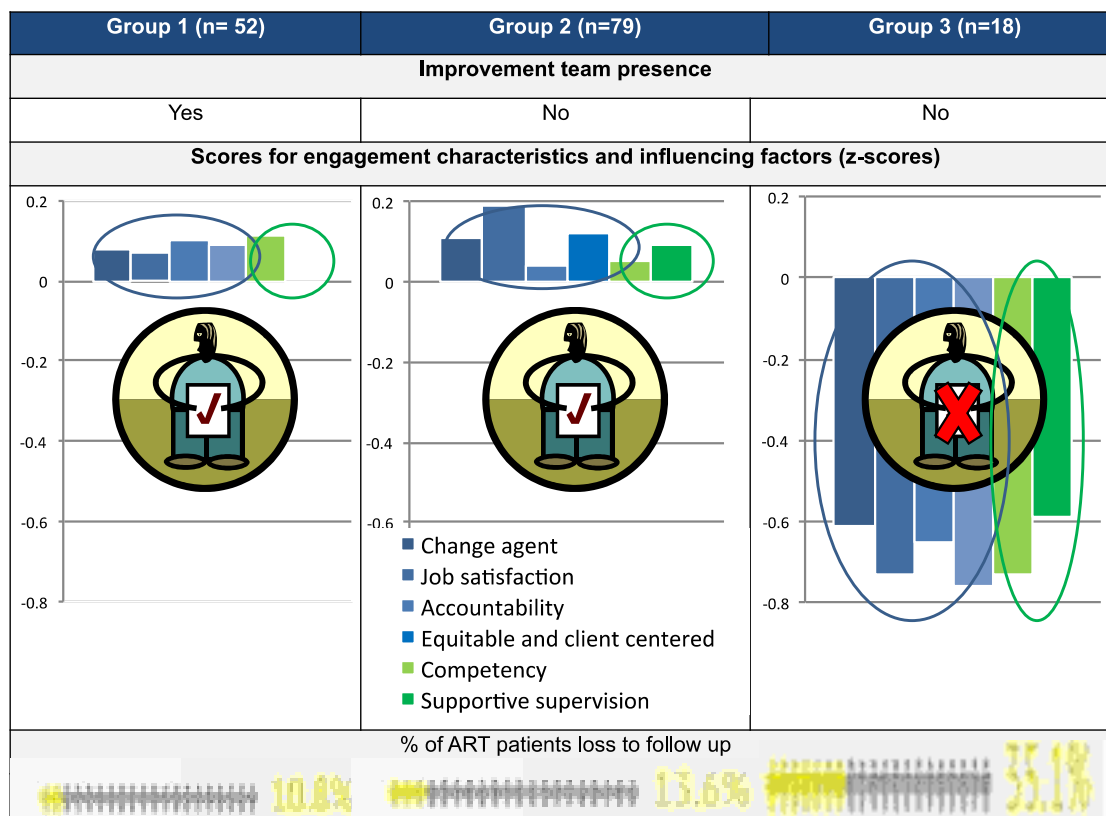


Figure 3: Sub-populations of health facilities identified through cluster analysis

No relationship was found between health worker engagement and other performance indicators such as: % of pregnant women attending ANC that were tested and found to be

infected then registered to attend CTC, % of HIV infected patients screened for TB on attending clinic, or % of new ART patients from CTC getting CD4 test at 6 months after ART initiation.

Qualitative analysis found evidence of the characteristics of engagement and factors influencing engagement identified in the quantitative analysis. Qualitative analysis yielded deeper insights into each of these constructs and factors and identified illustrative examples, attitudes and behaviours describing each of these multidimensional concepts. Additional factors that may also influence engagement identified from the qualitative study included perceived staffing adequacy, perceived value of opinions and contributions and encouragement from co-workers.

Discussion

Health worker engagement is a complex construct that is influenced by the perceived adequacy of one's own competencies and support from immediate supervisors. Engagement was not associated with the perceived adequacy of resources which dispels the perception raised in focus groups that informed the study that this was a major influencing factor. This raises the possibility that engagement of health worker is independent of the level of resources a health facility has and could thus potentially be influenced, even in the most poorly resourced settings. It also means that greater resources in a health facility do not mean that health workers are more engaged as a result.

Greater health worker engagement is associated with better HIV care and quite possibly performance in more complex tasks in other areas. Engagement was associated with performance in complex tasks that require problem solving and team work and multiple processes to work together, such as reducing loss to follow up. Ensuring that health workers are not only competent but also engaged is of significant importance to ensure that complex processes of care continuously improve over time for better and more reliable health care. This is particularly important in the movement towards an HIV free generation which requires that complex processes come together across the continuum of care at multiple points.

Bringing teams of health workers from across the levels of the health system to work together in improvement teams not only allows the system to tap into the deep and varied expertise of the system's inner workings to understand root causes to gaps and identify potential solutions, but also creates space for autonomy and collaboration as it engages health workers to clarify roles and responsibilities, strengthen working relationships and communication, and build systems of peer support to improve engagement and competence.

Conclusion

Engagement is not associated with perceived adequacy of resources. Engagement may be independent of the level of resources a health facility has. Engagement could potentially be influenced, even in the most poorly resourced settings. Having greater resources in a health facility does not mean that health workers are more engaged as a result. Engagement is associated with performance in complex tasks that require problem solving, team work and multiple processes to work together. Engagement was not associated with performance in simpler tasks such as undertaking lab tests. To achieve an HIV free generation complex processes have to come together across the continuum of care at multiple points.

References

- Harter, J. K., Schmidt, F. L., & Hayes, T. L. (2002). Business-unit-level relationship between employee satisfaction, employee engagement, and business outcomes: A meta-analysis. *Journal of Applied Psychology, 87*(2), 268–279. doi:10.1037//0021-9010.87.2.268
- A. M., Wellins, R. S., Vice, S., Of, P., Marketing, G., Development, N. E. W. B., et al International, D. D. (n.d.). EMPLOYEE ENGAGEMENT : THE KEY TO REALIZING COMPETITIVE ADVANTAGE. (2007).

Data management and information use in evidence-based decision making and planning to improve health care systems

ANNA NSWILLA

Ministry of Health and Social Welfare, Dar es Salaam, Tanzania

Background

The emphasis of this paper is to increase the use of health data and information for Evidence-based planning and decision making, especially data emanating from surveys and routine health statistics. It should be recognized that some information is always used by decision makers in reaching their decisions. The actual information that is used may and will differ between decision makers. People daily make hundreds of decisions about things and in making these decisions they use information. The issue is whether they are aware of all the available information and are using it. This will only bring meaningful when Evidence-based decision making is enhanced by a sound demand for health information, the collection and analysis of health data, making information available to decision makers, and finally, from facilitating use of information to improve health system performance. Better availability and use of information also permits improved accountability by allowing stakeholders and potential beneficiaries to monitor the outcomes of decisions. In this regard, the value of Data demand and information use extends far beyond the health sector and, at its most fundamental level, is fully consistent with the aims and objectives of many public sector reform programs, and with the guiding principles of improved democratic governance. When publicly available data and information are used for decisions, all stakeholders can question the basis for such decisions and challenge public officials to defend their decisions.

Health data and information lack value unless they are used to inform decisions. Data is often not used in decision-making and the barriers inhibiting data use are unknown. As such, interventions that increase local demand for information and promote its use are critical to improving the effectiveness and sustainability of the health system. In health information systems, the ultimate purpose of collecting and analysing data is to improve programs planning by enabling more informed decisions that is evidence-based decisions. For example did the awareness campaign increase use of oral contraceptives? Have our counselling efforts increased acceptance of HIV/AIDS testing? Questions such as these must be answered with facts, rather than intuition or estimation. Yet, in many areas of the world decision-makers do not have access to the required data, or they do not realize how data can be used to improve decisions, or the information they need does not exist or is not trusted. The practical utility of health information is how often and how effectively data is used or not used; is determined by multiple factors that can be categorized into three general categories: the attitudes and actions of people who produce or use data, the technical aspects of data processes and tools, and the organizational context that supports or inhibits data processes.

Much has been written about using information for program decision making (Lippeveld, Sauerborn et al. 2000); assessing routine health information systems and using the information they generate (Health Metrics Network 2005); and using information to guide problem identification and policy formulation, implementation, and evaluation (Hardee, Feranil et al 2004 <http://www.cdc.gov/descd/ddm/Default.htm>. Accessed 4/20/06. "Data for Decision Making." While there remain important challenges regarding the quality, timeliness and level of detail of available information, it is generally recognized that much of the data needed for decision making are already being collected on an on-going basis by national health information systems. Since

national health information systems vary from country to country, in their broadest sense, they include all sources of health information, encompassing vital events monitoring; service statistics and surveillance; population and housing censuses; periodic surveys; national health accounts; and resource tracking. Often these systems exist in countries with highly decentralized planning and service delivery structures; this introduces the need to address data demand and information use at all levels.

Health Management Information System (HMIS) in Tanzania

The Government of Tanzania considers Health Information System as one of the keystones for an efficient health system. In this regard provision of support to sector performance monitoring system has been identified as a priority for health development. The government places great importance on the functioning of the HIS and this is reflected in the new HSSP III (2009-2015). A national health management information system (HMIS) within Tanzania was designed and piloted between 1990 and 1994 and fully rolled out to all regions in 1997. The introduction of the HMIS was aimed at ensuring the availability of accurate, timely, and relevant data to health managers for purposes of planning and decision-making. However, recent studies carried out in Tanzania have indicated that the HMIS has not been able to provide decision makers with data of reliable quality (Simba & Mwangu, 2006; Nyamtema, 2010). Health data and information are one of the six essential building blocks of a health system. A well-functioning health information system should produce reliable and timely information on health determinants.

This situation is not unique to Tanzania. Reports from Sub-Saharan Africa indicate that vital health decisions are often made based on crude estimates of disease and treatment burdens (Robey & Lee, 1990). A number of factors have been associated with poor quality HMIS in Tanzania like in many other developing countries. These factors included failure of health workers to appreciate the importance of information; lack of knowledge and skills for data analysis; inadequate staff to record medical information; and lack of feedback from health managers after receiving data. The collection of enormous amounts of data tends to put an unnecessary burden on data collectors (Simba & Mwangu, 2006; Nyamtema, 2010; WHO, 1997; Mshana, 2004). The expansion of reportable conditions and the advent of vertical programs with their own demands for data had rendered the HMIS very inadequate, resulting in multiple and duplicative data collection and reporting subsystems. With the current scarcity of staff and other resources, these subsystems have rendered the HMIS even more unresponsive to the information needs of the MOHSW and stakeholders captured data was not only inaccurate but also incomplete and reported late.

In one of the studies, failure to use health data collected at the health facility level as reported by 63% of care providers indicated that the primary purpose of data collection was to report to higher levels suggesting a high prevalence of the "mailbox syndrome." The "mailbox syndrome" is a phenomenon whereby crucial information generated at the health facility level is mailed rather than used locally for quality care improvement (Bergstrom, 2003). These findings suggested that the existing HMIS in Tanzania has not been institutionalized in the sense of being integrated into the everyday activities, an important factor for its sustainability and reliability.

Tracking progress in core indicators including MDG, HSSP III, and CCHP is through collected, analysed and interpreted data and information. Data and information collected is through the routine data using HMIS tools.

The CCHP Assessment Report (2014) shows that only 70% of all LGAs use data generate from their situational analysis, and the situation is worse at lower level health facilities. A study conducted

by Ifakara Health Institute at Bugando Medical Centre in 2010 indicated that 42% of collected data were not used for planning, budget and service provision (IHI2010). Most health facilities are not using data collected to improve health services provisions.

Overall, the situation with regard to health information in Tanzania is of a considerable amount of data potentially available from routine data collection, from population surveys and research, but access to reliable, up to date, complete and useful information has continued to be poor. As a result, use of information for decision making has been limited, and parallel and uncoordinated systems of data collection have been set up to meet specific needs. The tools for data collection are: most of the facilities had no reliable data due to poor documentation in HMIS registers; most of the health facilities were using exercise books and patient records for outpatient departments (OPDs) and in-patient departments (IPDs) were not kept at the health facilities. And Report and request forms and dispensing registers were not correctly filled in, and health facilities were not tracking their own performance.

Some examples were shown from different projects or interventions that helped to improve data in some of the areas were: lessons learnt from Tibu Homa project under University Research Centre (URC) supported by USAID which was being implemented in Lake Zone region. The study was interested in the data collection and use for planning and decision making continued proving capacity building whereby, through quality improvement trainings, the quality improvement teams (PQITs) were exposed to practical approaches for identifying gaps and preparing their respective improvement plans. In this process, the teams discussed and identified changes that could improve documentation and data management and use. Some of the most common changes were: the project improved some areas such as developing an under-fives logbook in cases where the facility runs out of HMIS registers, adding columns to HMIS registers to document under-fives with fever ; retention of exercise books or purchase of OPD and IPD cards, proper storage of patient information; introduction of stock-out form to track all essential medicines and supplies ; monthly tracking of progress of improvement initiative through team improvement journals; modifying flow maps to reduce redundant steps and waiting time for the patients and also identifying a focal person to coordinate data collection and analysis in health facilities in the three Lake Zone regions (66 in Kagera, 47 in Mara, and 70 in Mwanza) where the project was implemented.

In this study, Tibu Homa project each quarter performed assessment on how the health facilities were collecting and using data to make quality improvement decisions using the standard assessment tool, including collecting data on key indicators, plotting the data on a time series chart, interpreting the data, and then making decision based on the results. The results showed significant improvement in proper data collection and use. The time series charts showed the performance of 183 Tibu Homa Project (THP)-supported health facilities that were assessed in the three Lake Zone regions (66 in Kagera, 47 in Mara, and 70 in Mwanza) between January-March 2013 and January-March 2014. The results show that the proportion of health facilities using data to make improvement decision has increased in all three regions: Kagera Region improved from 24% to 59%, Mara from 38% to 57%, and Mwanza from 75% to 85%. The result shows that most (17 out of 22) of the districts had improved between 2013 and 2014. These graphs also show that most districts made significant improvements in proper data collection and data use.

These results suggested that the formation of health facility Project quality improvement teams (PQITs) and empowering their members with problem-solving skills helped some health facilities and districts to make significant progress in data collection and use. PQIT members perform assigned roles such as daily monitoring of completeness of documentation of patient information

in HMIS registers, summarizing data from the registers weekly and then monthly and submitting data to the PQIT focal person.

The presence of an individual assigned to HMIS issues on a daily basis has been associated previously with improved quality data (Simba & Mwangu, 2006). Although PQITs received classroom training in data management and developed improvement plans, most of them had not implemented their plans as of the first supportive supervision visit. The PQIT training went hand in hand with training of RHMTs and CHMTs in improvement methods, comprehensive supportive supervision, and data management. The improvement in data management was found to increase with each subsequent supportive supervision and mentorship visit, as the quality of supervision improved with technical support from Tibu Homa Project staff. It was found that monthly effective supportive supervision and mentorship have been found to be a powerful method as it involved direct interactions with HCWs at their work places and tended to address issues in real time.

The differences observed across health facilities, districts, and regions is attributed partly to the strength in health facility, CHMT or and RHMT leadership. For instance, some of the key challenges in data management at facility level were: Some facility HCWs still see improvement initiatives as THP activities, thus leaving improvement efforts to only staff trained by the project., Some clinicians do not consistently document their HMIS registers, Trained staff are transferred to other health facilities or moved to other departments and Stock-out of registers (e.g., OPD registers, dispensing registers, OPD cards)

Most of these challenges were found in health facilities and districts which did not have strong leadership. In the previous studies in Tanzania, lack of commitment, dedication and accountability within the organization were reported to be associated with poor HMIS status (Simba & Mwangu, 2006; Nyamtema et al., 2003).

A study done by Tibu Home Project has indicated that the key lesson learnt is that improvement in health facilities' data management has a direct link in improving case management of under-fives with fever. This has contributed to an increased number of health facilities reporting no stock-out of essential medicines and supplies, increases in malaria parasite testing rates, and improvement in provider compliance with the IMCI algorithm. Another important lesson was that health facilities had demonstrated an understanding of willingness to use data to make decisions. This was vital in sustaining improvement in data management.

Monitoring and evaluation in HSSPIII 2009-2015

Monitoring and evaluation is among the 11 strategies in HSSP III with the aim of strengthening the HMIS to improve data collection, reporting, use to improve evidence-based decision-making at all levels of the health system, enhance public accountability, integrate and harmonize all the existing subsystems, which have been created in an attempt to respond to the deficiencies of the HMIS. Since the start of the strategic period, there has been considerable investment in information systems or surveys, but potential users are still having difficulty in obtaining access to the information they need. The ultimate measure of the success of any M&E initiatives should therefore be whether there have been any improvements in the use of information to support decision making, as well as whether the public is better informed, and able to comment on, health sector plans and activities. However, use of information, whether for decision making or accountability, depends on systems being in place to produce good quality and appropriate information.

Knowledge and usefulness of data collection and information use

There are many challenges regarding the quality, timeliness and level of detail of available information, it is generally recognized that much of the data needed for decision making are already being collected on an on-going basis by national health information systems. Whereby, complete and useful information has continued to be poor. Due to most of the facilities had no reliable data due to poor documentation in HMIS registers; most are using exercise books and patient records for outpatient departments (OPDs) and in-patient departments (IPDs) were not kept at the health facilities; report and request forms and dispensing registers were not correctly filled in, including Stock-out of registers (e.g., OPD registers, dispensing registers, OPD cards), and health facilities were not tracking their own performance. Although in some facilities health Care workers (HCWs) still see improvement initiatives takes place through different interventions, thus leaving improvement efforts to only staff trained by trained on data collection. In other aspects some clinicians do not consistently document their HMIS registers; trained staff are transferred to other health facilities or moved to other departments. As a result, use of information for decision making has been limited, and parallel and uncoordinated systems of data collection have been set up to meet specific needs.

Skilled human resources for data demand and information use

Health facilities suffer from shortage of staff, high turnover rate and inadequate available and use of health data as the result of this, the data and information from Health facilities does not meet the required standard, it takes a lot of time for the staff to collect as a result of this facilities are unable to provide quality care. (HMIS Tanzania 2010). Sound and reliable data is the foundation of informed decision making, planning across all health facilities.

The inadequate use of data at health facilities is due to the lack of skills. Absence of skills to process and analyse data collected have limited the ability of health workers at facility level to make informed decision, and develop plans that address concerns of the public at their locality (Yinger, 2003). Other reasons include: absence of systems at primary level to capture data, overwhelming volume and types of data required to be collected and analysed, pre-prescribed types of data/information to collect and report (top down approach), volume of work related to data entry, and management at health facilities and staff attitude all hamper proper collection and use of information/data.

According to Yazoume Ye et al (2012), there is little evidence based decision in most of Sub Saharan Africa for many reasons namely; lack of financial resources to facilitate health data collection and processing, information and data use is not always a priority for informed decisions to many planers and decision makers and lack of local capacity to collect, process and analyse data.

Structural constraints

The wider environment in which health system decisions are made includes the institutions and stakeholders that influence data users, as well as the data collectors and users. Structural constraints, such as poor roads, lack of telecommunications capacity, and insufficient quantities of appropriate human resources, present very real obstacles to timely and complete reporting of information. The internal organization and culture of the health system also matters. A health system structured around vertical disease control programs, for instance, is often at odds with an integrated district-level health information system.

Organizational factors

Organizational factors, such as lack of clarity about roles and responsibilities for information use; failure to actively promote the value of evidence-based decision making, lack of norms or standards with respect to data quality; and ambiguity surrounding the flow of information throughout the system, have a direct influence on the use of data. Many of these organizational factors are not addressed by interventions that have been designed to strengthen data and information systems. However, without an organizational context that supports and values data collection and use, it is nearly impossible to make the links among health data, health information, and health action. A system without a sound technical design, well-trained people, and clear norms and standards cannot produce the information needed for making decisions. Consequently, the path to improving the use of health information focuses mainly on introducing or upgrading technical skills, changing the design of the data system, or revamping the technology used to improve the availability and quality of data. Data use and decision making is an important component of quality improvement at all levels'. Information and communication technologies (ICT), are an increasingly important tool for delivering the information that is needed, and so ICT plans and developments such as DHIS considered as important. The sources of information for monitoring and evaluation include not only routine data collection but also population surveys and research, and so these are also considered.

Evidence-based decision making and policy and program decision stages

The concepts presented in this paper are predicated on the assumption that fostering evidence-based decision making is the primary function of national health information systems and is vital to the effectiveness of the health system as a whole. Indeed, the ultimate goal of a national health information system is to “collect, process, report and use health information and knowledge to influence policymaking, program action and research” (AbouZahr and Boerma 2005). As noted above, evidence-based decisions rely upon data and information from a variety of sources. Each source aspires to produce data that are transparent, consistent, verifiable, and understandable. We posit that access to and capacity to use information more frequently and effectively will lead to decisions that improve health by improving the health system’s ability to respond to health needs at all levels.

Another advantage of evidence-based decision making promotes transparency in the decision-making process and allows for accountability of health decision makers (Scott 2005). When publicly available data and information are used for decisions, all stakeholders can) question the basis for such decisions and challenge public officials to defend their decisions. Better availability and use of information also permits improved accountability by allowing stakeholders and potential beneficiaries to monitor the outcomes of decisions.

The primary stakeholders are policymakers like and planners because without information, plans are done arbitrarily and one becomes unsure of whether a policy or program will fail or succeed. If policies and plans are guided by empirical facts and data, there will be a noticeable change in the impact of the health system delivery.

Evidence-based decision making is enhanced by a sound demand for health information, the collection and analysis of health data, making information available to decision makers, and finally, from facilitating use of information to improve health system performance. To achieve this there is need to build the capacity of counterparts and their institutions, and to build coordination and collaboration among data producers and consumers.

There should be a clear and consistent link exists between the use of health information and the commitment to improving the quality of data upon which it is based. The more positive experiences a decision maker has in using information to support a decision, the stronger will be the commitment to improving the quality and timeliness of data collection systems. In fact increased information use in turn stimulates greater demand for data. In this case it brings an evidence-based decision-making process. The decision-making process involves *decision makers* and the *decisions* they make. To understand how information is used in this process, the paper defines operational definitions of information use and data demand and consider the broader context of decision making in the health sector.

Defining use and demand

Use: Take 'information use' to mean that both positive *and* negative findings affect the decision-making process (Marin et al. 2005). A definition of use must, therefore, include the two key elements of this process: those who make decisions and the decisions they make. A decision is a *choice* between two or more courses of action. In practice, not all choices are made consciously: the decision maker may not be aware that he/she is making a choice or even of what the alternative courses of action might be possible.

Two other aspects of use are also important. Raw data are seldom useful for decision making and usually must be transformed into information that is usable and that relates to the issue being addressed. For example, it is not enough to know how many clients used services; comparison against a target or previous performance may be needed. Data collection, its transformation into information, and its use in decision making may be done by the same person. However, they are more likely to be done by different people that have varying levels of understanding about each other's work (Yinger 2003). (For example, Yinger noted that analysts often consider that policymakers are too busy to read, reach swift conclusions, initiate actions unsubstantiated by data, distrust survey and research findings, and have a limited perspective, and that the policymakers themselves should be responsible for drawing implications from the data)

Information use is defined as decision makers and stakeholders explicitly consider information in one or more steps in the process of policymaking, program planning and management, or service provision, even if the final decision or actions are not based on that information.

Data Demand: In order for stakeholders and decision makers to place value on information, they should have some incentive or motivation to use it. Demand is a concept distinct from use and it reflects, at least in part, a measure of the value that the stakeholders and decision makers place on the information, independent of their use of that information. For the purposes of defining demand, stakeholders actively and openly request information.

Data demand requires both of the following criteria: The stakeholders and decision makers specify what kind of information they want to inform decision and planners; *and* the stakeholders and decision makers proactively seek out that information. Other postulates that stimulate data demand and information use are highlighted below:

Decisions are choices made in support of a target. As it has been defined that a decision as a choice that is made between two or more courses of action. But choices must be seen in the context of the goals of those making or wishing to influence the decision. A goal is a desired outcome. For example, a goal/target can be to improve access to health services by an identified group or population. Or, it may be to reduce under-five mortality due to malaria.

All decisions are made on the basis of some information. While the emphasis of this paper is to increase the use of information for decision making, especially data emanating from surveys and routine HMIS/health statistics, it should be recognized that some information is always used by decision makers in reaching their decisions. The actual information that is used may and will differ between decision makers. People daily make hundreds of decisions about things and in making these decisions they use information. The issue is whether they are aware of all the available information and are using it.

Stakeholders will want different types of information depending on the target they are intending to achieve. This theory underlines the fact that as targets differ so will the information that will be required to reach the supporting decisions for the targets.

There can be multiple and possibly contradictory targets. Which also recognize that decision makers can have multiple targets, and that a decision taken to achieve one target may have implications for another? For example, a country may seek to increase financial sustainability of its health care system while at the same time increasing access for the poor. A decision in support of the first target may be to introduce a cost recovery scheme for certain services. If applied to all clients, this decision could impede achievement of the second target if higher prices for health care lower use by the poor.

Decisions can be made by a single individual or by a group. It is also important to recognize that sometimes a decision rests with a single individual, but also that many decisions involve a range of stakeholders. Even if a single individual makes a decision, he or she may take stock of the views of others.

Individuals will have different targets or different interpretations of the same target even if they are involved in the same decisions. Consequently they may use different information to achieve the target. The different stakeholders involved in a decision may not have the same goals/targets or objectives. This is the case in many “political” decisions, including healthcare decisions. For example, officials in the national HIV/AIDS council may have as their overall target a reduction in HIV incidence, while people living with HIV/AIDS may be more interested in access to affordable treatment. In making resource allocation decisions on the use of HIV/AIDS funds, these stakeholders will differ in terms of their targets and, therefore, in terms of the information they would use.

Stakeholders often differ in their views about the importance of what information is needed to make the decision. How and what information feeds into a decision depends on how the decision maker sees the decision linked to the target. Two stakeholders who view the linkages differently will use different information or interpret the same information differently. For example, if one stakeholder believes that socio-economic factors such as education are important to increasing the use of health services, he or she would emphasize the use of education data; another stakeholder may see availability of services as the more important determinant of use of health services. A corollary to this is that even when individuals agree on the same causal model and on the relevant information to support that model, they may not agree on what the data say about the model’s validity.

Determinants of the Use of Health Information

These are technical aspects of data processes and tools, the behaviour of individuals who produce and/or use data, and the system/organizational context that supports data collection, availability and use (LaFond, Fields et al. 2005).

Technical determinants: A system without a sound technical design, well-trained people, and clear norms and standards cannot produce the information needed for making decisions. Consequently, the path to improving the use of health information focuses mainly on introducing or upgrading technical skills, changing the design of the data system, or revamping the technology used to improve the availability and quality of data. For example one respondent stated: *“Information on the cost of ARVs was hard to get as there were no standards on cost reporting, and data collection varied from organization to organization. Charges also depend on whether one is using generic drugs or not. The packages agencies and facilities adopt also vary from providing ARVs alone, treating infectious diseases, nutrition care, etcetera.”* (Ikamari 2005)

Interventions often focus on these technological ‘nuts and bolts’ of the system (data collection and standardization, transfer, analysis, and presentation), where most health and information professionals feel comfortable. Technical rigor is clearly needed in information systems; these essential elements and skills are at the core of an effective and efficient health information system. Nevertheless, technical interventions alone cannot translate into use of data on the ground. There are many examples of information systems where the indicators are sound, data collection forms are well designed, and people are well trained, but where neither data tools nor information itself are used routinely to manage health services, design programs or make policy.

Most often, data collectors and users are not motivated to use the information system, or the organizational context undermines evidence-based health action. For example, in health systems that use normative rather than strategic planning, decision makers follow traditional patterns of resource allocation based on set formulas. Even the availability of accurate and timely health data cannot guarantee that evidence becomes the basis of decision making. When planning comprehensive Council Health Plans the data and information is required. However, for data to be used consistently, the entire health system must place a high value on health

Ensuring that information based on technically sound data is understood by potential users is another aspect of the technical determinants of information use. This requires the adaptation of data and information products to the organizational contexts in which they are intended to be used. Lay people, especially those not working in public health, are often unfamiliar with statistical concepts or demographic indicators. As one journalist reported recently, *“We don’t trust the government’s especially on HIV/AIDS data because we don’t understand it.”*

Determinants at the system and individual levels: The wider environment in which health system decisions are made includes the institutions and stakeholders that influence data users, as well as the data collectors and users. Structural constraints, such as poor roads, lack of telecommunications capacity, and insufficient quantities of appropriate human resources, present very real obstacles to timely and complete reporting of information.

The other aspect is the internal organization and culture of the health system also matters. A health system structured around vertical disease control programs, for instance, is often at odds with an integrated district-level health information system. Organizational factors, such as lack of clarity about roles and responsibilities for information use; failure to actively promote the value of evidence-based decision making, lack of norms or standards with respect to data quality; and

ambiguity surrounding the flow of information throughout the system, have a direct influence on the use of data. Many of these organizational factors are not addressed by interventions that have been designed to strengthen data and information systems. However, without an organizational context that supports and values data collection and use, it is nearly impossible to make the links among health data, health information, and health action.

Generally, one frequently expressed issue is the lack of clear expectations related to data production and information use and a failure to reinforce expectations through supervision of staff at all levels. For example in one public health official in West Africa when asked if there had been occasions when data quality or local technical capacity made it difficult to use information in making a decision responded: *“Yes, we have such cases. There was an occasion when a report was sent from a Local Government Authority and I saw an incidence of smallpox. A serious matter like that requires urgent attention because the disease was thought to have been eradicated. The officer in charge of health was summoned to go and confirm the reported case. He found that the doctor actually diagnosed chickenpox, but the local officer responsible for sending data to the central level recorded smallpox. Such a case can make you think twice in using data collected by certain categories of staff and on the quality of staff collecting/recording various statistics in the health facilities. The staff must be told that every piece of information they forward is being scrutinized and not just dumped on the shelf. We asked them to do the job for specific reasons, but they seem not to understand the importance of the job they are doing”*. (Adewuyi and Akinlo 2005).

Behavioural aspects of capacity in use of data and information in evidence-based

Health data are collected and used by people who play professional and personal roles in the health system. Although building the capacity of these people is at the centre of data and information use strengthening, behavioural aspects of capacity are often the most difficult to identify and confront in a meaningful way. Behavioural influences on data demand and use often involve intangible concepts such as motivation, attitudes, and the values that people hold related to health information, job performance, responsibilities, and hierarchy. Influencing many of these behavioural factors will require interventions that go beyond simple training that improves knowledge and skills in understanding data and using information.

Behavioural factors give crucial insight into the way in which health workers, managers and policymakers use information or fail to do so. For example, the primary role of health service providers revolves around their roles and responsibilities as health workers or managers of health services. They see their other duties, such as disease surveillance, stock-keeping, and evidence-based planning and budgeting, as secondary to providing health care. As reported by One district Health Secretary, “Staff refuse to use data; they do not appreciate the importance of data, hence never refer to it in planning their compressive Council Health Plans and making decisions.” In fact, if expectations with respect to data use are unclear to health professionals at all levels of the system, their motivation and commitment to making informed decisions can suffer. As reported by a district medical officer.

Technical, system, or individual behavioural determinants of the use of data and information in evidence-based public health policy and program design rarely act alone. They are interconnected. For example, on the technical attribute, if policymakers feel that they have not effectively mastered the necessary skills to understand and use information effectively, then they are less likely to demand appropriate data and use information strategically. On the behavioural attribute, competency in collecting and using health information requires not just knowledge and skills but a supportive environment as well. In Tanzania, for example, the routine analysis of disease surveillance data by health workers has been improved by clarifying organizational roles

and responsibilities. Job descriptions, responsibilities, and accountability mechanisms should be clear to data collectors, and must be continuous availability of the tools necessary to complete their work. Many health systems are not designed to offer such guidance and support to health workers; this leads, in turn, to little appreciation of the value of health data and information.

The sharing or providing feedback of information

Though the central level does collect data from the health facilities, they rarely provide feedback report on information and data generated at primary level. This kind of relationship have contributed to facilities not placing importance on the use of data to address clients concerns and improve performance in service delivery. The absence of feedback giving user-friendly system with regards to data collected and processed at higher level has created a degree of laxity among health workers. There is no consistent feedback or guidance by RHMT and CHMT. Once the available information is identified, sharing the information and providing feedback is essential in the aspects of data use. In this session, the paper will take a closer look at sharing information and providing feedback. Quote health worker: *We are always providing patient forms and data to our HMIS focal person, who then gives data to donors and the government. I am the head of the facility/doctor and I never have the chance to look through the data before they go up. We just keep giving data up and up, and we never hear back about it"*

Data collection requires the efforts of many individuals within an organization, several organizations and facilities, different levels of government, and community members. The resulting information should be shared just as widely. Once data are analysed, however, the information often is not made available or accessible to stakeholders who need it for decision making. Feedback ensures that those who collected the data benefit from the collection as much as those requesting the data. Also, information needs to be shared regularly and in a timely manner so that a 'culture of information use' is supported.

The sharing or providing feedback of information needs to be done 'up' the information hierarchy (from the facility to the district to the region to the national level) but also within a facility, district, and region. Sharing among the other providers and management and between facilities, districts, and regions is equally important. Finally, it needs to be shared down the information hierarchy from the national level to the region to the district and facility. Feedback is an essential part of the data producer and data user relationship. Without feedback, neither is able to fulfil their role fully. The sharing of data from the data collectors to the data users and then back again also helps to pave a path between data collectors and users at all levels of the health system.

As we know, data collection requires the efforts of many individuals within an organization, several organizations and facilities, different levels of government, and community members. The resulting information should be shared just as widely. Once data are analysed, however, the information often is not made available or accessible to stakeholders who need it for decision making. Feedback ensures that those who collected the data benefit from the collection as much as those requesting the data. Also, information needs to be shared regularly and in a timely manner so that a 'culture of information use' is supported.

Building a culture of information use

Successful feedback contributes to what is known as the information culture. When information becomes available, it is more likely to be used. When information is shared and used, it becomes an integral part of decision-making processes, including planning, problem solving, choosing

alternatives, and giving or receiving feedback. Also empowers people to ask questions, seek improvement, learn, and improve the quality of programs.

Guide to develop feedback mechanism

Guide to provide feedback in the service delivery setting, there are issues to consider that will improve the usefulness of the mechanism. They include: Consider the data being shared. What is the best way to summarize and present them? ; Consider who or which stakeholders will benefit from the information being shared. Is it your fellow providers?, facility management? District leadership?. The recipients of the information will affect how you package it. What is the best format for your information? Will your feedback be written or verbal? Will it be a formal or informal feedback system? ; Consider the forum in which the feedback will be presented. Will it be presented at facility meetings? At district health management team meetings? How often will the feedback be provided? Weekly?, Monthly?, Quarterly?; Consider how the information will move to the next level. For example, program managers/ Council Health management Teams (CHMT) always should review data before they send them up to the next level and last, document the process for implementing and maintaining the feedback mechanism so that it will be standardized and shared with others mainly the lower level health facilities.

Conclusion

The concepts presented in this paper are predicated on the assumption that fostering evidence-based decision making is the primary function of national health information systems and is vital to the effectiveness of the health system as a whole. Despite these improvements, data and information is often not used by key stakeholders to effectively inform policy and programmatic decision making. As a result, many health systems fail to fully link evidence to decisions and suffer from a decreased ability to respond to priority needs at all levels of the health system.

However, there are many possible factors that undermine evidence-based decision making. Some factors can be traced to limited demand for information, stemming from a pervasive lack of “data ownership” where decision-makers are not aware of existing data sources or do not fully understand the underlying methodology or scope of the data set. Others relate to the low value placed on data by decision-makers because of a perception that the quality of the data is poor or the decision-maker lacks the understanding of how the information could be useful. The failure to present data to decision-makers in user-friendly, accessible formats also affects the ease of using it in the decision-making process. The factors that mitigate evidence-based decision making are many and relate to the varied types of decision-makers, how information flows to these individuals and how they make their decisions; others to the context in which information is collected; and still others to the organizational infrastructure and technical capacity of those that generate and use the data.

Data use and decision making is an important component of quality improvement at all levels. Therefore, data management initiatives continue to be an integral part of supportive supervision and mentorship to health facilities staff. Innovations tested by studies/projects under the ground at implementation level, such as updating HMIS registers and introduction of daily stock-out monitoring forms at dispensing areas, should be spread and institutionalized in all facilities while the national HMIS section continue looking for resources for conducting updating data collection tools for improving data management at facility level.

The appropriate use of accurate facility-generated data contributes to strengthening the capacity of health systems to make good decisions in improving care for patients. Data use for decision

making is an important component of quality improvement at all levels. It is recommended that data use and decision making be priorities at all levels of the health care system. All health facilities need to have and retain files for documentation of patient information. There is also a need for standardization of required patient information at the time of admission to allow clinicians to fill in provided spaces or circles as appropriate so as to reduce time wasted in writing.. Indeed, the ultimate goal of a national health information system is to “collect, process, report and use health information and knowledge to influence policymaking, program action and research” (AbouZahr and Boerma 2005, emphasis added). As noted above, evidence-based decisions rely upon data and information from a variety of sources. Each source aspires to produce data that are transparent, consistent, verifiable, and understandable. We posit that access to and capacity to use information more frequently and effectively will lead to decisions that improve health by improving the health system’s ability to respond to health needs at all levels.

A system without a sound technical design, well-trained people, and clear norms and standards cannot produce the information needed for making decisions. Consequently, the path to improving the use of health information focuses mainly on introducing or upgrading technical skills, changing the design of the data system, or revamping the technology used to improve the availability and quality of data.

References

- 1) AbouZahr, C. and T. Boerma (2005). “Health information systems: the foundations of public health.” *Bulletin of the World Health Organization* 78-583.
- 2) Adewuyi, A. and A. Akinlo (2005). *Decision Maker Perceptions among Key Informants in Nigeria: A Rapid Assessment of Data Use Constraints.*
- 3) *Assessment of the Country Health Information System in Tanzania July- December, 2007*
- 4) Bergstrom, S. (2003) *Quality of audit of maternity care.* In Harrison KA & Bergstrom S Chapel Hill NC, MEASURE Evaluation/Carolina Population Centre. Conference, Kuala Lumpur.
- 5) Chapel Hill NC, MEASURE Evaluation/Carolina Population Centre and collaborates with World Health Organization in an integrated strategy to strengthen capacity of local researchers and program managers in OR data use.
- 6) Health Metrics Network (2005). *Strengthening Country Health Information Systems: Assessment and Health Research for Action (HRA).* (2000). *Review of the Health Management Information*
- 7) Ikamari, L. (2005). *Decision Maker Perceptions in Kenya: A Rapid Assessment of Data Use Constraints.*
- 8) Ikonje, A. (2014) *Strengthening data management and use in decision making to improve health care services: Lessons learnt. Dissemination Workshop Report.* Published by the Tibu Homa Project for the United States Agency for International Development. Mwanza, Tanzania: University Research Co., LLC.
- 9) Joint assessment of national strategies: http://www.internationalhealthpartnership.net/en/about/j_1253621551.
- 10) MEASURE Evaluation (in addition to other MEASURE partners, such as DHS, CDC and the U.S. Bureau of the Census) is among many USAID-funded projects with the mandate to promote data use. For example, FRONTIERS for Reproductive Health provides assistance in using operations research findings to develop reproductive health policies and programs
- 11) Ministry of Health and Social Welfare Tanzania Mainland National AIDS Control Programme *Health Sector HIV and AIDS Monitoring & Evaluation Plan* December 2010

- 12) Monitoring Tool (draft 1.0). Geneva, Health Metrics Network.
- 13) Mshana, S. (2004). *Health Management Information System Evaluation: Lesson from Tanzania*. University of Kuopio. PhD Thesis.
- 14) Nyamtema, A.S., Mgaya, H.N.& Hamudu, N.S. (2003). A survey on obstetric care, factors affecting provision of care and pregnancy outcome in Dar es Salaam district hospitals, Tanzania
- 15) Nyamtema, A.S. (2010) Bridging the gaps in the Health Management Information System in the context of a changing health sector. *BMC Med Inform Decis Mak.* 10: 36.
- 16) Strengthen HIS, HMIS and M&E in Tanzania: 5 Year Operational plan & Year 1 Annual Work Plan
- 17) Tanzania Service Availability and Readiness Assessment (SARA) 2012; July 2013
- 18) The United republic of Tanzania; The Ministry of Health and Social Welfare (MoHSW
- 19) World Health Organization 2011. Monitoring, evaluation and review of national health strategies: a country-led platform for information and accountability. 10 November 2011
- 20) Yinger, N. (2003) Creating a window of opportunity for policy change. Paper presentation at the AMDD

Tanzania economic development transformation includes health: an overview of health big results now initiative in Tanzania

Oberlin M.E. Kisanga

Health Sector Reform Secretariat, Ministry of Health and Social Welfare, Dar es Salaam, Tanzania

A policy descriptive study has been employed by the author with an objective of informing the Public Health Community on the Health Sector priorities for the 2014/18 medium term framework. The Tanzania Development Vision 2025 (TDV25) envisions a society with High quality livelihood, good governance and with competitive economy. In order to accelerate this, Tanzania adopted the BIG RESULTS (BRN) initiative; a methodology which manages government Strategies and Interventions with a more focused, coordinated efficient and output oriented discipline. Implementation is already underway in seven (7) key results areas; namely Agriculture, Education, Energy, Transport, Water, Resource Mobilisation and Business Environment. Health sector has been invited to the ring, preparations in place for Financial year 2015/16 . A Medium term (2015-2018) for the first round implementation framework envisaged.

Both the Minilab (August 2014) and the Six week Lab (October 2014) identified both Health Systems Strengthening and Service delivery implementation issues. Four Priority areas (work streams) were therefore identified and detailed worked out:

Human Resources Distribution: Aspires achievement of 100% equitable distribution of skilled health workers per 10,000 populations at primary care services starting with the 13 greatly under resourced regions. through improved proportionate posting and internal re-distribution. Key interventions include: Prioritising allocation of employment permits to the 13 regions, Improve provision of skilled HRH through Private Sector engagement, Redistribution of health care workers within the regions and Optimising the pool of new recruits through reinforcement of bonding policy.

Facility performance: Aspires implementation of star rating accreditation of all primary care facilities and move 80% of them to star 3 by 2018. Key Initiatives include; Baseline assessment and star rating all primary level public and private facilities, fiscal decentralization by devolving health fund management from LGA level to Health Facility level, increased Social Accountability at facility and Community level to address local health priorities and introducing use of performance targets and contracts at primary care level.

Commodities: Aspires to move to 100% availability of essential health commodities whereas. Key Interventions include Improving health Commodities supply chain governance, Inventory at all levels, Strengthening MSD working capital and improved private sector participation.

Maternal New Born Child: aspires to reduce the current level of Maternal mortality by 20% through intensive implementation of Comprehensive and Basic Maternal Neonatal Child Health (CEmONC, BEmONC), Mobilisation of Community health workers for RMNCH, having functional Regional satellite blood banks and enhancing awareness and outreach through electronic communication. This work stream prioritises the 5 lake zone regions with poor MNCH performance indicators.

Good governance in health care delivery systems

Anna L. Nswilla

Ministry of Health and Social Welfare, P.O. Box 9083, Dar es Salaam, Tanzania

E-mail: answillla@yahoo.co.uk

Introduction

The National Health Policy 2007 provides the government of Tanzania's long-term vision for development of the health sector; it outlined policies and directives in several areas pertaining to the health sector including prevention and treatment of communicable and non-communicable. It has been underscored that achieving and sustaining successful health outcomes for the poor requires strategies that address key governance issues and promote the development of capable, accountable and responsive health systems. In addition, it requires approaches to help strengthen the capacity and confidence of citizens to hold those who plan, finance and deliver health services accountable. This will facilitate reaching Millennium Development Goals (MDGs) that would sharply reduce poverty, raise educational levels and reduce mortality, among other achievements.

Focusing in investing in health sector, raising living standards and improving human capital contributes in reaching the MDGs. To achieve the gains in health requires increasing attention and support from the multi-lateral and bi-lateral institutions. Health care provision depends on efficiently combining financial resources, human resources, and supplies, and delivering services in a timely fashion distributed spatially throughout a country. This requires a "system" that mobilizes and distributes resources, processes information and acts upon it, and motivates providers' appropriate behaviour by individuals, health care workers, and administrators. Good governance is a critical factor in making such a system function comprises the arrangements put in place to ensure that the intended outcomes for stakeholders are defined and achieved. In health care, good governance implies that health care systems function effectively and with some level of efficiency. Though many governance indicators have been developed for countries in the aggregate, governance indicators for specific sectors, such as health, are not readily available.

Major challenges facing health systems as part of the social determinant of Health are good governance, corruption, accountability measures include information on performance and impact, the ability to audit, the authority to reward performance, and discipline, transfer and terminate employees who engage in abuses; and answering to stakeholders on the performance of public services. Without strengthening the key institution for the sector it is unlikely that the goals of reducing poverty, mortality and morbidity can be achieved while putting more effort to address the above determinants. This paper examines health systems from the perspective of good governance focusing on corruption as a whole, drawing on the knowledge and experience garnered over the past decade at the national and firm levels and supplementing that with health-specific evidence. It therefore examines the effectiveness of government and specifically the efficiency of its role in producing health care services.

Good Governance refers to the exercise of political and administrative authority at all levels to manage a country's affairs. It comprises the mechanisms, processes and institutions, through which citizens and groups articulate their interests, exercise their legal rights, meet their obligations and mediate their differences. Specific reference is made to democratic governance as "a process of creating and sustaining an environment for inclusive and responsive political processes and settlements." The institutional and human capacities for governance determine

the way in which the effectiveness of health policies and strategies is attained, especially in healthcare service delivery.

Effective governance in the health sector encourages better decision making and the efficient use of resources and strengthens accountability for the stewardship of those resources. Effective governance is characterized by robust scrutiny, which provides important pressures for improving health sector performance and tackling corruption, which in the health sector has been a rampart and a talk of the day, while deter patients to access healthcare services when they need it. Effective governance can improve management, leading to more effective implementation of the chosen interventions, better healthcare service delivery, and, ultimately, better outcomes and People's lives are thereby improved.

The four major pillars against which good governance can be judged are stated to be:

(a) *Accountability*. At the macro level this includes financial accountability, in terms of an effective, transparent and publicly accountable system for expenditure control and cash management, and an external audit system. It encompasses sound fiscal choices, made in a transparent manner, that give priority to productive social programmes – such as basic health services and primary education vital to improving the living standards of the poor and promoting economic development – over non-productive expenditures, such as military spending. At the micro level it requires that managers of implementing and parastatal agencies be accountable for operational efficiency. Auditing systems should meet international standards and be open to public scrutiny.

(b) *Transparency*. Private-sector investment decisions depend on public knowledge of the government's policies and confidence in its intentions, as well as in the information provided by the government on economic and market conditions. Transparency of decision-making, particularly in budget, regulatory and procurement processes, is also critical to the effectiveness of resource use and the reduction of corruption and waste.

(c) *The rule of law*. A fair, predictable and stable legal framework is essential so that businesses and individuals may assess economic opportunities and act on them without fear of arbitrary interference or expropriation. This requires that the rules be known in advance, that they be actually in force and applied consistently and fairly, that conflicts be resolvable by an independent judicial system, and that procedures for amending and repealing the rules exist and are publicly known.

(d) *Participation*. Good governance requires that civil society has the opportunity to participate during the formulation of development strategies and that directly affected communities and groups should be able to participate in the design and implementation of programmes and projects. Even where projects have a secondary impact on particular localities or population groups, there should be a consultation process that takes their views into account. This aspect of governance is an essential element in securing commitment and support for projects and enhancing the quality of their implementation. In health sector involving HFGC in developing the facility plans which takes into citizens needs and wants depending with the availability of resources to be taken on board.

Government effectiveness encompasses efficiency of the bureaucracy and public servants, roles and responsibilities of local and regional governments, including the administrative and technical skills of government, effectiveness of policy and program formulation, governing capacity, and effective use of resources. Extending the example above, decentralization that comes without funding or local authority undermines potential effectiveness of local jurisdictions as they have

no power to affect resource allocations or decision-making and can be the victim of “provider capture” where centrally deployed staff determines service, organization and delivery. This will be addressed only if fiscal decentralization move down to health facility level, whereby the health facilities will be accountable to the HFGC to account all the resources in terms of finances/funds collected and contributed, human resources, health materials specifically medicines, medical equipment and supplies.

Promoting good governance

What does it mean to promote good governance for human development? Much discussion about the definition of good governance has centred on what makes institutions and rules more effective and efficient, in order to achieve equity, transparency, participation, responsiveness, accountability, and the rule of law. These aspects are crucial for human development and the eradication of poverty, reduce morbidity and mortality since ineffective institutions usually result in the greatest harm to those who are poor and vulnerable.

Improving good governance poses an important challenge to governments in transition and developing countries, but there are good examples of things that can be done based on actual experiences. Accountability and incentives serve as feature across the components because they represent the keys to better policy and outcomes. Main accountability measures include (i) information on performance and impact, (ii) the ability to audit, (iii) the authority to reward performance, and discipline, transfer and terminate employees who engage in abuses; and (iv) responds to stakeholders on the performance of public services.

Accountability tends to be absent due in part to measurement problems but also to minimal management, oversight or evaluation of performance. The high demand from patients for diagnosis and care when they fall ill, and the difficulty in generalizing across medical conditions further complicate oversight and accountability.

Corruption and Accountability in HealthCare Delivery

This paper also deepens more on the effects of lack of accountability which pictures on evidence of corruption and its application to the health sector that result when governance is poor. Sound institutions and good governance go hand-in-hand. Kaufman and Kraay (2003) define good governance as “the traditions and institutions by which authority in a country is exercised”. More specifically it encompasses; capacity of government to formulate and implement sound policies, manage resources and provide services efficiently; the process that allows citizens to select, hold accountable, monitor and replace government; and, the respect of government and citizens for the institutions that govern economic and social interaction.

Corruption can be defined as “use of public office for private gains” (Bardhan, 1997) or “the sale by government officials of government property for personal gain” (Shleifer and Vishny, 1993). With either definition good government hinges on the incentives for and accountability of public servants. Forms of corruption vary. Sparrow (1996) describes the extent of fraud in the US Medicare program, which is exacerbated by heavy reliance on electronic payments in compensating providers.

According to Presidential Commission of Inquiry against Corruption Report (URT, 1996) health sector was ranked the 3rd highest corrupt sector whereby as per the findings of a study by SIKIKA, 2010 in Dar es Salaam and Pwani regions, the carders that seemed to be mostly involved in corrupt practices were Medical Doctors (32.9%), Nurses (28.0%), Laboratory Personnel (14.1%)

and 18.2% in other carders. The government has been taking various measures to prevent and combat corruption which include: staff meetings to mobilize against corruption; staff to wear name tags; putting up posters showing the hospital care price list for user fees services and a list of services provided free and provide guidelines and standards of medicines (PCCB, 2009). Other efforts include; increasing the number of health staff, improvement of infrastructure through MMAM program and partnering with the private sector with a view of improving accessibility and reducing overcrowding at health facilities. Despite the efforts, corruption is perceived to continue to persist in the health sector hence likely to hinder those with limited resources from accessing the service and or causing them to use their merger resources to obtain the service.

There are various causes of corruption in the health sector. According to SIKIKA, 2010 major factors include; low pay (57%), greediness (23.1%), pressure from patients (7.5%), inadequate equipment and supplies (6.4%) and bribes being a socially accepted practice (5.9%). Furthermore, Mwaffisi (1999) associated corruptions with factors such as excessive red tape at health facilities where patients are put on long waiting list, some hospitals forced to do away with elective surgeries and perform emergency operations only thus creating a room for corruption. The ibid 1999 added that poor salary lead health workers to win the sympathy of patients who see them as deserving more for what they do. Poor management, weak supervision, lack of enforcement e.g. user fees, exemptions policy for special groups and lack of information to clients were among the cross cutting issues that also contribute to corruption.

Corruption possesses a barrier in access to health service and has equity implications. In a corrupt environment people are likely to refrain from seeking care from formal system. It takes away valuable resources available for health, lowers the quality and increases the cost of getting them thus having corrosive impact on the populations level of health.

Effects of Lack of good governance in healthcare delivery

Absenteeism and malpractices is against the professional code of ethics for the public service as it comprise provision of essential services let alone comprise quality of care . According to studies (Sikika 2012) show 69% of workers in some facilities are sometimes in and sometimes out at their place of work. In light of negative altitude and unprofessionalism, absenteeism and bad behaviour among health workers, the quality of health services provided in public health facilities become poor, inaccessible, unreliable and unsatisfactory. About 1.5% of client were not satisfied with services provided by doctors encountered (Muhondwa et al 2008) and about 62.76% of the client indicate there was no influence of the charter on the improvement of quality services (IHI Sylvia Kirenga at el 2009). Other studies done in hospital shows that (4.2%) patients were unsatisfied with health care services provided (Kagashe et al 2011). These are some of the studies which have been done to address the issues of negative altitude, unprofessionalism and absenteeism as setbacks in provision of quality of health care. (Sikika report 2012 and HSSP III mid-term report 2012) As a result there is apparent implication on MNCH services whereby 48% of pregnant women (in rural) gave birth at home and 18% gave delivery at home in urban areas (Pfeiffer, 2013).

Absenteeism occurs for various reasons, many of them legitimate or necessary. For example, rural health workers often need to travel to larger towns to receive their pay check, fetch supplies or medicines or are delayed by poor infrastructure or weather. All lead to absences but are necessitated by inadequate management or other shortcoming of the country context. On the other hand, some staff has other commitments or preferences and don't show up. In effect they receive a salary but provide minimal if any services. This is effectively theft, a form of "public office for private gain."

Capturing the extent of absenteeism among public service staff is made difficult by the lack of or incomplete nature of staff attendance records. Various alternatives have been applied to examine the issue including perceptions of other providers (DiTella and Savedoff, 2001).

Internationally, studies on corruption revealed as in corruption surveys interviewing public officials, business executives and the general public in 23 countries, health ranked first as the most corrupt sector in Moldova, Slovakia and Tajikistan, second in Bangladesh, India and Sri Lanka, and in the top four in Kazakhstan, Kyrgyz Republic, Madagascar and Morocco. For the most part these countries also ranked highly on the percent of the population perceiving high levels of corruption in health moving as high as 95% in Pakistan, 92% in Sri Lanka, 85% in Tajikistan, 82% in Moldova and 80% in Morocco. Expectations on paying for health care correspond to the perceptions of corruption, which in turn are closely related to the need for informal payments.

The review of country evidence and the examination of the cross-country factors that influence performance and to some extent outcomes in health care suggest that governance plays an important role. If the health system is not governed well, health workers are absent, patients pay illegal fees, and basic inputs are stolen without any consequences for those who mismanage or corrupt the system, performance of health services will be poor and population health will suffer.

Lack of performance indicators

The performance of health care systems in various frameworks is classified by certain performance attributes, among them the quality of care, access to care and the cost of care. Performance indicators are not set correctly. Performance indicators are necessary to measure performance. They are employed for four basic functions i.e. facilitating accountability; monitoring health care systems and services as a regulatory responsibility; modifying the behaviour of professionals and organizations at both a macro (population) and micro (patient) level; and forming policy initiatives (Leatherman, 2001).

Presently in many primary health facilities there is lack of performance indicators or if available they are not set correctly. This is caused by several factors, including lack of job descriptions for facility health workers, neither do they know the job description of their facility in charges; facility plans (where available) focus on development activities with financial support they overlook the routine activities of health workers, lack of planning knowledge and skills in health facilities, which is the result of unavailability of staff with planning knowledge and skills caused by high turnover of staff with no replacement, presence of many untrained staff in health facilities, particularly in the hard to reach rural areas, unfavourable working environment, new request for HRH not corresponding with present gaps, underfunding in training institutions.

Utilization data and patient satisfaction offer complementary metrics of health system effectiveness since under-utilized public facilities or their by-passing by target groups suggest implementation problems. Despite their relevance, such data rarely if ever are collected on a routine basis in countries. Indeed such information only exists for a subset of facilities and often for only a segment of the health system. In the absence of comparable monitorable indicators this kind of information can inform policy makers about performance and the pressure points of health systems development before large scale data collection is in place.

The limitation in assessing existing health care systems is the lack of any single measure of what constitutes a functioning system. Every country has its own, unique health care arrangements with a mix of public and private financing, delivery and regulations. The comparisons of system performance tend to be limited to gross measures such as spending levels or mortality statistics. The more meaningful comparisons are those based on specific diseases where costs, treatment

options and outcomes can be compared, though countries don't necessarily collect comparable data limiting the extent of meaningful comparisons. For developing countries systems differ and information on comparable indicators simply does not yet exist.

These characteristics explain why government's role is so critical to examine, and why the indicators used in this paper for health care delivery are so different from those used in other studies of governance or health care delivery. This effort documents "government failure" to live up to the objectives of public policy, looking specifically at efficiency enhancement and redistribution, and focusing on incentives as a means to improve performance without compromising equity objectives (Jack and Lewis, 2004).

While straightforward in concept, the production function itself is far from simple and the market failures identified above plague both private and public systems (i.e., principal agent and information asymmetry problems), which undermine incentives and limit the extent of accountability. Accountability can be to a central government, local government, communities or patients, or some combination of these.

Measures to assess performance of public systems are lacking. Infant mortality, a readily available and commonly used measure of outcome, better reflects more aggregate measures of wellbeing (such as income and education) rather than the health system, although once the IMR drops below 25-30 per 1000 it better captures the quality and extent of medical interventions. Monitoring basic functions such as hiring, existence of appropriate policies, purchase of medicines, building of clinics and procurement practices, can be easily accomplished but only represents the identification of inputs.

The more complex and important measures of health system performance are such things as staff output, medicines and medical supply availability, regularity of funding transfers, state of physical infrastructure, inventory and functionality of equipment, and existence of patient records, factors which reflect whether health systems are meeting minimal efficiency and quality standards.

Socio Accountability, Public Health Care Systems and Good Governance

Good Governance when it comes to public policies in the social sectors including health is largely ignored. The growth, governance and corruption literature (Elliott, 1997; Transparency International, 2005; World Bank, 1997 and Commission for Africa, 2005). Implicit in that neglect is that good intentions surrounding these investments are such that good governance is secondary, if it has any importance at all. Efficiency in resource use would suggest the need to consider such themes, however, socio Accountability is among the areas that also not well addressed as they related to good governance includes a broad range of actions and mechanisms, beyond voting, that citizens can take to help the government be more effective and accountable. It also includes actions on the part of government, civil society, media, and other societal actors that promote or facilitate these efforts. Social accountability approaches serve to empower citizens and contribute to the evolution of inclusive and cohesive democratic institutions.

For any health facility to respond properly to the needs of the community it serves there must be social accountability. Social accountability mechanisms complement and enhance conventional internal (government) mechanisms of accountability. This accountability facilitates health facilities to function according to the policy, guidelines, set goals and objectives.

Characteristics of Health Care existing markets

Unlike other goods and services health care services embody some unique characteristics stemming from inherent existing markets failures. The asymmetry of information and agency challenge of health workers acting as agents for patients (everyone is a “doctor”), since this group can’t be challenged by ordinary community members exacerbates the situation. The absence of incentives for health managers and service providers at all levels to encourage social accountability also contributes to the above situation. Presently there is ineffective social accountability at all health facilities of all levels. The situation is worse in the primary level facilities. This is influenced by several factors which include; communities fear of reprisal by health facilities staff if communities hold them responsible for any action, there has been no culture of holding public health service providers accountable to the populations they serve. There is also lack of community awareness on their rights, roles, responsibilities and mechanisms for holding health service providers accountable, including lack of community participation in preparing plans of health facilities whereby the community interests can be planned and implemented, including issues related to social accountability.

Patients are aware they don’t feel well but they rely on health professionals, often clinicians, to act as their agents in diagnosing and treating ailments. Patients are ill-equipped to assess the adequacy and quality of clinician’s decisions and actions, and therefore focus on the environmental and interpersonal aspects of clinical services, the elements they are best able to evaluate. The above mentioned factors are influenced by the failure of existing mechanisms, which would link health facilities to the communities served (including HFGC) to supervise the health facilities.

Generally, lack of effective governance structures facilitate adverse selection practices by private health insurers lead to an uninsured population disproportionately made up of those most in need of health care; the chronically ill people, the poor and those having experienced a catastrophic illness. In settings without health insurance ability to pay limits the same groups from obtaining care so the same constraints apply. Government intervention compensates for the mechanism reluctance to insure the most vulnerable. And because of the random nature of illness or injury, government subsidies protect the population against financial demands of illness.

Government indicators

Capturing the effectiveness of public health care services, the extent of corruption and the degree of accountability pose serious challenges, which contribute to the lagging effort to address good governance in the sector. Using national level indicators such as access to health services provides limited guidance on how well the sector is performing. At the same time, performance indicators are scarce, and difficult to aggregate where they exist. The heterogeneous nature of health care and the large number of *sui generis* events; the highly variable and unpredictable nature of health care demand; they may help to explain the inconclusive findings of Filmer and Pritchett (1999) on the lack of association between public health expenditures and infant and child mortality.

Good Governance indicators are built on perceptions of in-country and outside observers, and their application has emphasized cross-country comparisons. On the first point, perceptions are powerful factors in shaping behaviour. If investors perceive corruption or patients perceive poor quality, it discourages private investment or health demand, respectively. But perceptions are only part of what is of interest in assessing governance issues in health. Good governance has been shown to correlate with property rights and civil liberties, and greater foreign investment

(Hellman et al., 2000), and to “grease” the wheels of government (Kaufmann and Wei, 1999). Less corrupt and politically stable government the more attractive they are for private investors and donors (Kaufmann et al. 2005). Aid effectiveness also rises in countries with good governance. These clearly have relevance to health care.

Wagstaff and Claeson (2005) extend these analyses further and use more recent data. They find that spending reduces under 5 mortality, but only where good governance, as measured by the World Bank’s CPIA score (Country Policy and Institutional Assessment measure that is scored between 1-5 depending on performance, part of which regards corruption and governance), is sound (a CPIA above 3.25). This study specifically explores the implications of additional spending for reaching the MDGs, and concludes that more spending in medium and low CPIA countries would not be expected to reduce child mortality, and that per capita income growth offers a better investment if mortality declines are the objective.

A major challenge is differentiating informal and gratitude payments given the official co-payment, bribes and gifts that patients pay. Where all fees have been banned any payment by households is clearly unofficial, but in many countries formal fees exist, blurring the dichotomy. It then becomes the level of payment, the nature of the transaction and its timing that become relevant for distinguishing the nature of the payment. For example, in Kyrgyz Republic in 2001 95 percent of those who paid for services did not receive a receipt while only 3 percent reported giving a gift to the health personnel and the time of service (Falkingham, 2002). A Bolivia study showed that perception of corruption was associated with the size of informal payment with a significant coefficient of 0.34 (Gatti et al. 2004).

Mismanagement in Health Care Service Delivery

Often irregularities and poor governance simply stem from poor management. Where incentives for strong performance either don’t exist or are undermined by ineffective management it is not surprising that productivity and performance suffer. For example, if staff advancement caps after a single promotion, a common pattern in many countries, then the incentives to excel are diminished. By the same token the inability to fire public sector staff even in the face of embezzlement or nonattendance erodes managers’ authority and the public sector’s ability to hold staff accountable. The lack of carrots and sticks dis-empowers public management and thwarts efforts at accountability.

Evidence on mismanagement is spotty. The core issues include human resource management and supervision, basic subsystems function (e.g., procurement, medicines logistics), efficiency of fiduciary transfers, input availability, and satisfaction of the target population.

Low wages represent one area of potential temptation for corruption. Where earnings are low individuals have second and third jobs, but they also perceive that low wages entitle them to demand contributions from patients. public service reform was often required to address egregious structural problems related to postings, promotion and pay, but the health sector can also serve as a pilot to launch improvements that stimulate better performance. Alternatively experimentation with other payment arrangements may prove more effective.

As discussed elsewhere higher pay will not necessarily address corruption by itself, but paying wages that are appropriate to existing labour market conditions, prohibiting side payments and holding providers accountable could together encourage more transparent and fair transactions, and offer incentives for better provider performance. Although it is expensive for countries to raise wages in public health care services, a reform that regularizes and improves pay has the

potential to raise productivity. Higher productivity, in turn, would make it possible to provide the same amount of services or more, with fewer workers, thereby offsetting some of the expected increase in the total wage bill. In addition, greater transparency in all fiduciary functions would improve fairness and bolster effectiveness.

These results lead to the tentative conclusion that voice can take many forms and none by itself will necessarily lead to the effective control of corruption. However, the expression of voice via the press or direct community involvement appear to be more powerful tools than voting in influencing public performance. Public service delivery does not affect voting patterns or candidate selection sufficiently. Voting may be too blunt of an indicator, one that captures a range of interests of constituents. Health will only predominate if it is the pressing issue of the moment. Otherwise other concerns drive voter preferences. Some of this may be due to entrenched corruption where localities regardless of their oversight simply do not have enough clout to influence public sector behaviour. Where hiring and promotion remain centralized, local voice will have less effect in any case. Popularity of candidates, other factors that appeal to voters and insufficient evidence on things like corruption no doubt play a role, but it is difficult to be definitive given the paltry evidence and the complexity of the issue.

Conclusions

Good governance as critical attribute to the health care delivery system function. Health care provision depends on efficiently combining financial resources, human resources, and supplies, and delivering services in a timely fashion distributed spatially throughout a country. This requires a “system” that mobilizes and distributes resources, processes information and acts upon it, and motivates providers’ appropriate behaviour by individuals, health care workers, and administrators. Good governance is a critical factor in making such a system function. In health care, good governance implies that health care systems function effectively and with some level of efficiency. Though many governance indicators have been developed for countries in the aggregate, good governance indicators for specific sectors, such as health, are not readily available. If the health system is not governed well, health workers are absent, patients pay illegal fees, and basic inputs are stolen without any consequences for those who mismanage or corrupt the system, performance of health services will be poor and population health will suffer.

Major challenges facing health systems are governance, corruption, accountability measures include information on performance and impact, the ability to audit, the authority to reward performance, and discipline, transfer and terminate employees who engage in abuses; and answering to stakeholders on the performance of public services. Without strengthening the key institution for the sector it is unlikely that the goals of reducing poverty, mortality and morbidity can be achieved. Hence achieving the dramatic and permanent declines in mortality envisioned by the Millennium Development Goals is doubtful unless governments shift their attention to the institutional factors that affect performance in the health sector. Accountability and incentives serve as threads across the components because they represent the keys to better policy and outcomes.

Finally, achieving the dramatic and permanent declines in mortality envisioned by the Millennium Development Goals is doubtful unless governments shift their attention to the institutional factors that affect performance in the health sector. A dysfunctional environment limits the chances that more funding can have an impact, and much of the discussion above highlights situations that will not necessarily benefit from large increases in funding unless more is done to bolster the capacity of the institutions expected to implement the agenda. Funding without the

necessary institutional strengthening could lead to perverse results, and assistance for both good governance and financing will be needed in the health sector.

Addressing these public program failures are critical to effective government and functioning health care systems. Because good governance promotes economic growth and effective public services, the health sector cannot afford to be side-lined on this agenda. Health system is the institution that must be engaged and on the front line if governance is to improve government effectiveness and control corruption in the sector. Without bolstering the key institution for the sector it is unlikely that the goals of reducing poverty, mortality and morbidity can be achieved. The evidence here points to serious problems of good governance across the globe in developing and transition countries, which thwart the goals. As a result the returns to health investments may be very low where good governance is not addressed. The paper concludes that good governance is important in ensuring effective health care delivery, and that returns to investments in health are low where good governance issues are not addressed. It is necessary to look for alternatives that reflect the quality of health sector governance.

References

1. Commission on the Social Determinants of Health. 2008. *Closing the gap in a generation: health equity through action on the social determinants of health. Final report of the Commission on Social Determinants of Health*. Geneva: World Health Organization. Online at: http://whqlibdoc.who.int/publications/2008/9789241563703_eng.pdf, accessed 5 February 2013.
2. World Health Organization. 2008b. Health Systems Governance. Toolkit on monitoring health systems strengthening. Geneva: WHO. Online at: http://www.who.int/healthinfo/statistics/toolkit_hss/EN_PDF_Toolkit_HSS_Governance.pdf accessed 5 February 2013.
3. Visit us on the web at: <http://wbi.worldbank.org/wbi/topics/governance>
Photo Credits: *Strengthening Governance: Tackling Corruption* (World Bank, 2012)
4. A Data: <http://www.stanford.edu/~wacziarg/downloads/fractionalization.xls>
5. Bardhan, P. 1997. "Corruption and Development: A Review of Issues." *Journal of Economic Literature* 35(3) 1310-1346.
6. A Data: <http://www.cid.harvard.edu/ciddata/Appendix%20Data%20Tables.xls>
7. Brinkerhoff, D. 2004. "Accountability and Health Systems: Toward Conceptual Clarity and Policy Relevance." *Health Policy and Planning* 19(6): 371-379.
8. Brueckner, J. 2000. "Fiscal Decentralization in Developing Countries: The Effects of Local Corruption and Tax Evasion". Department of Economics and Institute of Government and Public Affairs. Urbana, Illinois: University of Illinois.
9. Falkingham, J. 2004. "Poverty, Out-of-Pocket Payments and Access to Health Care: Evidence from Tajikistan." *Social Science and Medicine*, 58: 247-258.
10. Filmer, D. and L. Pritchett. 1999. "The Impact of Public Spending on Health: Does Money Matter?" *Social Science and Medicine*. 49; 1309-1323.
11. Fisman, R., R. Gatti. 2000. "Decentralization and Corruption: Evidence across Countries". Development Research Group. Washington D.C. World Bank. Processed.
12. Gilson, L. 1997. "The Lessons of User Fee Experience in Africa." *Health Policy and Planning* 12(4): 273-285
13. Gopakumar, K. 1998. "Citizen Feedback Surveys to Highlight Corruption in Public Services: the Experience of Public Affairs Centre, Bangalore." (September) Mimeo.
14. Gosden, T., L. Pedersen and d. Torgerson. 1999. "How should We Pay Doctors? A Systematic Review of Salary Payments and their Effect on Doctor Behavior" *Quarterly Journal of Medicine* (92) 47-55.

15. IMF. 1997. "Good Governance: The IMF's Role". IMF Guidance Note. Washington, D.C.: International Monetary Fund.
16. Jack, W. and M. Lewis. 2004. "Falling Short of Expectations: Public Health Interventions in Developing and Transition Economies." *Social Science and Medicine* 58(2).
17. Kaufman, D. and A. Kraay. 2003. Governance and Growth: Causality which way? – Evidence for the World, in brief." Washington, D.C.: World Bank
18. Kaufman, D, A. Kraay and M. Maztruzzi. 2005. "Governance Matters III: Governance Indicators for 1996-2002." Washington, D.C.: World Bank.
19. Leonard, K. 2005. "Getting Clinicians To Do Their Best: Ability, Altruism and Incentives." University of Maryland. Mimeo (Draft)
20. Lindelow, M. and J. Dehn. 2001. "Public Expenditure Tracking Survey of the Health Sector in Mozambique". Washington, D.C.: World Bank. Draft.
21. Partnership for Governance Reform. 2002. *A Diagnostic Study of Corruption in Indonesia*.
22. Phongpaichit, P., N. Treerat, Y. Chaiyapong, and C. Baker. 2000. "Corruption in the Public Sector in Thailand Perceptions and Experience of Households. Report of a nationwide survey". Political Economy Centre. Bangkok.: Chulalongkorn University. Processed.
23. Rauch, J. E. and P. B. Evans. 2000. "Bureaucratic Structure and Bureaucratic Performance in Less Developed Countries." *Journal of Public Economics* 75(1): 49-71.
24. Shleifer, A. and R. W. Vishny. 1993. "Corruption." *Quarterly Journal of Economics* 108(3): 599-617.
25. Wagstaff, A. and M. Claeson. 2004. *Rising to the Challenge: The Millennium Development Goals for Health*. Washington, D.C.: World Bank.
26. World Bank. 1997. *World Development Report. The State in a Changing World*. Washington, D.C.: World Bank.
27. World Bank. 2004c. *The Millennium Development Goals for Health: Rising to the Challenge*. Washington, D.C.: World Bank.

Is it cash or card?: a decade of health care financing in Tanzania

Randolph Quaye
Ohio Wesleyan University, Delaware, Ohio USA

Introduction

Tanzania has a long history of state intervention in health care. From its socialist objectives in the 1960s, culminating in the Arusha Declaration of 1967, the directive by the government has been that, "Health services should be made available to all Tanzanians at no cost to the people" (Ministry of Health, 1994). This was followed by the nationalization of hospitals and a ban on private medical practice in 1977. However, as the Tanzanian economy faltered, so did revenues and at the urgings of the World Bank, the government re-assessed its approach to healthcare financing. User fees or cost sharing was introduced in July 1993 with mixed results. As well documented by Mwabu et al, 1998, 2002, Criel, 1998 and Gilson and Russell (1997), user fees are highly regressive and have been associated with declines in attendance at hospitals and clinics. The rather negative income effect generated by out-of-pocket payments did contribute to greater experimentation in social health insurance as a financing strategy in Africa.

In Tanzania, the NHIF Act No 8 of 1999 with Amendments Act No 25 of 2002, Act No. 11 and Act No.2 provided the framework for the creation of the National Health Insurance Fund. The specific provisions under this act were that the scheme will be mandatory and will cover employees, spouses and children or legal dependents not exceeding four family members and contributions will come from both the employer and employee each contributing 3percent to the scheme.

As a health care financing strategy, very little is known about social health insurance schemes in Africa, but in an increasingly interdependent world, the cross-national experiences with alternative health care financing options offer a rich field for analysis. It has been a decade since Tanzanian experimented with social health insurance. While research has been done through on the viability of the scheme, it has not been clear whether the SHI introduced to cover civil servants and those in other public sectors had worked or not.

Materials and Methods

In this paper, I explore the perspectives of Tanzanians regarding the social health insurance program. We were particularly interested in assessing the benefits and challenges of NHIF. The study addressed the following questions:

- Is the current NHIF meeting the health needs of Tanzanians in terms of coverage, risk protection and benefit management?
- How well informed is the general population about the benefits and drawbacks of the scheme?
- What specific problems are encountered by users of NHIF?
- How can the services provided under NHIF be improved or expanded?
- What benefits do NHIF have in promoting health care access in Tanzania? And, finally,
- What experiences do users have with health care providers?

The data was obtained from a survey carried out in Dar es Salaam between March and May 2013 when the author was attached to the Sociology and Anthropology department at the University of Dar Es Salaam as a Fulbright scholar. Of the 50 questionnaires distributed, only 38 were

returned. Apart from the socio-demographic section of the questionnaire, they were open-ended questions. This allowed respondents to give detailed responses.

Table 1: Demographic characteristics of the respondents (N- 38)

Variable	Response	Number	Percent
Gender	Male	17	47.7
	Female	21	55.2
Age (years)	≤31	9	
	>31	29	73.6
Education	Bachelor degree	12	31.5
	Master degree	14	36.8
	PhD	8	21
Religious affiliation	Catholic	16	42.1
	Protestant	10	26.3
	Muslim	4	10.5
	Other	8	21
Employment	Employed	36	94.7
	Unemployed	2	5.2
NHIF	Member	31	81.5
	Non-member	7	18.4
Marital status	Married	27	71
	Single	10	26
	Divorced	1	3.5

Results

In this paper we wanted to ascertain the extent to which Tanzanians surveyed were familiar with the social health insurance system as currently configured. To assess that, we asked our respondents to define what they understood the concept to mean. Overwhelmingly, all our respondents demonstrated through their responses that they have a good understanding of social health insurance. Several define SHI as a system that insures access to health care to members enrolled in the program. One respondent argues that SHI is, “A state engineered health insurance scheme tenable mostly in public facilities and covering a range of health problems.” Another stated: “It is an insurance scheme that covers health expenses of its members based on their contributions.” For another: “It is just a fund which helps government employees access health services, although some people are limited to low quality services.” Another respondent states that: “NHIF means liberation to one relating to health problems especially when one is bankrupt; it is a prepayment scheme which aims at pooling risks against the risk of bankruptcy.” One respondent defines NHIF as, “security for[my] health.”

On the question, “what benefits do NHIF have in promoting health care access in Tanzania?”, majority of our respondents reported that NHIF is useful in cases of accidents as it allows individuals to have access to health services at a reduced or free diagnostic exams, x-rays, CT Scan at Muhimbili and other private hospitals and clinics. As one respondent puts it, “Many people can access health care services through NHIF.” It is helpful [NHIF], especially at a time when we do not have money. It has the benefit of providing health services at a cheaper price.” For another, the benefit of NHIF is that it has “Facilitated health service access to many people. The costs have been significantly reduced if one compares the monthly contributions to the cost of services one receives. I think the benefits are much more than the problems associated with it.” Perhaps, one sums it best when he says, “The benefits of NHIF is promoting health care access to Tanzanians; It allows those who are members to get quality health services and it prevents overcharging of health services as they are forbidden.”

On the question, what specific problems are encountered by NHIF users, more than half of the respondents reported that they had problems receiving proper medications depending on the type of card they had. Several pointed to the fact that some medical services are not covered by NHIF. Several also raised questions about their dealings with health care providers. They mentioned that some hospitals do not provide adequate services to NHIF users and some complained that they experience delays in getting health services and for those who got them, they reported receiving substandard health services. From the perspective of a respondent, “users of NHIF have difficulty accessing specialist services. They have limited access to some medications and that authorization process takes too long. Some discussed that payments to health care providers are delayed by the employer, making getting services from certain providers difficult. Another respondent in answer to the question stated that, “most of the hospitals discriminate against patients depending upon the type of card they carry.” As one puts it, “I am always limited in the type of services I get because I carry the brown card. To me, NHIF is providing services to many but they not equally provided. I once missed the service because the health centre I went to complained that NHIF have delayed in paying them and as a result have stopped providing the services until further notice.”

Another respondent indicated that when NHIF users approach the health facility, they are made to feel like they are “beggars” for health services. Some health facilities do not provide services to NHIF members and they wanted to be paid in cash. The medicine prescribed are often out of stock and one is forced to sign NHIF forms before treatment and some investigations are not covered by the scheme. From the perspective of another user, “Most of the health care I prefer do not accept NHIF card. For those that do, there are many inconveniences, including providing undesirable medications, especially for children.” Another respondent indicated that “In theory, with my NHIF card, I should be able to go to any health clinic for service but the reality is different.”

From the perspective of another respondent, “First of all, it’s a hoax and a failure [NHIF] and not all hospitals have agreements with NHIF members. The best hospital in Dar is not even a provider of health services. Aga Khan joined but they pulled out as well. Another issue is the difficulty of capacity. They tell you, you can access health services anywhere but the fact is that these hospitals do not have the capacity to do so. For example, if you walk to a hospital in Singida they look at you and say ha. They ask you is it cash or card? There are problems with NHIF and that is why a lot of its members are disgruntled with NHIF and its services. I am disappointed with the scheme, how it is set up and the proposed benefits they tout to provide for their members.”

In summary, the key points raised by respondents included the following: (i) Lack of medicine for users; (ii) Long process in using NHIF services; (iii) Lack of necessary and sufficient health care providers; (iv) Lack of health care providers who accept NHIF users; and (v) Overcrowding of patients to health care providers that accept NHIF cards.

Finally, when respondents were asked, how best can the NHIF services can be improved? Overwhelmingly, all our respondents stated the need for customer choice in accessing health care. Some mentioned the need for improved and better quality care for users. Some suggested the need for making sure that health care providers are close to the users. As one puts it, “We need to make sure that in every street, there is at least one health care provider who accepts NHIF card.” Some also decried the compulsory nature of the scheme and suggested that it should be voluntary and members should pay depending on the services they choose. One respondent in response to the above question stated, “I contribute 60,000 shillings and ever since I signed on to it, I have not used the services. I will say that NHIF is a hoax and a failure to some extent. When the NHIF started in the early 2000s, there was a comparative advantage such

as helping people who could not afford treatment. However, lately the fund has failed to maintain itself. In so many respects the fund has siphoned money from its members without giving them or their families' quality health service in return. NHIF has failed to live up to expectation. Dissolve it, form something new or allow public servants to join other private health insurance agencies.”

On another point, one respondent stated that, “NHIF is good, but sometimes the scheme is not well-regarded by providers so the queue may be long or some drugs denied on excuse of unavailability.” The benefit of NHIF is that it has opened access for more people with modest incomes to get care in private facilities. For another,” NHIF has replaced the original policy of free access to all citizens; now one has to pay for insurance and still pay the usual government taxes. Those who cannot pay the insurance are left out.” Others mentioned that [university} staff should not be forced to join NHIF. As eloquently described by one respondent, “ We want the mandate to decide which health insurance is best for us on individual basis.[Rather], we have been forced to join NHIF.”

Discussion

This paper has explored the perspectives of Tanzanians (mostly academic staff and employees from two government offices) on their experiences with NHIF. On a general level, most of respondents believed that NHIF is providing a useful service in meeting the health needs of Tanzanians. Several mentioned the easy access to the better health services at a lower cost made possible by the introduction of the scheme. Some indicated that the scheme is further making it possible for greater number of Tanzanians to be able to access health care. The benefits of insurance, including fostering a “peace of mind” for users are a welcome relief from the cash and carry system in the past for some. Though several decried the poor quality of services and the rather limited options for accessing health care, most favoured that with greater attention paid to health care providers, the scheme can be effective in attracting more users to the scheme. Some felt that NHIF should use some of its profits to pay health care providers in a timely manner so that these initial barriers can be overcome. Some questioned the wisdom of prior – authorization for certain services and the degree of centralization in the prior approval process. Others raised the fundamental question of equity with the use of the green and brown cards and questioned whether there is a danger in dividing the country into two classes and thereby creating and reinforcing two tier systems of health care delivery systems in Tanzania. This is a concern that must be addressed by the NHIF administrators.

Conclusion

Relatively little research has been done to assess the usefulness of social health insurance as a source of health care financing in Africa. While health insurance has been used extensively in Western countries and it constitutes the major part of health care access, this has not been the case in Africa. For the past decade, several African countries have introduced social health insurance. While national health insurance schemes do not eliminate all the barriers to health care access, it nevertheless provides for low income countries one effective ways of insuring the population of the country through individual and government contributions. After all, given the disease burden in Africa and the limited resources of African governments, a broader vision of expanding health coverage through the private sector is long overdue.

This paper is limited by its small sample size and the lack of representation from other districts in Tanzania. By focusing solely on respondents from Dar es Salaam and most exclusively from an academic institution, our sample cannot be said to be representative of Tanzanian society. A

wider sample representative of Tanzanian society would yield valuable information for assessing the effectiveness of this scheme. Nevertheless, this is part of a broader study that is currently being undertaken by the author. As we better understand the role of social health insurance in Africa, the Tanzanian experience offers a window on how to expand health coverage to millions of Tanzanians.

References

- Criel, B. (1999) District Based Health Insurance in Sub-Saharan Africa. Belgium: Studies in Health Services Organization and Policy, No. 9:33-130
- Gilson, L. (1997) The Lessons of User Fees Experience in Africa. *Health Policy and Planning* 12:273-285.
- Mwabu, G, Mwanzia, J. & Liambila, W. (1995) User charges in government health facilities in Kenya: Effect on attendance and revenue. *Health Policy and Planning* 10:164-170
- Msambicchaka, L.& Humba, E. A. (2011) Historical Development of the National Health Insurance Fund of Tanzania: From Resistance to Radiance Dar Es Salaam, Semuka International Ltd. National Health Insurance Fund. NHIF Actuarial and Statistical Bulletin June 2009
- Quaye, R. (2004) Paying for Health Services in East Africa: A Research Note. *Social Theory and Health* 2:94-105.
- Quaye, R. Balancing Public and Private Health Care Systems. New York: University Press of America, 2010

Expanding access to HIV diagnostics: costing of point-of-care CD4 testing using Alere PIMA technology in primary health care facilities in Tanzania: Case studies in Iringa and Njombe regions

HILTRUDA C. TEMBA

Ministry of Health and Social Welfare, Dar es Salaam, Tanzania

Abstract: Fifty percent of individuals diagnosed to be HIV positive are lost from care before completing Antiretroviral medicines eligibility assessment in Sub-Saharan Africa. Early initiation on Antiretroviral Therapy (ART) is cost effective but the majority of HIV-positive individuals present late to health facilities. Introduction of Point-Of-Care CD4 testing to primary health care facilities is possible and may lead to CD4 testing and receiving results on the same day, hence timely initiation of ART. The aim of the study was to explore cost implication in decentralizing Point-Of-Care Alere PIMA CD4 Testing in Primary Health Care facilities in Tanzania. The study relied on secondary data by reviewing both the grey and peer reviewed literature. Micro-costing approach to costing was used to establish unit cost per Point-Of-Care CD4 test at primary health care facility in Iringa and Njombe regions in Tanzania. All prices were converted into 2012 prices. Average unit cost per CD4 test using Alere PIMA POC technology is US\$ 11.60 and US\$ 15.26 at health center and dispensary level respectively; ranging from US\$ 11.02 for health centre in Njombe, US\$ 12.19 for health centre in Iringa, US\$ 14.78 for dispensary in Njombe to US\$ 15.75 for dispensary in Iringa. PIMA reagents and quality assurance constituted 53% and 30% of the total unit cost per CD4 test. Decentralization of POC CD4 testing to primary health care facilities is feasible and can be expected to contribute to early initiation of ART for improved health outcomes.

Introduction

Reported in 2012, there is an average of 1.2 million people living with HIV/AIDS in Tanzania of which 27% of adults and 35% of children in need of ART are receiving them (National AIDS Control Programme 2013a). Eugene (2010) concluded that, it is cost-effective to use CD4 testing in initiation of ART compared to clinical staging because of its capacity to identify CD4 count below 350 cells/mm³ and hence enable early initiation into ART which is associated with improved outcome in the quality of life of PLHIV (Athanasopoulos et al., 2010; Jani et al., 2011; Eaton et al., 2014).

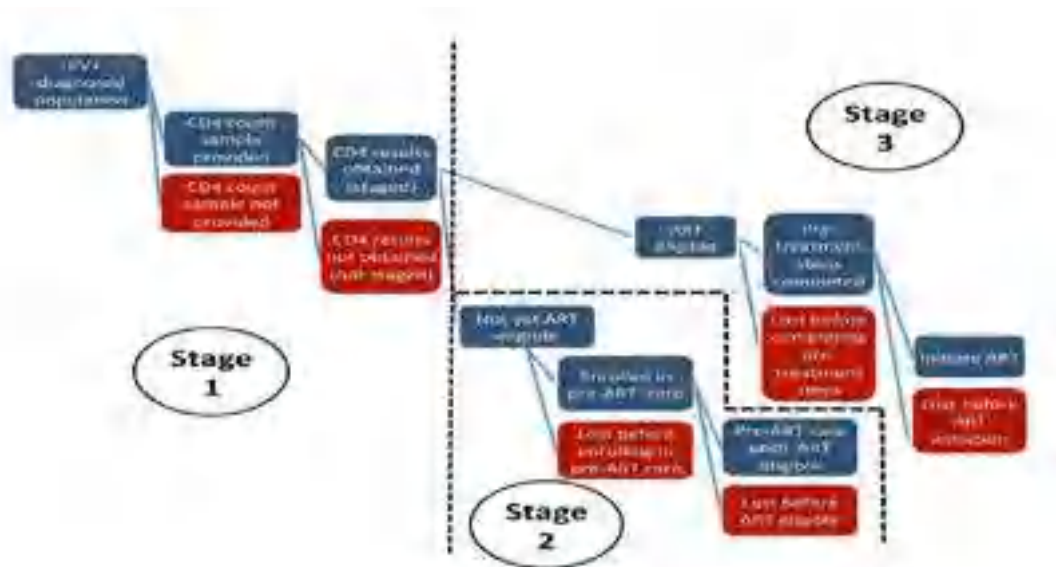
In order to achieve the universal treatment coverage, Tanzania has set a target of having 95% of ART eligible adults (15+) receiving ART by 2017 (Tanzania Commission for AIDS 2013). Introduction of Alere PIMA POC CD4 testing services at the primary health facilities, to supplement the existing conventional laboratory CD4 testing methods, may contribute in the achievement of this target as most of the PLHIV will receive their CD4 test results on the same day (National AIDS Control Programme 2014b).

Information on costing health care intervention is important not only in evaluating efficiency of a programme but also in estimation budget and resources requirements for implementing and sustaining any newly introduced strategy (Galarraga et al. 2011). However, costing information is limited in resource limited settings (Beck et al. 2008). This analysis is therefore proposed to contribute in the establishment of cost per CD4 test using Alere PIMA POC technology in order to inform policy makers.

In order to improve the HIV programmes in general, especially in resource-limited settings, efforts should be made to ensure that all individuals testing positive for HIV receive continuous pre-Antiretroviral Therapy (pre-ART) care and initiated on Antiretroviral Therapy (ART) as soon as

they become eligible and before they develop AIDS (Fox & Rosen 2010; World Health Organization 2010). Improved availability and accessibility of ART has reduced new HIV infections and improved life expectancy worldwide (World Health Organization 2013). Figure 1 shows the stages of pre-ART care where loss to follow-up has been observed to occur. For example, of individuals tested positive for HIV in SSA, only 51% to 59% completed ART eligibility assessment (Rosen & Fox 2011; Kranzer et al. 2012).

Figure 1: Stages of pre-ART care



Source: (Rosen & Fox 2011)

The CD4 level is one of the assessment criteria used when assessing individuals eligibility for ART, and the current policy is initiation of ART to those with CD4 count ≤ 350 cells/mm³ (Ministry of Health and Social Welfare 2012). In Tanzania on the other hand, CD4 testing services are available in fewer health care facilities mainly at district, regional and consultant hospitals for public sector and private hospitals where they are using conventional laboratory CD4 estimation technology which is associated with massive time lag as the next stage in cascade of HIV care. Therefore, Point-Of-Care (POC) diagnostics are being promoted in settings where laboratory services are limited as an alternative to improve the quality of HIV treatment services (UNAIDS 2013). The Alere PIMA technology for estimating CD4 level among PLWHIV is one of such POC diagnostics services that have been introduced in the country. The aim is to place them in Primary Health Care (PHC) facilities (health centres and dispensaries). This analysis contributes to the establishment of cost per CD4 test using Alere PIMA POC technology in order to inform policy and it intends to explore cost implication in decentralizing Point-Of-Care Alere PIMA CD4 Testing in PHC facilities in Tanzania. The broad objective was to build a model to inform decision making on optimal level of introduction of new POC CD4 testing HIV/AIDS technologies for initiation of ARVs in Iringa and Njombe regions in Tanzania. Specifically, the study aimed to (i) map generic laboratory infrastructure in Iringa and Njombe regions health systems; and (iii) model resource use implications of introduction of Point-of-Care CD4 testing at different PHC levels.

Materials and Methods

A theoretical costing model was developed based on peer-reviewed and grey literature. Ethical clearance was applied and granted by the London School of Hygiene and Tropical Medicine

(LSHTM) ethical committee in fulfilment of MSc in Health Policy, Planning and Financing (HPPF) regulations.

Costing Method

Iringa has a total of 7 hospitals, 25 health centres and 207 dispensaries; whereas Njombe region has a total of 11 hospitals, 22 health centres and 201 dispensaries (Ministry of Health and Social Welfare 2014b). This forms the basis for this costing analysis.

Estimation of the unit costs was done from a provider's perspective, using micro-costing approach which is recommended bottom-up method for evaluating new technology as it identifies and values typical resource use pattern at patient level (Frick 2009).

Cost valuation

Each input required for a CD4 estimation using Alere PIMA technology was identified, quantified and multiplied by respective unit prices. All costs are in 2012 prices. Inflation was adjusted using the GDP deflator obtained from the World Bank web page (World Bank n.d.). Capital costs were annualized using a discount rate of 3% (Vale 1996) with an assumption that, the expected useful life for the PIMA machine was 5 years (B. Larson et al. 2012) and training of the personnel on use of the PIMA technology was estimated to have duration of effect of three years (Fern Terris-Prestholt et al. 2011). Both financial and economic costs were estimated (Menzies et al. 2011) and presented in this analysis.

Collection of Costing Information

The cost information used was from different levels of service sites including health facilities (dispensary and health centre); regional laboratory and the Ministry of Health and Social Welfare (MOHSW); and the National and Training Laboratory. Inputs costed at dispensary and health centre included: personnel – nurse/clinician (at dispensary level) and nurse/clinician and laboratory technician (at health centre level); general laboratory supplies (needles and syringes, sterile gloves, cotton wool, ethanol/methanol and tourniquet) and quality control (PIMA Bead Standard and personnel costs). Building costs and cost incurred by patient are excluded in this analysis. Inputs costed at Regional laboratory service site included personnel, transport costs and external quality assurance testing panels. Inputs costed at Ministry of Health and Social Welfare (MOHSW) service site included: personnel (trainers and trainees), costs for hiring training venue and training facilities (computers, printer and projector); economic costs for PIMA machine that will be used for training; PIMA cartridge, PIMA Bead Standard and other laboratory supplies.

Allocation

Costs for the personnel were allocated based on their monthly gross salary and benefit allowances. Laboratory supplies were allocated on the basis of quantity required per test, whereas PIMA equipment and training costs were allocated based on the average number of CD4 tests expected to be done in a month at dispensary and health centre levels.

Results

Service Statistics

In Iringa and Njombe regions, which are the focus for this analysis, there is a total of 473 health facilities of which 83 (18%) have CTCs (Ministry of Health and Social Welfare 2014b). Of the 83 CTCs, 16 (19%) are in hospitals and 67 (81%) are in primary health care facilities.

Availability of CD4 testing services in Iringa and Njombe regions

Currently, there are a total of 18 conventional laboratory CD4 testing equipment (17 FACSCount and one FACSCalibur) and 18 Point-Of-Care CD4 analysers in both regions mainly placed in the regional and district hospitals (Ministry of Health and Social Welfare 2012). The CTCs with no CD4 testing capability are referring samples to their respective district hospital. In this referral system, the average turnaround time for a CD4 test result to reach CTC is 3.5 months (National AIDS Control Programme 2014b). On the other hand, in CTCs with POC CD4 testing services, the majority (98%) of clients are receiving their CD4 test results on the same day (National AIDS Control Programme 2014b).

Different inputs for the total cost per CD4 test

The cost inputs were categorized into fixed and variable and both financial and economic costs were established per CD4 test at health centre and dispensary level. The average cost per CD4 test using Alere PIMA POC technology at health centre and dispensary level is US\$ 11.60 and US\$ 15.26 respectively, ranging from US\$ 11.02 at health centre in Njombe region; US\$ 12.19 at health centre in Iringa region; US\$ 14.78 at dispensary in Njombe region to US\$ 15.75 at dispensary in Iringa region.

Cost structure

Cost structure for CD4 test using Point-Of-Care Alere PIMA technology included: quality assurance, PIMA equipment and supplies specific for PIMA technology, training, and other general supplies. Figure 5 shows the proportion constituted by each cost input category in the total cost per CD4 test.



Figure 2: Distribution of cost structure per POC CD4 test in Iringa and Njombe regions at both health centre and dispensary levels

Sensitivity Analysis

The following variable were subject to the univariate sensitivity analysis; discount rate, prices for supplies specific for PIMA, proportion of PLHIV not in care expected to be tested using PIMA

technology, and frequency of external quality assurance. Varying of all expect discount rate lead to significant change in total cost per CD4 test.

Discussion

The average estimate of facilities per 1000 PLHV is 0.33 in Iringa and Njombe regions compared to national estimate of 0.53 (National AIDS Control Programme 2013a). There are 64,239 and 77,933 PLHIV in Iringa and Njombe respectively (National Bureau of Statistics 2012). It is reported that, only 41% of PLHIV in need of ART in Iringa and Njombe regions are on treatment (National AIDS Control Programme 2013a). Timely initiation of ART to those eligible has been emphasized as it is associated with better health outcome and fewer complications (World Health Organization 2013; Eaton et al. 2014).

Out of the total 83 CTCs in Iringa and Njombe only 36 (43.4%) have CD4 testing services. In order to increase proportion of eligible PLHIV initiated into ART in the country, CD4 testing service capacities need to be expanded to match the unmet need. However, scaling-up the conventional CD4 testing method is very costly because of initial investment on equipment, structural capacity in existing health facilities and highly trained laboratory personnel (Medina Lara et al. 2012). It has been envisaged that POC tests would bring about a possibility of scaling up CD4 testing at affordable cost (Medina Lara et al. 2012). The POC PIMA CD4 testing is also expected to reduce the turnaround time for CD4 testing. The new POC CD4 testing technologies will therefore complement the existing conventional laboratory CD4 testing methods to reach more PLHIV and in-turn contribute in the national targets of early initiation of ARTs to as many PLHIV as possible.

In this analysis, costs for materials (supplies specific to PIMA machine and external quality assurance panels) and personnel are the main costs drives of the total cost per CD4 test. Further, unless costs for test panels are brought down, costs for the quality assurance which constitutes 30% of the total cost per CD4 test will persistently remain high.

In this costing analysis, the cost per CD4 test at dispensary level is higher compared to the cost at health centre level in both regions. It might be because of economies of scale since estimated numbers of Out Patient Department attendees at different health care levels were used to estimate PLHIV receiving care and treatment services at these two different levels of primary health care facilities. Findings shows that, more PLHIV are receiving services in health centres compared to dispensaries.

In the univariate sensitivity analyses, discount rate had no impact on the costs of CD4 test. On the other hand, increase of proportion of PLHIV tested for CD4 by 30% lead to a decrease in total cost per CD4 test by 13% and 10% at dispensary and health centre respectively in Iringa region and 11% and 9% at dispensary and health centre respectively in Njombe region. Further, 25% decrease in price of the supplies specific for PIMA led to a decrease of the total cost per CD4 test by 13% and 17% at the dispensary and health centre respectively in Iringa and 14% and 19% at dispensary and health centre in respectively Njombe. Halving the frequency of quality assurance led to a reduction of the total cost per CD4 test by 15% and 7% at dispensary and health centre respectively in Iringa and 13% and 6% at dispensary and health centre respectively in Njombe. However, reduction of frequency of quality assurance is not advisable especially soon after introduction of the new POC CD4 testing technology.

The study has a number of limitations including, the costing in this study relies on information from literature.

Conclusion

Decentralization of POC CD4 testing technologies in the Tanzania health care system is needed in order to achieve early initiation to ARVs. In prioritizing Iringa and Njombe regions as highest burdened regions, the decentralization should be done in all CTCs as the CTCs are currently available in all various levels of health care facilities. Compared to other studies, this cost analysis also provides evidence that cost of POC CD4 testing varies in different setting.

References

- Bank of Tanzania, 2012. *Bank Of Tanzania Economic Bulletin For The Quarter Ending December 2012*,
- Beck, E.J., Santas, X.M. & Delay, P.R., 2008. Why and how to monitor the cost and evaluate the cost-effectiveness of HIV services in countries. *AIDS (London, England)*, 22 Suppl 1, pp.S75–85. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/18664958>.
- Eaton, J.W. et al., 2014. Health benefits, costs, and cost-effectiveness of earlier eligibility for adult antiretroviral therapy and expanded treatment coverage: a combined analysis of 12 mathematical models. *The Lancet Global Health*, 2(1), pp.e23–e34. Available at: <http://linkinghub.elsevier.com/retrieve/pii/S2214109X13701724> [Accessed July 15, 2014].
- Fern Terris-Prestholt, A., Santos, Sedona Sweeney, L. & Kumaranayake, 2011. *Guidelines for Cost Effectiveness Analysis of Syphilis Screening Strategies*,
- Frick, K.D., 2009. Microcosting quantity data collection methods. *Medical care*, 47(7 Suppl 1), pp.S76–81. Available at: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2714580&tool=pmcentrez&rendertype=abstract>.
- Galárraga, O. et al., 2011. Unit costs for delivery of antiretroviral treatment and prevention of mother-to-child transmission of HIV: a systematic review for low- and middle-income countries. *PharmacoEconomics*, 29(7), pp.579–99. Available at: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3833352&tool=pmcentrez&rendertype=abstract>.
- Jani, I. V, Siteo, N.E., Chongo, P.L., et al., 2011. Accurate CD4 T-cell enumeration and antiretroviral drug toxicity monitoring in primary healthcare clinics using point-of-care testing. *AIDS (London, England)*, 25(6), pp.807–12. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/21378535> [Accessed July 15, 2014].
- Jani, I. V, Siteo, N.E., Alfai, E.R., et al., 2011. Effect of point-of-care CD4 cell count tests on retention of patients and rates of antiretroviral therapy initiation in primary health clinics: an observational cohort study. *Lancet*, 378(9802), pp.1572–9. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/21951656> [Accessed July 15, 2014].
- Kranzer, K. et al., 2012. Quantifying and addressing losses along the continuum of care for people living with HIV infection in sub-Saharan Africa: a systematic review. *Journal of the International AIDS Society*, 15(2), p.17383. Available at: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3503237&tool=pmcentrez&rendertype=abstract>.
- Larson, B. et al., 2012. How to estimate the cost of point-of-care CD4 testing in program settings: an example using the Alere Pima Analyzer in South Africa. *PloS one*, 7(4), p.e35444. Available at: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3331987&tool=pmcentrez&rendertype=abstract> [Accessed July 15, 2014].
- Larson, B. a et al., 2012. Rapid point-of-care CD4 testing at mobile HIV testing sites to increase linkage to care: an evaluation of a pilot program in South Africa. *Journal of acquired immune deficiency syndromes (1999)*, 61(2), pp.e13–7. Available at: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3458178&tool=pmcentrez&rendertype=abstract>.

- Medina Lara, A. et al., 2012. Cost effectiveness analysis of clinically driven versus routine laboratory monitoring of antiretroviral therapy in Uganda and Zimbabwe. *PloS one*, 7(4), p.e33672. Available at: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3335836&tool=pmcentrez&rendertype=abstract> [Accessed August 3, 2014].
- Menzies, N. a et al., 2011. The cost of providing comprehensive HIV treatment in PEPFAR-supported programs. *AIDS (London, England)*, 25(14), pp.1753–60. Available at: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3225224&tool=pmcentrez&rendertype=abstract> [Accessed July 14, 2014].
- Menzies, N. a, Berruti, A. a & Blandford, J.M., 2012. The determinants of HIV treatment costs in resource limited settings. *PloS one*, 7(11), p.e48726. Available at: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3492412&tool=pmcentrez&rendertype=abstract> [Accessed August 7, 2014].
- Ministry of Health and Social Welfare, 2014b. *List of Facilities From DHIS2*, Dar es Salaam.
- Ministry of Health and Social Welfare, 2012. *United Republic of Tanzania National Guidelines.4thEdition*, National AIDS Control Programme, Dar es Salaam: Ministry of Health and Social Welfare.
- National AIDS Control Programme, 2013a. *Care and Treatment Report Number 3-Final Draft*, Dar es Salaam.
- National AIDS Control Programme, 2014b. *POC Impact assessment report 2014-doc*,
- National Bureau of Statistics, 2012. *Tanzania HIV and Malaria Indicator Survey THMIS 2011-12 Report*, Dar es Salaam.
- Rosen, S. & Fox, M.P., 2011. Retention in HIV Care between Testing and Treatment in Sub-Saharan Africa : A Systematic Review. , 8(7).
- Vale, A., 1996. Guidelines for authors and peer reviewers of economic. , (August), pp.275–283.
- World Health Organization, 2013. *Global update on hiv treatment 2013*;

Enhancing public health advocacy: proposing social media strategy for the Tanzania Public Health Association

PHILBERT NYINONDI

Sokoine University of Agriculture P. O. Box 3022 Morogoro, Tanzania and Tanzania Commission for Science and Technology P. O. Box 4302 Dar es Salaam, Tanzania.

Email: pnynondi@yahoo.com

Abstract

Social media is changing the way people and organizations communicate in the private, public and third sectors, and in everyday life. It provides an opportunity to listen and engage with huge numbers of people on a level, at a speed and in ways that have not previously been possible. Tanzania Public Health Association (TPHA) cannot afford to take a “wait-and-see” approach. At minimum, TPHA need a social media strategy to guide outreach program, to educate its members and the public about appropriate social media use. More broadly, organizations should develop an overarching strategy that leverages social media to help influence people and accomplish strategic healthcare goals. This paper describes the approach that can be used by TPHA to take advantages of the social media to enhancing public health promotion. It identifies and addresses the many issues raised by social media. It then sets out a vision for the use of social media by TPHA and describes implementations plans to achieve that vision.

Introduction

The communications landscape is constantly changing with technological development, it is changing and information has become more accessible. Social media is the latest in a line of changes with the ability to interact and interconnect with all of the previous means of communication and interconnectivity. For example, communicating in person, face to face has now been enabled across thousands of miles via smart phones, tablets and computers enabled with applications like Skype; printed papers are unnecessary, as the content can be posted on web.

Social media as a new communication technology include Short Messaging Services (SMS), social-networking sites, and blogs being important new resources for the successful mobilizing and organizing social movements. Social media have been successfully applied in organizing and implementing collective activities and promoting a sense of community and collective identity among marginalized group members. It creates less-confining political spaces, enabling mobilization of social movements, and publicizing causes to gain support from the global community.

Within the wider field of communication, the media landscape is also changing. Newspaper circulation is under pressure. Rolling news channels are competing to fill 24 hours worth of news. Community media are expanding. Web media are blurring the distinctions between newspapers, magazines and broadcasters. In this context social media continues to grow and is changing the way people and organisations communicate in the private, public and third sectors, and in everyday life. It provides an opportunity to listen and engage with huge numbers of people on a level, at a speed and in ways that have not previously been possible.

The usage of social media

There has been an increasing use of social media by non-governmental organisations and government agencies in their developmental programs and projects across the globe. During the

Arab spring, social media were used to the extent that anti-government movements, the one against the former president Hosni Mubarak in Egypt and the other against former President, Ben Ali in Tunisia were named Twitter and Facebook revolutions. In connection to this, many organisations are discovering the power of social media in influencing change by forming networks among organizations with common objectives and interests and lobbying for support from their stakeholders (Eltantawy and Wiest, 2011). Burford (2011) in a study titled the use of Social Media in the Work Practices of Information Professional considers social media as blogs which target a specific social group sharing same interests. The study reports that there has been an increasing usage of social media within organizations in fulfilling their information and communication goals. For instance, many corporate companies use Facebook and Twitter accounts to market their products to their customers whereas non-profit organizations use social media to share information to their stakeholders.

Tanzania is not exceptional in the phenomenon of social media. A study by O'Rourke (2010) revealed that organisations had been using social media to promote dialogue and meaningful interaction between organizations and their stakeholders. The use of social media has become a priority area for organization information sharing because it is possible to influence social change particularly but not limited to issues that target young people.

A detailed study to assess the role of social media in organizational performance in Tanzania was done by Constantine (2013). The study results revealed that Civil Society Organizations in Tanzania used social media to a large extent and had policies on social media, the use of social media significantly contributed to organizational efficiency; it contributed to organizational effectiveness for organizations which used social media together with mass media (Radio and TV).

Studies on the public usage of social media show that individual participation is also high. The study by Mangi (2012) on the social media use patterns among Sokoine University Students revealed that 79.5% of the students are connected in at least one of social network sites. The study further showed that women make more use of social network sites than men do, while the usage decreases with age and access mobile phone with internet connectivity capacities influence the level of interest and engagement. Further, crosscutting survey published by Jagero and Muriithi (2013) about extent of social media usage in private universities located in Dar es Salaam, confirmed that almost all students are in connect in one of social media sites, and majority spends 30 minutes to 1hour in a day on social media per day. The prime time for accessing social media is from 17-21hrs and after 21 hrs.

Earlier study on the use of social media among individuals in Tanzania, reported that up to the end of the year 2011, there were about 426, 360 Facebook subscribers in Tanzania where 72% of them aged between 18- 34. In the same study Novelli (2012) found out that 70% of Facebook users were male and the remaining 30% females. The study asserts that male young people are more educated and have high access to technological devices in Tanzania as compared to other social groups; hence making a high percentage of social media users (Novelli, 2012). In 2014, Facebook users were estimated to be over 1 million.

It is important to note that the primary reason most people use social media is not for seeking information. Creativity is therefore required if social media tools are to be used to raise awareness or give information to the public. The public do use social media to express opinions. So it has potential for public engagement. Furthermore, the extensive use of social media by journalists, the mainstream media and by organisations in the public, private and third sectors means that it is an important and effective channel for communicating with them.

Table 1: Tanzanians organisations/companies on Facebook Vs. Followers

Name	Fans	Sector
Tigo Tanzania	575,922	Telecommunication
Vodacom Tanzania	511,683	Telecommunication
Airtel Tanzania	457,433	Telecommunication
ITV Tanzania	369,913	TV Channel
Habari Star TV	177,420	TV Channel
Travelstart Tanzania	120,225	Travel/Leisure
BlogSy Tanzania	118,736	Website
Zantel Tanzania	84,892	Telecommunication
Castle Lite Tanzania	78,899	Food/Beverages
Castle Lager Tanzania	74,954	Food/Beverages
Precision Air Tanzania	65,292	Transport/Freight
DStv	30,288	Product/Service
Sony Mobile TZ	20,007	Local Business
Worldlink Travel Tanzania	18,145	Local Business
Arise Beauty Tanzania	15,474	Local Business
Save Orphans	9,297	Non-Profit Organization
UNICEF Tanzania	7,422	Non-Profit Organization
Twaweza Tanzania	6,494	Non-Profit Organization

Organisations concerns on the use of social media

A number of organisations like TPHA are concerned with the usage of social media because of perceived and existing risks. Some of the issues of concern are identified and addresses include:

Expectation: The popularity of social media is a fact. Conversations about TPHA and public health issues are happening now. Many members are already involved in these conversations in a personal capacity. Today's digital audience expects the organisation's involvement and the only way to influence – positively or negatively, the outcome of those conversations is to be involved.

Control: The vast access to, and use of, social media channels mean that nearly everyone has the ability to have their say about whatever they are interested in whatever words they choose. It is therefore not possible to control messaging. Even if TPHA wanted to control messaging, it is just not possible. What is therefore more important is to generate trust in the TPHA brand and to support member and others to understand its ambition, purpose and values. A workforce that is genuinely and intuitively supportive of the organisation will speak as one.

Timeliness: One of the reasons for the success of social media is its immediacy. Like 'real' conversations, social media conversations are fast paced and two-way. However, this presents a challenge to ensuring accuracy and an understanding of context. The immediacy of some social media tools such as Twitter means it should be a useful tool to communicate vital advice and information during outbreaks and incidents. TPHA seeks to be a responsive organisation. Social media provides a platform to be responsive. The speed with which social media can communicate information and opinions means that brands can be damaged within hours. Issues can blow up and change public opinion in the same timeframe. TPHA needs the capacity and capability to respond and engage in the same timeframe if it is to ensure that good public health advice is not undermined and that its reputation is not damaged unfairly.

Transparency: TPHA is committed to being an open organisation. It is a fundamental corporate value. The public sector is expected to be more transparent, accountable and engaging than ever before. TPHA is a trusted authority on public health issues. A social media presence will help the organisation to develop a more transparent approach to its work. This in turn will improve relationships with stakeholders and help them to understand the scope of public health. However, an active social media presence will increase the likelihood of closer public scrutiny and the possibility of negative (and positive) comments made about the organisation. It therefore needs monitoring.

Engagement: Social media gives people a far greater role in not only reading and disseminating information, but also in sharing and creating content for others to engage in social media engagement provides a means for the organisation to listen to what stakeholders and the public are saying about its services and public health issues. It provides a unique opportunity to follow others and engage with them directly. This dialogue can improve the ongoing development of its services. It is in tune with the organisational commitment to be professional, persuasive, responsive and reflective. However, conversations may also take place which were not anticipated or do not fit in with the organisation's agenda. For example, if using social media during an outbreak of measles, it is possible that posts alleging links to autism could occur. During outbreaks, rumours and misinformation can spread quickly. Social media tools should therefore also be used to correct any inaccuracies and reinforce public health advice, while maintaining a dialogue with followers/friends/fans.

Personal: Social media was developed to be social. It is therefore more effective if personal. A personal interaction is more likely to be engaging than a corporate one. Organisations communicate best through their member and the same applies with the use of social media. However, even if communicating corporately, the tone of voice and personal style are important considerations.

Continuous: TPHA has had some ad hoc social media presence. In a number of these cases it has not been used continuously. If not used on an ongoing basis, there is a risk of damage to the reputation of the organisation/division/programme. It could give the impression that work is not being progressed or that TPHA is not truly engaging.

Bilingual: TPHA is committed to communicating with the public in English and Kiswahili equally. Conversations should be allowed to develop in the friend/follower's language of choice. However, if a conversation is developing in more depth or more quickly in one language, the other language account should signpost to that conversation.

Geography: The ability of social media to identify people geographically means that networks based on geographical location can be developed through social media sites. This provides potential for community development and community health improvement initiatives. Such networks require local skills and are less likely to benefit from the creation of corporate social media accounts.

Productivity: Arguments against employees using social media tend to focus on the potential impact on productivity. However, an organization which values and trusts its staff focuses on their responsibilities, the achievement of their objectives and delivery of agreed work plans.

New technology challenges: For the many members who already use social media in their personal lives, it is an easy and intuitive means of communication. Such member would need little training in how to use the media. For a significant number of members, social media is an alien and

untried technology. Some are fearful of it. Others are uncomfortable with it. Some are sceptical of its value. For these members, learning and training is important.

Information Technology access and security: The value of smart phones in accessing the internet and in using social media will also present opportunity for TPHA to encourage more member's acquire theme and engage on social media. Like any other internet-based service, all social media accounts are subject to hacking. Precaution measures need to be taken

Resource: Consistent, responsive and authoritative engagement with social media requires time and commitment. Although much of this can be built into existing roles, the time proper engagement takes should not be underestimated. Appropriate members/ a person should be identified and trained to communicate on behalf of TPHA using social media.

Proposed Social Media Strategy for the Tanzania Public Health Association

To achieve its vision for the use of social media, there are three phases to the social media strategy for TPHA. Phases one and two will be considered as pilots. The learning from these stages will be compiled and reviewed before stage three is embarked upon.

Phase One: Corporate presence

English and Kiswahili Facebook and Twitter accounts should be established on behalf of TPHA. A LinkedIn corporate page should be created. A Wikipedia entry TPHA should also be established. A TPHA YouTube Channel should be established. This process should be led by the Publicity Secretary and should be completed by the end of March 2015. The Twitter and Facebook accounts will be used to:

- Promote TPHA work
- Promote, respond to or correct public health stories in the media
- Share advice and information during outbreaks and incidents
- Engage in a dialogue with stakeholders and the public
- Listen, monitor and evaluate stakeholders and the public's opinion of TPHA
- Link to other public health work by other organisations and individuals.

Proactive bilingual content should be prepared in advance and signed off by the appropriate public health topic lead. Reactive content can be provided by the Publicity Secretary with the support of the appropriate public health topic lead. The Publicity Secretary should also regularly review who to follow/ befriend.

A list of Kiswahili speakers who are happy to respond reactively on behalf of the organisation should be compiled for use in emergency or out of hours situations. The possibility of an out of hour's translation service should also be explored. Content for new posts on the corporate social media accounts will be sought via the TPHA Forum, intranet and staff e-Bulletin. People, groups and organisations in the following categories will be followed/befriended by the corporate social media accounts:

- Government
- Media
- National Health Insurance
- International health organisations
- Local government
- Third sector
- Academia
- Relevant individuals

Suggestions for followers/friends can be submitted to the Communications Team.

The TPHA corporate social media accounts should be promoted through the website, TPHA News, other newsletters and staff and members email signatures. Links should be made from relevant web pages on the internet and intranet. The TPHA email signature guidance should be amended accordingly. An internal social networking service is being established by the Informatics Team with input from the Publicity Secretary and Professional and Organisational Development Team, specifically for TPHA staff. This Enterprise Network is to be used by staff as a means of internal social networking. Staff will be responsible for creating and maintaining their own profiles. Profiles can include areas of expertise, previous work and current priorities.

Phase Two: Service/Team/staff presence

After establishing a corporate social media presence, the second phase is to develop a network of public health services, teams and individuals using social media to engage on public health issues.

TPHA will be responsible for some of this but responsibility also lies with working groups and individuals. So, for example, Alcohol control Team will lead communication on alcohol and alcoholism. Decisions on TPHA involvement should be taken as part of the development of a set of broader communications strategies developed by topic in partnership with the groups. Each topic will have its own specific audiences and social media needs. Where TPHA services, teams or projects identify the need for a social media presence, advice should be sought from the Communications Team. The Publicity Secretary will help them to consider whether a social media presence is the most effective way to reach their intended audience. It will also help ensure continuity with the aims of the team's overarching communications strategy. The possibility of using social media for specific purposes such as surveillance could also be explored. In this context, social media is just one part of a programme's/project's/team's communications strategy and not an end of or in itself. Increased digital profile via social media will signpost people to the associated web pages. If these are out of date it could create a poor impression. Therefore, the team requesting a social media presence will need to ensure that its web pages are maintained and updated.

The Publicity Secretary will also provide advice to any individual members of staff who would like a social media presence in a professional capacity. Updates on professional social media accounts should be bilingual. Team/project/staff social media accounts should be linked to the relevant web pages. In addition to links to the corporate social media accounts, staff with their own professional/team/project social media accounts should also carry a link to them in their email signatures. Full training will be available to teams and individuals on how to use social media. This second phase should start in April 2015 and will take around four months to implement.

Phase Three: Open to all

Social media use in phases one and two will be reviewed before phase three is undertaken. Depending on the outcome of this review, from August 2015, discussions should commence to explore the possibility of giving access to social media sites to all TPHA staff /members with access to a computer. It is anticipated that these discussions will take some time as they will involve negotiations over access, security and bandwidth.

Staff/Members should be free to use their personal social media profiles for public health. Keeping within the limits of their knowledge and competence, and within the boundaries of TPHA policies, will help staff to tell the story of TPHA and its work in a way which reaches their own networks.

TPHA Members using their personal social media accounts to talk about public health issues are free to conduct these conversations in their language of choice. Staff/members should be encouraged to follow/befriend TPHA corporate accounts. They may choose to share corporate content. TPHA may also choose to share staff content. The corporate Twitter and Facebook accounts should continue to be updated bilingually. One computer connected with internet and staff will be required to set up and implement this strategy.

Roles and responsibilities: Overall responsibility for social media within TPHA lies with the Publicity Secretary. The Publicity Secretary should be responsible for:

- Establishing, maintaining and monitoring the TPHA corporate social media presence (including out of hours monitoring)
- Strategic advice to teams, projects and individuals
- Training for staff and teams on the use of social media
- Approving and supervising all social media profiles created on behalf of TPHA

Individual teams/programmes/projects should lead on:

- Authorising content in their areas on corporate sites
- Developing their own social media profile
- Developing content, maintaining their profile and responding to comments
- Translation and simultaneous bilingual posting.

Monitoring: During the first phase of implementation, the Publicity Secretary should monitor the TPHA social media profiles. Once a social media presence has been established for individual teams/projects, it is their responsibility to monitor their profiles and respond to any comments posted.

Out of hours monitoring: Social media conversations are fast paced, responsive and immediate. Because of this, monitoring must be undertaken during and out of normal office hours.

The Publicity Secretary provides communications support out of hours through an on-call system. It is proposed that the Social Media Officer on call would monitor the TPHA corporate social media presence and respond to any social media conversations involving TPHA as appropriate. If specific topics are trending or discussed via the corporate social media presence, then the Social Media Officer on call could need support from TPHA members. Once a social media presence has been established for individual teams/projects, it is their responsibility to develop a system for monitoring their social media presence out of hours. This system must be agreed as part of the communications strategy and plan before the social media presence is established.

Evaluation: Evaluation is important to using social media. It represents a serious challenge in being able to analyse and track posts, comments, tweets and other content that may impact the organisation. Evaluation principles that apply to social media are the same as those for traditional communication channels. Therefore, the use of social media should be evaluated against the objectives set in the relevant communications strategy.

Quantitative evaluation: A quantitative approach should be adopted which looks at the number of followers each social media presence has. This will allow TPHA to see whether the number of followers/friends/fans is increasing. A monthly monitoring scheme for the TPHA open blog as well as the TPHA websites should be included on monitoring roster. Figures should also be monitored regarding the number of posts (tweets, re-tweets, comments, blog entries etc). These figures are useful to help the user evaluate if the message has been far reaching.

Conclusion

The Tanzania public health association need a social media strategy to guide its outreach program. This propose the the approach that could be adopted. The approach sets out a vision for the use of social media by health promoting organization and a simplified plan to achieve it.

References

- Burford, S. (2011). The Use of Social Media in the Work Practices of Information Professionals, University of Canberra, Australia, University of Canberra
- Costantine, D. (2013). The social media and organizational performance among civil society organizations in Tanzania: The case of policy forum and selected member organizations. A Dissertation Submitted in Partial Fulfillment of the Requirements for Degree of Master of Development Management of the University of Dar es Salaam.
- Eltantawy, N. and Wiest, J. B. (2011). Social Media in the Egyptian Revolution: Reconsidering Resource Mobilization Theory, International Journal of Communication, High Point University.
- Mangi, F. (2012). The social media use patterns among Sokoine University Students. A special project report submitted for the partial fulfillment of the requirement for the diploma in information and library science at Sokoine University of Agriculture.
- Muriithi, M. K., and Muriithi, I. W. (2013) Student's Motives for Utilizing Social Networking Sites in Private Universities in Dar Es Salaam, Tanzania. Academic Research International. Vol. 4 No. 4. ISSN-L: 2223-9553, ISSN: 2223-9944.
- Novelli, P. (2012). The Use of Social Media in Business, the Case of Tanzania, Available at, <http://atfrontline.blogspot.com>.
- O'Rourke, L. (2010). Tanzanian Youth Use of Online ICTs and Famine HIP, Malmo, Sweden, the University of Malmo.

Annex 1: Timeframe for the implementation of the strategy

Action	Lead	Date due
Establish corporate Twitter account	Communications Team	By 30 March 2015
Establish corporate Facebook account	Communications Team	By 30 March 2015
Establish LinkedIn presence	Communications Team	By 30 March 2015
Establish corporate YouTube channel	Communications Team	By 30 March 2015
Write corporate Wikipedia entry	Communications Team	By 30 March 2015
Develop process for developing, signing off and monitoring corporate social media content	Communications Team	By 30 March 2015
Develop process for seeking social media content	Communications Team	By 30 March 2015
Develop training package on using social media	Communications Team	By 30 March 2015
Develop out of hours translation protocol for social media updates	Communications Team	By 30 March 2015
Revise email signature guidance to incorporate links to corporate social media accounts	Communications Team	By 30 March 2015
Review appropriate TPHA policies to ensure they cover social media use in their scope	Executive Committee	By 30 June 2015
Review phases one and two	Communications Team	By 30 March 2015
Begin discussions with the TPHA members and Teams for phase three	Communication Team	From 1 April 2015

The use of social media commands the future of public health advocacy in Tanzania

PHILBERT NYINONDI

Sokoine University of Agriculture, P. O. Box 3022, Morogoro, Tanzania and Tanzania Commission for Science and Technology P. O. Box 4302, Dar es Salaam, Tanzania

Email: pnynondi@yahoo.com

Abstract

Social media is the process of people using online tools and platforms to share content and information through conversation and communication. It is drastically changing the way of communication and paving the new era of promoting public health. Globally, healthcare organizations are already using social media as an important tool to connect public health Practitioners and the public as well as to update on emerging health issues. The experience shows that social media can be used to accomplish healthcare goals in four broad areas: i) communications, ii) information sharing, iii) clinical outcomes, iv) speed innovation. Reviewing the global trends, social media has changed the potential value for health care organizations because extent of use to reach out stakeholders, aggregate information and leverage collaboration. This paper presents an overview of social media, highlighting the social media initiatives in healthcare and discusses how the social media will revolutionized the patterns of public health advocacy in Tanzania.

Introduction

Social media is the social interaction among people in which they create, share or exchange information, ideas, and pictures/videos in virtual communities and networks (Ahlqvist *et al*, 2008). Social-media technologies take on many different forms including magazines, Internet forums, weblogs, social blogs, microblogging, wikis, social networks, podcasts, photographs or pictures, video, rating and social bookmarking. Technologies include blogging, picture-sharing, vlogs, wall-posting, music-sharing, crowd-sourcing and voice over IP, to name a few. The integration of different forms of technologies/ platforms is usually what makes social media friendlier and user centred (Wikipedia, 2014).

In a decade, hundreds of millions of people globally have become active users of social media sites, the most popular of all Internet destinations. Social media is a radically different way to communicate because it breaks through three barriers that previously were major limiting factors: geography, time and cost.

The world statistics on social media suggest that the number of people actively using social media each month has reached 2 billion (Wearesocial, 2014). Beyond the social media stats, more than half the planet population (i.e. 3.6 billion) owns a mobile phone. Globally active mobile subscriptions exceed 7.1 billion, suggesting that the average phone owner maintains almost 2 active subscriptions. Mobile phones have facilitated access to the internet, particularly in developing countries. Internet growth apace with globally active users estimated to be 3 billion. Mobile social media use is also on the rise, with 77% of all social networking users now accessing via mobile devices (Figure 1).

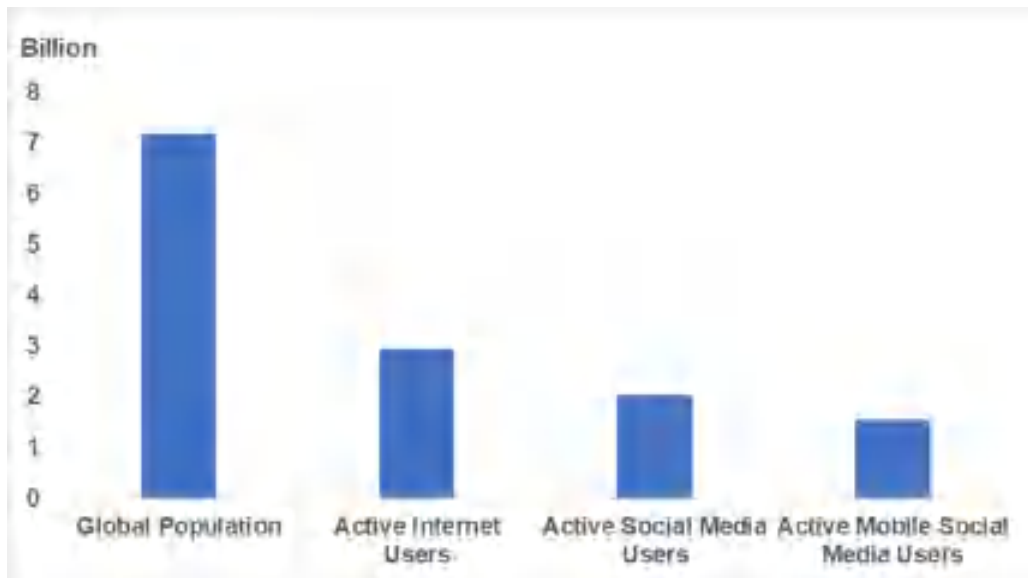


Figure 1: Global statistics on access to internet and social media use (Source: Wearesocial 2014)

The leading social media sites are usually available in multiple languages and enable users to connect with friends or people across geographical, political or economic borders. In 2012, more than 1.4 billion internet users accessed social networks and number is growing as mobile device usage and mobile social networks increasingly gain attraction (Statista, 2014).

The majority of social networks with more than 100 million users originated in the United States, but European services like VK or Chinese social networks Qzone and Renren have also garnered mainstream appeal in their areas due to local context and content. The most popular social networks usually display a high number of user accounts or strong user engagement. For example, Facebook was the first social network to surpass 1 billion monthly active users, whereas microblogging network Twitter had over 271 million monthly active accounts as of August 2014 (Figure 2).

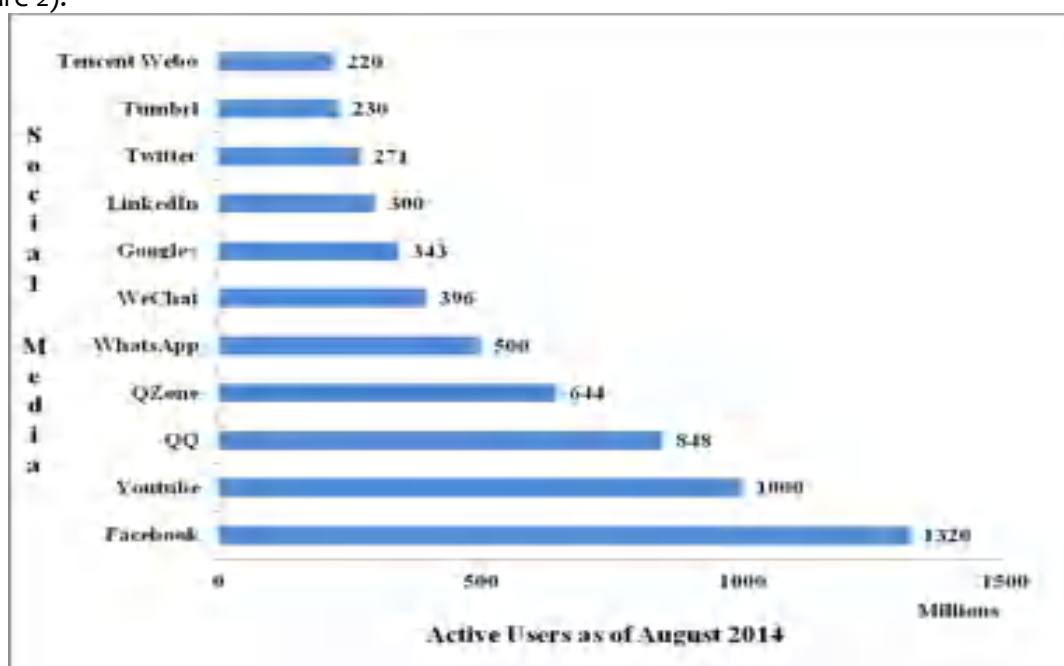


Figure 2: The most popular social media sites (networks) in August 2014 (Source: Wearesocial 2014)

Social network usage by consumers is highly diverse platforms such as Facebook or Google+ are highly focused on exchanges between friends and family and are constantly pushing interaction through features like photo or status sharing and social games. Other social networks like Tumblr or Twitter are all about rapid communication and are aptly termed microblogs. Some social networks focus on community; others highlight and display user-generated content. More recently, the Social Messenger/ ChatApps like QQ, WhatsApp and Wechat are gaining popularity and acceptability among internet users.

Due to a constant presence in the lives of their users, social networks have a decidedly strong social impact. The blurring between offline and virtual life as well as the concept of digital identity and online social interactions are some of the aspects that have emerged in recent discussions. Although social networks are considered primarily a recreational tool, they are becoming increasingly important to businesses and organizations. Table 1 provides some examples of popular social networks and potential opportunities for organizations applications.

Table 1: Social Network, Description, Usage and Applications

Network	Description	Usage	Organization Applications
Twitter	A micro-blogging site that allows users to communicate with each other and share information through short (140 characters) messages, or “tweets.”	271 million users (Wearesocial, 2014)	• Posting press release, announcements, advertised and clarification on issues of organisation concern
Facebook	A social networking website that allows users to create a personal profile, connect with others, exchange messages, and join common-interest user sites.	1,320 million users (Wearesocial, 2014)	• Building fan pages for specific topics or campaigns, products promotions and getting feedback from customers.
YouTube	A media sharing platform that allows users to view and share videos with a global audience	Over 1 billion views per day (Wearesocial, 2014)	• Posting educational videos, documentaries, demonstrations and testimonials
Weblogs/ Blogs	Tumblr, WordPress, Blogger and others allow users to generate their own content, whether it is image based, video based, or the plain old written word, which they can share with anyone they want.	Over 409 million people view more than 17.6 billion pages each month (The figure is for only Wordpress hosted blogs; Wordpress, 2014)	• Used as organisation online newspapers and active discussions on organisation events and progress.
LinkedIn	Professional peer-to-peer networking	300 million users (Wearesocial, 2014)	• Recruiting organisation members, talents and announcing staff news
Wikipedia	A free online encyclopaedia that anyone can edit. One of the most comprehensive sources of knowledge online,	Most retrieved site with search engines	Creation of organisation Public Profile, product descriptions and fact information on issues related to organisation.

but reportedly, also a frequent source of misinformation.

Forums and discussion boards	Online locations to post questions and receive community replies	Global statistics not readily available	▸ Facilitating participants' sharing of experiences and knowledge
Peer-to-peer social network	Organization's own social network, which includes profiles of its members	Global statistics not readily available	▸ Supporting members in therapeutic areas that are high-impact and high-burden

Social media initiatives in healthcare

Social media enable access to and sharing of information that is essential to the healthcare system. The public increasingly depend on these media to help them choose providers, determine a course of treatment and manage their health risks. Already, these media are enabling patients to communicate with each other to better manage their treatment and physicians to communicate with each other to better practice medicine. Although, the current uses of social media are somewhat limited, the future of health care landscape is an integral part of social media. Indeed, social media trends that could change the face of health care information sharing, providing new power for providers, patients and the public alike. Globally, healthcare organizations are already using social media as an important tool to connect consumers and providers as well as to inform product development. Some of health organisation to date are using social media to improved their publicity and engagement of their stakeholders by leveraging user feedback and interaction (Table 2).

Table 2: Impact of Social Networks on Selected Health Organizations

Organization	Social Networking Activity	Impact
Wealth Health Organisation (WHO)	Shares timely information and actively engage the followers	Share news, promote events and public awareness campaigns, and represent the company before a global audience. WHO timely reach about 2million fans and an average of 15,000 visits a day for Facebook page alone.
U.S. Food and Drug Administration (USFDA)	USFDA sharing news and events reports through social networks.	Keep the American posted with information for staying safe and healthy. Over 229, 380 get the newsfeed from USFDA Facebook page.
The American Centers for Disease Control and Prevention (CDC)	Given the mission of the CDC and its budget, the organization has been using social networks to help the public share accurate information about health.	<ul style="list-style-type: none"> ▸ During the 2009 flu season, H1N1 YouTube videos were viewed 2.6 million times, podcasts were downloaded 1.5 million times and the CDC Facebook page had over 50,000 followers.¹⁷ ▸ Social media use spikes coincided with outbreaks representing the public's use of information during the epidemic.
MD Anderson Cancer Center	To better understand its patients' experience and to improve patient care, MD Anderson has moderated social networks that include "The Cancer Survivor's Network," "Ask the Expert" and "The Anderson Network."	<ul style="list-style-type: none"> ▸ Increased understanding of patient experience helped MD Anderson prioritize their scheduling processes.¹⁸

The future of public health advocacy in Tanzania

Public health advocacy that encompasses activities that promote health and access to health care in communities and the larger public should be suited best to address challenge of patient-centred care in complex healthcare system. Advocacy strategies draw from a range of tactics. According to Gomm (2006) the advocacy involve "...creating and maintaining effective coalitions, the strategic use of news media to advance a public policy initiative and the application of information and resources to effect systemic changes that change the way people in a community live. It often involves bringing together disparate groups to work together for a common goal." Advocating for health promoting social change is an inherently political activity. Due to the potential for conflict with powerful stakeholders, and the public-sector nature of most public health practice, public health professionals attempting to advocate for health promoting social change may find this work limited by institutional restrictions and a lack of organizational support for advocacy activities.

There are two phenomena in Tanzania which makes the social media an opportunity to revolutionise public health advocacy. The first phenomenon is inbuilt in the history of social media, traced back in 1995, when the internet service was introduced in the country. In 2000, the country had only 115,000 people connected to the Internet. Since then the number has kept growing significantly reaching 9.3 million users in 2014; equivalent to 20 per cent of the 45 million people in Tanzania (TCRA, 2014). Social media is considered to be driving factor for the rapid diffusion and growth of mobile phone ownership and internet usage Tanzania. This simply imply the social media changing how Tanzanians are connected, communicating, sharing and accessing information in day to day life.

The second phenomena is the recent lessons from the so-called Arab Spring, which practically proved the power of social media in mobilizing the people around diverse themes, raising popular concerns and enforcing political change. The problems of healthcare system in Tanzania are no exceptional will in the near future be an agenda of health advocates in the social media. Similar to its effects on many public spheres, traditional public health advocacy in Tanzania was and remains limited in engaging the individuals and their respective families. The main approach of advocacy is simply unidirectional and typically employing expensive channels. Typical examples of media advocacy initiatives include: television, print media, radio advertising, direct mail initiatives and blast e-mail campaigns.

This kind of advocacy initiatives is quite labour-intensive, require the assistance of expensive marketing professionals, media professionals and have a lower return on impacts when compared to many successful social media initiatives. The cost of establishing a blog, generating meaningful content and utilizing an aggregating platform to share that content is far less expensive and time-consuming than developing a television, print ad campaign or direct mail campaign. In addition, studies are showing that over 40% of public health advocates targeted individuals are online and searching for health information. The social media techniques offer opportunities for public health advocated to improve: outreach, ability to educate, promote health service, promote healthcare practice, collaborate and engage with audience, google ranking and reputation management.

Public health advocacy channels have changed and will continue to be on a fundamental level. Social media has revolutionized how people interact not only with each other, but with many of the products and services that they wish to utilize. The public is moving away from traditional channels which focus on pounding information into people's heads. The focus is now on engagement techniques, which primarily focus on adding value by providing meaningful

information and engaging potential audience such as patients in a far more meaningful, engaging and social manner.

Present, public health practitioners do not feel obliged, but in few years to time, everyone interested in public health will be obliged to produce meaningful, educational healthcare content for patients and public at large to identify and utilize when researching online. This will be the best way of drowning out much of the commercialized nonsense that a typical google search produces. In the past, word of mouth recommendations occurred at parties or dinners with friends. Today's hyper-connected world brought forth by digital communications has tremendously increased the magnitude, rapidity and reach of those who have something to say about health or practice. In this fast-paced world of digital communications, public health advocates must be where the potential audience chose to be. If the health advocates choose not to use social media platforms, they will have chosen not to advocate for health anymore. The combination of social media techniques and traditional media in this transitional era is the way to go, while understanding of the potential of social media in the digital healthcare presence is of paramount importance and commands the future.

Conclusion

Engaging in public advocacy requires a diverse set of skills. The core skills required are the ability to work collaboratively with multiple stakeholders, the ability to conduct strategic analysis and strategic use of media. Successful public advocacy framing involves drawing on issues that have widespread support so that the solutions proposed to the problems are seen as consonant with solutions demanded for problems with parallel values underlying them. The social media tools and platforms serve as the avenue to reach and mobilize individuals and mass audiences for support. The social media are indeed the tools and channels of today and the success of tomorrow public health advocacy in Tanzania.

References

- Ahlqvist, T., Bäck, A., Halonen, M., and Heinonen, S. (2008). Social Media Roadmaps: Exploring the futures triggered by social media. (VTT Tiedotteita – Research Notes 2454). Retrieved from Digital Agenda for Europe website <http://ec.europa.eu/digital-agenda/futurium/en/content/social-media-roadmaps-exploring-futures-triggered-social-media>
- Chapman S. (2001). Advocacy in public health: Roles and challenges. *International Journal of Epidemiology* 30:1226-32.
- Gomm M, Lincoln P, Pikora, T, Giles-Corti, B. (2006). Planning and implementing a community-based public health advocacy campaign: a transport case study from Australia. *Health Promot Int.* 21(4): 284–292.doi:10.1093/heapro/dalo27; Retrieved <http://www.ncbi.nlm.nih.gov/pubmed/16901910>
- Statista (2014). Social network penetration worldwide from 2012 to 2018. Retrieved from <http://www.statista.com/statistics/260811/social-network-penetration-worldwide/>
- Wearesocial, (2014). Social, Digital & Mobile Worldwide in 2014. Retrieved from <http://wearesocial.net/blog/2014/01/social-digital-mobile-worldwide-2014/>
- Wikipedia.(2014). Social networking service. Retrieved from http://en.wikipedia.org/wiki/Social_networking_service

Health care financing in public hospitals: experience and challenges of Tumbi Designated Regional Referral Hospital

PETER G. DATTANI and BEATRICE BYALUGABA
Tumbi Designated Referral Hospital, Kibaha, Tanzania

Tumbi Designated Referral Hospital (TDRRH) is situated about 35Km from Dar-es-Salaam along Morogoro Road and a leading centre for mass casualties from Road Traffic Accidents-RTA (up-country bus fleets to Morogoro and Segera). This is a nodal hospital in serving Road Traffic Accidents due to its location, as 80% of all motor traffic accident that occur in coast region are attended at Tumbi hospital, and 8% of all motor traffic accidents occurring in Tanzania mainland are attended at this Hospital.

Tumbi hospital was constructed as a health centre and started to provide services to a small community at Kibaha Education Centre in 1967. In November 2011 the hospital acquired the role of a Regional Referral Hospital. The Hospital acquired this role without respective increase in infrastructure for Regional Referral Hospital, while expansion has come to a standstill since 2010 due to lack of funds. The hospital has 253 hospital beds. Every day 500-600 patients are attended in outpatient department and on average 300 patients are in the wards at one given time. This hospital is experiencing a serious manpower deficit – 355 out of 614 required.



Figure 1: Map of Pwani Region

In present situation we have the following categories of clients:

- Cost Sharing - 20%
 - Cost Recovery - 5% (Insurance, Private, IPPM "Fast-Track") and
 - Waivers/Exemption - 75%
- Cost Sharing enables the hospital to collect some money to buffer the budget deficit but TDRRH is buying medicines at 100% new market price and selling at 50% old market prices – so there is absolutely no SUSTAINABILITY.
 - Cost Recovery is about Insurance covered clients (like NHIF, AAR, MedeX and the like), Employer-covered health bills(TANESCO, NSSF), Private(out of pocket) clients, Intra-mural Private Practice(IPP or "Fast-Track")

Waivers/Exemptions category is unfortunately the largest – 75% of all clients and 35% of these are clients from Dar es Salaam. All Motor Traffic Accident victims are waived (we handle an average of 4.9 accidents per day, casualties of which are brought to Tumbi). Other clients include: Elderly, Pregnant Women, Children<5yo, Chronic Diseases, Social Destitute.

Two major roads A14 and A7 meet at Chalinze and thus double the traffic density to Dar es Salaam, this in turn reflects on increased RTAs on this road. Tumbi being the only major hospital on this stretch, receives all casualties involved.



Figure 2: Casualties at Tumbi

Motorcycles operating as commercial public transport are making the situation of RTAs in this region worse as daily RTAs attended at Tumbi Hospital are rising steeply

- 10 Year ago we had an average of 2.1 accidents/day (2003/2004)
- 7 Years later we are handling an average of 4.9accidents/day - >2folds (2010/2012)
- All RTA victims are waived!
- TDRRH owes MSD > TShs 170,000,000/=, but MoHSW owes TDRRH > TShs 150,000,000/= this year from services rendered to RTA casualties only.
- This creates negative effects on implementation of Tumbi Comprehensive Hospital Plan with the insufficient allocated budget.

Covering up the DEFICIT:

- No refundin cash or in kind from MoHSW for all these waivers/exemptions
- No social welfare fund to cater for exemptions
- OC from RAS is insufficient to cover medicines, staff holiday fares, post-mortem allowances, uniform allowances for nurses, extra-duty allowance , call allowances for intern doctors.
- The practical WAY OUT is to improve services to NHIF and other insured clients in order to optimize collections which will alleviate the vacuum created by EXEMPTIONS!

The anticipated NHIF support: It is a good coincidence that NHIF is not a commercial entity as other health insurance companies however it makes profit as other insurance companies and therefore we request NHIF to help us shoulder the burden of waivers/exemptions by reviewing their price codes. Presently some of the prices paid by NHIF are lower than cost-sharing(50%)

prices and this leaves TDRRH in hard times. TDRRH is of an opinion that NHIF should consider supporting PUBLIC Regional Hospitals by paying at least not less of what is paying Private Health Facilities for identical services since the expertise and equipment involved are standard.

Presently there are so many gaps between NHIF and Public Health Facilities, to mention the few: NHIF does not pay for Mortuary Services and their clients are not aware of that. This gives administration a hard time of explaining to the mourners that they must pay out of pockets. This must be made clear. NHIF does not pay for ambulance transport costs of their referred clients to Muhimbili National Hospital or to any other Health Facility. A range of services is presently not covered by NHIF for their clients and they are obliged to pay “out of pocket” e.g. all cardiac Profiles, H-Pylori test, Coomb’s test, EEG e.t.c; these clients feel “intimidated” and we as providers cannot find “sweet words” to explain this discrepancy to them. Reimbursements are never timely! TDRRH provides affordable IPPM “Fast-Track Services” since 2005 to any client who wishes except NHIF Client. NHIF has not approved their clients to be eligible for IPPM at TDRRH for 10 years now though at some other Health Facilities the holders of “Green Card” are eligible to some IPPM services! IPPM is designed to motivate Health Care Workers (HCW) and discourage moonlighting, therefore these HCW are not much “interested” to serve cold cases of NHIF clients after official hours! NHIF does not pay consultation fees whereby all clients including cost-sharing must pay these fees. These fees if paid by NHIF, part of them could be used to motivate Health Care Workers to improve the quality of care. This on the other hand would have improved recording of NHIF client data by HCW and minimize the penalties that TDRRH gets every year and hence improve reimbursement! For poor recording of data in March 2013, we have been penalized TShs >5,000,000 by NHIF Auditors; by June 2014 it has more than doubled TShs 11,000,000. It is very frustrating for genuine bills to be treated as forgeries! TDRRH advocates at least yearly Medical Check-up in Community Education as a Preventive Strategy! NHIF Clients wishing to check their Health are obliged to pay out of pocket, most of them are forced to do check-up by pre-requisites – Schools, Colleges, Employment etc

TDRRH requests NHIF to reconsider the flat rate prices for regional hospitals and take an individual approach to every hospital according to its spectrum of services. An NHIF Auditor who assessed TDRRH (June 2013) openly declared in his feedback report that SERVICES offered at TDRRH are beyond “Regional Referral Hospital” and urged that TDRRH should send its updated profile to NHIF in order to be considered for an UPGRADE.

Conclusion

The NHIF “Flat Rate Policy” Price classification for Regional Hospitals is affecting some individual institutions and NHIF clients feel “intimidated”. We suggest individual approach in Regional Referral Hospitals assessment. NHIF should reconsider services offered by TDRRH as we are planning to install a CT Scan, Dialysis machines, immunology lab on PPP basis! Vehicle Insuring Companies should be obliged by law to contribute to costs for serving casualties in Mass Casualty Incidents, to start with. The Ministry of Health should consider increasing Human Resources and Equipment to minimize burn-out. Government should consider increasing the Tumbi hospital budget to include accidents and Mass Casualties Incidents (MCI). The MSD should consider issuing Special Package for casualties at TDRRH.

Screening for Syphilis, HIV, and Haemoglobin during pregnancy in Moshi municipality, Tanzania: how is the health system performing?

JOHNSON KATANGA^{1,2}, MELINA MGONGO^{3,4}, TAMARA HASHIM^{3,4}, BABILL STRAY-PEDERSEN⁵& SIA E. MSUYA^{3,6}

¹Mirembe National hospital, Dodoma, Tanzania; ²Kilimanjaro Clinical Research Institute, Kilimanjaro Christian Medical university College, Moshi, Tanzania; ³Better Health for African Mothers and Children Tanzania, Moshi, Tanzania; ⁴Nelson Mandela University, Arusha, Tanzania; ⁵Department of Obstetric and Gynaecology, Rikshospitalet University hospital, University of Oslo, Oslo, Norway; ⁶Department of Community Medicine, Institute of Public Health, Kilimanjaro Christian Medical University College, Moshi, Tanzania

Correspondence: johnsonkatanga2013@gmail.com

Abstract

The objective of this study was to determine the proportion of pregnant women that was tested for HIV, syphilis and haemoglobin during routine antenatal care in Moshi municipality, Tanzania. This cross sectional study was conducted in October 2013 – March 2014. Pregnant women in their 3rd trimester who were attending for routine antenatal care at Pasua and Majengo health centres were enrolled. Interviews were done to determine if women were tested for the 3 tests mentioned in earlier pregnancy, prior to the study followed by clinical examination and sample collection to test for HIV, syphilis and Hb. Data were entered and analysed by using SPSS. A total of 536 women were enrolled. Despite being in the third trimester and had attended for routine antenatal care several times, the majority of pregnant women were not screened for syphilis (89.4%), (28.6%) were not screened for haemoglobin level and only 1% reported not to be screened for HIV. Three hundred and sixty three participants (87.9%) reported to have received iron supplement. Syphilis is forgotten and not given the same priority as HIV in pregnant population. Strategies are required to improve its screening as it is the leading cause of stillbirths and perinatal deaths in developing countries like Tanzania.

Keywords: screening program, HIV, syphilis, haemoglobin, ANC, Tanzania

Introduction

Maternal and neonatal morbidity and mortality are still a public health concern in most sub-Saharan Africa (SSA) countries including Tanzania [1]. Maternal and neonatal deaths have declined globally from 1990 to 2013; however the progress in SSA is suboptimal, as many countries have made insufficiency progress to attain the MDG 4 and 5 [1, 2, 3]. Tanzania's maternal and neonatal mortality is at 454 per 100,000 live births and 26 per 1,000 live births while the target by 2015 is to reach 193 and 19 maternal and neonatal deaths respectively [2,4,5]. Tanzania is thus among top twenty countries with poor indicators pertaining to maternal mortality rate (MMR) and neonatal mortality rate (NMR).

Several strategies have shown positive impacts in reducing MMR and NMR and improving the outcomes of mother and newborn babies. Among them is universal coverage of; quality antenatal care, use of SBA during pregnancy and delivery and access to emergency obstetric care (EmOC) [1,6]. While globally the ANC coverage is 71%, in Tanzania at least 98% of the women attend for at least one ANC visit, 43% attend recommended four or more ANC visits and 51% use skilled birth attendant during birth [4]. Despite high ANC attendance, MMR and NMR are still high suggesting that quality of care offered during the antenatal care visits is sub-optimal to avert morbidity & mortality [4, 7]. TDHS of 2010 showed for example only 53% of pregnant women are

counselled on danger signs, 76.2% have blood checked and 67.5% have blood pressure checked [4].

In 2002, Tanzania adopted the Focused Antenatal Care model (FANC),[8]. The FANC requires a woman without complications to attend for four visits with specific content related to screening, detection of complications, therapeutic interventions, and education at each visit [8, 9]. Screening for syphilis, HIV and checking for anaemia by measuring haemoglobin are among routine recommended tests to offer at first visit for every pregnant woman [8]. Syphilis is prevalent in pregnant SSA women with prevalence ranging from 4% - 15% compared to prevalence of <1% in European settings [10, 11]. Untreated syphilis is associated with 21 - 50% of stillbirths in SSA, low birth weight, and congenital infections [12, 13]. Similarly HIV in pregnancy leads to negative pregnancy outcomes like preterm delivery, low birth weight (LBW) or neonatal infections [14]. Maternal anaemia is associated with increased risk of preterm delivery, LBW, maternal deaths, and neonatal anaemia [15]. Thus early screening (preferably at 1st visit) to detect and manage syphilis, HIV and haemoglobin cannot be overemphasized in order to improve maternal and foetal outcomes.

In Tanzania few studies have evaluated coverage of the three tests among pregnant women. Recent NACP report showed the site coverage for PMTCT is 93% with 100% HIV testing coverage [16]. In 2009, the NACP had a report that only 37% were tested for syphilis [17]. There is lack of current information if the situation has improved or not. This study aimed to provide information on the proportion of pregnant women who were attending for routine ANC at Majengo and Pasua health centres that were tested for HIV, syphilis and Hb.

Materials and Methods

This was a cross sectional study of pregnant women attending routine antenatal (ANC) at two large primary health care, Majengo and Pasua in Moshi, Tanzania. Moshi municipal is a district in Kilimanjaro region which is situated in northern part of Tanzania.

During the study every pregnant woman in their 3rd trimester who gave informed consent was invited to participate. Face to face interview was done by using a questionnaire to collect socio-demographic, socio-economic, sexual and behavioural characteristics and frequency of ANC use and the services which were offered. Interviews were followed by clinical examination (general and gynaecological) then blood was taken for laboratory diagnosis of specific tests.

Venous blood sample (5mls) was used in the test of HIV and syphilis. HIV was confirmed by positive results from both Determine (Alere medical Co. Ltd, 357Matsuhidai Matsudo-shi China, Japan) and Uni gold test (Trinity Biotech plc,IDA business Park, Bray, Co. Wicklow Ireland), (recommended Tanzania national regime) Syphilis determine (Wellkang Ltd, London, U.K.) used to test syphilis then active infection was confirmed by Rapid plasma Regain test (Span Diagnostic Ltd, India) Haemoglobin was measured by using HemoCue Hemoglobinometer (Altenhofstrasse, Germany).

Those infected with syphilis were given benzyl benzathine penicillin 2.4MU im weekly for 3 weeks and advised to bring their partner for screening and treatment, anaemia were given ferrous sulphate and folic acid some of them were referred to Kilimanjaro Christian Medical Center or St Joseph hospital and HIV-positive women were given triple therapy tenofovir, lamivudine and efavirenz

Data were entered and cleaned by using frequency in SPSS. Proportional is used to summarize categorical variable. Anaemia was classified on the bases of WHO 2011[18] criteria $\geq 11\text{g/dl}$ normal, $10.9 - 10\text{g/dl}$ mild, $9.9 - 7\text{g/dl}$ moderate and $<7\text{g/dl}$ severe.

Approval for the study obtained from Kilimanjaro Christian Medical University College ethical committee (Ethical Clearance Certificate No 605) and Moshi municipal medical committee. Pregnant women with less than 18years gave assent and their parents/guardian gave consent. Infected participants and those with anaemia, with their partners got free treatment according to Tanzania treatment guideline for STIs/RTIs.

Results

Table 1: Proportion of pregnant women who were tested for HIV, Syphilis and Haemoglobin during ANC (n=536).

Variable	N (%)
HIV	
Yes	528 (99.0)
No	5 (1.0)
Syphilis	
Yes	57 (10.6)
No	479 (89.4)
Haemoglobin	
Yes	260 (71.4)
No	104 (28.6)

Majority of them reported they were tested for HIV and haemoglobin, 99.0% and 71.4% respectively. Only 10.6% were tested for syphilis. Table 2 shows proportion of pregnant women who were tested for HIV, syphilis and haemoglobin during routine ANC attendance. Forty percent (40.5%) of the participants found to have anaemia and those with HIV infection were 6%. The prevalence of mild, moderate and severe anaemia was 22.5%, 15.7% and 2.3% respectively. Table 3 shows prevalence of HIV, syphilis anaemia among participants.

Table 2: Prevalence of HIV, Syphilis, anaemia among pregnant women (n=535)

Variable	N (%)
HIV	
Yes	32 (6.0)
No	503 (94.0)
Syphilis	
Yes	4 (0.7)
No	531 (99.3)
Anaemia(Hb $>11\text{g/dl}$)	
Normal	315 (59.5)
Mild	119 (22.5)
Moderate	83 (15.7)
Severe	12 (2.3)
Given haematinics	
Yes	319 (87.9)
No	44 (12.1)

Discussion

There has been a good coverage of ANC services throughout the world, however the quality of care that is provided in most of developing countries is of concern. In our study we observed most of the ANC attendees were tested for HIV and haemoglobin estimation, few of them were

tested for syphilis. The findings of high response in HIV testing was also found in Kilombero [19], this could be due to great attention paid to HIV by international donors through special programs like PMTCT and EMTCT in which all pregnant women must check up for HIV status and start medication as soon as they are found to be positive [14].

It was of a concern to note only 11% of pregnant women reported to have been tested for syphilis. This testing prevalence is much lower than that of 37% reported by the NACP in 2009, and of 33% and 38% reported in Zimbabwe and among SSA women [17, 20]. Of great importance, syphilis is among the infectious disease which has adverse pregnant outcome for example abortion, congenital infection and still birth [3, 12]. And treatment with benzathine penicillin is cheap, affordable by most governments and available in most SSA health facilities [10, 20]. Low proportion of syphilis testing maybe due to two key reasons. First it maybe that health providers are not aware of negative consequence of syphilis in pregnancy and do not give it similar priority to HIV [21]. Logistics of refrigeration for reagents for RPR has been mentioned as a problem of syphilis screening elsewhere [21]. Ministry of health and social welfare (MOHSW) had introduced rapid testing kits for syphilis in 2010 to avoid the problem of refrigeration. Thus frequent stock out of these testing kits has been reported by several regions. This is missed opportunity to pregnant women who were supposed to get such an important service as recommended by WHO and National Package of Essential Reproductive and Child health Intervention (NPERCHI) [8, 22]. Furthermore it is cost-effective to routinely screen and treat syphilis on every pregnant woman as it has advantages of averting negative consequences on maternal health and pregnancy outcome [23, 24]. So responsible authorities should develop a system to assure that the adequate stocks of syphilis screening test and treatment are available and distributed to appropriate health facilities [10]. 28.6% were not tested for anaemia, yet about 40.5% of the participants tested for haemoglobin estimation found to have anaemia. Nyamtema also showed that 25% of pregnant women with severe maternal morbidity were tested for haemoglobin [19], while TDHS showed only 76.2% women reported to be tested for haemoglobin [4]. Again with effects of anaemia on pregnancy and neonates, this call for strengthening screening by using HemoCue which can be used up to dispensary levels. The need of having good care during ANC visit in which all pregnant women should be given supplements including haematinics which are crucial in improving maternal and child health.

So quality of services provided in ANC should be of priority in order to fulfil the strategic plan for Tanzania in reduction of maternal, newborn and child death by 2015. Also there should be an integrated system of monitoring and evaluation of HIV and syphilis screening and treatment in pregnancy, it will smoothen its delivery to ANC attendees. The study show the proportion of pregnant women who were screened for HIV, syphilis and Hb which are essential component of in the focused antenatal care package. However the method used in the screening of syphilis may miss some individual with early syphilis infection.

The interventions that is being taken by authorities to improve maternal health and reduce death of newborn, should go in line with the good quality of care during ANC. Apart from HIV, also syphilis screening and Hb estimation should be mandatory to all pregnant women attending ANC.

Acknowledgements

The authors thanks the Letten Foundation for supporting the study

References

- [1] WHO and UNICEF report 2014. Countdown report to 2015 maternal, newborn and child survival. www.countdown2015.com .Published in 2014, accessed September 21 2014.
- [2] WHO and UNICEF report 2013. Accountability for maternal, newborn and child survival. www.countdown2015.com Published 2013, accessed September 21, 2014.
- [3] World health Organization (2013). Sexually transmitted infections. Available at www.who.org
- [4] NBS National bureau of statistics. Tanzania Demographic and health survey 2010. Dar es Salaam Tanzania
- [5] Ministry of health and social welfare. The national road map to accelerate reduction of maternal, newborn and child death 2008 – 2015; 2008.
- [6] Carroli, G., Rooney, C., & Villar, J. How effective is antenatal care in preventing maternal mortality and serious morbidity? An overview of the evidence. *Paediatric and perinatal epidemiology* 2001, 15 Suppl 1, 1-42.
- [7] World health organization . Antenatal care in developing countries 2003. Available at www.who.org
- [8] Ministry of health and social welfare. Focused antenatal care malaria and syphilis in pregnancy 2009.
- [9] Villar J, Callori G, Khan-Neelofur D, Piaggio GGP, Gülmezoglu AM. Patterns of routine antenatal care for low-risk pregnancy. *The Cochrane library* www.thecochranelibrary.com . Published 200. Accessed October 1,2014
- [10] Gloyd S, Chai S, Ann mercer M. Antenatal syphilis in sub Saharan Africa: missed opportunity for mortality reduction. *Health policy and planning* 2001; 16(1): 29 – 34.
- [11] Swai RO., Somi GGR., Matee, MIN., Killewo J, Lyamuya, EF., Kwesigabo G. et al. Surveillance of HIV and syphilis infections among antenatal clinic attendees in Tanzania-2003/2004. *BMC Public health* 2006, 6 (91).
- [12] Watson-Jones D, Gumodoka B, Weiss H, Changalucha J, Todd J, Mugeye K et al . Syphilis in pregnancy in Tanzania. II. The effectiveness of antenatal syphilis screening and single-dose benzathine penicillin treatment for the prevention of adverse pregnancy outcomes. *J infect Dis* 2002; 186: 948-957.
- [13] Mullick S, Watson-Jones D, Beksinska M, Mabey D. Sexually transmitted infections in pregnancy: prevalence, impact on pregnancy outcomes and approach to treatment in developing countries. *Sex Transm Infect* 2005, 81: 294 – 302.
- [14] Ministry of health and social welfare. PMTCT guideline 2013. Available at www.moh.go.tz
- [15] Lone FW, Qureshi RN, Emanuel F . Maternal anaemia and its impact on perinatal outcome. *Tropical medicine and international health* 2004, 9(4): 486 – 490.
- [16] Ministry of health and social welfare (2014). PMTCT Tanzania. Available at www.moh.go.tz
- [17] National Aids Control Program, HIV/AIDS/STI surveillance report United Republic of Tanzania, Ministry of Health and Social Welfare, 2009.
- [18] World health organization. Haemoglobin concentration for the diagnosis of anaemia and assessment of severity 2011. Available at www.who.org
- [19] Nyantema AS, Bartsch-de jong A, Urassa DP, Hagen JP, van Roosmalen J. The quality of antenatal care in rural Tanzania: what is behind the number of visit? *BMC pregnancy and child health* 2012, 12:70.
- [20] Peeling RW, Holmes KK, Mabey D, Ronald A. Rapid test for sexually transmitted infections (STIs): The way forward. *Sexually Transmitted Infection Journal* 2006; 82.
- [21] Gloyd S, Montoya P, Floriano F, Mariaana C, Chadreque M C, Pfeiffer J, Gimbel- Sherr K. Scaling up syphilis antenatal screening in Mozambique: Transforming policy to action. *Sexually transmitted diseases* 2007; 34(7): 31 – 36.
- [22] World health organization. Baseline report on global sexually transmitted infection surveillance 2012. Available at www.who.org

- [23] Blandford JM, Gift TL, Vasaikar S, Mwesigwa-Kayongo D, Dlali P, Bronzan RN. Cost effectiveness of on-site antenatal screening to prevent congenital syphilis in rural Eastern Cape town province, Republic of South Africa. *Sexually transmitted diseases* 2007; 34(7): 61 – 66.
- [24] Terris-Prestholt F, Watson-Jones D, Mugeye K, Kumaranayake L, Ndeki L, Weiss H et al. Is antenatal syphilis screening still cost effective in sub-Saharan Africa. *Sex transm infect* 2003; 79: 375 – 381.

Seeking solutions and strategies to adolescent girls' education in Tanzania

CATHLEEN SEKWAO

Tanzania Education Network, Dar es Salaam, Tanzania

Abstract

This paper is an extract of a situation analysis of adolescent girls' education in three districts of Tanzania, commissioned by UNESCO Dar es Salaam to Joy Stevens and Cathleen Sekwao. The key purpose was to gather information on this subject area to guide UNESCO in designing and implementing a programme to address the retention and performance of adolescent girls in lower secondary schools. The paper focuses on the issues and challenges influencing the education attainment of adolescent girls (aged 13 – 19 years). It covers a causal analysis of low performance and drop-out with a particular emphasis on truancy, pregnancy, and early marriage; vulnerability of adolescent girls; an investigation of legislation, cultural norms and practices which affect girls' educational opportunities; examines the socio-economic status and social structures of target communities as well as their gender dynamics; and provides recommendations for a community mobilization strategy for girls in secondary schools.

Introduction

Adolescents aged 10-19 years account for nearly one quarter of the nation's population. In recent years, attention has begun to shift from young children to the needs of adolescents, of which the most important is an education system that will equip them not only for the job market but also develop their life skills. Of special concern is the situation of adolescent girls whose education attainment falls behind that of boys, and their vulnerability to pregnancy and early marriage and other forms of gender discrimination. The implications of girls' low education attainment relative to boys are far-reaching, with mother's level of education being a widely recognized indicator for infant mortality. A study in Tanzania found that mothers' level of education has a positive effect on girls' school attendance and hours of study.

This Situation Analysis of adolescent girls' education was commissioned by UNESCO to provide a deeper understanding and to document the factors influencing the low numbers of girls who complete secondary education in Tanzania. In 2010 only 13,000 girls completed six years of secondary education, against an estimated population of 465,000 girls aged 19 years – just 2.8%. Approximately 31% of 17 year old girls completed lower secondary (Form 4), compared to 41% of boys, but only half of these girls passed the examination to transit to upper secondary. Understanding the reasons for the low enrolment of girls relative to boys, and the factors influencing their low performance and retention are important prerequisites to addressing the situation.

Methods

The field work was carried out in Micheweni District, Zanzibar, and Shinyanga Rural and Kahama Districts in Shinyanga Region, Mainland Tanzania, which were selected for having low numbers of girls completing secondary school, and for being culturally diverse. Six lower secondary schools, together with their catchment communities and feeder primary schools were investigated in depth. Discussions were held with District Education Offices, Heads Teachers and teachers, students, parents, community members and influential people including government and faith leaders. A sample of drop-outs were traced and interviewed in each school. Peer research methods were used to gain additional insights from students.

Results and Discussion

With regard to the 1995 national Education and Training policy and legislation, lower secondary education is neither free nor compulsory on Mainland Tanzania. However, the current Education and Training Policy (not yet circulated) is said to spell out that Secondary education is compulsory and fee free. Regulations under the Education Act 1978 and Education & Training Policy 1995 permit the use of corporal punishment in schools and the expulsion of pregnant girls. However, an Education Circular No 6 of 2004 states that it is compulsory for all school going age children to complete the level of education for which they have been enrolled. This Circular details criminal penalty for those involved in the marriage or impregnation of primary or secondary schoolgirls, and does not state that pregnant schoolgirls must be expelled. Circular No 24 of 2002 allows but places limits on corporal punishment in schools. A key finding of this study is that dissemination, understanding, and enforcement of education regulations is insufficient. The Marriage Act is discriminatory by gender, allowing the marriage of girls from age 15 (age 14 under special circumstances) but the minimum age for boys is 18 years. It permits men to have more than one wife (under customary law), but prohibits women from doing likewise.

In Zanzibar, the Education Act 1982 states that basic education is compulsory and free, and the Education Policy 2006 has extended basic education to 12 years, including 4 years of lower secondary. Legally, this means that lower secondary education is both compulsory and free; however there is no mechanism for enforcement of either and fees are still charged. There appears to be no statutory law covering the minimum age of marriage, and under Islamic law a girl can be married at puberty. Guidelines state that a student should not be married before completing basic education; they also prohibit corporal punishment and permit pregnant girls to be re-admitted, but these guidelines are not necessarily being practiced.

The gross enrolment rate (GER) of girls increased from 29% (2007) to 46% (2011) due to the opening of ward schools in Tanzania Mainland, but still falls short of parity with boys (students are 43% female to 57% male). Girls' pass rates are worse than boys in all subjects except for Kiswahili. The attrition rate of students is high – just over 70% who enrol will complete Form 4 - but girls' drop-out is not significantly worse than boys. Zanzibar has made similar giant strides in increasing secondary level enrolment. After a change in policy (Education Policy 2006) which made lower secondary education compulsory, enrolment in Form One tripled between 2006 and 2007, and gender parity has been achieved throughout lower secondary level. However, examination pass rates are poor, and girls generally perform less well than boys.

This study focused on factors influencing the education attainment of adolescent girls in three districts. The first district is Micheweni District on the island of Pemba, Zanzibar. In Micheweni District there is gender parity in enrolment throughout lower secondary, and drop-out rates are not excessively high, but very low attendance rates impact on academic performance and cause low pass rates in examinations. In the sample schools, girls' pass rates fall well below those of boys, and girls struggle with certain subjects such as mathematics and English. The study concludes that the key factor limiting girls' performance in Micheweni are the household chores which girls perform in addition to assisting with other productive family work. Girls report that this not only leaves them feeling fatigued and unable to concentrate in class, but also may prevent them from completing school homework, attending extra-curricular tuition, or even attending school. Other contributory factors include the lack of specialist subject teachers, female teachers and teaching materials, few participatory teaching methods, plus some insensitivity or prejudice by male teachers towards girls and the challenges which they face. Work demands by poorer families affect both boys and girls' school attendance. Coastal schools record

a drop in attendance when low tide coincides with school hours as students are involved in seaweed harvesting, and attendance also drops during the rainy farming season.

Girls' drop-out is no worse than boys. The two major causes of girls' drop-out are economic constraints and marriage. Poverty appears to be a major challenge for certain pockets of Micheweni, and affects both boys' and girls' educational outcomes as parents find themselves unable to pay the school fees and additional contributions demanded by schools. But teachers reported that the low value placed on education by parents is also a factor, and this in turn is likely to be influenced by the particularly high levels of adult illiteracy which are found in the district. Also the practice of polygamy stretches family resources and has a negative effect on adolescent children's education opportunities as the family expands.

According to the findings Micheweni has a strongly structured and cohesive society centred on the mosque and their Islamic beliefs and values. Out-of-wedlock pregnancy is frowned upon, and fear of its stigma drives parents to marry their daughters young and remove the risk. Parents observe that their children's morals and behaviour are being increasingly affected by modern influences. Girls reported that they do not feel well-informed on sexual and reproductive health, and this perception may be influenced by societal traditions and attitudes which do not support the use of contraceptives by unmarried women. Girls are commonly married by age 18, but some may marry as young as 15. Sometimes it is the girl who decides to leave school and get married, and this decision is typically influenced not only by being in love, but also by perceptions of poor progress at school or the pointlessness of education, or awareness that her parents are struggling to pay the school fees. Girls lack female role models and this may account for their low ambitions. Other factors which play a contributing role include the lack of qualified teachers, old-fashioned teaching methods, and the practice of corporal punishment.

In Shinyanga region, traditional values are still very strong, and the likelihood that a girl will complete secondary education is often low. Gender discrimination permeates Shinyanga society and has a deeply negative effect on girls' education. The pass rate for girls in the Primary School Leaving Examination (PSLE) is very low – 31% compared to 50% for boys. Teachers report that some parents instruct their daughters to deliberately fail so that their education will terminate and they may be married. The tradition of a high bride-price, traditionally paid in cattle, encourages father to marry their daughters young and deny them a full education. Research shows that the engagement is arranged and the cows delivered while the girls are in Standard Six, with the wedding taking place as soon as they have completed Standard Seven.

Due to the practice of early marriage, girls' enrolment in secondary school is half that of boys. Girls' performance lags behind boys for the same reasons as in Micheweni, with girls discriminated by the extra burden of household chores and prioritizing of sons' education. Approximately 30% of students drop out of school during lower secondary, with boys dropping out at an equal rate to girls. Drop-out is rarely due to a single reason but a combination of factors. Foremost among these is difficulty in paying the school fees, and for which girls are particularly discriminated against. But teachers noted the low value placed on education by parents and this may be the underlying root cause rather than outright poverty. Such parental attitudes are sustained by the high levels of adult illiteracy, particularly among women.

The poor quality of education due to the lack of qualified teachers and old-fashioned pedagogy affects girls' performance and contributes to drop-out. Female teachers are few, particularly in rural areas where long distances to school and the lack of girls' hostels results in a higher drop-out rate. Students reported that certain negative aspects of school culture – teacher absenteeism, corporal punishment, and in some places sexual harassment of girls – make them

disaffected with school and more likely to drop out. They greatly dislike the practice of caning which is routine in schools. Excessive punishments for less serious crimes such as lateness or improper uniform impact on attendance as students prefer to skip school rather than risk punishment.

Among the 63 girls surveyed in Shinyanga schools, 24% reported that they are sexually active, and 27% have experienced sexual harassment, with 14% claiming they have had sexual intercourse against their will. Within some schools, the sexual harassment of girls by certain teachers is a disturbing issue which impacts on their retention in school. Girls' ability to resist the sexual advances of men is weak due to gender discrimination in the allocation of family resources, and their lack of social capital. Pregnancy is a leading cause of girls' drop-out, as girls are tempted into agreeing to have sex for as little as a bar of soap; other factors include their low self-esteem, the low status of women in society at large, and the lack of parental attention or guidance in the family home. Regulations currently prohibit girls from continuing their education if they fall pregnant, even though nearly every drop-out girl interviewed in this research said that she wished to return to school.

The vast majority of drop-out cases are labelled as cases of 'truancy'. This label does not refer to the reason for the drop out, but reflects the fact that the student failed to inform the authorities prior to their departure. In most cases it appears that the authorities make little effort to trace such drop-outs. A total of 19 drop-out girls were traced and interviewed for this study, and the reasons they gave varied greatly; the most notable fact is that there was rarely a single cause but a combination of several factors, including the student's perceptions of their poor performance in school.

Conclusion

This study concludes that adolescent girls in all three districts are in need of stronger social, political, and practical support to help them complete their secondary education, and that a sizeable number of adolescent boys face similar challenges. Recommended strategies to address the problems include: Establishment of girls' clubs and peer mentoring programme, and adoption of female role models; Extending the number of girls' hostels and dormitories; Strengthening teachers' understanding of psycho-social theory and counselling skills in order to provide a more supportive school environment for girls; Advocacy to abolish corporal punishment and the expulsion of pregnant girls and students whose parents cannot pay their fees. Also for the training and recruitment of more female teachers; Adult literacy and women's empowerment programme to address income needs and strengthen women to address gender discriminatory practices which affect girls' education; An intensive mobile campaign to raise awareness in the communities on the importance of education and the negative consequences of its loss; Support the expansion and quality of alternative education classes for adolescents who have dropped out of school; Explore whether it is feasible for older students to responsibly earn money to help pay their fees through school-sanctioned income generation activities in the school holidays; Establishing a school-to-school mentoring system and sharing of Good Practices; and Foster greater involvement of secondary schools in their communities through sponsoring Open Days and Community Days.

References

Bangser M (2010) *Falling through the cracks: Adolescent girls in Tanzania: Insights from Mtwara*, USAID

Education Stakeholders (June 2011) *A review of gender based violence in schools*, Education Stakeholders Report

Global Initiative to End Corporal Punishment, *Briefing for the Committee on economic, social and cultural rights, pre-sessional working group 5-9 December 2011*

Mascarenhas O, (August 2007) *Baseline Study of the Situational Analysis of Girls Access to Education*, CARE International, Tanzania

Ministry of Education and Vocational Training (March 2010) *Guidelines on how to enable pregnant school girls to continue with their studies*

Ministry of Education and Vocational Training Tanzania *Basic Education Statistics in Tanzania 2007-2011 (BEST)*

Ministry of Education and Vocational Training, Zanzibar, *Education Policy 2006*

MoEVT(June 2010) *Strategic Plan for Gender*

National Bureau of Statistics, *Population and Housing Census 2002 Micheweni District profile*,

National Bureau of Statistics, *Demographic and Health Survey 2010*

Noronha R. Mori E, Shimamoto K, Mwanukuzi-Kwau C (August 2010) *Fact Finding Mission Report, Shinyanga Region*, United Nations Population Fund

UN Adolescent Girls Initiative (April 2011) *A Situation Analysis of Adolescent Girls in Tanzania*

UNICEF (September 2011) *Adolescence in Tanzania*

Exploration of the factors associated with third level delay in receiving care by clients with obstetric/neonate complications in Pwani Region, Tanzania

R. KAHWILI, J. GORDON, & L. MAFOLE

Abstract

Factors associated with 3rd level delay in receiving care for obstetric/neonate complications were investigated in the health facilities of Pwani region. In this study conducted between May and July 2014, knowledge of providers, triage, availability of protocols, equipment, supplies and medicines were the key issues. Over half (53.7%) of providers were found to have low knowledge on signs and symptoms of obstetric/neonate complications. Knowledge was significantly asymmetrical with cadres/professionals of providers, the lower the cadre the poorer the knowledge. Medical attendants were the majority cadre of providers and exhibited very unfavourable knowledge, 70% of the interviewed had low knowledge. A significant proportion of trained providers were found also to have low knowledge. Equipment, supplies and medicines were perceived not adequate. Almost half of interviewees reported not having triage and protocols in their facilities. It is concluded that, factors for 3rd level delay in receiving care are prominent in facilities of this region. We recommend that, all supportive supervisions, mentorship actions as well as other forums should bear an agenda of diagnosis and management of complicated obstetric/neonate cases in order to improve capacity of providers. Obstetric equipment, supplies and medicines should be assessed and improved in all health facilities on regular basis.

Introduction

Pwani is among the 25 regions of Tanzania Mainland and comprises of 7 councils, where by 6 are district council and 1 is a town council. The region has a total population of 1,098,668. Total facilities in the region are 274, where by 7 are hospitals, 21 are health centres and 246 are dispensaries. Out of these facilities, 58 are private owned. Almost all government facilities in the region provide emergency obstetric and neonatal care (EmONC) services.

Maternal death in the region was 51 per year (2013), under 1 year mortality rate was 11/1,000 (2013) and Under 5 mortality rate was 09/1,000 (2013). Three levels of delay for receiving management for any ailment are recognized. 1st Level delay is observed at family level, a delay in decision making for seeking medical care. 2nd level delay, relates to transport logistics in moving to health facilities. 3rd level delay, relates to factors within the health facility which may delay the promptly receiving of the right care at the right time. In the present study, factors contributing to delay in management of obstetric/neonate complications at the facility level, are investigated. The delays in receiving care contribute greatly, to the burden of maternal and neonate health.

The trending in MMR is not 'on track' in spite of the sizable efforts and resources being invested in reproductive and child health services. To alleviate this situation, strategies to intervene the right challenges. In a qualitative study conducted in Malawi, Chodzaza & Bultemeier (2010) found that, poor quality of obstetric care at the facility level was being contributed by inadequate resources, inadequate staffing, poor teamwork, and inadequate knowledge/supervision

In rural Bangladesh, a study by Shegufta, S. *et al* (2009), in Gaibandha district found that, Women attributed their life-threatening experiences to societal and socioeconomic factors that led to

delays in seeking timely medical care by decision makers, usually husbands or other male relatives. The study showed that non-certified providers such as village doctors and untrained birth attendants were the first-line providers for women in all categories of severe complications.

In a study conducted in Nigeria (2010), revealed that Ninety one percent of the maternity unit staff had poor knowledge concerning the concept of EmOC, with no difference in knowledge of respondents across age groups. While consistently more than 60% of staff reported the inclusion of specific client-centred messages such as birth preparedness and warning/danger signs of pregnancy and delivery in the (ANC) delivered to clients, structured observations revealed that less than a quarter of staff actually did this. (Ijadunola et al(2010). Literature review by Dogba&Fournier,P(2009) in Quebec Canada ..revealed two major challenges for developing Countries , staff shortages are a major obstacle to providing good quality EmOC; (2) women are often dissatisfied with the care they receive during childbirth.

Margaret et al(2013)in Rivers State Nigeria found approximately only a third of respondents (33%), reported having obstetric protocols in their facilities. Approximately 77% of respondents demonstrated poor knowledge on basic EmOC. Regular training and re-training of staff on EmOC, with adequate and equitable distribution of resources between urban and rural facilities is recommended.

Ruchi Puri,(2011), in his thesis for partial fulfilment of a degree in master of science in Duke University Rwanda found that, there was a low level of demonstrated knowledge in Safe Motherhood services with a mean of 46.4% of 50 questions answered correctly. Performance of knowledge in normal labour (39.3% correct) and obstetric complications (37.1% correct) were the weakest areas identified. A high percentage of providers (60.8%) engage in the potentially harmful practice of fundal pressure during vaginal delivery, while only 15.9% of providers practice the active management of the third stage of labour in all deliveries. The objective of this study was to explore the magnitude of factors associated with the 3rd level delay for obstetric emergencies in health facilities of Pwani region. Specifically, the study aimed to: (i) explore the magnitude of knowledge of providers on signs and symptoms of antenatal/obstetric/neonate complications in health facilities of Pwani region; (ii) assess the perception of providers on the frequent scarce equipment, supplies and medicines for obstetric care; (iii) assess the perception of providers on the scarcity of workforce for obstetric care; and (iv) assess the level of possession and Utilization of obstetric guide manual among providers.

Methodology

Sample for studies in health facilities is estimated by 25-30% of all health facilities. (Kielman et al 1990). Conveniently this study was conducted in all 7 Councils of Pwani region. The minimum sample size was calculated by the formulae (Bland,1995)

$$n = \frac{Z^2 P(100-P)}{l^2}$$

Where, n=number of subjects, Z=standard normal deviate set at 1.96.

l=Marginal error set at 9

P1=Proportion of providers with poor knowledge. Margaret, E O. Et al, (2013) revealed that 34.8% of providers had poor knowledge on EmOC and obstetric complications.

Calculating from the above formulae the minimum number of providers required for the study is 100. The study population were all providers of obstetric services including ANC from Regional Referral Hospital, District hospital, health centres and Dispensaries in Pwani region. These include all cadres, the only criteria being provision of EmONC services including MA, EN, ANO, NO, MD, AMO, CO and ACO. Health facilities of Pwani region, Regional hospital, Council hospitals, health

centres and dispensaries. Regional referral hospital was selected conveniently, Two Council hospitals, 7 health centres and 12 dispensaries were selected conveniently .

Providers studied were selected conveniently, all those available at the time of study were interviewed. The result of this study will benefit the following institutions, Local Government Authorities (LGAS). Regional Secretariat (RS) and other decision makers. Especially the findings will be disseminated to all CHMT in Pwani Region. The RHMT and CHMT forums are held annually.

Results

A total of 6(85.7%) councils out of 7 were studied, namely , Bagamoyo, Kibaha District, Kibaha Town, Kisarawe, Mkuranga and Rufiji. Mafia district were not studied. Hospitals studied were 2 (28.5%) out of 7 of Pwani namely TDRRH and Kisarawe Hospital. A total of 7(30.4%) health centres were studied out of 23 available in Pwani region namely Mkoani HC, Mlandizi HC, Chalinze HC, Masaki HC, Kibiti HC, Ikwiriri HC and Irene Kilimahewa, Dispensaries studied were 12(5.0%) of all 243 in Pwani Region. A large proportion of providers studied were Medical Attendants (39.5%), followed by enrolled nurses (22.4%), clinical Officers (15.5%) and ANO (14.5%).

Table 1: Provider by cadre/ profession

Cadre	Frequency	%
Assistant Medical Officer	2	2.6
Clinical Officer	12	15.8
Assistant Clinical Officer	3	3.9
Nursing Officer	1	1.3
Assistant Nursing Officer	11	14.5
Enrolled Nurses	17	22.4
Medical Attendant	30	39.5
Total	76	100

Table 2: Knowledge level of providers along the 12 obstetric/neonate complications

Complication	Low	Moderate	High	NA	Total
Danger signs	21	17	32	6	76
Shock	57	13	6	0	76
PPH	38	12	26	0	76
APH	48	14	14	0	76
S. preeclampsia	12	13	51	0	76
Eclampsia	17	18	41	0	76
Obstetric labour	60	12	4	0	76
Pro-2 nd Stage	55	12	9	0	76
Puerperal sepsis	62	12	2	0	76
Premature	65			0	76
Birth asphyxia	29	22	25	0	76
Congenital anomaly	26	13	37	0	76
Total Frequency	490	169	247	6	912
Percent	53.7	18.5	27.0	0.6	100

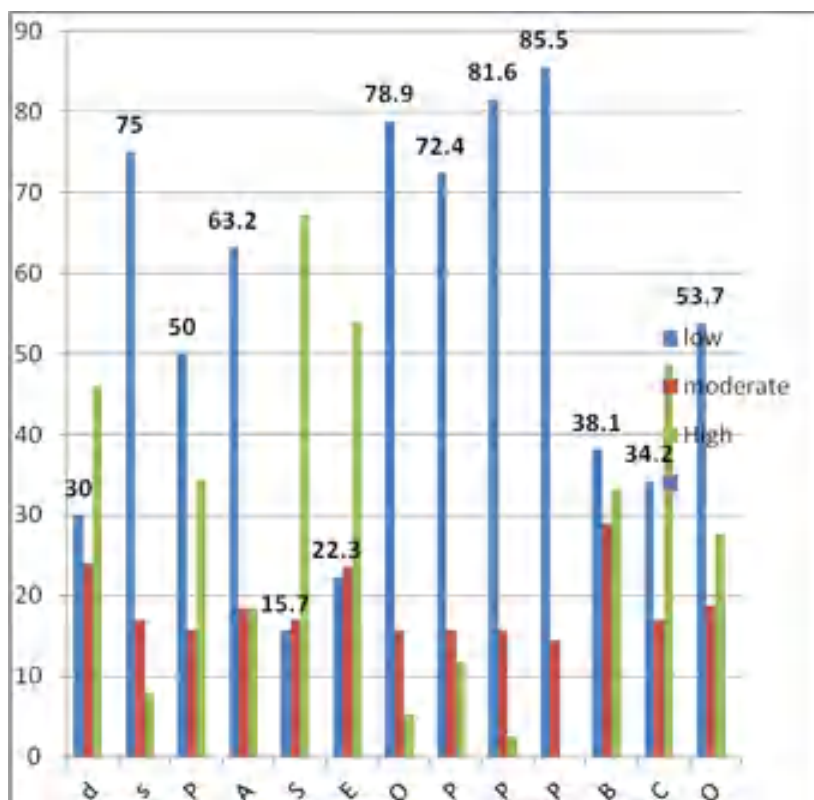


Figure 2: knowledge levels of providers along the 12 obstetric/neonate complications

Key-PPH- postpartum haemorrhage Pro 2ndstage lab.-Pro longed second stage labour

-APH-Ante partum haemorrhage

Puerperal s-Puerperal sepsis

-s.pre ecl.-Severe pre eclampsia

Premature B. -pre mature/low birth weight

-Eclamps-Eclampsia

B. Asphyxia-birth asphyxia

-Obstrt l.- Obstructed labour

Congenital A.-Congenital anomalies

On average 53.7% of providers were found to have low knowledge on the various signs of maternal complications. However there was significant variations in knowledge among provider cadre/professions in some complications. Maternal shock χ^2 52.1, P-value 0.001, APH χ^2 26.7 P value 0.009. Obstructed labour χ^2 37 P value 0.001. Prolonged 2nd stage labour χ^2 30.5 P value 0.002. Puerperal sepsis χ^2 59.7 P value 0.001. Pre mature /Low birth wt χ^2 14.8 P value 0.020 and birth asphyxia χ^2 22.3 P value 0.033. In other complications knowledge difference was not significant.

Table 3: Differences of knowledge proportions among providers of different cadres/professions and chi square test

SIGNS	AMO	CO	ACO	NO	ANO	EN	MA	Total	χ^2	p-value	
Danger	0.0	38.5	0.0	100	25	5.3	34.4	27.6	20.6	0.298	
M.Shock	0.0	69.2	100	0.0	41.7	68.3	93.8	93.8	75.0	52.1	0.001
PPH	50	38.5	66.7	0.0	8.3	52.6	65.6	65.6	50.0	18	0.115
APH	0.0	58.3	100	0.0	36.4	58.8	80.0	80.0	63.2	26.5	0.009
S.pre-eclamp	0.0	16.7	0.0	0.0	0.0	11.8	26.7	26.7	15.8	12	0.438
Eclampsia	0.0	16.7	33.3	0.0	9.1	11.8	36.7	36.7	22.4	15.5	0.214
Obstr.Labor	0.0	66.7	100	0.0	72.7	76.5	93.3	93.3	78.9	37	0.001
Pro2 nd stag.L	50	66.7	100	0.0	45.5	58.8	93.3	93.3	72.4	30.5	0.002
Puerperal sep	0.0	66.7	100	0.0	63.6	88.2	96.7	96.7	81.6	59.7	0.001
Premat/wt	100	58.3	100	100	72.7	82.4	100	100	85.5	14.8	0.020
B.asphyxia	0.00	33.3	33.3	0.0	27.3	17.3	60	60	38.2	22.3	0.033
Cong.anom.	0.00	25.0	0.0	0.00	27.3	11.8	60	60	34.2	18.4	0.101

Total	16.7	46.2	61.1	16.7	35.8	45.3	70.0	53.7
-------	------	------	------	------	------	------	------	------

Assessment of obstetric clients on arrival was reported to be practiced by only 42.1% of providers. Perception of providers reported as follows, inadequate equipment (94.7%), supplies (78.9%) and medicines for obstetric care (94.9%). Prevalent equipment perceived inadequate or unavailable were Scissors 12(15.5%), delivery drum 49(64.3%), delivery bed 33(43.4%), patient bed 19(25%), vacuum extractor 31(40%). Prevalent perceived medicine inadequacy or unavailable included. Oxytocin 64(84.2%), ant hypertensive's 26(34.2%), infusions 42(55.2), magnesium 33(43.4%). Prevalent Perceived inadequacy or unavailability of supplies included Gauze 34(44.7%), syringes 23(30.3%), gloves 43(56.6%).

The providers who perceived there was inadequate number of providers were 90.8%. In this study 35(46.1%) of providers reported, having no protocol guide for obstetric and neonate care. The mean distance calculated in this study was 25 kms with a range of 0 to 82 kms. This statistical values should not be predicted for the parameter since the studied facilities were limited by logistical capability. Facilities were not selected by randomization.

Discussion

Knowledge of providers may have an impact on executing prompt and correct care of clients with obstetric /neonate /ANC complications. In this study it is alarming that, more than half of providers interviewed had low knowledge, worse still in pre-mature/low birth wt, 85.5%, of providers had low knowledge, birth asphyxia 38.2%, puerperal sepsis 81.6%, obstructed labour 78.9% and maternal shock 75.0%. It must be remembered that the leading causes of maternal mortality includes PPH, eclampsia and puerperal sepsis, while the leading causes of neonate death includes bacterial infection, birth asphyxia and pre mature birth and low birth weight. There is a big chance for the providers to misdiagnose these conditions and thence elevate the consequences of 3rd level delay including diminution of attainment of MDG 4&5. Margaret et al. (2013), in their study in River State, Nigeria found that 34.8% of providers had poor knowledge on EmOC and complications. This is slightly lower than the level found in this study of 53.7%.

Of course as observed before majority who provide obstetric care are untrained personnel's (40%) a factor that would necessitate deliberate measures to ensure they don't jeopardize the purpose of the service. In this study untrained providers who scored low knowledge were 70%. This means that, obstetric services are provided by unskilled persons by 40% and the knowledge of such providers is low in 70% of them. This is not surprising in developing countries, Margaret et al (2013) in Rivers State Nigeria found approximately 77% of respondents demonstrated poor knowledge on basic EmOC. However even for the trained personnel have, a remarkable number of them revealed low knowledge in this study CO 46.2%, EN 45.3%, ANO 35.8% entailing some more effort is needed to protect the obstetric clients from 3rd level delay. With this trend do we expect to achieve the millennium goals MDG 4&5?. Probably a deliberate move is required to improve on some of these third delay factors.

Assessment of obstetric patients on arrival is very important for avoiding delay of receiving the right treatment at the right time. In this study only 42.1% reported there was triage being practiced. This may bear a great risk for facilities with large flow of obstetric clients. All providers perceived that staff were not adequate for care of obstetric clients. This state may lower the quality of service.

In this study equipment such as scissors 12(15.5%), delivery drum 49(64.3%), delivery bed 33(43.4%), patient bed 19(25%) and vacuum extractor 31(40%). Others supplies such as Gauze

34(44.7%), syringes 23(30.3%), gloves 43(56.6%) and Medicines included Oxytocin 64(84.2%), ant hypertensive's 26(34.2%), infusions 42(55.2) and magnesium 33(43.4%). These items can lead to delay in care of obstetric clients if they are not available. Protocol manual for references is very essential in management of clients. In this study less than half of providers interviewed reported to have access to the guides. This may show that majority of providers have no habit of consulting guide books, and therefore practice low quality of care. Margaret *et al* (2013) in Rivers State Nigeria found that, approximately only a third of respondents (33%), reported having obstetric protocols in their facilities. This result has lower than the findings of this study of 46.1%

In this study it is concluded that, factors for 3rd level delay for obstetric care are prominent in health facilities of Pwani region. Some factors cannot get short term remedy while others can, such as those on providers knowledge. Knowledge as a factor of delay among providers is alarmingly ubiquitous. We recommend that: Signs and symptoms for antenatal/obstetric/neonate complications including management should be an agenda for all supportive supervisions, mentorship actions and other forums in order to improve capacity of providers; Ensure availability and utilization of obstetric care guides in all facilities; Assess, monitor and ensure availability of basic obstetric equipment, supplies and medicines in all facilities; Triage for obstetric clients should be put in place, especially for those facilities with high rate of attendance of obstetric clients; Upgrading of strategically located health facilities for provision of emergency surgical and obstetric care should purposefully be put in force in order to minimize referral distance; Further studies should be carried in better designs to capture causal relationship as well.

References

- Ifadunola et al. (2010) New paradigm old thinking: the case for emergency obstetric care in the prevention of maternal mortality in Nigeria.
- Dogba and Fournier (2009) Human resources and the quality of emergency obstetric care in review of literature.
- Margaret, E.O. et al (2013) *Clinical Medicine and Diagnostics* 3(2): 29-51 DOI: 10.5923/j.cmd.20130302.03
- Emergency Obstetric Care: Urban Versus Rural Comparison of Health Workers' Knowledge, Attitude and Practice in River State, Nigeria- Implications for Maternal Health Care in River State.
- Ruchi Puri(2011) Knowledge, Attitudes and Practices of Obstetric Care Providers in Bugesera District, Rwanda. MSc Dissertation. Duke Global Health Institute in the Graduate School of Duke University
- Chodzaza & Bultemeier (2010) *Malawi Medical Journal*; 22(4): 104-111 December 20)
-

Market research to overcome barriers to the scale-up of intermittent preventive treatment of malaria in IPTp) pregnant women and the potential role of azithromycin-based combination therapy in IPTp

CATHERINE BUNGA, JOYCE WAMOYI and SOORI NNKO

National Institute for Medical Research, Mwanza

Abstract

Despite the WHO recommendation for the scale up of intermittent preventive treatment of malaria to pregnant women (IPTp), uptake has been low. The objective of this study is to identify solutions to barriers impeding the scale-up of IPTp among pregnant women. Qualitative methods were employed to collect data between September to October 2013 in Sengerema district in Mwanza region. Specially, we collected 8 focus group discussions (FGDs) and 54 in-depth interviews (IDI) with pregnant women. Analysis was conducted using NVIVO qualitative data analysis software. The study findings showed that, most pregnant women were well aware of the usefulness of attending the ANC but raised lots of provider challenges that seemed to discourage them from coming to the clinic like poor services e.g. provider insults, being ignored delays at the facility and each pregnant woman should come to the health facility with her partner and should wear a maternity dress. Participants also mentioned ignorance by a few pregnant women e.g. not knowing the importance of attending ANC clinic and fearing the HIV test and taking of medications. Most pregnant women reported that they did not receive malaria medication (SP), During IDIs most of the pregnant women reported experiencing vaginal discharge and itching. All pregnant women were excited about the idea of a combination therapy. They said they were willing to take this medication so long they were given proper explanation on their usefulness and how they should take them. In conclusion, many pregnant women do not clearly understand the difference between prevention and treatment of malaria, and may be reluctant to take medication for a sickness they do not have.

Introduction

The World Health Organization (WHO) recommend the administration of intermittent preventive treatment of malaria to pregnant women (IPTp) living in areas of moderate (stable) to high transmission with at least two directly-observed doses of sulphadoxine-pyrimethamine (SP) at every scheduled antenatal care visit, beginning in the second trimester and continuing up to delivery (1). The primary objective of IPTp-SP is to reduce the malaria attributable-fraction of low birth weight (LBW). At present, 36 countries worldwide have adopted IPTp-SP as a national malaria control policy, 35 of which are in sub-Saharan Africa (2). A recent systematic review of the implementation of the intermittent preventive treatment of malaria in pregnancy (IPTp) with sulphadoxine-pyrimethamine (SP) based on national survey data from 27 countries from between 2009-2011 found the median coverage of two doses to be 24.5% (range 7.3%-69.4%), despite the median coverage for at least two antenatal care (ANC) visits being 84.6% (range 49.7%-96.9%; 22 countries, 2003-2011) (3). Coverage of IPTp-SP is low despite 44 national leaders from Africa having signed the Abuja Declaration in 2000, pledging to provide 60% of pregnant women with chemoprophylaxis or IPTp-SP by 2005. The Roll Back Malaria Initiative increased these targets, calling for 100% coverage of IPTp-SP by 2010.

To address the issues related to poor IPTp-SP uptake, the National Institute for Medical Research in collaboration with London School of Hygiene and Tropical Medicine conducted a qualitative study to identify solutions to ANC barriers, as well as to investigate the acceptability of

combination therapy that may reduce the dual-burden of malaria and curable STIs/RTIs in pregnancy.

Methods

Design and data collection

Data was collected in Sengerema district in Mwanza region for a period of five weeks using focus group discussions (FGDs) and semi-structured in-depth interviews (IDIs). FGDs were conducted among pregnant women attending ANC clinic in five health facilities while the semi-structured IDIs were conducted with pregnant women, health care providers, and policymakers.

Women and health providers who participated in the study were sampled from health facilities they attended and worked respectively. Sampling was conducted to reflect a range of settings (rural/urban, roadside, lakeshore) and health facility type. The health facilities were sampled based on rural versus urban characteristics. Of the 25 wards, we selected four wards to represent the different characteristics of the district and much of the Tanzanian national context as follows:

Table 1: Ward, health facility and location characteristics

Ward	Health facility type	Characteristics
Katunguru	Health centre (public)	Lakeshore, trading centre
Nyamatongo	Dispensary (public)	Rural, roadside, lakeshore
Sengerema	Hospital (missionary owned, district referral hospital)	Urban
	Health centre (public)	Urban
Nyehunge	Health centre (public)	Rural

The selected characteristics are important determinants of health seeking behaviour for many people within the selected localities and may be important for the health seeking behaviours of pregnant women. For example, the type and location of health facility determines the level of education of the health providers. It could also determine availability of drugs and hence, client willingness to use a given health facility.

A total of 64 pregnant women participated in FGDs, while 28 participated in IDIs. Recruitment of pregnant women happened in five health facilities as planned. Pregnant women were selected to participate in the study if they had attended the ANC clinic at least once prior to our visit. This condition was based on the assumption that women who were attending the ANC clinic for the first time, particularly are likely not to have been exposed to SP.

A total of 14 health providers were interviewed. All the health providers were recruited from their respective work places. During recruitment, we targeted the head of the health facility and staff providing ANC and treatment of STIs regardless of their level of education. A total of 11 policymakers were interviewed. The policymakers were selected based on their positions with regards to the research topic. Most of the policy makers are based in Dar es Salaam.

Data analysis

All interviews were digitally recorded. The recordings were later transcribed and translated by research assistants and checked by study coordinator. The transcripts were scrutinized to identify emerging and recurrent themes and coding was progressively established and structured by using Nvivo program version 10.

Ethical consideration

Ethical clearance was obtained from the Medical Research Coordinating Committee of the National Institute for Medical Research. Respective city directors and Regional Medical Officers (RMO) were informed about the study. Verbal and written consent was sought from all participants before they were enrolled into the study. With permission from the study participants, the In-depths Interviews were digitally recorded. To ensure confidentiality, all study participants were given unique identification numbers to link them with the FGDs and IDIs data. All study documents bearing participants identifiers are kept locked in filing cabinets in NIMR offices in Mwanza and are only accessible to other study staff under permission from the principal investigator.

Results

Pregnant women

Access to and perceptions of antenatal care: Most pregnant women were well aware of the usefulness of attending the ANC but raised lots of provider challenges that seemed to discourage them from coming to the clinic. Examples of these were: the condition that in order to receive services, each pregnant woman should come to the health facility with her partner and should wear a maternity dress; poor services (e.g. provider insults, being ignored, delays at the facility); and lack of funds to pay for some services). Participants also mentioned ignorance by a few pregnant women i.e. not knowing the importance of attending ANC clinic and fearing the HIV test and taking of medications.

Poor client-health provider relationships resulted in client-provider communication breakdown. The following are examples from the pregnant women on examination without information: *We are not told anything, they just ask us to lie on the bed and you are touched, you are not told the heartbeat of the child, whether the child is in a good position or not, [FGD]*

Concerning the condition of coming to the health facility with a partner or paying for his absence: *I paid the nurse 5000/= Tanzanian shillings, because I went to the clinic without a partner [Nyamatongo health centre, IDI].*

Concerning other costs at the ANC clinic: *We dislike being charged two thousands shillings for the clinic card while it is not for sale, [FGD].*

Experience with malaria treatment & other medications: Most pregnant women reported that they did not receive malaria medication. They talked about the health providers not providing information on malaria and hence, many women lacked information on SP apart from what they had heard from the media (e.g. radio campaign against malaria in pregnancy and advising pregnant women to ensure they take SP).

Pregnant women also reported not receiving any health education. They said that they were not aware of the medications they were taking as the health providers did not explain to them anything when they gave them the medicines: *You find the nurse just gives you the drugs and says take this and chew up, these ones you will swallow at night without any further explanations, [FGD].*

In the group discussion we asked women to mention all the drugs that are provided to them during their visit to ANC clinic. Examples of these were: folic acid, mebendazole iron, and vitamin tablets while a few mentioned SP. A few of the participants who said thought had had SP before, reported experiencing side effects such as dizziness and vomiting. Majority who reported had not had SP talked about fears about SP prolonging the delivery dates for women who had used

them. We however, noted that most women did not know the difference between SP and other drugs: *I was just given 3 drugs white in colour but not SP, [IDI].*

Given the example above, it is possible that some women may have been given SP but did not just realise they were taking SP. Almost all pregnant women did not understand the difference between treatment and prevention of malaria and did not easily conceptualise why they should take SP when they do not have malaria. One participant from the group discussion said: *Why should they give us SP for malaria while we are not sick? Besides, they do not even examine us to see whether we have malaria? [Katunguru, FGD].*

Curable STI/RTI and intra vaginal cleansing: During IDIs most of the pregnant women reported experiencing vaginal discharge and itching. They said they thought it was normal for women to experience itchiness in the genitals. None of the women had been treated for the itching and discharge. They reported that the health providers never asked them of any health problems they had but instead just checked the position of the baby in the womb and told them to go home.

Intra vaginal cleansing was sometimes done in response to the experience of itchiness and vaginal discharge. Most of the participants reported practising intra vaginal cleansing (e.g. washing inside the vagina using warm water especially when feeling itchy). One participant said: *I told my mother that I had itching and she said it is normal for women, just use hot water [IDI participant, Katunguru].* Another participant from Sengerema hospital reported: *I had that itching and rashes in the genital area and I was told to use a piece of stone to scratch them until they shed blood, and I did it.*

When the interviewer followed up on the above response, the woman said women believe when blood is shed then they are cured. Another participant who reported that she had a smelly discharge talked about her health seeking behaviour in the following: *I did not tell the doctor that I have a bad smell because I know it is normal for women ... I just go to bath and use hot water, [IDI, Sengerema hospital].*

Combination therapy: All pregnant women were excited about the idea of a combination therapy. They said they were willing to take this medication so long they were given proper explanation on their usefulness and how they should take them. The following are examples from several end-users:

I: What has made you prefer that combination drug for prevention and treatment of STIs, malaria and all reproductive tract infections?

R: I am impressed with it because it is made for multiple protection of my body... That is why I am happy to take them, even if it is for three days, [IDI#01-End user].

Health providers

The health providers talked about their responsibilities as: vaccinating children; weighing pregnant women; health education in general and family planning in particular; and cleaning of the health facility. Although pregnant women reported that they had to pay for some of the services, most of the health providers reported that pregnant women received ANC services for free. One provider said: *At this facility women do not pay anything, it is free of charge, ... it is free of charge because of the policy of the ministry of health which states that a pregnant woman must be attended free of charge, [IDI].*

While pregnant women reported not receiving any information on SP or malaria, health providers reported provided information on potential side effects of SP as this was a requirement for them to do so for any medication. Health providers were in agreement concerning the need for

pregnant women being told the potential side-effects of SP before giving them the drug: *How can you give a person such drugs that you real know have side-effect to some people without telling her? [IDI].*

Intra vaginal practices: Health providers reported that they did not talk much about intra vaginal cleansing with pregnant women. They mentioned that the only advice they gave pregnant women on this was for them to clean their genitals using clean water and should avoid inserting things because that would lead to infections. They said that despite their advice, some pregnant women seemed to insert substances in their genitals because when examining them they had found unusual substances (e.g. herbal medicinal roots) inserted in their vaginas. A health provider working at the district hospital talked about one of the reasons women used intra vaginal substances as: *When I was still working at the MCH department, sometime we experienced some women inserted things like roots, or other unusual things and when you ask them they always tells you that, her aunt or mommy has directed her to put it there so that she can be able to give birth easily, [IDI].*

Combination therapy: Health providers seemed to like the idea about a combination therapy that could cure and prevent malaria and STI/RTI at the same time. When asked about the choice they thought could motivate pregnant women to comply with prescription given to them, most health providers preferred to have a new medicine that protects against malaria and STI/RTIs than the one that treats malaria and STI/RTIs separately.

Policy maker

Combination therapy: Similar to end-users and health providers, policy makers reported that they preferred a combination therapy as it would prevent pregnant women against malaria and curable STIs at the same time. One said:... *You kill two birds using one stone, [IDI-PM-05].*

Combination therapy was also regarded as advantageous to pregnant women with asymptomatic infections who in most cases are not provided with timely treatment. Majority of participants explained that, timely STI prevention and treatment to pregnant women will prevent both mothers and new-borns from STI infection, avoid miscarriages, and reduce number of still-births. Likewise, since pregnant women will be prevented from malaria, curable STIs and RTIs infections the country will have healthier mothers thus reduce the government's expenditure on medication. They discussed the benefits of combination therapy as: simplify procurement task and reporting system by those in-charge of health facilities since both malaria and STIs in pregnancy will be documented in the same report; simplify storage of drugs since this will occupy little space at the facility level; and reduce pill burden to end-users who will use fewer tablets for both malaria and STIs prevention/treatment.

Despite the mentioned benefits, a number of policy makers did not hesitate to express their scepticism on a combination therapy that would prevent/cure malaria and curable STIs/RTIs. To them, each of the drugs has its peculiar ingredients that cause specific adverse effects. Likewise, they did not understand how this combination therapy will be equipped to treat malaria and all types of curable STIs at once. They were worried of the side effects of such a combined therapy which is designed to address multiple infections of different nature. Others were worried on its affordability. Furthermore, they warned that since the drug will be new, lack of thorough advocacy and community sensitization will probably lead to misconceptions towards the drug.

Conclusion

In conclusion, these findings confirm that combination therapy is something that would very much welcome by pregnant women, health providers and policy makers. Given the positive

responses it is hoped that if made available it would be easily accepted within the system if the barriers with regards to supply and delivery are eliminated. Pregnant women are willing to take SP and/or combination therapy if they are provided with information on the benefits and side effects and barriers to access are eliminated. They also need to be informed about what treatment and prevention of malaria means so that they can see the value of taking medication even when they are not feeling sick.

References

1. World Health Organization. WHO policy brief for the implementation of intermittent preventive treatment of malaria in pregnancy using sulfadoxine-pyrimethamine (IPTp-SP). Geneva, : April 2013.
2. World Health Organization. World malaria report: 2012. Geneva: World Health Organization; 2012.
3. Van Eijk AM, Hill J, Larsen DA, Webster J, Steketee RW, Eisele TP, et al. Coverage of intermittent preventive treatment and insecticide-treated nets for the control of malaria during pregnancy in sub-Saharan Africa: a synthesis and meta-analysis of national survey data, 2009-11. *Lancet Infect Dis.* 2013;13(12):1029-42. Epub 2013/09/24.

The role and contribution of community health workers in improving access and utilization of maternal and reproductive health services in Tabora Region, Tanzania

NDAYANI LUKUMAY

TABASAM Deputy Program, Care International, Tanzania

Introduction

CARE Tanzania and CARE International is implementing a Community Health Worker program in Tabora Region in partnership with the Tanzania Ministry of Health and Social Welfare (MOHSW), Regional and Local Governments (PMO-RALG) and Jhpiego. This project, funded through the Canadian government, began in April 2012 and will end in April 2015. This document will outline some of the lessons learned from its implementation and will look at CHW roles and responsibilities, program challenges, the CHW contribution to Maternal Reproductive Health (MRH) outcomes and will also explore CHW sustainability within the health system.

In 2012, MOHSW in collaboration with JHPIEGO released the National Integrated Community Maternal, Newborn and Child Health Guidelines under the Maisha program which set the blueprint for implementers of community MNCH interventions in Tanzania. More specifically these guidelines covered how the CHW interacts with the community and the health system and recommends interventions during antenatal care, postpartum care, newborn care and child care.

With this in mind, in February 2013, TABASAM organized a CHW Strategy Intervention Meeting to address the challenges in achieving MRH outcomes through utilizing CHWs in four key areas: family planning and adolescent health, antenatal care (ANC), child birth at facility and post-natal care. During this meeting the roles and responsibilities of CHWs were discussed and operational issues around rolling out the program were determined. Following this meeting, the CHW strategy was refined and put into action with recruitment and training of CHW taking place over a six month period. The CHWs began operating in October 2013 and have been supporting their communities for approximately one year.

Methods

Recruitment

A total of 988 CHWs were selected based on the following criteria adopted from the guidelines:

- Nominated from the community by the village government in collaboration with the health facility (those who are interested will apply)
- Accepted by community members through village meeting
- Resident of the specific area
- Willingness to volunteer/Exhibit spirit of volunteerism
- Above 18 years with preferably Form 4
- Balanced representation of male and female CHWs (gender consideration)

As of 31 September 2014, 30 CHWs had dropped out. There were various reasons for leaving the program. Some married and moved elsewhere; some returned to school; and some (i.e. in Tabora Urban) took up employment elsewhere.

Training

The selected participants attended a three week government-accredited CHW training program according to the National Integrated Community MNCH Training Package (includes manual for

CHW and job aides and IEC materials) including two weeks of classroom training and one week of practical training at the community level. The training covered antenatal, postpartum and newborn care, family planning, how to plan community based MNCH activities, referral system, reporting and monitoring of community MNCH services. At the end of the training the CHWs received a certificate of attendance signed by the TABASAM Project representative and a government official.

A two-day refresher training was conducted approximately a year after the initial training. This refresher training reviewed some of the challenges, revised a few concepts but focused primarily on data recording and reporting. The participants appreciated the refresher training as they were able to voice their concerns and address any pertinent issues in their work.

Roles and Responsibilities

According to the guidelines the role of CHW focuses on reaching mothers and their families and communities to promote healthy maternal, newborn, child and reproductive health practices and to facilitate service use. The Roles of CHWs in the guidelines include:

- Planning Maternal, Newborn and Child Health (MNCH) activities in the respective catchment area;
- Conducting annual community surveys and regular mapping of the catchment area;
- Providing information, education and basic counselling on maternal, newborn and child health in the community, primarily through home visits;
- Providing referrals for clients for MSRCH services;
- Participating in village health meetings and linking with partners; and
- Monitoring of community MNCH services.

CHWs also play an important role at health facilities by:

- Assisting with weighing of babies;
- Filling out immunization cards;
- Providing health education;
- Assisting with maintaining cleanliness of the health facilities;

The CHWs are responsible for catchment areas which can range from several households in village to even hundreds of households in a few villages. Through a mapping exercise every six months, the CHW identifies households with pregnant women or women with children under 5 within their catchment area. On average the CHW spends between 3 hours and 24 hours a week carrying out their various roles. It appears that in rural areas the catchment areas for CHWs are much larger and in urban areas the number of families per household is larger. It also appears that in urban areas, CHWs have other competing interests for their time and dedicate lesser time to roles, while in rural areas CHWs are more available to dedicate more time to their roles.

Both male and female CHW are comfortable providing health information to males and females in the community. Their training had helped them become comfortable and male CHWs had no issues discussing breastfeeding or sexual health with women. Similarly female CHWs had no issues discussing sexual health issues with men. However in most cases the CHW preferred if

Regina Alias has been a CHW for one year and is responsible for 36 households. She was selected by the village community leaders and was put forward to be a CHW. She works as a food vendor on the side. She likes being a CHW. People become happy when they see her and call her more often. She sees a difference with pregnant women attending clinic and an increase in facility deliveries.

both the woman and her partner were available in the household as this helped discuss family planning options and eased health access and options for the woman.

Supporting CHWs

TABASAM both equipped and provided technical support to the CHWs through supervision. TABASAM provided CHWs with working tools including: gum boots, an umbrella, t-shirt, a backpack, bicycle, referral forms, report forms, registers and a job aide. The CHWs also received markers and flip-charts for their community mapping exercise. In addition each CHW received a monthly allowance of TSHS 15,000 to cover communication and transport costs.

TABASAM trained healthcare workers based at the local health facilities to be CHW supervisors as recommended by the national guidelines. This role could be filled by a clinical officer or their assistants depending on the staffing the health facility. 178 CHW supervisors were oriented and trained for 2 weeks on supervision skills (including conflict resolution), integrated community based maternal, newborn and child health guidelines, reporting and monitoring. Supervisors were trained using the *Integrated Community MNCH Supervisors' guide*. Supervisors maintain a record of CHWs working in their catchment area, develop a supervision plan, and provide technical support to CHWs for community mapping and sensitization activities. Supervisors ensure monthly and quarterly CHW progress reports are compiled and submitted to the district level. The CHW supervisors conduct quarterly meetings to discuss implementation of planned activities by CHWs and provide technical support accordingly.

Motivation

The sense of commitment from the CHWs is inspiring. Some travel long distances of up to two hours each way to reach some households. CHWs are dedicated, committed and they juggle duties between their jobs, their houses and facilities. Many CHWs would continue to provide services even without the remuneration. When asked CHWs were motivated for various reasons:

- They liked helping their community, and enjoyed volunteering;
- They previously used to be a health volunteer and wanted the opportunity to continue;
- They had observed poor health and suffering in their communities and wanted to do something about it.
- They had noticed many mothers in the community had little knowledge on health issues and wanted to make a difference; before there were a lot of deaths of pregnant women and newborns and now there is a change;
- Community work is a blessing - “god will bless you if you work for the community”.

Benefits

The benefits of CHWs are undeniable. They play an essential role in the health system, linking the community to the facility. Through CHWs, more community members trust the health system and attendance has increased not only for ANC but also for child visits. CHWs detect problems or issues in the community and can alert their supervisors. They also report on community deaths and births.

With significant staff shortages at facilities, CHWs also ease the burdens of health workers by carrying out many non-professional tasks such as weighing babies, helping with immunization and providing health information to clients. Health workers cannot do the outreach and provide MRH education to the community and CHWs fill in this important gap. CHWs also play the critical role of referring clients to the facility - and then following up afterwards.

CHWs have made significant strides in engaging men as well. Perceptions of men changed significantly through this process with males becoming more supportive of their partner's health and also accompanying them to the clinic and assisting with household chores to reduce their workload. More men are also testing for HIV through this process as they both get tested when they go to the clinic. Through engagement of the family, men are also supportive of family planning options.

Operational and Programmatic Challenges

Every program has its challenges - and the TABASAM program is no exception. For example:

- CHW only provide information and referrals but they do not carry any commodities, or medicines and they continue to get request from the communities;
- Sometimes the referral forms are not filled out properly at the health facilities and they need to be returned to the client for the CHW to follow up;
- In areas where other NGOs operate there might be comparison with other programs. For example, in Uyui the Millennium Villages Project provides bed nets and malaria treatment. This confuses beneficiaries and also raises expectations;
- Sometimes CHWs are viewed as “nurses” or other health professionals and the community does not understand their limitations;
- There are some traditional beliefs and myths which CHWs need to be aware of and address;
- Supervisors might not be able to provide sufficient support to CHWs due to their own heavy workload.

Program Sustainability

The issue with programs such as TABASAM is that they are donor supported and not funded in the health system. As much as possible TABASAM tries to embed itself within the government system. It utilizes the health facility staff to supervise the CHWs. It uses the Community Health Management Teams to provide guidance and leadership and make decisions. TABASAM used the government endorsed training guidelines and the national trainers and supervisors from within the health system. TABASAM operates out of the government run facilities with the eventual vision that CHWs would be absorbed into the health system.

There is unequivocal support on the benefits of CHWs from CHMT members in all 6 districts and a desire for the program to continue. The CHW Program has been operational for a year and has demonstrated results, gained momentum and built local community capacity. It has brought the community and health facilities closer, improved access to services and has demonstrated impact in reducing maternal and child deaths. As a result, most districts are considering including CHWs as part of their next CCHP budget or finding some means of supporting and maintaining them through other funding mechanisms.

In conclusion, TABASAM is very grateful for the opportunity to work alongside the MOHSW and the Regional and Local Governments authorities in supporting the important contribution made by CHWs to Tanzania's national health system – and we look forward to our ongoing collaboration in the future.

Tanzania Youth Alliance combating HIV/ AIDS

SHAREEQUE A. SADIQ

Ohio Wesleyan University, United States of America

Background

Around the world there are numerous organizations that struggle to control HIV/AIDS, but Tanzania Youth Alliance has found ways to do so by educating individuals about HIV/AIDS, bringing the community together and setting up programs to empower the youth. TAYOA was established in 1997. Tanzania Youth Alliance's vision is, "TAYOA empowers youth of Tanzania to take charge and engage in improving their quality of life that is free from poverty and diseases". This steered into the mission statement, "To coordinate and build capacity of youth in Tanzania to acquire knowledge and skills for Disease Prevention, Entrepreneurship and Good Governance??" Tanzania Youth Alliance's vision and mission statement directed the organization to come up with seven strategies to achieve their objectives.

TAYOA is divided under several portals, including Market development, Jobs, Financial literacy, Governance, Health, and Education. Market development, is described as TAYOA giving out small amounts of money to women who want to start a little business. Additionally, TAYOA engages in helping college graduates find jobs and trains youths for internship opportunities. As an example, TAYOA has a special department that goes through eight to ten newspapers per day looking for job opportunities. After finding the job opportunities in the newspapers, the Tanzania Youth Alliance's staff cuts, scans and posts the article on their Jobs Portal for individuals to look and apply to. Moreover, TAYOA has a unique program called the Leadership and Job Training, which helps college graduates prepare for interviews and public speaking skills in the business world. Moreover, TAYOA teaches youth about financial literacy with the help from National Bank of Commerce. The financial literacy has helped numerous students start their own savings and checking accounts.

TAYOA emphasizes on good governance and unity among the youth because they believe that the youth are the future of the Tanzanian government. There are a few dishonest political leaders who hold the country back and Tanzania Youth Alliance's objective is to encourage youth to get involved in the local government and in Parliament to unite the students together for a greater cause. As an example, TAYOA has a group of students who actively view and particulate in the local government and at the Parliament level.

Another portal that TAYOA is based on is Health. Categories for health are healthier eating choices, avoiding drugs, and physical and sexual abuse and HIV/AIDS prevention. Making healthier eating choices is one of the categories of health because many Tanzanian youths have access to a great deal of unhealthy foods. Avoiding drugs and educating the youth about drug-use is an important aspect of TAYOA because drug-use hinders their ability to grow mentally, physically, and emotionally. That is why TAYOA focuses on educating the youth about drug-use and where they can receive help for themselves and/or for their family or friends. Domestic violence and sexual abuse is another element of health. Domestic abuse and sexual abuse usually occurs when a man is under the influence of alcohol. To combat domestic violence and sexual abuse TAYOA has multiple programs, including several helplines that women can call to report what has happened and to seek medical attention. Additionally, TAYOA wants to improve the quality of life for individuals by freeing them from poverty and diseases. Poverty and HIV/AIDS go in a parallel line and if TAYOA can improve one, the other one will develop itself. That is why TAYOA focuses on educating individuals about safe sexual practices, and condom use during

sexual activities and being faithful and loyal to one person. But, overtime, TAYOA has primarily focused on educating individuals about safe sexual practices and condom use during sexual activities because those two methods have been successful.

TAYOA launched four projects in relation to the online portals. The projects are called National AIDS Helpline, VijanatzAjira /Jobs Incubator Project: Improve the employability of disadvantaged African Youth, TAYOA Youth Programming: Engaging young people to make positive decisions, and Tanzania Youth Alliance's One Stop Center for Gender Based Violence (GBV).

The National AIDS Helpline started in 2001 with only one telephone line operating for two hours a day. But, the AIDS Helpline has when through numerous changes to expand its availability and the standard of its services to the Tanzanian people. As an example, the National AIDS Helpline hired sixty-eight permanent and freelance counsellors. The AIDS Helpline has received 1.8 million callers, in counting. The Helpline currently has a working database, which includes information from voluntary counselling and testing, prevention of mother-to-child transmission of HIV, sexually transmitted infections, relationship guidance, GBV, behaviour change, and treatment opportunities. One of Tanzania Youth Alliance's main objective are to make people feel comfortable and safe as much as possible when they are calling to speak to the counsellors because seventy- eight percent of all callers are between the ages of 14 - 24 years old. Each day the AIDS Helpline receives approximately one thousand calls and most of those calls are referred to medical services.

VijanatzAjira/ Jobs Incubator Project: Improve the employability of disadvantage African Youth is designed for youth who are between the ages of 16 to 35 in Dar es Salaam and Kilimanjaro. Another name for this project is Youth ICT Empowerment Project. The Youth ICT Empowerment Project has two components. "First, the employability component focuses on computer-based training and internships for unemployed graduates and university students. It also provides entrepreneurial training and assistance in youth enterprise development for youth who lack higher education." (Vijanatz.com). Youth ICT Empowerment includes teaching individuals about, life skills, information and communication technology, job searching techniques, entrepreneurship skills, business planning/ development support, and internship placement. The outcome of the Empowerment Project has place graduates and unemployed youth in respectable jobs, internships, and community service positions and helped some students start a professional career. Additionally, this program has helped a few students start their own business in poultry, milk and honey farming. The ICT Empowerment Project has trained six hundred youths during the first six months, provided online support for one thousand five hundred youths and has helped five hundred youths in writing their business plan.

TAYOA Youth Programming is a project that engages young people to make positive decisions based on behaviour, education and Outreach Programs. The object of Youth Programming is to promote abstinence, delayed sexual debut, partner reduction, and consistent condom use among young people through life skills and HIV and sexual reproductive health education.

Tanzania Youth Alliance's One Stop Center for GBV is another project that was introduced, in partner with the National AIDS Helpline. The main objective of the GBV project is to establish a One Stop Center that meets the medical, social and legal needs of women and children who have experienced physical, sexual or psychological violence and abuse. One Stop Center for GBV focuses on assisting the victims and their family from facing farer abuse from their abuser and stopping the vicious cycle of violence.

On the other hand, TAYOA has combined its National Health Helpline project with the One Stop

Center project to provide counselling, information and referral services for those individuals who have suffered from GBV and HIV/AIDS. Through the National Health Helpline those individuals are now seeking medical assistance.

When TAYOA began they had insufficient financial support. But over the fourteen-year period, TAYOA has gained many sponsors. As an example, Tanzania Youth Alliance's major contributors are the United State of America President's Emergency Plan for AIDS Relief (PEPFAR), the Tanzanian Ministry of Health and Social Welfares, the United States Center for Disease Control and Prevention (CDC), United State of America Department of Health and Human Services, Embassy of Finland, Embassy of Ireland, Embassy of Poland, Embassy of Switzerland, the United Nations, National Bank of Commerce (NBC), the Coca' Cola Company in Tanzania, Vodacom, Airtel, Tigo, Zantel and fundraising done by TAYOA themselves.

Materials and Methods

The research method that was picked to conduct this research was a voluntary questionnaire to the Tanzania Youth Alliance's staff members and a one and a half month long internship. Due to the limited time spent at Tanzania Youth Alliance, this research is preliminary.

Results

Combating HIV/AIDS in Tanzania

TAYOA is combating HIV/AIDS by creating social awareness for the youth, providing programs to reduce risky behaviours and empowering the youth. TAYOA is creating social awareness for the youth by using mobile technology especially Short Message Service (SMS) and National AIDS Helpline. Additionally, TAYOA provides free counselling for those individuals who are infected with HIV/AIDS to prevent the spread of AIDS. So, to avoid this from happening TAYOA offers free HIV/AIDS counselling to those who need it. TAYOA also has a free mobile HIV/AIDS testing centre for those communities that are in the rural areas of the country who do not have access to HIV/AIDS testing. Moreover, mobile technology is used to spread HIV/AIDS prevention and treatment messages. As an example, TAYOA has a motto that states, "Graduate with a new degree, not a new HIV/AIDS infection." This motto is design to encourage the youth to use Condoms. Condom use is another part of TAYOA social awareness strategy because the Tanzanian Youth Alliance understands that educating the youth is more important than asking the young people to practice sexual abstinence.

In order to practice safe sexual behaviours among the youth, TAYOA also provides programs to reduce risky behaviours such as, unprotected sexual intercourse. The programs that TAYOA provides are combating HIV/AIDS in school, commercial sex workers, and men having sex with other men. Combating HIV/AIDS in schools, colleges and universities are the most important because youths are more likely to attract HIV/AIDS because they do not have the proper sexual awareness or the knowledge compared to elder couples that have been sexually active. Commercial sex workers also practice risky sexual behaviour because they are more likely to receive more money if they do not use a condom. To reduce that TAYOA tries to show the commercial sex workers the health issues HIV/AIDS can cause in the long run. This, in most case leads to safer sexual behaviours.

Empowering the youth is another tool to combat HIV/AIDS in Tanzania. Empowerment gives the youth a psychological mental boost that leads them to make better choices overall. As an example, if a youth as taught what HIV/AIDS is, what health affects it has on an individual's body and how to avoid HIV/AIDS from Secondary School that child is less likely to become sexually

active. Additionally, empowering the youths on economic issues is beneficial because it allows the youth to be financially independent and have decision-making power within them. TAYOA has a particular program just for that and it is called the Entrepreneurship and Employability project. The main objective of the Entrepreneurship and Employability project is to empower youths to start their own business and to help them prepare for and find jobs. Additionally, the Entrepreneurship and Employability project also focus on teaching youths about life skills/ planning to combat HIV/AIDS. Social awareness for the youth, providing programs to reduce risky behaviours and empowering the youth are important tools in combating HIV/AIDS in Tanzania.

Challenges faced by Tanzania Youth Alliance

The challenges that the TAYOA is facing are inefficient funding, not enough staff members for conducting outreach activities and the shortage of HIV testing kits for the Mobile HIV/AIDS Testing Center. Mentioned earlier in the research, funding for non-governmental organizations is limited because there are several non-governmental organizations and not enough financial capital to go around. Inefficient funding affects TAYOA in numerous ways. As an example, TAYOA has a negative perception among some rural communities and the youths that live there. Some rural communities and the youths believe TAYOA is just another non-governmental organization taking money from the West and putting the money in their personal pockets. But that is not truth, TAYOA has several programs, which are very expansive to run that have benefited the Tanzanian youth the most. The reason why TAYOA needs additional donor support is to change that perception of those individuals by increasing spending on awareness and outreach programs. Additionally, TAYOA believes that the youth are the future and that they are linked to the country's economic, social and political growth and movement.

Inefficient funding also ties in with not having enough staff members to conduct programs completely. Not having enough staff members affects everything including activities and staffing for activities. The program that is affected the most by under staffing is the outreach activities. The outreach activities are activities that are designed to go in to the rural communities to spread HIV/AIDS knowledge. At this point, the seed of negative perception is formed because TAYOA comes to the community for a small period of time, spreads the message and leaves. There is not a constant flow of information coming in to the community due to lack of funding and overtime people develop a negative perception about Tanzania Youth Alliance.

On the other hand, TAYOA also provides free HIV testing in rural communities to youths and young adults in their free Mobile HIV/AIDS Testing Center. The major constrains to the Mobile HIV/AIDS Testing Center is the shortage of HIV testing kits and the hours the testing is provided in the communities are limited. Therefore, not everyone is tested in the community, including commercial sex workers. The free HIV testing helps reduce risky behaviours from the young adults and the youths. "But, also with Mobile HIV/AIDS Testing Center – TAYOA have been counselling and testing young people and youths whom would otherwise never [be] tested [for HIV/AIDS]", from an individual who participated in the research. TAYOA is also working with different Universities and Colleges to conduct free HIV/AIDS testing services in those institutions to bring awareness. With the Mobile HIV/AIDS Testing Center, TAYOA also focuses on a "Graduate with [a] Degree, not with [a] new HIV infection" campaign. This campaign is geared towards university students to encourage them to use a condom if they choose to be sexually active. If Tanzania Youth Alliance's funding is increased, it will expand on its services to advance and carry out their operations in effectively ways.

According to the individuals who participated in this research suggested addressing the challenges that TAYOA is facing by raising their own funds, working with different universities and colleges to increase HIV/AIDS awareness, and utilizing resources effectively and efficiently.

Other recommendations by the participants were awareness creation intervention, seek additional donors to contribute and expand Tanzania Youth Alliance's services, partnering up with different businesses and schools, effectively and efficiently planning of events and activities, using interns and volunteers effectively to assist in Tanzania Youth Alliance's activities, and focus on the activities that are funded only. All those ideas sound great but the ones that seem genuine are 1.) Utilize resources effectively and efficiently, 2.) Use interns and volunteers to assist in Tanzania Youth Alliance's activities, such as the outreach activities and 3.) Partner up with different businesses and schools to spread HIV/AIDS awareness. Those ideas seem genuine because they are making TAYOA self-reliant.

Discussion

Tanzania Youth Alliance's plans for the next five years are to become locally known in schools and universities by every youth and young adult, improve their Entrepreneurship and Employability program, and increase the staff members in programs. "I see TAYOA empowering young people and other vulnerable groups like key populations that are affected by HIV/AIDS. With [Tanzania Youth Alliance's Information Communication] Technology, TAYOA has a potential to cover the whole nation easily and bring measurable impact to the communities. I think technology is a tool that can be used not only on HIV/AIDS issues but other health related issues and non-health issues like women empowerment and domestic violence. TAYOA expanding more on HIV/AIDS and more on other health issues like malaria, malnutrition and tuberculosis. I see TAYOA addressing all areas that are affecting the communities and make them remain in poverty" from an individual who contributed to the research. Additionally, Tanzania Youth Alliance's One Stop Center for all Information Communication Technology Services has helped youths to deal with their challenges that they did not, correctly know how to address before TAYOA influenced them.

Conclusion

In conclusion, TAYOA has done a great job in combating HIV/AIDS in Tanzania. TAYOA has created social awareness for the youth by using mobile technology especially in Short Message Services and National AIDS Helpline. Therefore, Youth Alliance also focused on condom use, demonstration and distribution to the youth to allow the youths to reduce risky sexual behaviour and to practice safe sexual behaviour. Social awareness on the other hand provided programs to reduce risky behaviours and empowered the youth, which are important tools in combating HIV/AIDS in Tanzania. Empowering the youth gave the youth the psychological boost that they needed to make better choices overall. TAYOA has advanced on reducing HIV/AIDS by involving themselves in the community, and by raising funds to provide more services and to cover more areas of the community. The programs that have benefited the Tanzanian youths the most are the National AIDS Helpline and the Entrepreneurship and Employability program. The challenges that the TAYOA are facing is inefficient funding, not enough staff members for conducting outreach activities and the shortage of HIV/AIDS testing kits for the Mobile HIV/AIDS Testing Center. TAYOA is doing their best to utilize resources effectively and efficiently, use interns and volunteers to assist in outreach activities and to partner up with different businesses and schools to spread HIV/AIDS awareness. Overall, TAYOA is becoming self-reliant but they still need donor support.

References

Internship at Tanzanian Youth Alliance
http://www.tayoa.or.tz/tayoa/?page_id=349

http://www.tayoa.or.tz/tayoa/?page_id=354
http://www.tayoa.or.tz/tayoa/?page_id=363
http://www.tayoa.or.tz/tayoa/?page_id=453
http://www.tayoa.org/tayoa/?page_id=6
http://www.tayoa.org/tayoa/?page_id=128
http://www.tayoa.org/tayoa/?page_id=75
<http://www.tayoa.org/tayoa/wp-content/uploads/2013/04/TAYOA-Helpline-Presentation.pdf>
<http://www.vijanatz.com/tz/>
<http://www.afyatzsms.com/afyatzsms/>
<http://vijanajobs.com/tz/jobs/>
<http://www.biasharatz.com/biasharatz/>
<http://vijanatv.blogspot.com>
<http://www.fedhatz.com/fedhatz/>
<http://www.kazitz.com/kazitz/>
<http://www.ujasiriamalitz.com/ujasiriamalitz/>
President's Emergency Plan for AIDS Relief Blueprint: Creating an AIDS- free Generation. (PDF)
TAYOA“117 National AIDS Helpline and 15017 Free SMS for Health” (PDF)

Double Burden of Diseases

FAUSTINE NJAU

Tanzania Public Health Association, Dar es Salaam, Tanzania

Abstract

Africa faces a double burden of communicable and non-communicable chronic diseases. While infectious diseases still account for as large proportion of least 70% of deaths on the continent, age specific mortality rates from chronic diseases as a whole are actually higher in sub Saharan Africa than in virtually all other regions of the world, in both men and women. Tanzania has similar patterns of morbidity and mortalities. The continent is projected to experience large increase in death rates from cardiovascular disease, cancer, respiratory disease, injuries mainly due to accidents and diabetes if the trend is not checked. African health systems are weak and national investments in healthcare and service delivery are weak. The priorities for Tanzania are correct under Sector Wide Approach (SWAp) for a number of years. There is a strong consensus that Africa faces significant challenges in double burden of disease policy, strategy, service provision and systems research. This presentation highlights on the weak health systems, social determinants for health and also proposes way forward. It suggests that there in a life course approach and the two conditions run in parallel and not in a sequence. At times there is co-morbidity of CD and NCDS. The new epidemics like Ebola, Marburg and other re-emerging conditions and escalation of NCDs need to be fully addressed in the health system and also the social dimensions of health. This needs to be a joint approach by all key actors; “health in all policies” as the underlying, upstream determinants includes rapidly increasing urbanisation, poverty and lack of government programmes for the prevention of CVD and related chronic diseases. This is a call for all the sectors to act and not health alone.

Life course in double burden of diseases

The health of the population depends both on the provision of health care for the sick and the efforts organized by society to protect, promote and restore people’s health from pregnancy, at birth, neonates, childhood, teenage, adulthood and at old age.

Since the dawning of civilization, humankind made remarkable progress in advancing public health and improving people’s health, but in many ways, we are facing intractable and emerging health problems. Tanzania is not exempt. During the last 100 years, the application of scientific and technological breakthroughs in health has brought accelerated progress in control of communicable diseases in industrialized countries; but, the fundamental success factors lied on social and economic development that improved environment, housing, food, nutrition, education, water supply, hygiene and sanitation; and other key health determinants. This is evident with diseases like Typhus fever, Smallpox, Plaque, Anthrax, Syphilis, Cholera, and malnutrition; to mention only a few.

From inception, neonate, under one year, under five years, adolescence, teenage and adult hood and aging above 50 years to the time when death occurs, is a live course of events which affect our health in different ways. The BOD is in every age group. From conception, there are diseases which are inherited through genetic mapping; such as Sickle cell disease, Down’s syndrome and others are infections transmitted from mother to child; including Syphilis, Gonorrhoea, and hepatitis e.tc. Today we have HIV and AIDS on the top of the list. The most at risk groups are the <5 yrs, pregnant mothers, but for now we have accidents of all types at places of work and road

accidents which are claiming a substantial number of lives and injuries on daily basis. In 2011, the Tanzanian Traffic Police reported 3,981 deaths and 20,802 injuries on Tanzanian roads. Pedestrians accounted for 32% of deaths and 20% of injuries (Tanzania Traffic Police (2011)). Violence-related deaths were 10,357 deaths or 2.35% of all deaths. According to sentinel panel of districts 9% of deaths 5 years and older are due to injuries.

As the economy improves, the demands on the health care have increased. This is made worse by climate changes and new emerging and re-emerging diseases both communicable (Ebola, Marburg and others) and non-communicable ones. Tanzania population growth rate of 2.9% is high. The investments in health do not commensurate the demands in health services and the increased cost of inputs to the health care. The demand is greater than the supply. This situation is not unique to Tanzania alone. To date, developing countries, particularly in Sub-Saharan Africa are facing a double burden of communicable and non-communicable diseases associated to high infant and maternal mortality and epidemics. This is further aggravated by the prevailing weak health systems, poverty and weak economic performance that pose serious challenges to health and development.

If we compare the key health indicators in the world, for example those related to the Millennium Development Goals, we are struck with the uneven distribution of health across countries, within countries, and between population sub-groups, e.g. rich and poor, men and women. There are differences between rural and urban areas in coverage of key health services, such as, skilled attendance at birth, immunization, and diagnosis and treatment of common diseases. These inequities can be avoided through adoption and implementation of relevant health and development policies that seek to minimize variation of health indicators associated with socio-economic status.

Available evidence shows a strong and positive correlation between health and wealth, education status, urban and rural divide. Public Health as a discipline is at the crossroads. There are major changes due in part to globalization, political and economic reforms, demographic and epidemiological changes, and new technologies, open access to information and communication, and relatively high literacy rates among the population. These changes have brought both positive and negative effects in the way we perceive and manage health systems.

The case of Ebola outbreak in West African Countries is a case at hand which indicates weak health systems can create havoc not only on the lives of citizens and the economy but fear and panic across the world. Communicable diseases have shown how the resurgence can affect us and the NCDs are running in parallel and need to be addressed simultaneously and not in series. Therefore, decision-makers, managers, health professionals and other relevant stakeholders should be prepared to address a broad and ever-increasing public health agenda, with new problems being assigned over time. There is a need to harmonize and align and integrate the management of the double burden of diseases in the existing systems instead of creating new vertical programs.

Over the last 30 years life expectancy has increased globally. According to the World Health Statistics 2011, the average life expectancy at birth was 68 years in 2009, ranging from 54 in the African Region to 76 years in the Region of the Americas. Tanzania life expectancy is 61 years females and 58 years male. More than a billion of the world's poorest people are not benefiting from major advances in health care, and several countries particularly in sub-Saharan Africa have seen a decline in life expectancy due in part to the HIV/AIDS epidemic.

According to the WHO Global Burden of Disease, about 59 million people died in 2008, globally. Almost 18.6% of those deaths occurred in the African Region which shares about 12.1% of the world's population. Communicable diseases represent 63% of total deaths in the African Region. HIV/AIDS, diarrheal diseases, malaria, Tuberculosis, and childhood diseases cause 88% of those deaths. HIV/AIDS alone, accounts for 38.5% of deaths from communicable diseases and 15.6% of all deaths in the African Region. Nevertheless, all these diseases are preventable!

Tanzania Access to and coverage of PMTCT and ART continue to increase according to HSSP III national targets [MTR, 2014). There is good access to eMTCT (93% of RMNCH clinics) and coverage of ARV prophylaxis among HIV positive women has increased to 77%. ART coverage rates are on target and have increased to 53% (65%) of adults and 31% (48%) of children: 260,000 adults and 21,000 children were on ART by the end of 2011. Treatment is initiated earlier and survival rates in the first year have improved to 93% among those who initiated in 2010. Loss to follow up from the initial ART clinic is still a major challenge (25%).

Globally, the proportion of children under five years of age who were underweight declined from 25% in 1990 to 18% in 2005 despite the fact that prevalence in under-nutrition has increased in some countries, and globally stunted growth affects about 186 million children under five years of age. However, child mortality continues to decline in the African Region mainly due to concerted expansion in coverage of immunization programs and the Integrated Management of Childhood Illness - IMCI approach. Though, the current statistics show that about 40% of deaths among children fewer than 5 years of age are estimated to occur in the first month of life, reflecting poor attention to neonatal care. According to WHO reports, the greatest reductions in child mortality have been recorded among the wealthiest households and in urban areas.

In Tanzania, Child mortality continued to rapidly decline to 81 per 1,000 live births for 2006-2010, and the HSSP III and MDG target of 54 by 2014 is likely to be met. The gaps between urban and rural children and between the poorest and best-off have reduced considerably and are generally small. Tanzania's child mortality progress is among the best in the region. Neonatal mortality is also declining but at a slightly slower pace and is becoming more prominent, with now almost one third of child deaths occurring in the first month of life.

The risk of maternal death is highest in the African Region where 620 deaths occur per 100,000 live births compared, for example, to 21 per 100,000 in the European Region. Maternal mortality is the indicator that shows the widest gaps between rich and poor, both between and within countries. In the African Region, maternal, perinatal and nutritional conditions represent 12.2% of deaths. Unfortunately the African region is not on track to achieving the MDG5.I. September 2010 the Secretary General of the United Nations launched the "Global Strategy for Women's and Children's Health", with the goal of saving 16 million lives by 2015 in the world's 49 poorest countries. Tanzania is one of them. The Heads of State and Government of the African Union debated on "Promoting Maternal, Infant and Child Health and Development in Africa" in Uganda, 2010, committed their countries on key actions to accelerate efforts to improve the state of Africa's women and children. MMR for Tanzania stands at 454/100,000 live births as of to date (Population Census, 2012)

Non-communicable diseases

Chronic diseases including mental disorders represent about 60% of the current global disease burden. Worldwide about 37 million deaths are attributable to non-communicable diseases (NCDs); that is, 63% of the total number of deaths. Available estimates in the African Region show that 3.0 million deaths annually are attributable to non-communicable diseases. There is no

reliable data on cause-specific mortality and burden of disease in Tanzania. Therefore, one has to rely on estimates. According to WHO statistics for 2008, 13% of the total years of life lost were due to non-communicable diseases and 8% due to injuries. The remaining 78% was due to communicable diseases. Accordingly the recent IHME-GBD 2010 study none of the non-communicable conditions appears in the top 10 causes of DALYs.

Table 1: Burden of disease global trends in non-communicable diseases, 2006-2015

Geographical regions (WHO classification)	2005 Total deaths (millions)	2005 NCD deaths (millions)	2006-15 NCD deaths (millions)	2006-15 Trend: Death from infectious disease	2006-15 Trend: Death from NCD
Africa	10.8	2.5	28	+6%	+27%
Americas	6.2	4.8	53	-8%	+17%
Eastern Mediterranean	4.3	2.2	25	-10%	+25%
Europe	9.8	8.5	88	+7%	+4%
South-East Asia	14.7	8.0	89	-16%	+21%
Western Pacific	12.4	9.7	105	+1	+20%
Total	58.2	35.7	388	-3%	+17%

WHO projects that over the next 10 years, the largest increase in deaths from cardiovascular disease, cancer, respiratory disease and diabetes will occur in developing countries (WHO Chronic Disease Report, 2005)

Table 2: Ten leading causes of death in the world

Cause of Death	Deaths in millions	% of deaths
Ischaemic heart disease	7.25	12.8%
Stroke and other cerebrovascular disease	6.15	10.8%
Lower respiratory infections	3.46	6.1%
Chronic obstructive pulmonary disease	3.28	5.8%
Diarrhoeal diseases	2.46	4.3%
HIV/AIDS	1.78	3.1%
Trachea, bronchus, lung cancers	1.39	2.4%
Tuberculosis	1.34	2.4%
Diabetes mellitus	1.26	2.2%
Road traffic accidents	1.21	2.1%

The rapidly increasing burden of NCDs is affecting poor and disadvantaged populations disproportionately contributing to widening health gaps. Most of chronic diseases are associated with major risk factors such as tobacco use, unhealthy diets, physical inactivity and alcohol abuse. In general, risk factors for chronic diseases are common in Tanzania. There is evidence from community and hospital studies that several NCDs are a common cause of illness and death, such as ischemic heart disease, stroke, diabetes, chronic obstructive pulmonary disease (COPD) and cancers. Data from cancer registry 2006 to 2009 shows that cervical cancer, Kaposi's sarcoma and breast cancers are the three most common cancers seen at Ocean Road Cancer Institute representing 35%, 12% and 8% of all cancers respectively.

In 2012 a national population based survey was conducted among 5,860 adults 25-64 years (WHO STEPS) (Mayige et al., 2012). The survey provides a comprehensive picture of chronic disease risk

factors in Tanzania. It shows that many risk factors are highly prevalent in Tanzania and greatly increase the risk of cardiovascular and other diseases.

What can be done to address the double burden of diseases

Needless to say that the untapped potential of public health approaches such as health promotion, disease prevention and specific protection, could make significant difference in reducing the level of exposure of individuals and populations to these modifiable factors. It is to be noted though; there is almost co-morbidity of NCDs and CDs; in parallel, in series or overlapping each other. The alarming growing trend of NCDs has been subject of intense global debate. In September 2011 a Resolution of the United Nations General Assembly, adopted the Political Declaration on the prevention and control of non-communicable diseases. In October 2011, the World Conference on Social Determinants of Health held in Rio de Janeiro, Brazil offered an excellent opportunity of debate on issues of governance for health, community participation, equity in health, and finally adopted the Rio political declaration on social determinants of health that makes a resounding call for global action towards policies needed to achieve both sustainable development and health equity through action on social determinants. Tanzania has adopted the Rio declaration and translated these into actions. In the ongoing preparations of the strategies and plans the NCDs have been accommodated.

To respond to the huge disease burden, disabilities and premature deaths due to communicable and non-communicable diseases, the unfinished agenda of reducing infant and maternal mortality, and addressing emerging and re-emerging diseases; the World Health Organization provides in its 11th General Programme of Work (2006-2015), seven key orientations:

1. Investing in health to reduce poverty; for Tanzania this is aligned in MKUKUTA and health sector strategic plans which are linked to Vision 2025.
2. Building individual and global health security;
3. Promoting universal coverage, gender equality, and health-related human rights; Tanzania has moved towards the Social Health Insurance through Health Sector Financing Strategy in the offing.
4. Tackling the determinants of health; Here there is still a challenge as these are many and requires a lot of advocacy at all the levels. There is a need to address the issue of behaviour at personal, household and community levels
5. Strengthening health systems and equitable access to health care; this is a challenge given the observed dwindling health sector budgets and financing by the government and development partners.
6. Harnessing knowledge, science and technology to improve health; and
7. Strengthening governance, leadership and accountability in health.

In this context Tanzania has highlighted: WHO normative and policy guidance; health systems based on the primary health care approach through Primary Health Service Development Program (MMAM 2007-2017); the health of mothers and children first; accelerated actions on HIV/AIDS, malaria and tuberculosis; prevention and control of communicable and non-communicable diseases and; accelerated response to risk factors and key determinants of health. One clear challenge is a weak health system and financial resource allocation is dwindling from both the domestic sources and the donors.

The Millennium Development Goals

Achieving the highest possible level of health implies addressing current and emerging health problems. Progress towards achieving health Millennium Development Goals is unequal

throughout the world. Some parts of the world are doing better than others. In the African Region for example, very little progress was made towards MDGs 4 and 5. Therefore, the world has to tackle both the intractable public health problems and new emerging ones. New threats to public health are commonly associated to socio-economic and demographic factors, (e.g. population growth rates, international trade, poverty, urban migration, international travel, social disruptions); individual and collective human behaviour e.g. diet, illicit drug use, sexual practices. Poor environmental aspects which include the use of pesticide and antibiotics in crop and livestock management, changes in food processing, inadequate coverage of potable water and sanitation. The Health systems challenges matters; such as the use of technologies, availability and use of human resources, financing, among other determinants.

The global recognition of new public health challenges is of particular significance in the African region. Adaptation to climate change: droughts in the horn of Africa and the Sahel have resulted in environmental distress that impact negatively on food security, nutrition and health of people. Internal displacement of people as a result of civil wars in Africa has a lot of bearing on malnutrition, poor health and on injuries. Urbanization in Africa is rapidly evolving with overcrowding, and pollution, which may lead to outbreaks, violence and other negative effects on people's health.

Changes in the interface between wild-life and human settings are creating interactions between animal and human health and is increasing the risk of new pathogens and diseases, calling for One Health initiative to address the issue of zoonosis. Emergence of germs that are resistant to common antibiotics such as resistant strains of pathogens related to AIDS, Tuberculosis and Malaria is another big challenge.

These new public health challenges create increased demands on health systems to detect and mitigate them. Tanzania should be ready to face these challenges now. TPHA should be in the middle of this readiness and appropriate response.

From what to how!

Addressing the public health challenges in the 21st Century requires a strengthening the health systems. Health systems are subject to powerful social and economic influences that often pull them from their intended goals. We need sounder health policies underpinned by the primary health care values and principles. We need reforms that redesign health systems in a more holistic manner; in which public health is a shared responsibility that recognizes the important role of individuals, households, the environment we live in, the ecosystem and the communities.

Strides Towards global health equity require, a more critical approach of health systems, within which Public Health as a theoretical framework incorporates a broader range of individual and societal issues; and identify interventions that are relevant to different contexts and environments.

Health in all policies is a must to tackle health determinants and risk factors to reduce the double burden of diseases (DBOD). Intersectoral, multisectional and multidisciplinary collaboration, actions and partnerships are important requirements of public health. It is in this context that I would like to see the important convening role of TPHA. This annual scientific conference is an indicator of that action.

Strategic health interventions

The health policies and strategies need to ensure **“attainment by all the peoples the highest possible level of health”**. Through better health leadership, partnerships with other stake holders, setting norms and standards of health services delivery, better research agenda to provide evidence of effective interventions and quality of services. Monitoring performance is a key to service provision including, to address the burden of communicable diseases, address the NCD appropriately; reduce risk factors associated with use of tobacco, alcohol, drugs and substance abuse, unhealthy diets, and physical inactivity advocating for behaviour change and counselling facilities, promote a healthier environment, intensify primary prevention and influence public policies in all sectors to address the root causes of environmental threats to health and improve nutrition, food safety and food security in support of public health and sustainable development, improve health services through better governance, financing, staffing and management,

What needs to be done?

We need to fix the systemic issues in the sector. Investing in health to address the issue of poverty, ensure health security, addressing the social determinants of health, factoring the issue of equity, gender and human rights for health care. Acquire new knowledge and technology and strengthening good governance and leadership, tackle the broad aspects of the burden of diseases including both communicable and non-communicable diseases. Special attention should be focused on the vulnerable groups to bring down the DBOD. More resources to be allocated to the sector to be efficiently and effectively put to use and we need also to focus on the climate change and associated disasters.

The role of Tanzania Public Health Association in the coming decade

Tanzania Public Health Association (TPHA) needs to advocate for Public Health at all levels and transform the association to a reputable knowledge bank and a reference centre for health policy debates including carry out evidence based policy studies. Advise for better management and leadership of health system, for health services delivery to all the citizens and participate fully in Emergencies and Epidemics and provide Technical Guidance to the ministry when and where is needed.

Advocating for more PPP engagement, enhancement of the ethical code need to be revisited and strengthened for more effective professionalism and better services to the users of the services. Advocate and support for private production of the allied health workers that can have opportunities to work both in public and private health facilities. It does not make much sense to have private providers through dispensaries, health centres, hospitals and clinics including maternal homes but not opening up the training opportunity by private sector to train clinical officers, pharmaceutical technicians, nurse midwives, sanitarians to mention only a few. We are indebted to advice on this noble course. In this endeavour we will be addressing the DBOD in a broader perspective.

Nutrition knowledge, attitudes and practices among healthcare workers in management of chronic kidney diseases in selected hospitals in Dar es Salaam, Tanzania

ADELIN E. MUNUO¹, BEATRICE MUGENDI², ONESMO A. KISANGA³

¹Tanzania Food and Nutrition Centre, Dar es Salaam, Tanzania ²Dedan Kimath University College of Technology, Nyeri, Kenya ³Muhimbili National Hospital, Dar es Salaam, Tanzania

Abstract

Chronic kidney disease (CKD) is amongst non-communicable disease though given low priority by the World health organization. CKD is not only common, harmful and treatable but also a major contributing factor to the incidence and outcomes of diabetes, hypertension and cardiovascular diseases. However, there is limited information on the nutrition knowledge on management of CKD among healthcare workers in Dar es Salaam Tanzania. The aim of this was to assess nutrition knowledge, attitudes and current practices of healthcare workers in management of patients with CKD in selected hospitals. This cross sectional study was conducted amongst 133 healthcare workers in renal units between December 2011 and March 2012. Hospitals were purposively selected based on the availability of renal care services in the facility. Nutrition knowledge was assessed using a standardized questionnaire. The mean nutrition knowledge score was 9.8 (SD 3.12). There was a significant difference in the nutrition knowledge among cadres ($p \leq 0.001$). Medical specialists had a higher mean score (13.75) compared to medical doctors and nurses with mean score 12.05. Other cadres had lower mean score of 8.65. Likert scale showed that 94% had positive attitudes on the role of nutrition in preventing and treating diseases. Most of respondents 92% did not use any nutrition guidelines. Nutrition management was discussed occasionally during ward rounds. Significant relationships between nutrition care practices and some demographic variables were observed. These included occupation ($\chi^2= 12.9$; $df= 4$; $p= 0.014$) and work experience ($\chi^2= 15.8$; $df= 3$; $p= 0.001$). Inadequate nutrition training in medical school, lack of resources and motivation were identified as obstacles to good nutrition management of CKD patients. In conclusion, Nutrition knowledge among study participants was poor; though their attitude was positive they failed to practice due to poor knowledge. Review of medical curriculum to incorporate clinical nutrition topics, continuous nutrition education programs for in-service healthcare workers and hiring dieticians in each hospital department would improve nutrition management of CKD patients in hospitals.

Introduction

Chronic kidney disease (CKD) is a permanent and progressive loss of kidney function, which results in deterioration of renal function or End-Stage Renal Disease (ESRD). Olugbenga *et al.*, (2010), found ESRD as a devastating medical, social and economic problem for the patients, their families, and the country as a whole. The overall management of CKD focuses on medication, dialysis, transplant and nutrition. Study has found that Nutrition play a major role in the protection of renal function and well-being in the CKD patient (Moore *et al.*, 2003). With increasing evidence on relationship between nutritional status and risk of several diseases and disorders, the nutrition and infection cycle, knowledge on synergistic and antagonistic drug-nutrient reactions, role of optimal nutrition and patient recuperation, clinical nutrition service is now globally recognized as an essential component of health care system and its operations (Williams, 2001). An understanding of the normal functioning of kidney in health as well as their impaired functioning in disease is essential for relating the dietary management of different renal disorders (Khanna *et al.*, 1997). Nutrition knowledge changes with new scientific evidence. Information from health workers to patients has been found to have a positive and significant

correlation with adoption of dietary behaviour and reduced risk of nutrition related chronic disease (Fox et al., 2006).The importance of nutritional assessment and diet therapy in the overall management of the patients with CKD is unquestioned; however, ability of healthcare workers to provide accurate, practical and consistent dietary advice appropriate to the needs of patients is limited (Hasse, 2006).

The objective of the present study was to assess nutritional knowledge, attitude and current practices of healthcare workers in management of patients with chronic kidney disease in hospitals in Dar- es Salaam region, Tanzania.

Materials and Methods

A cross sectional study design was conducted amongst 133 health workers working in renal units at Muhimbili National Hospital, Regency Medical Centre and the Aga Khan hospitals. Hospitals were purposively selected based on the availability of renal services in the facility. Study subjects were conveniently selected from the three hospitals and the sample size was 140. Permission to collect data was sought at the Research and Publication Committee of Muhimbili University of Health and Allied Sciences (MUHAS). Upon consenting to the study HCW were given the questionnaire to fill in the presence of researcher or the assistant at a place of the respondent's choice within the hospital premises and at their convenience.

A focus group discussion guide was used to collect information that could not be collected using the questionnaire such as “challenges encountered in nutrition management of CKD patients, perception and attitude about nutrition training in medical /nursing school, and measures that can be taken to improve nutritional management of CKD patients. A total of 30 healthcare workers participated in the focus group discussion.Nutrition knowledge was assessed using a standardized questionnaire. The level of nutritional knowledge was judged by the ability to correctly respond to the given questions. Attitude was measured using a Likert scale and the focus group discussion guide while practices were assessed using the questionnaire and the observation checklist. Data were analysed using SPSS computer software version 17 Chi-square was used to test the relationship between categorical variables. A p -value of < 0.05 statistical significant was used.

Results

Nutritional Knowledge

The study found that 59.4% of HCW had low nutrition knowledge. Although 88% of participants had nutrition training, only 11% covered topics in clinical nutrition as shown in table 1 Age ($\chi^2=16.69$; $p=0.01$) and work experience ($\chi^2=18.61$; $p<0.01$) related to nutrition knowledge of respondent significantly. 76.7% of respondents had negative attitude on nutrition practices at their work place, while 64.2 % had negative attitude regarding their own knowledge on nutrition related matters. 92 % of respondents did not use nutrition guideline; in most cases, nutrition care plan of the patients was not discussed during major ward round.Knowledge on CKD related nutritional knowledge. On assessment on knowledge on nutrients the study found that the majority (69.9%) were not aware of the important nutrients that are key to the management of CKD as well as their sources. In addition, most of them except for the nutritionists, and some doctors had not heard anything about medical nutrition therapy. The few (11.3%) who had this information got it from workshops and seminars. Questions regarding some nutrients restrictions in CKD management and recommendations were also poorly answered (Table 1).

Table 1: Response rates of CKD-related nutritional knowledge among health workers

Question	n (%)
Some vitamins may accumulate in the body to dangerous levels if large doses of vitamin supplements are frequently taken. Examples of this would be? 1) Vitamin B6, Bland C 2) Vitamin A, E and D* 3) Vitamin B2, Niacin and C4) Vitamin B and B ₁₂	61(45.9)
Carbohydrates are needed by the body for the following reasons except? 1) Glycogen stores and to spare protein for tissue synthesis 2) To insulate the body. 3) To help body fight infections* 4) As a source of energy.	87(65.4)
Which groups of food listed below are high biological value proteins? 1) Red beans, Milk, green grams. 2) Milk, chicken, fish* 3) Meat, lettuce, peas.4) Bread, beef, spinach	82(61.7)
The following are diet related risk factors for chronic kidney disease 1) Diabetes, hypertension* 2) HIV, cardiovascular disease 3) Typhoid, malaria4) Cancer, cholesterol	104(78.2)
Which of the following food is not a rich source of potassium? 1) Rice* 2) Banana 3) Spinach 4) Sweet potatoes	89(66.9)
Which of the following is central to management of Chronic Kidney Disease Mineral and Bone Disorder (CKD-MBD)? 1) Dietary calcium 2) Dietary phosphorous* 3) Dietary sodium 4) Dietary potassium	40(30.1)
Dialysis patients do NOT require supplementation of which vitamin: 1) Vitamin A* 2) Vitamin B 3) Vitamin C4) Folic acid	34(25.6)
“A person's nutrition requirements increase following chronic disease” 1) True* 2) False	96(72.2)
“Unless renal failure develops, or there is diminished urine output (oliguria) protein is NOT restricted” 1) True* 2) False	100(75.2)
“Adherence to dietary regimens can have a large impact on lifestyle and is often one of the most difficult aspects of management” 1) True* 2) False	102(76.7)

*Correct answer

Higher correct scores were obtained for questions regarding signs of patients with fluid overloads (65.1%), recommendation to increase carbohydrate to patients (60.2%). However, only 11.5% were aware of importance of protein of high biological value and only 19.5% could explain why protein is restricted to CKD patients. Only 36.1% had knowledge of goal of nutrition in CKD management (Table 2).

Table 2: Proportion of respondents who provided the correct answerers

No	Question	Correct answer	N (%)
1.	Goals of nutritional management of chronic kidney disease	maintain good nutritional status, slow down disease progression and treat complications	48(36.1)
2.	Signs of a patient with fluid overload	Oedema, shortness of breath, hypertension	87(65.4)
3.	Functions of protein	repair tissue, making hormones antibodies and enzymes, balance acid-base, fluid and electrolytes	84(63.2)
4.	Foods with large amount of sodium patient with CKD should	canned and processed foods such as bacon, sausage, popcorn	30(22.6)

	avoid		
5.	Why is protein restricted for a renal patient?	to slow progression and minimize accumulation of uremic toxins	26(19.5)
6.	Importance of protein of high biological value for CKD patient	to provide the essential amino acids without resulting in excessive urea production	15(11.5)
7.	Why is it recommended to increase carbohydrate intake for a renal patient?	Provide energy and spare protein	80(60.2)
8.	Why are fluids restricted for a renal patient?	Reduce risks of hypertension	71(53.4)
9.	Why are minerals restricted for a renal patient?	To avoid accumulation leading to bone diseases	42(31.6)

Table 3: Demographic Characteristics of healthcare workers with good knowledge on nutrition management of CKD (N=133)

Demographic Variable	Total no N=133	Good knowledge	Significance
Age group:			
< 28	15(11.3)	5 (16.7)	X ² =16.69; df=6; p=0.01
29-39	45(33.5)	9 (30.0)	
40-50	54 (40.6)	12 (40.0)	
>51	19(14.3)	4 (13.3)	
Occupation:			
Doctors	21(15.8)	14 (25.0)	X ² =13.22; df=8; p=0.1 NS
Nurses	77(57.9)	29 (51.8)	
Nephrologists	3()	3 (5.4)	
Urologist	-	-	
Others	10	10(17.9)	
Work experience			
> 1year			X ² =18.61; df=6;p<0.05
2-5 years	31(23.3)	8 (14.3)	
6-10year	57(42.9)	31(55.4)	
<10years	23(17.3)	11(19.6)	
	22 (16.5)	6 (10)	

NS=not significant; df= degrees of freedom; n = total number of health care workers interviewed

Attitude and Practices

The study found that 92 % of respondents did not use nutrition guideline, 21.1 % claimed to have guidelines. It was also observed that there was a shortage of anthropometric instrument. In most cases, nutrition care plan of the patients was not discussed during major ward round. Nutrition education sessions were also not done regularly (Table 4)

Table 4: Frequency of nutrition sessions to CKD Patients in the study area

Nutrition session per week	N=133	%
0	65	48.9
1-2	38	28.6
Others*	30	22.6
Total	133	100

* Not scheduled

Factor influencing nutrition management of CKD patients

Table 5: Themes and findings emerged from focus group discussion

Theme	Findings
1. Knowledge on nutrition management of CKD patients	<ul style="list-style-type: none"> • Inadequate training in medical schools • Lack of reference materials (books, internet ,) • Lack of nutrition guidelines
2. Attitude on nutrition training in medical school	Training was too general and not specific on management of CKD
3. Application of nutrition knowledge (practices)	<ul style="list-style-type: none"> • Lack of nutrition guidelines • Lack of reference materials
4. Challenges on nutrition management of CKD patients	<ul style="list-style-type: none"> • Labour shortage • Lack of motivation
What is to be done to improve nutrition management of CKD patients	<ul style="list-style-type: none"> • Improve working conditions • Hire clinical nutrition expert • Regular nutrition trainings

Discussion

The major finding of the present study was that although almost all the health workers had nutrition training in medical/nursing school, there appeared to be a number of gaps in their nutrition-related knowledge. About 70% claimed that what they learned in their professional training was not sufficient to provide proper information to patients with CKD. This is of particular significance as it has been shown that nurses are a trusted source of health information as noted in the similar study by Harrison (2002). Therefore, it is important that information provided by health professionals is accurate. Interestingly, 48.9% of these participants did not provide such information to patients while 28.6% and 22.6% did it once to twice per week and whenever they had time to do so respectively. This observation is similar to an earlier study where only 4% of post-partum women identified health professionals as their source of nutrition information (Nowak *et al.*, 2004).

The lack of knowledge about nutrient (minerals, protein, and carbohydrate) adjustment is of particular concern, as these health care workers provide information about nutrition to their patients.

Healthcare workers felt that nutrition plays an important role in prevention and treatment of disease. However, 72.4% of nurses reported that they were not knowledgeable in nutrition related matters and that nutrition assessment was the responsibility of nutritionists and doctors. In places where nutritionist services are not available as is common in most hospitals in Tanzania, nurses tend to fully depend on doctors for guidance as far as nutritional management of patients is concerned.

Furthermore, results indicated that 76.7% had negative attitude regarding their own nutritional knowledge. This was revealed when they were asked to rate themselves on nutrition related matters. This could be due to less emphasis given to nutrition in medical/nursing schools and as part of in-service trainings in patient care. Such negative attitudes were expressed during group discussion when they were asked to give opinion on nutrition knowledge in their professional training. Marjolein *et al.* (2001), in a study on attitudes and motivation of health staff in the Northern Vietnam, found that positive attitudes of health personnel resulted in good performance in delivery of health services.

In this study an assessment of a patient's nutritional condition was not always performed. Instead, the patient's condition, diagnosis, treatment and age were taken into consideration as a low performance of nutritional assessment was also found recently among nurses in Amsterdam (29.9%) (Bavelaar *et al.*, 2008) and, in Denmark (40%) (Lindorff-Larsen *et al.*, 2007). One reason for the limited use of assessment tools, confirmed by other studies (Alfengard and Klevsgard, 2005), could be that they maybe not so easy to use the instruments (Söderhamn, 2006) and that there is lack of instructions and guidelines (Kondrup *et al.*, 2002). Another reason could be that the doctors use their clinical judgement and therefore abandon the tools. The reasons might be found in inadequate knowledge and skills, or perceived lack of resources, such as assessment tools and guidelines. In addition, nurses might think that nutritional assessment is not part of their role, something which has been discussed recently (Adams *et al.*, 2008).

Conclusion

This study found that majority of health workers had low nutrition knowledge on management of CKD patients. There was a significant relationship between practices and nutrition knowledge among respondents. Income, career development, personal professional growth and feeling of being trusted in work were the factors that affected nutrition management of CKD. Regular nutrition updates by nutritionists at the work place so as to ensure that health workers particularly nurses who are close to patients have current and accurate nutrition information

Acknowledgements

The authors gratefully acknowledge the health workers who took part in this study.

References

- Adams, N. E., Bowie, A. J., Simmance, N., Murray, M., & Crowe, T. C. (2008). Recognition by medical and nursing professionals of malnutrition and risk of malnutrition in elderly hospitalised patients. *Nutrition & Dietetics*, 65(2), 144-150.
- Alfengård, K., & Klevsgård, R. (2005). Nutrition in somatic and social care investigation of routines and needs for education about nutrition in somatic care at hospitals and somatic and social care of elderly patients in one county in the south of Sweden. *Vård i Norden: Nordic Journal of Nursing Research*, 25(2), 42-47.

- Bavelaar, J. W., Otter, C. D., Bodegraven, A. A., Thijs, A., & Schueren, M. A. (2008). Diagnosis and treatment of (disease-related) in-hospital malnutrition: The performance of medical and nursing staff. *Clinical Nutrition*, 27(3), 431-438.
- Fox, C.H., Brooks, A., Zayas, L.E., McClellan, W. & Murray, B. (2006). Primary care physician's knowledge and practices pattern in the treatment of chronic kidney disease: an Upstate New York Practice-based Research Network (UNYNET) Study. *Journal of American Board of Family Medicine*, 19(1)54-61
- Harrison, S.L, Hutton, L.E & Nowak M. (2002). An investigation of professional advice advocating therapeutic sun exposure in infancy. *Aust N Z J Public Health*; 26: 108-15.
- Kondrup, J., Johansen, N., Plum, L. M., Bak, L., Larsen, I. H., Martinsen, A., et al. (2002). Incidence of nutritional risk and causes of inadequate nutritional care in hospitals. *Clinical Nutrition*, 21(6), 461-468.
- Lindorff-Larsen, K., Hojgaard Rasmussen, H., Kondrup, J., Staun, M., & Ladefoged, K. (2007). Management and perception of hospital undernutrition - a positive change among Danish doctors and nurses. *Clinical Nutrition*, 26(3), 371-378.
- Marjolein, D., Pham V.C., Le, VA. & Martineau, T. (2001). *Identifying Factors for Job Motivation of Rural Health Workers in Northern Vietnam*.
- Moore, H., Reams, S.M., Wiesen, K., Nolph, K.D., Khanna, R. & Laothong, C. (2003). National Kidney Foundation Council of renal nutrition survey: past- present clinical practices and future strategic planning. *Journal of Renal Nutrition*; 13(3): 233-240.
- Nowak, M. Harrison, S. & Buttner P (2004). General nutrition-related knowledge and beliefs of post-partum women. *Nutr Diet*; 61: 82-7
- Olugbenga, E. Ayodele, C. & Olutayo, A. (2010). Burden of Chronic Kidney Diseases. Peritoneal Dialysis Patients. *Journal of Renal Nutrition*, 1 20, (3): pp 193-198.
- Söderhamn, U. (2006). Nutritional screening of older patients. Developing, testing and using the nutritional form for the elderly (NUFFE). Diss Linköping: Department of Medicine and Care, Division of Nursing Science, Faculty of Health Sciences Linköping University

Dengue outbreak in Dar es Salaam, Tanzania, 2014

LEONARD E.G. MBOERA¹, NDEKYA ORIYO¹, SUSAN F. RUMISHA¹, CLEMENT MWEYA¹, PATRICK K. TUNGU¹, GRADES STANLEY¹, ATHANAS MHINA¹, FRANCESCO² VAIRO, PASQUALE DE NARDO², MARIAM R. MAKANGE³ and GERALD MISINZO³

¹National Institute for Medical Research, Dar es Salaam, Tanzania; ²National Institute for Infectious Diseases "L. Spallanzani", Rome, Italy; ³Faculty of Veterinary Medicine, Sokoine University of Agriculture, Morogoro, Tanzania

E-mail: lmboera@nimr.or.tz

Background

In recent years, 2010, 2012, 2013 and 2014, Dengue outbreaks have been reported in Dar es Salaam and Zanzibar in Tanzania (Ministry of Health and Social Welfare, unpubl). In February – April 2010, five cases of Dengue were reported among tourists who were returning to France, Sweden and Japan (Gautret et al., 2010; Moi et al., 2010; Mboera et al., 2011). Most of them had an epidemiological link with Zanzibar and/or Comoros. All these cases were identified to be caused by Dengue-3.

In addition to the recent reports of Dengue outbreaks in Dar es Salaam, available data indicate that different areas of the country have reported either clinical cases or the presence antibodies against DENV. Surveillance data on febrile out-patients on Pemba Island and Tosamaganga township in Iringa in February and March 2007 reported a dengue prevalence of 7.7% and 1.8%, respectively (Vairo et al., 2012). Recent studies in Mbeya have reported high prevalence of antibodies against flaviviruses including DENV 1-4. The highest seroprevalence of 6% of Dengue 1-4 were found in Mlowo area (Weller et al., 2010; 2014). In Kilosa in central Tanzania, Chipwaza et al. (2014) recently reported a prevalence of 20.9% and 38.2% of presumptive acute DENV and confirmed acute DENV, respectively. All these findings indicate circulation of Dengue viruses among Tanzanian populations.

There is limited information on the burden and transmission indices of the disease in Tanzania, despite the four recent outbreaks. The objective of this study was therefore to carry out an epidemiological, clinical and entomological investigation of Dengue infection in Dar es Salaam, Tanzania during the 2014 outbreak. Specifically, this study aimed to: (i) determine the incidence of dengue virus in the patients with febrile illness attending healthcare facilities; (ii) assess the clinical signs, symptoms and complications associated with Dengue and validate the clinical case definition to be used for future surveillance; (iii) determine the abundance and pattern of mosquito vector infestation and (iv) determine the infection rate of the mosquito vectors.

Materials and Methods

This cross-sectional study was conducted in Dar es Salaam in Tanzania and involved Ilala, Kinondoni, and Temeke districts. Nine wards, namely Kwembe, Sinza, Msasani, Kigamboni, Miburani, Chamazi, Kivukoni, Jangwani, and Tabata were selected. In each ward at least health facility was selected for the epidemiological and clinical studies. Patients with fever of less than 7 days were tested for dengue and malaria infections using rapid diagnostic tests. Demographic, environmental and clinical data were collected from the patients using a questionnaire. Sampling of adult mosquitoes, larvae and pupae was done. Dengue virus infection rate was determined using real time reverse transcription polymerase chain reaction.

Results

A total of 483 patients presenting with fever were enrolled. Majority of patients (37.4%) were 15-29 years old. Out of the enrolled patients, 110 (22.8%) were infected with dengue virus. The incidence of acute dengue infection (Ag/IgM) was 20.9% while 9 (1.9%) were IgG positive indicating a past infection. Kinondoni had the largest number of patients with fever (37.3%) or dengue (48.5%). Patients with acute dengue were more likely to be between 15 and 44 years old than those with no dengue infection. The risk of getting dengue infection in this age group was 3 times more than in other age groups. Patients with dengue infection were more likely to have been or were on anti-malarial treatment. The odds of acquiring acute dengue infection was 2.5 times higher in employed than unemployed patients. Acute dengue infection was mostly characterised by muscle and joint pains. Twenty-one (20.8%) patients with acute dengue were positive for malaria by rapid test.

A total of 6,241 mosquitoes were collected. Over half (59.9%) of the adult mosquitoes were collected in Kinondoni. *Aedes aegypti* accounted for only 17.2% of the adult mosquito collected. The most common breeding containers for the *Aedes* mosquitoes were discarded plastic containers and used tyres. Of a total of 796 houses inspected, 38.3% had water-holding containers in their premises. The overall *Aedes* house index was 27.5%; whereas district specific indices were 18.1% in Ilala, 35.3% in Kinondoni and 25.5% in Temeke. The respective container indices were 77.4%, 65.2% and 80.2%. Of the reared larvae and pupae, 5,250 adult mosquitoes emerged. Of these, about two thirds (61.9%) were *Ae. aegypti*. Based on molecular detection of dengue virus in the laboratory, mosquito infection rate was highest in Ilala (10.3%) followed by Temeke (8.5%) and Kinondoni (6.8%).

Discussion

The findings of this study indicate that the incidence of dengue was high among febrile patients. The study incidence was half of the incidence from the Ministry of Health surveillance reports (Ministry of Health and Social Welfare, unpubl.). This could be explained by a different definition of acute infection or by a different definition of suspected cases. Risk factors associated with acute infection were age (15-44) and having an employment. Patients with acute dengue were more likely to be older with most of them being 15-44 years old compared with patients with no dengue. The association with age could be explained by the immunological status of the population and by the higher exposure of this group of people to the possible mosquito bites. This finding is in agreement with the low IgG seroprevalence reported in this study. Moreover, patients with acute dengue were more likely to be resident in Kinondoni and Ilala, and more likely to have a job. Older individuals (>15 years) were more than 3 times likely to have acute dengue infection than their young counterparts. Moreover, patients with a job were still more likely to have dengue infection. In a recent study in Nepal, the largest proportion (28.1%) of dengue cases belonged to the 21-30 years age group whereas the lowest proportion (1.5%), belonged to the age group below 10 years (Nepal et al., 2014).

Like in our findings, some studies in India have also reported 15-45 years as the most affected age group (Gupta et al., 2005; Ukey et al., 2010; Kumar et al., 2010). In contrary, in several other studies, dengue has been reported as mainly a paediatric public health problem (Shah et al., 2006; Anderson et al., 2007). The fact that the adult age group was the most affected in Dar es Salaam, indicates that the majority of the population in this part of the world has not been exposed to dengue virus infection.

Clinical symptoms associated with acute infection were fever, myalgia and arthralgia. Finally, people with a job outside home could be more exposed to mosquito bites than people staying at home during daytime. Given the non-specificity of dengue symptoms, no clinical symptoms showed an association with dengue acute infection if compared with no dengue except for joint and muscle pain which were clearly associated with the presence of dengue infection. Dengue warning signs were present in 41.6% of the subjects and were significantly associated with the presence of dengue. Shock and fluid accumulation were present in a few patients. Only three patients had criteria for severe dengue. Patients with dengue were more likely to be admitted due to clinical signs and symptoms. The non-specific clinical presentation of DF makes the diagnosis harder in malaria endemic countries. However, so far, only DENV serotype 2 has been reported in Dar es Salaam (Ministry of Health and Social Welfare, unpubl.).

One-fifth of the patients with acute dengue were positive for malaria rapid test. Malaria and dengue are endemic in similar tropical regions, and therefore, may result in the possibility of co-infection. However, only a few cases of malaria and dengue co-infection have been reported. This is mainly due to non-systematic investigation of both diseases (Ebelboin et al., 2012; Mohapatra et al., 2012; Magalhães et al., 2014) and that most of the febrile illnesses in the region are clinically diagnosed as malaria (Stoler et al., 2015).

In this study, *Ae.aegyptimosquito* accounted for less than a quarter of the man-biting mosquitoes caught in the sentinel sites of Dar es Salaam. These findings provide the most up-date of data on *Ae. aegypti* in the City since 1980. Over one third of the inspected house premises had water-holding containers positive for immature stages of *Aedes* mosquitoes. The most common breeding containers for the *Aedes* mosquitoes in Dar es Salaam were discarded plastic containers and tires. Only a few natural breeding sites (including axils of plants) were identified. Previous studies in Tanzania have shown that in most places *Ae. aegypti* breeds in both artificial and natural sites (Trpis, 1972a,b). Similar to our findings, Trpis (1972a) reported that the tires, tins, wrecked motor cars, water-pots, coconut shells, snail shells and tins were the most productive containers in the City.

The infection rates found in this study are relatively very high compared to many other reported elsewhere, most likely because of pooled mosquitoes used to identify infection. However, the presence of virus in the mosquito is adequate to indicate that local dengue transmission is taking place in Dar es Salaam. The vector infection rates with dengue virus are of the order of 1% even in areas where transmission is ongoing (Ritchie et al., 2014; Mamen et al., 2008; Yoon et al., 2012; Garcia-Rejon et al., 2008).

In conclusion, the incidence of dengue among febrile patients was high, with one-fifth co-infected with malaria parasites. Most of the affected patients were adults. This study has established that *Ae. aegypti* is the main vector of Dengue in Dar es Salaam and breeds mainly in medium size plastic containers and tyres. The overall and site specific *Aedes* house indices were high indicating that all three districts were at high risk of dengue transmission. The high larval indices of mosquito in the three districts warrants establishment and intensification of mosquito surveillance activities along with source reduction and health education. It is important that dengue infection among febrile patients is routine monitored, especially during epidemic periods.

References

Chipwaza, B., Mugasa, J.P., Selemani, M., Amuri, M., Mosha, F., Ngatunga, S.D. & Gwakisa, P.S. (2014) Dengue and Chikungunya fever among viral diseases in outpatient febrile children in Kilosa District Hospital, Tanzania. *PLoS Neglected Tropical Diseases* 8(11): e3335.

- Epelboin, L., Hanf, M., Dussart, P., Ouar-Epelboin, Djoussou, F., Nacher, M. & Carne, B. (2012) Is dengue and malaria co-infection more severe than single infections? A retrospective matched-pair study in French Guiana. *Malaria Journal* 11:142.
- Garcia-Rejon, J., Lorono-Pino, M.A., Farfan-Ale, J.A., Flores-Flore, L., Rosado-Paredes, E., Rivero-Cardenas, N., Najera-Vazquez, R., Gomez-Carro, S., Lira-Zumbardo, V., Gonzalez-Martinez, P., Lozano-Fuentes, S., Elizondo-Quiroga, D., Beaty, B.J. & Eisen, L. (2008) Dengue virus-infected *Aedes aegypti* in the home environment. *American Journal of Tropical Medicine and Hygiene* 79: 940-950..
- Gautret, P., Simon, F., Hervius Askling, H., Bouchaud, O., Leparc-Goffart, I., Ninove, L., Parola, P. for EuroTravNet. (2010) Dengue type 3 virus infections in European travellers returning from Comoros and Zanzibar, February-April 2010. *European Surveillance* 15: 19451.
- Gupta, E., Dar, L., Narang, P., Srivastava, V.K. & Broor, S. (2005) Serodiagnosis of dengue during an outbreak at a tertiary care hospital in Delhi. *Indian Journal of Medical Research* 121: 36-8
- Kumar, A., Rao, R., Pandit, V., Shetty, S., Bamigatti, C. & Samarasingh, C.M. (2010) Clinical manifestation and trend of dengue cases admitted in tertiary care hospital, Udupi, Karnataka. *Indian Journal of Community Medicine* 35: 386-391.
- Magalhães, M.L., Siqueira, A.M., Alexandre, M.A.A., Souza, M.S., Gimaque, J.B., Bastos, M.S., Figueiredo, R.M.P., Melo, G.C., Lacerda, M.V.G. & Mourão, M.P.G. (2014) *P. vivax* malaria and Dengue fever co-infection: a cross-sectional study in the Brazilian Amazon. *PLoS Neglected Tropical Diseases* 8(10): e3239.
- Mboera, L.E.G., Mayala, B.K., Kweka, E.J., Mazigo, H.D. (2011) Impact of climate change on human health and health systems in Tanzania: a review. *Tanzania Journal of Health Research* 13 (Suppl 1). 10:10
- Moi, M.L., Takasaki, T., Kotaki, A., Tajima, S., Lim, C.K., Sakamoto, M., Iwagoe, H., Kobayashi, K. & Kurane, I. (2010) Importation of dengue virus type 3 to Japan from Tanzania and Cote d'Ivoire. *Emerging Infectious Diseases* 16: 1770-1772.
- Nepal, H.P., Ansari, S., Gyawali, N., Gautam, R., Puadel, R., Shrestha, S., Rimal, B., Acharya, A., Chapagain, M. & Taylor-Robinson, A.W. (2014) Detection of IgM against Dengue virus in clinically suspected patients presenting at a tertiary care centre, Narayani Zone, Nepal. *Journal of Tropical Diseases* 2:139.
- Ritchie, S.A., Pyke, A.T., Hall-Mendelin, S., Day, A., Mores, C.N., Christofferson, R.C., Gubler, D.J., Bennett, S.N. & van den Hurk, A.F. (2013) An explosive epidemic of DENV-3 in Cairns, Australia. *PLoS One* 8(7): e68137.
- Shah, Y., Khadka, G., Gupta, G.P., Adhikari, N., Poudel, A., et al. (2012) Sero-diagnosis of dengue virus in different hospitals of Nepal. *International Journal of Infection Microbiology* 1: 58-62.
- Stoler, J., Delimini, R.K., Bonney, J.H., Oduro, A.R., Owusu-Agyei, S., Fobil, J.N., Awandare, G.A. (2015) Evidence of recent dengue exposure among malaria parasite-positive children in three urban centres in Ghana. *American Journal of Tropical Medicine and Hygiene* 92 (3): 497-500.
- Trpis, M. (1972a) Seasonal changes in the larval populations of *Aedes aegypti* in two biotypes in Dar es Salaam, Tanzania. *Bulletin of the World Health Organization* 47, 245-255.
- Trpis, M. (1972b) Dry season survival of *Aedes aegypti* eggs in various breeding sites in the Dar es Salaam area, Tanzania. *Bull World Health Organization* 47(3): 433-437.
- Trpis, M. (1972c) Breeding of *Aedes aegypti* and *A. simpsoni* under the escarpment of the Tanzanian plateau. *Bulletin of the World Health Organization* 47, 77-82
- Ukey, P.M., Bondade, S.A., Paunipagar, P.V., Powar, R.M. & Akulwar, S.L. (2010). Study of seroprevalence of dengue fever in central India. *Indian Journal of Community Medicine* 35: 517-9
- Vairo, F., Nicastrì, E., Meschi, S., Schepisi, M.S., Paglia, M.G., Bevilacqua, N., Mangi, S., Sciarrone, M.R., Chiappini, R., Mohamed, J., Racalbutto, V., Di Caro, A., Capobianchi, M.R., Ippolito, G.

- (2012) Seroprevalence of dengue infection: a cross-sectional survey in mainland Tanzania and on Pemba Island, Zanzibar. *International Journal of Infectious Diseases* 16 (1): e44-46.
- Weller, N., Clowes, P., Dobler, G., Saathoff, E., Kroidl, I., Ntinginya, N.E., Maboko, L., Löscher, M. & Heinrich, N. (2014) Seroprevalence of *Alphavirus* Antibodies in a Cross-Sectional Study in Southwestern Tanzania Suggests Endemic Circulation of Chikungunya. *PLoS Negl Trop Dis* 8(7): e2979.
- Weller, N., Elias, N., Dobler, G., Clowes, P., Kroidl, I., Saathoff, E., Maboko, L., Heolscher, M. & Heinrich, N. (2010) Epidemiology of neglected arthropod-borne viral diseases in Mbeya Region, Southwest Tanzania. In: Proceedings of the 24th Annual Joint Scientific Conference, March 15-18, 2010, Arusha, Tanzania, 213-216pp. National Institute for Medical Research, Dar es Salaam, Tanzania. Available at: <http://www.nimr.or.tz>
- Yoon, I-K., Getis, A., Aldstadt, J., Rothman, A.L., Tannitisupawong, D. et al. (2012) Fine scale spatiotemporal clustering of dengue virus transmission in children and *Aedes aegypti* in rural Thai villages. *PLoS Neglected Tropical Diseases* 6(7): e1730.

Evidence of huge potential of locally available food resource for reducing malnutrition in Kilosa District, Tanzania

LAURENT MSELLE & ONESMO MELLA

Abstract

Under-nutrition is a public health problem in Tanzania. Identification of specific causes among many for a particular culture or locality is important for informing intervention strategy formulation. A study was conducted in Kilosa district to determine specific factors contributing to the observed under-nutrition in the area. Twenty four hour recall and food frequency questionnaire (FFQ) were dietary intake assessment methods used and overall nutritional status was determined using anthropometric measurements. Results showed that although diversification of diets was far from sufficient, available potential for nutritional improvement is huge. About 50 percent of households scored high in diversification of diet, 57 percent depended on their own production for food. Although the prevalence of stunting was at 39% wasting in under-fives was not of public health significance (1.7%). There were significant correlation between nutrition status and cereal production ($r=0.5$) and food consumption level ($r=0.20$). Food secure households had significantly ($p<0.001$) higher food consumption and women from food sufficient households had significantly ($p<0.001$) higher BMI. Household food security is one of the important factors influencing nutrition status of household members in Kilosa district although agricultural potential is huge. Translation of available food resource into nutritional benefits in Kilosa requires tackling socioeconomic and behavioural constraints. Engagement of behaviour and practice changing strategies are recommended.

Introduction

Under-nutrition especially in form of stunting and micronutrient deficiencies is a public health problem in Tanzania and causes are multiple varying with population groups. The most recent national data showed that 35, 21 and 4% of the children below five years of age were below -2 z-score for height-for-age, weight-for-age and weight-for-height respectively (NBC and ICF Macro, 2011). From sustainability point of view food based interventions are critical important in redressing, yet not much investment is directed to it probably due to insufficient understanding of available potential.

There is insufficient information relating to consumption levels among communities especially for traditional vegetables and fruits. Available data suggest that the current food consumption patterns need adjustments. Proportion of Tanzanian women consuming vitamin A rich fruits and vegetables was 62%, protein rich foods was 35% IN 2010 and causes of the observed low consumption was many (TFNC, 2012). About 71% of all energy was obtained from staples indicative of low diversity of diets (MOH,2011). Normally an increase in individual dietary diversity is related to increased nutrient adequacy of the diet (Steyn *et al.*, 2006; Ruel *et al.*, 2004; Hartloy *et al.*, 2000) as dietary diversity score have been positively correlating with increased mean micronutrient adequacy of the diet in non-breastfeeding children (Kennedy *et al.*,2007) adolescents (Mirmiran *et al.*, 2004; Kennedy *et al.*, 2007) and adult (Foote *et al.*, 2004).

In order to inform intervention strategy formulation, a study was conducted in Kilosa district in 2011 to determine factors influencing nutrition security in the area as a component of a wider project in the area aiming at developing guidelines on eco-nutrition.

Materials and Methods

Kilosa is characterized by dry tropical climate of semi-arid type. Agriculture is the main economic activity and source of livelihood. Rice, maize, pigeon peas, beans, cassava, sorghum, peanut and banana are the major crops grown. The study population was all pre-school children and women of child bearing age. All women age 15 – 49 in the household were included.

Cross-sectional study design was employed and structured questionnaire was administered through face to face interviews. Anthropometric measurements taken for computing anthropometric indices were sex, age, weight and height / length. BMI was used to measure thinness or obesity in adult.

A stadiometer specially produced for use in survey setting by Shorr (Shorr Productions 17802 Shorley Bridge, Maryland) was used for height measurements. Recumbent length taking for children of less than two years of age was by positioning stadiometer on a hard flat surface, and with the mother's help the child was measured and measurement taken to the nearest 0.1centimetres. For child above 2 years of age or an adult height was measured and recorded to the nearest 0.1centimetres. Weights were taken without shoes on and with minimum clothing. The scale (SECA, Hamburg) was used. NCHS/CDC/WHO International reference population was used as reference population. Children whose index is more than two standard deviations below the median of reference population for children of the same gender are classified as malnourished.

Twenty four hour recall (24-h recall) and food frequency questionnaire (FFQ) methods were used to determine food consumption adequacy. Respondent was first asked to recall what they ate during the previous 24 hours. Then, a food frequency questionnaire was administered to the same respondent. The questionnaire was developed with the local informant assistance of providing a list of all commonly consumed foods in the area. A 4-point scale scoring system was devised to further explore meal diversity among subjects. If the respondent reports less than three meals a day and single type of meal then received 1 point; if two types of meals but less than three meals a day then received 2 points; if two types of meals and three meals then 3 points were given and 4 points given to every subject with meal frequency exceeding 3 per day and more than two types.

To assess habitual food intake food frequency questionnaire was employed (with daily, weekly, monthly or rarely categories) and mothers were asked how often they consumed each item of food listed in the questionnaire. The responses were scored in a similar way whereby rarely or yearly received 1 point, monthly 2 points, weekly 3 points and almost every day 4 points.

Sample

This was a district representative sample of 256 households, obtained using multistage sampling procedure. A multistage sampling was done to obtain the division, ward and village where the survey was to be carried out and in this way, Kimamba division, Rudewa ward, and finally Rudewa-Mbuyuni village was selected. Formula by Hulley and Cummings (1988) was used to get preschool children sample size. The formula gave 256 households.

WHO Anthro (3.1) software was used to compute nutritional indices (z-scores for underweight, wasting and stunting in preschool children). Indicators for stunting (height-for-age), wasting (weight- for-height), underweight and (weight-for-age) were determined and used to assess nutrition status. For adults, BMI was used. The SPSS version 16 software was used analyse data and statistical tests for associations between variables were set at 95% level of significance.

Results

Low socioeconomic status (SES) households dominated with most of the households having low quality houses with earth floor (93.8%), grass roofing (57.0%) and galvanized iron sheet (42.0%). Burnt bricks were used by 64% of the households and 23% used poles for construction of walls. Most (49.6%) of the respondents had primary school education, while 29.7% had no formal education.

Table 1: Mean (Standard Deviation) and proportions of respondents in various socioeconomic and demographic characteristics of groupings (n=250)

Variable	Response/Value	Percentage	Mean (SD)
Under fives	Male	51.7	NA
	Female	48.2	NA
House with	Grass roofing	57.0	NA
	Pole walls	58.0	NA
	Mud brick wall	64.0	NA
	Earth floor	93.8	NA
Mother with	No formal education	29.7	
	Primary education	49.6	
Household	With food shortage	62.0	
	Size (member)	NA	4.4
	Land (acres cultivated)	NA	2.8
Cereal yield (kg)	Maize	NA	388.2 (314.9)
	Paddy	NA	259.4 (1782)
Income	NA	18,460 (164782)	

Results further show that about 57% of the households depended on their own production as main means for accessing food. Table 2 present yields of major cereals cultivated by households. In the season prior to the study the respondents cultivated sorghum, maize, pigeon pea, paddy, beans and cowpea as major food crops. Number of acres cultivated ranged from 0 acre to 34 acres and mean was 2.8 ± 3.0 . Households with larger size of farm were more likely to have food throughout the year in the household as compared to the household with small size of farm ($p < 0.01$). About 62% of households believe that the food they harvested was insufficient for annual cereal need of the household. Labour selling was mentioned as a major (53.0%) food insecurity coping strategy followed by petty business (47.0%).

Table 2: Yields of food crops produced in the season preceding the interview (n = 256 households)

Food crop	Number	Median Yield (Min, Max) in kg
Maize	201	474.5 (4; 3000)
Paddy	156	164.0 (12; 1800)
Sorghum	6	49.0 (6; 2500)
Beans	72	60.0 (10; 270)
Pigeon pea	69	40.0 (1; 1800)
Cowpea	48	22.5 (2; 400)
Peanut	52	22.5 (3; 180)
Sunflower	48	45.0 (6; 300)

Dietary assessment revealed that diversification was encouraging though not sufficient (meal diversity score mean of 2.4 out of 4-point scale). Proportion of respondents with lowest score (1)

was low (15.5%) and proportion with best score (4) was substantial (50.8%) indicating good prospects for nutrition insecurity reduction.

Habitual food consumption as assessed by FFQ was consistent with 24-h recall as it gave diverse range of foods with dominance of maize that was eaten almost daily, rice and cassava which were eaten weekly (scoring 3.1 and 3.0 respectively). Banana and sweet potato were eaten monthly. Consumption of animal source foods (ASF) was low as the only substantial consumption was that of sardines which was eaten weekly (score of 3.0), while beef, fish and milk were consumed monthly (scoring 2.3, 2.2 and 2.1 respectively). Fairly good consumption was observed for fruits, highest score being that of banana, pawpaw and citrus (2.8, 2.4 and 2.1 respectively). Vegetables were frequently consumed, amaranth scoring highest (3.4 score). Sweet potato leaves (3.2 score) and cowpea leaves (3.0 score). Wild vegetables and pumpkin leaves were eaten monthly.

Children nutrition status

Out of 234 children under the age of five years assessed, 91(39%) were stunted and there was no difference between boys and girls nutrition status but the difference was huge among age categories. Stunting increased with age, climaxing before the age of three and dropping thereafter. Before six months of age undernourishment was not evident (Fig.1). About 4 percent of all children under the age of five years were obese.

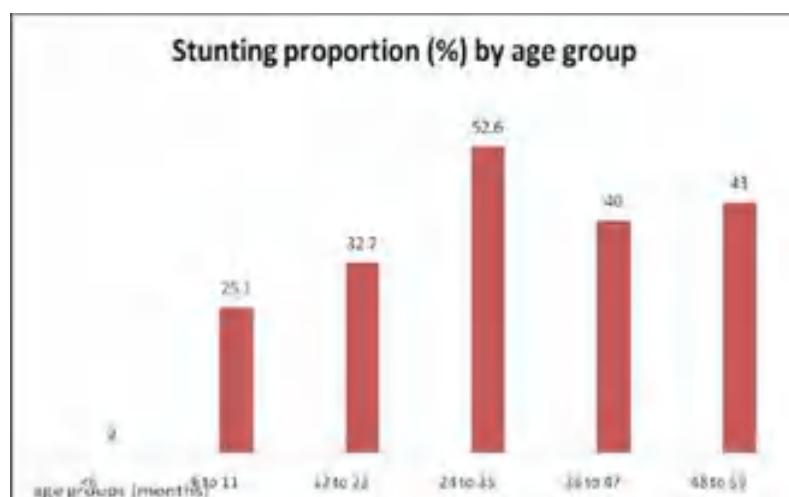


Figure1: Stunting by age categories

Children aged 24-35 months had a significantly ($p=0.03$, $X^2=25$ df 9) higher proportion of stunted children compared to other age groups. Prevalence of under-nutrition in women was 5.8% while prevalence of overweight was 22.7%. Prevalence of obesity was 6.0%(Table 3).

Table3: Nutrition status of women and their children in Rudewa village, Kilosa district

Group	Variable	Number	Percent
Children <5 years	Stunted	91	39.0
	Underweight	35	15.0
	Wasted	4	1.7
	Obese	11	4.7
	Normal	93	39.6
All children		234	100
Adult women	Low BMI (<18.5)	9	5.8
	Moderate overweight	35	22.7
	Obese (BMI >30)	11	7.1
All women		154	100

Looking at determinant factors, many factors were observed to influence nutrition status with food availability taking the lead (particularly availability of rice in the household) followed by accessibility (as indicated by purchasing power). Table 4 present this information and shows also that feeding practices influenced food consumption level. Correlations were $r=0.28$, $r=0.27$, $r=0.20$ for meal diversity score and under-fives nutrition status indices namely weight-for-age z-score (WAZ), weight-for-height z-score (WHZ) and BMI respectively.

Table 4: Correlation matrix of selected variables

	BMI	Meal diversity score	HH income	Hand-washing score	Toilet quality score	Maize production	Paddy production
Meal diversity score	0.20**						
HH income	0.25*	0.3**					
Hand-washing score	0.2*	0.05	-0.02				
Toilet quality score	0.20*	0.22**	0.31*	0.38**			
Schooling years	0.07	0.01	0.0	0.0	0.0		
Maize production	0.20	0.25**	0.22**	0.0	0.0		
Beans production	0.1	0.0	0.17	0.0	0.0	0.37**	0.37**
Household farm size	0.1	0.25*	0.34**	0.0	0.16	0.34**	0.31**
Z-score for children							
WAZ	0.20	0.28*	0.1	0.1	0.0	0.1	0.1
HAZ	0.0	0.20	0.1	0.0	0.0	0.0	0.0
WHZ	0.22	0.27*	0.0	0.0	0.0	0.0	0.0

** - Significant at $p < 0.01$ * - Significant at $p < 0.05$

Income had strong influence on size of farm cultivated ($r=0.34$), cereal production levels ($r=0.22$), food consumption levels ($r=0.30$) and sanitation quality ($r=0.31$). Other factors influencing nutrition status were non-food factors namely morbidity, hygiene and sanitation.

Influence of Agricultural production on food consumption

Acreage size positively and significantly ($p < 0.05$) correlated with food consumption score ($r=0.25$), quantity of maize produced by the household in that particular season ($r=0.34$) and quantity of paddy produced by the household in that particular season ($r=0.31$). Moreover, households with higher yield of maize and higher yield of paddy in that particular season were more likely to have adequate number of meals per day ($r=0.25$, $p < 0.01$ and $r=0.14$, $p < 0.05$ respectively). Food secure households had significantly higher food consumption ($r=0.30$, $p < 0.001$) and women from food sufficient households had significantly ($p < 0.001$) higher BMI. Food secure group had a mean BMI of 22.7 ± 3.6 while food insecure group had mean BMI of 21.8 ± 3.5 .

Influence of food consumption and socioeconomic characteristics on nutrition status

Meal diversity score positively and significantly ($p < 0.01$) correlated with household income ($r=0.28$). Household with higher income were more likely to have adequate number of meals per day ($r=0.2$, $p < 0.01$). Households from low socioeconomic category had significantly ($p < 0.05$) lower

BMI (Table 5). Annual income reported by respondents (in Tanzanian shillings per annum) positively and significantly correlated ($r=0.2$) with reported number of meals per day ($p<0.001$).

Table 5: Nutrition status of women (as shown by BMI) and meal frequency by household socioeconomic status (SES)

Index	High SES		Low SES		p-value ¹
	n	mean±SD	n	mean±SD	
Meal number	39	2.3±0.8	86	2.6±0.9	p< 0.05
BMI	39	23.6±3.8	26	21.5±3.3	

¹t-test for difference between high and low socioeconomic status households

Discussion

This data set showed that what household members consumed contributed significantly to their nutrition status. Food consumption was influenced most by food security in form of availability of food in the household through own production and household income, demonstrating high potential of own production in improving nutrition status. Apart from household income other socioeconomic factors particularly assets owned, eating pattern and education had strong influence on nutrition status in this data set.

From evidences of Rudewa-Mbuyuni study, agriculture produces appear to have a huge potential of reducing malnutrition in Kilosa and similar situations in the country. Current nutrition status was marginally satisfactory based on weight-for-height indicator and food availability (own production), food consumption (meal diversity scores) were encouraging. Moreover, observed high prevalence of stunting (39%) in this study is neither a reflection of currently prevailing situation nor food deficit but rather accumulation of long term socioeconomic deficits with wide spectrum of factors (WHO, 1995).

Previous studies also reported similar results (Herforth *et al.*, 2012; FAO, 2012). The available huge potential would be expected to have nutritional benefits beyond what was observed due to a number of reasons including knowledge gap negative attitudes towards traditional foods. More promotion as well as awareness creation among communities is required for better outcomes in utilization of the available potential and their sustenance. Data from the same study reported elsewhere (Mselle *et al.*, 2013) supports the argument that non-food factors need more attention for better results particularly caring quality, water safety, hygiene and sanitation as their contribution to the observed under-nutrition in Kilosa was huge. What is needed for promotion and sustainability is nothing but articulation of relevant campaigns in such a way that understanding of the significance of the available traditional foods is increased, dietary practices are improved and non-food factors influencing nutrition status are controlled.

Availability of food in the household is the most important factors influencing nutrition status especially own production closely tied to size of land cultivated indicative of huge potential of food based nutritional interventions in reducing the prevailing malnutrition in the country. Therefore, there is a need for revisiting utilization of locally available food resources and refine advocacy strategies to enhance change of people's behaviours and attitudes that is to say we recommend educating communities and employing advocacy strategies capable of changing behaviour.

References

- FAO (2012). Making agriculture works for nutrition: Synthesis of guiding principles. Rome, Italy
- Hatloy, A., Halund J., Diarra M.M. and Oshaug A. (2000). Food variety, socioeconomic status and nutritional status in urban and rural areas in Koutiala Mali. *Public Health Nutrition* 3:57-65
- Herforth, A., Jones, A. and Pinsup-Undersen, P. (2012). Prioritizing nutrition in agriculture and rural development: Guiding principles for operational investment. Health, Nutrition and Population family (HNP). Discussion paper. World Bank. Washington DC
- Kennedy, G., Pedro M.R., Seghieri, C., Nantel G and Brouwer, I. (2007). Dietary diversity score is a useful indicator of micronutrient intake in non-breastfeeding Filipino children. *Journal of Nutrition* 137:1-6. 2007
- Mirmiran P., Azadbakht, L., Esmailzadeh, A and Aziz F. (2004). Dietary diversity score in adolescents – a good indicator of nutritional adequacy of diets. Tehran lipid and glucose study. *Asia Pacific Journal of Clinical Nutrition* 13 (1) :56-60. 2004.
- MoH (2004). Tanzania National Strategy on Infant and Young Child Nutrition. United Republic of Tanzania, Ministry of Health, Dar es Salaam. 2004
- Mselle L.S., Kinabo J.L and Nyaruhucha C.N. (2003). Contribution of care, hygiene and sanitation to maternal and child nutrition status in Kilosa district. *Tanzania Food and Nutrition Journal* 13 (1) 63-75.
- Ruel M., Graham J., Murphy S., and Allen L. (2004). Validating simple indicators of diversity and animal source food intake that accurately reflect nutrient adequacy in developing countries. Report submitted to GL-CRSP.
- TFNC(2012). Landscape analysis for countries scaling up of nutrition intervention: Tanzania assessment.
- National Bureau of Statistics (NBS - Tanzania) and ICF Macro (2011). Tanzania Demographic and Health Survey 2010. Dar es Salaam, Tanzania
- WHO(1995). Physical status: the use and interpretation of anthropometry. Report of a WHO Expert Committee, World Health Organization, Geneva.

Staying abreast with breast and cervical cancer

CARLY LOVULLO

Ohio Wesleyan University, United States of America and University of Dar es Salaam, Dar es Salaam, Tanzania

Abstract

This paper explores the importance of breast cancer and cervical cancer awareness in Tanzania. The lack of knowledge, in these topics, has led to late diagnosis resulting in many women being diagnosed in the late stages of cancer. The lack of knowledge has also allowed for a lack of facilities that have the proper means to deal with the women who have cancer. Having worked with Medical Women Association of Tanzania (MEWATA) for the past month and a half, I have concluded that the best way to catch early signs of cancer and spread awareness is to promote the early presentation of symptoms and educate women about their bodies and the problems that could be associated with them. After reviewing case studies from the Ocean Road Cancer Institution and from a regional hospital in Tanzania, I have determined that there is a lack of knowledge about women's reproductive cancers (cervical and breast). This paper will explore the correlation between breast and cervical cancer promotion and health screenings and the rates of early diagnosis, treatments and survivals. I believe that my research presented in this paper is evidence that promotion of breast and cervical cancer has shown that there is a positive correlation in diagnosis, especially in early stage cancer, regulated treatments and higher survival rates. This proves that women's health promotion is extremely beneficial and should be one of the top priorities for the people of Tanzania.

Introduction

As women increase in age, their likelihood to get cancer increases in Tanzania. From ages 1-10, there is a 2.4 percent chance of having cancer. From 11-20 the rate goes up to 5.1 percent, 21-30 is at 8.5 percent, 31-40 is at 23.2 percent, 41-50 is at 47.3 percent, 51-60 is at 70.7 percent, 61-70 is at 89.2 percent, 71-80 is at 97.6 percent and finally 81-90 is at 99.6 percent. These rates are astonishingly high. To help decrease these high rates, preventative measure should be taught to all women. This includes teaching them how to self-test themselves for breast cancer, having them get mammograms and pap smears as needed and helping them to take care of their bodies (Lyimo).

Human Papilloma Virus (HPV) is the most common sexually transmitted infection (STI). There are many different types of HPV. Some types can cause health problems including genital warts and cancers. However, there are vaccines that can prevent these problem. HPV is spread through vaginal, anal, or oral sex with someone who has the virus. HPV usually goes away on its own, but when HPV does not go away, it can cause health problems like genital warts and cancer. HPV can cause cervical cancer and other cancers. There is no way to know which people who have HPV will develop cancer or other health problems. People with weak immune systems may be more likely to develop health problems from it. HPV can be prevented by getting vaccinated and getting screened for cervical cancer. Each year, about 21,000 of HPV-related cancers could be prevented by getting the HPV vaccine (Human Papillomavirus).

Medical Women Association of Tanzania (MEWATA) was founded in 1987 and registered in October 1989 as voluntary non-governmental organization. MEWATA's vision is having Tanzanian medical women excel in medical and dental ethics with the attainment of quality health

intervention. MEWATA's mission is to promote professional development of women medical and dental doctors for better delivery of quality health services for women of Tanzania. For the last 27 years MEWATA has been working to spread awareness on women's health issues and improve them. MEWATA allows a woman from near or far regions to receive treatment, help, and support and health services no matter her income. MEWATA's values and goals are similar to those that I want to achieve later in life. For these reasons, I wanted to investigate how women's health promotion through MEWATA has been beneficial. My data is coming from a survey conducted by MEWATA in a screening in Tabora. I will also use information presented to me while working in the offices at MEWATA.

As seen on the MEWATA website, Tanzania has high rates of death for both cervical and breast cancer. Stigma around women's health and women's bodies lead them to be diagnosed late in their cancer. Many women delay testing, screening and treatment for as long as possible. Most of the deaths could have been prevented if they had been screened earlier in their cancer. According to Msaki and Lyimo of the University of Dar es Salaam, cure rates are very low in Tanzania. For example, the cure rate is 14 percent for cervical cancer and 15% for breast cancer. For stage one cervical cancer, there is a cure rate of 21% in Tanzania. This is very low compared to other parts of the world (Lyimo). Facilities to deal with these illnesses are also hard to find and often are not well equipped to handle the problems presented by the patients (Lyimo). For these reasons, MEWATA wants to create more community based screenings. There are many goals for these screenings. MEWATA wants to increase community awareness on breast and cervical cancer screenings as well as HPV vaccinations. MEWATA also wants to promote prevention and screening of breast and cervical cancer among community members. Another goal is to increase awareness within the government and other donors and stakeholders about breast and cervical cancers and their burdens. Finally, MEWATA would like to increase awareness among policy makers to distribute funds for cervical cancer services in Tanzania.

Ocean Road Cancer Institute (ORCI) is the only specialist cancer treatment centre in Tanzania. There are nearly 4,000 new patients every year. ORCI is having trouble coping with the amount of patients in need of treatment. Because of this. It sometimes has to place two, or even three, patients in one bed for months at a time. One of ORCI's goals is to increase survival rates and provide subsidized care. This goal is not always possible because many of its patients arrive at the centre after their cancer has reached stage four. This is because early signs of cancer are often missed by local village doctors. These doctors can make "incorrect diagnoses and are usually not aware about informing the public of warning signs" (Khimji). According to the ORCI, about 20,000 people are diagnosed with cancer each year in Tanzania.

In 2007, the Tanzanian government formed a steering committee to develop a national cancer control strategy. It now works alongside ORCI and other NGOs, such as the INCTR and the International Atomic Energy Agency, on a £400,000, three-year strategy to promote sustainable cancer care. Part of this strategy includes expanding ORCI into three other university cities, procuring drugs, further research and, more importantly, carrying out national awareness campaigns on common signs of various cancers (Khimji)

Materials and Methods

I have used data found online through different organizations. One of the case studies that I have used is from ORCI, in which it studied 1447 women diagnosed with cancer. In a study done by E. Darj and Miriam Urasa, 137 nurses were questioned and studied to find out the extent of their knowledge on HPV and cervical cancer. This study was described as a "descriptive cross sectional

study using questionnaires on 137 nurses. Data analysis was made by descriptive statistics and chi square tests” (Darj)

I also am using data that is coming from a survey that MEWATA has given in the past few months at a breast and cervical cancer screening in Tabora. This survey was given to 1168 women. This screening was opened to the public and women from all over the country came. This screening was free for all women. These women are between ages 10 and 82. Many women in this study originally come from Tabora, followed by Mwanza and then Kigoma. There were also several women from all over the country, like Dar es Salaam, Arusha, Mbeya and others. Most of the women in this study resided in Tabora followed by Ipuli. Many women also resided in other parts of the country including the names listed above.

Screenings

When coming to these screenings, women were able to choose to have a breast examination, cervical screening or both. After the examinations, women were given several results. For breast examinations, this includes examination findings (normal, lump, cancer or other), and a clinical diagnosis (simple surgery, FNAC, biopsy, referral or other). For cervical screenings, this includes examination findings (positive, negative, cancer, or other), and a clinical diagnosis (cryotherapy, cervical biopsy, referral or other). Also at the screenings, the woman are taught many ways to prevent late diagnosis. The women are taught how to self-screen themselves for breast cancer, they are informed about the benefits of early detection and the dangers of late stage diagnosis, and they are also informed more about these diseases (i.e. how they affect a woman’s body, the signs and symptoms, the treatments and definitions on these types of cancer). They are taught these strategies in hopes of that they will use the information provided but also teach it to their daughters, sisters, mothers and other women. By spreading awareness about these diseases, MEWATA is enabling women to take control over diseases connected to their reproductive health. Also educating donors, stakeholders and government will give them more reason to privately fund programs for these women. Educating policymakers will also allow the government to spend more money on these services.

Survey

After these results were given out, there was a survey given to the women to fill out to find out more background information. This survey allowed MEWATA members to see which groups of women come to these screenings and which groups of women need to be engaged and more informed about them. The questions on this survey included socio-demographic characteristic.

Results

Ocean Road Cancer Institute Case Study

I found information in a study by Ocean Road Cancer Institute (ORCI). In this study, there 1447 women who had cervical cancer. 13 percent of these women were diagnosed in stage one of their cancer. 35 percent were diagnosed in stage two, 46 percent were diagnosed in stage three and 6 percent of these women were diagnosed in stage four. Of these women, those diagnosed in stage one of their cancer, 21.1 percent were cured, 34.1 percent died, 1.6 percent were absconded, and 34.1 percent had an unknown survival rate. For women diagnosed in stage two of their cancer, 28.18 percent were cured, 34.4 percent died, 0 percent were absconded and 46.8 percent had an unknown survival rate. For the women diagnosed in stage three of their cancer, 10.1 percent were cured, 54.1 percent died, 0 percent were absconded, and 35.5 percent had an unknown survival rate. Finally, for the women diagnosed in stage four of their cancer, 7.1 percent were cured, 70.6 percent died, 0 percent were absconded and 22.4percent had an unknown survival rate.

In general, OCRI reported survival rates at 13.9 percent for cervical cancer and 14.9 percent for breast cancer as overall survival rates. The death rate for cervical cancer is 45.6 percent and is 48.6 percent for breast cancer. Only 0.4 percent of women with cervical cancer were absconded while none are usually absconded for breast cancer. There is a 40.1 percent unknown survival rate for women with cervical cancer and a 36.5 percent unknown survival rate for women with breast cancer (Lyimo).

Case Study of Nurses from a Regional Tanzanian Hospital

Less than half of the nurses had adequate knowledge regarding cervical cancer. The nurses often associated causes of cervical cancer and transmission of HPV with age. It should also be noted that knowledge was more adequate among the young nurses ($p = 0.027$) and knowledge differed significantly between cadres. Registered nurses had more adequate knowledge than enrolled nurses ($p = 0.006$). A majority of the nurses did not know information about screening intervals. Few were even aware of the HPV vaccine. Most nurses (84.6%) had never had a Pap smear examination.

Survey

5.7 percent of the women surveyed had answered that there was breast cancer or cervical cancer history in their family. 70.7 percent of the women answered no to this same question. 23.6 percent of the women were unsure about their family history. It can be inferred that families do not talk about matters like this because of the stigma around it. It may be believed that since it is such a personal issue, it should not be shared with the family. I believe that a dialogue needs to be created to bring awareness to these topics. Talking openly will allow women to know their history and may increase rates of early stage cancer diagnosis.

The women in this survey were also asked if they had any sort of breast problems. 20.8 percent of the women reported having some type of breast problem. 7.2 percent responded no to this question. 72 percent of the participants did not respond to this question. Out of the women tested, 53.3 percent had at least primary education. 21 percent had secondary education, 10 percent had a college or university education, 7.5 percent had no education and 7.5 percent didn't respond. This shows that education is an important factor in deciding whether or not to get screened and tested. Since there are very few uneducated women getting tested, this attests to the idea that NGOs, like MEWATA, should actively seek to inform these women about their bodies and health issues associated with being a woman.

There was a lot more background information found on these women through the survey. 792 women (68 percent) were in monogamous marriages. 100 women were in polygamous marriages with 2 or more wives in the marriage. Of these women, 763 of them have carried at least one pregnancy, the most reaching 18 pregnancies. 24 women reported never being pregnant and 190 women did not respond to this question. Out of the women surveyed only the 24 did not give birth. 63 did not respond and the rest had all given birth at least once in their life.

Breast examination findings and course of action

91.2 percent of the women surveyed were normal in their tests. .26 percent (3 women) of the women had a lump found in their breast. .34 percent (4 women) of the women answered under the choice "other". 8.2 percent of the women did not respond to this question. To assess and handle the results of the findings, one person was recommended to have a simple surgery to remove the lump. 1 woman got a referral to another doctor or institution for treatment or a second opinion. 4 women answered "other" as their course of action. 99.5 percent of people did

not respond to this question. One of the women with either a lump or other finding did not report her course of action after finding out the results to her test.

Cervical Cancer Findings and Course of Action

About one third (34.3%; n=400 women) of the women surveyed responded that their cervical screening was negative, 3.3% (39 women) of the women surveyed reported having a positive cervical screening. .26 percent (three women) were diagnosed with cervical cancer, and three women responded “other” to the question about their cervical screening. 61.8 (721 women) percent of women did not respond to this question. After being diagnosed 38 women were recommended cryotherapy. Four of the women surveyed did not answer this question. This included three of the women that had a diagnosis other than negative.

Discussion

As stated before, 85 percent of the women had at least primary school level education. 7.5 percent of the women did not have any sort of education. The low turnout in uneducated women speaks volumes as to how important education is in health. Even as little as primary schooling gives women an advantage in knowing more about her body. If MEWATA and other similar organization were able to go to communities and educate women, community members etc., as stated in their goals, information could spread like wildfire and more women may come to these screenings.

To repeat, MEWATA’s goals should be adopted by similar organizations to help provide care, treatment and education to women with and without cancer. These goals include increasing community awareness on breast and cervical cancer screenings as well as HPV vaccinations, promoting prevention and screening of breast and cervical cancer among community members, increasing awareness within the government and other donors and stakeholders about breast and cervical cancers and their burdens and increasing awareness among policy makers to distribute funds for cervical cancer services in Tanzania. By doing this, the rates of early detection of breast and cervical cancer will increase, as well as the number of women getting screened. It will also increase the funding, therefore providing better quality care services for the patients as well as better equipped and up to date facilities to handle these cancers. This will give women better access to health care as well as make it a little more affordable for them.

Some 5.7 percent of the women surveyed had answered that there was breast cancer or cervical cancer history in their family. 70.7 percent of the women answered no to this same question. 23.6 percent of the women were unsure about their family history. Almost 25% of the women were not sure of their family’s history. It can be inferred that families do not talk about matters like this because of the stigma around it. It may be believed that since it is such a personal issue, it should not be shared with the family. I believe that a dialogue needs to be created to bring awareness to these topics. Talking openly will allow women to know their history and may increase rates of early stage cancer diagnosis.

The women in this survey were also asked if they had any sort of breast problems. 20.8 percent of the women reported having some type of breast problem. 7.2 percent responded no to this question. 72 percent of the participants did not respond to this question. I think we need to bridge the gap and begin talking more openly about reproductive cancers.

Three women had a lump found in their breast and 4 women answered “other”. These women were either recommended to have a simple surgery to remove the lump, received a referral to another doctor or institution for treatment or a second opinion or chose another option as their

course of action. What was surprising to me was that one of the women that was diagnosed did not respond to the question. Another thing is the amount of referrals given. Since there are not many hospitals that provide services in all regions of the country, many women get referred to other hospitals that are able to sustain the needs of the women with cancer.

A total of the 39 of the surveyed women reported having a positive cervical screening. Three women were diagnosed with cervical cancer, and three women responded "other" to the question about their cervical screening. After being diagnosed 38 women were recommended cryotherapy. Four of the women were given a referral to another institution or doctor. Three of the women that had a diagnosis other than negative did not respond to this question. The amount of cervical cancer was at a much higher rate than breast cancer. Because of this, I think the HPV shot should be more regulated to help bring down the number of women with cervical cancer. To follow up with MEWATA's goal, funding should be provided for women to get the HPV vaccine to lower the rates of cervical cancer.

The results for the ORCI studies were astounding. In the study of 1447 women who had cervical cancer, there were very high percentages of women being diagnosed in later stages of cancer. 13 percent of these women were diagnosed in stage one of their cancer. 35 percent were diagnosed in stage two, 46 percent were diagnosed in stage three and 6 percent of these women were diagnosed in stage four. Although most of the women weren't in their final stage, the aim should be to diagnose women in stage one. The death rates for the women increased as they were diagnosed in later stages of cancer. The cure rate went down as they were diagnosed in later stages of cancer as well. This attests to the idea of early detection. By detecting early signs of cancer or precancerous cells, women are giving a higher survival rate and they are prolonging their life had they gotten diagnosed in a later stage.

The general rates for these cancers are very shocking too. The survival rates for both cancers are less than 15 percent in Tanzania. The death rates reach almost 50 percent for both cancers. Both of these rates are at their extremes. To combat these extreme rates and help reduce the death rate and increase the survival rate, facilities should be introduced in all 17 regional hospitals in Tanzania. By doing this, it would allow women to have easier access to needed health care as well (as provide them with the materials, drugs, surgeries, therapies and other procedures needed to help deal with the cancer.

Conclusion

Breast cancer is an issue that needs to be addressed in Tanzania. Women's health, especially reproductive health, is often stigmatized and therefore not always considered to be extremely important. There need to be an increase in facilities available to treat these women. The large death rates show how behind Tanzania is in cancer prevention and treatment. To improve the health care system surrounding cancer, the goals set in place by ORCI and MEWATA and similar organization should be followed up with and implemented in other organization

References

- Human Papillomavirus.N.p.: n.p., 2014. Centers for Disease Control and Prevention. Web. 26 Nov. 2014. <<http://www.cdc.gov/std/hpv/stdfact-hpv.htm>>
- Khimji, Zahra. "Tanzania is Taking Cancer Care Seriously and Creating More Treatment Centers." *The Guardian* 4 Feb. 2011, Environment: n. pag. Print.
- Lyimo, R.E., and Msaki, P. *Cancer Survival Rates and Gender Bias in Tanzania: A*

Case Study at the Ocean Road Cancer Institute. N.p.: n.p., n.d. Print.

Darj, E. and Urasa, Miriam. Knowledge of Cervical Cancer and Screening Practices of Nurses at a Regional Hospital in Tanzania. N.p.: n.p., 2011. National Center for Biotechnology Information. Web. 26 Nov. 2014. <<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3092321/>>.

Overcoming challenges: combating mental illness in Uganda

SHELLI L. REEVES

Ohio Wesleyan University, United States of America

Background

My Interest in this topic grew out of a research paper that I wrote for a course on Africa. In my research, I discovered that traditional healers in Uganda have been successful in treating individuals with mental illness. Specifically, my paper explores the causes and types of mental illnesses, stigma's and intervention programs within Uganda including the role traditional healers play in providing mental health services to individuals afflicted by mental illness. In Uganda, people suffering from mental illnesses have various ways to seek help but collaboration between healers and doctors is the best way.

Statistics show that mental illness is a serious health issue that is affecting many people worldwide and in Uganda. Globally, one out of every 4 people are affected by mental illness or suffer from some type of neurological disorder at least once in their lifetime. Over 450 million people are currently affected by mental illness making it the leading cause of disability and sickness worldwide (Mental Disorders, 2001). In Uganda, it is estimated that currently “20% (6.8 million) out of the 34 million people in Uganda have some degree of mental illness, ranging from anxiety and depression to severe madness” (Kagola, 2012). To begin, a conceptual definition of mental illness is presented.

Mental illness is a condition that disturbs a person's feelings, thoughts and moods. It affects one's daily functions, and impairs one's ability to relate to others. Often people with mental illness have difficulties handling the daily stresses of life(Mental Illnesses). Mental illness can affect anyone and the cause of it is unknown. Due to recent research and general public inquiry, “We can say that certain inherited dispositions [of mental illness] interact with triggering environmental factors. Poverty and stress are well-known to be bad for your health—this is true for mental health as well as for physical health”(American Psychiatric Association, 2005).

Global definitions provide a basis for what mental illness is but traditionalists within Uganda describe mental illness differently. For example, mental illness is believed to be either passed from person to person- similar to a physical illness- or brought on by witchcraft. If witchcraft is the cause of the illness then spirits are involved. The spirits are either acting on their own accords or other people summoned them. If the spirit is acting on its own accord it is usually because the person broke a taboo and insulted the spirit (Orley 15-20). Even in the traditional context, mental illness does not discriminate and it is considered a serious issue within the community. Ugandans who suffer mental illness still have trouble with daily functions, mood, thoughts, and ability to relate but they also behave abnormally, such as running around in the nude or not eating. With mental illness as a health challenge, Ugandans are exploring ways of getting help for their illness. Medical doctors and traditional healers are the primary sources of help within the Ugandan community. Often, stigmas prevent people from getting help. This is compounded by lack of medical facilities. There are many types of mental illnesses.

There are several different types of mental illnesses in Uganda and each one has a different cause. Traditional Ugandans have 10 main mental illnesses, which are associated with different parts of the body. Often people passed the mental illness orthe spirit cause the illness to affect the recipient and that illness favours a certain part of the body. Traditional healers in Uganda

classify mental illnesses differently with different names. The ten main mental illnesses with four associated with the brain, 2 associated with the heart, and 4 that are associated with women, children, or sleeping habits. First, illnesses associated with the brain include Eddalu, Ensimbu, Obusiru, and Kantalooze. Eddalu is similar to chronic schizophrenia, especially in regards to anger and violent tendencies towards other people. Another way to describe Eddalu is “Violent madness, and a person so affected will typically throw stones, abuse people, run around naked and will not eat food” (Orley 5). Ensimbu is epilepsy. The person often shakes while being unconscious, sometimes urinating or biting their tongue, before falling asleep and losing their memory of the event. Obusiru is a disease of someone acting younger than they are or foolishness. Kantalooze is referred to as dizziness and if left untreated it may cause epilepsy. Diseases associated to the heart include Emmeme etyemuka, which is an intense pounding of the heart caused by fear often causing a reaction of running and hiding, and Emmeme egwa, which causes a weakening of the body due to a lack of appetite. Other illnesses include Amakiro, Eyabwe, Kigalanga, and Akasumagizi. Amakiro affects women, who are about to give birth in one or two days, by killing them during the birth of their new child. It is caused by adultery with many men during the pregnancy. Eyabwe is a child’s illness where there is concussion and a fever. This also has some relationship with epilepsy, except it is a milder version for children. Kigalanga is an illness where women and children’s stomachs feel queasy and may contract a temperature. Therefore, it draws resemblance to epilepsy as well. Akasumagizi is also considered a mental illness; the main symptom is frequently dosing off to sleep.

Those illnesses are usually caused by one of the many spirits within the community. There are several different types of spirits but the main spirits that cause mental illnesses. The Baganda believe in several forms of spirits; *balubaale* (hero-gods), *mayembe* (literally meaning horns, but referring to spirits residing in horns or other receptacles), *mizimu* (the ghosts of dead ancestors), *misambwa* (spirits associated with certain animals, rivers, rocks or forests) and *kitambo* (a spirit usually causing people to walk naked at night and eat dead bodies) (Orley 17)

To get a spirit to infect someone, a taboo must be broken or another person summons the spirit. Often if a taboo is broken it is something that is unknown to the person who will suffer from the consequence. An example is a doctor skipping a procedure during childbirth. When the doctor does not perform his or her job correctly the child suffers from a mental illness. If someone summons a spirit, it is often a spirit that is associated with the family and the spirit is sent with ill intent.

Although traditional illnesses are more specific to Uganda, other mental illnesses are present. “Other mental illnesses include depression and bipolar disorders” (Abba S16). It is often perceived that depression and Bipolar disorder are illnesses, which derive from issues within their lives, rather than something that is internal. First and foremost, poverty greatly contributes to the high number of mental illnesses in the world due to its control over people’s ability to get education, have basic needs, and have good health care. “Poverty can be intrinsically alienating and distressing, and of particular concern are the direct and indirect effects of poverty on the development and maintenance of emotional, behavioural and psychiatric problems” (Murali). The main problems that it causes are depression and anxiety. As of 2009 the poverty line in Uganda is 24.5% leaving 8.94 million people living below the poverty line. This number is an improvement from recent years; in 2005 the poverty line was at 31.1% of the population and in 2002 the line was at 38.8% (WHO). The high poverty line increases the amount of people who are struggling to live comfortably. This in turn increases mental stress and turmoil.

Human right issues within Uganda are serious and if neglected can cause mental illness, especially depression. Human rights issues affect the daily lives of men, women and especially children in

Uganda. When one's human right is violated, it increases the person's risk of getting a mental illness. For children "Depression, severe anxiety, panic attacks and post-traumatic stress disorder (PTSD) are the most common mental health consequences of abuse" (Lazenbatt 2). The extensive list of human rights issues and violations are as follows: Arbitrary killings; vigilante killings; mob and ethnic violence; torture and abuse of suspects and detainees; harsh prison conditions; official impunity; arbitrary and politically motivated arrest and detention; incommunicado and lengthy pre-trial detention; restrictions on the right to a fair trial and on freedoms of speech, press, assembly, and association; restrictions on opposition parties; electoral irregularities; official corruption; violence and discrimination against women and children, including female genital mutilation (FGM), sexual abuse of children, and the ritual killing of children; trafficking in persons; violence and discrimination against persons with disabilities and homosexual persons; restrictions on labour rights; and forced labour, including child labour. (Dagne 13)

The relevance of children especially being affected by human rights and mental illness is that children and adolescents are the most affected by mental illnesses, observed by doctors. Women are second most affected and men are the least affected by mental illnesses, observed by doctors (WHO). On the other hand men are mostly affected by traditional illnesses, women and children are not affected by many of the traditional mental illnesses. Therefore, human rights issues contributes to the mental health in Uganda and depending on who is making the diagnosis, men are more vulnerable to traditional illnesses and children are more vulnerable to medical illnesses.

Treatment Options

With mental illnesses being a prevalent issue within Uganda the community has come together to create different avenues of treating them. The main two ways of treating an illness is going to a village healer or going to a medical doctor. Healers agree that some conditions need medicine and doctors agree that some people need one on one "healing" rather than medicine. Other groups in the community rely on group counselling and/ or religion to help a person overcome their struggles. In some cases everything is needed to help a person because each method takes a different approach to helping the person. Therefore, healers and doctors have different approaches but they are both useful in Uganda in regards to mental health.

Healers

Healers have various jobs within the community along with curing people who suffer from mental illnesses. The jobs include curing physical and mental illnesses, interacting with the community and keeping a constant connection with the spirits of the village. Different healers within the community are connected to different spirits; therefore some patients must go to various healers before they can be cured. Healers are needed to remove illness within the community especially if a spirit causes it.

Healers are a necessary resource to help the people who have mental illnesses in Uganda. The characteristics of healers vary, but overall, a healer is male with lower than senior education and has over 15 years of experience. To become a healer the person who is interested usually knows a healer from an experience or is related to one. In this case the correct ties are created and healing begins to take place. Besides knowing the right people, the potential healer must care and have a good sense of problems and how to solve them. Healers must help themselves before helping others. Also, "[Healers] believed that mental illnesses were caused by evil spirits, witchcraft or curses"(Ovuga 276).

Due to this belief, healers diagnose mental illness by cowrie shells and observation of symptoms. Symptoms include a frazzled appearance, shifty red glistening eyes, hoarding trash, speaking incoherently, running away or having strange behaviour (Ovuga 277). After observing these symptom healers can attempt to cure the patient.

Healers work at shrines where ceremonies to remove the effects of negative spirits occur. Often the spirit will severely infect the patient with a mental illness so that they must go to a healer. Once the patient is at the shrine the healer decides which method will serve the patient best. The options are herbal remedies, which are usually used for physical illness, blood cupping, or to call on the spirit [balubaale]. In most cases of mental illness the spirit balubaale is summoned. This spirit enters the body and informs the healer of what needs to be done. While this process is happening the patient stays at the healers grass hut. The ceremony involves singing and only happens at night (Ovuga 15-20).

If the healer is not connected to the correct spirit they still attempt to help by putting the patient into a trance, often tools like cowrie bells are used in this stage of healing. Within this trance the healer attempts to figure out the cause of the patients turmoil. If a spirit lingering in the patient's body causes the illness that the healer has access to, then there are ceremonies to get the spirit out. The ceremonies last for several days and there is a portion of time the patient is allowing the spirit to be released. Often there are ceremonies If the patient is not cured there is a chance that they may live with the doctor in an attempt to encourage healing. Within the healers home the spirit within patients has ample opportunity to leave the patient's body and move on.

Often healers overlook mental illnesses like depression and anxiety because the person being affected is not rambunctious enough to draw attention to them. People with depression often are quiet and are not affecting other people. They are quiet and having internal issues with themselves. These people often do not have the energy or motivation to go to a healer. If the healer also does not see that they need help the patient is left to suffer. Healers are not trained to see the situational symptoms of people who suffer mental illnesses. Since healers are a part of the community they work in, they are able to help the patient through the illness as they heal.

Doctors

Doctor procedure for treating mental illnesses vary but overall the procedure of getting help is complicated and tedious. First if a person feels as though they have a mental illness they must go to a general practitioner and share how they feel. A person within the community can also recommend a person to go to a doctor to get assistance. Once the person shares their feelings with a doctor a questionnaire is given to the patient. Often the questionnaire asks simple questions about sleeping, eating, and social habits. If the survey and the doctor agree that the patient is suffering from a mental illness they are recommended to see a psychiatrist (Goldberg 1-3). The psychiatrist then diagnoses them with a mental illness and begins to give them medicine, recommend them to see a therapist or both. This process can take months if there are not many psychiatrists.

Doctors often practice medicine, administrating prescriptions and monitoring how the body reacts. When depression is severe this is what people rely on. It is a struggle to get adequate medical care because the budget for mental illness, including government hospitals, was 4%. Therefore the needs of people with mental illnesses are not being met because there is a lack of adequate resources and trained medical personnel. "There was one National Mental Hospital available in the country with a total of 1.83 beds per 100,000 population" (WHO-AIMS 12). Within

this hospital there is not a special section for women or children although women and children make up 57% of the people who get treated.

“There were 28 mixed outpatient mental health facilities available in the country, with no special clinics for children and adolescents only. The number of users per 100,000 general population treated by these facilities could not be established. However, these facilities had treated a total of approximately 13,710 new users in the previous year.” (WHO-AIMS 11)

This is surprising since there is only one hospital and one-day treatment facility. The day treatment facility primarily helps women and children, 49% of people who come to the treatment facility are women and 36% are children. Also, there is a lack of space that only treats children and adolescents. There are also community based inpatient psychiatric hospitals, which cater more toward children. 15% of the beds are for children and adolescents the people who are admitted into these hospitals often are dealing with mood disorders or epilepsy. Although this system is lacking when it comes to finances and resources, which affects the people negatively.

There is a large treatment gap, which is impeding the recovery of many people in Uganda. It is estimated that only 44 out of every 219 people referred are treated for their illness (Ndyabangi 2012). In an attempt to decrease the gap, general practitioners are going through training to gain some clearance to treat some mental illnesses. This leads to many mentally ill people searching for help and not finding it.

Within the country there is an increased desire to increase care for mentally ill people in Uganda. The government created a mental health program, which was created in 1996 by the Ugandan Ministry of Health. With new developments in patient care for mental illnesses draft a new mental health plan in 2000, this plan was still in draft form in 2006. The draft speaks about a referral system with trained people within the community. Traditional healers, community leaders, and other relevant people would be trained (Kigozi, 2010). Overall this would bring awareness to the people within the community about the symptoms of mental illness but the lack of hospital beds would cause the people that are being referred to be waitlisted. There was also a legislation passed in 1964 that brought attention to mental illness within the country but the legislation has not been revised and it does not take human rights into account. In 2010 there was another draft submitted to address mental illness issues. The draft is still being processed.

Doctors are a way for many people to get assistance within the Ugandan community but there are many complications for the people who want to get help. The lack of finances and bed leave many patients untreated or waiting for help. Also, the process to get help is long causing many people to get turned away from medical doctors if they have a mental illness.

Healers and Doctors

There is a possibility that the best strategy to help the patient is for healers and doctors to work together. Often healers and doctors treatment methods clash because some medicines cannot be mixed with the herbal treatments that healers give to patients. Over 80% of African people see healers before, after, or instead of seeing a western doctor because they are cheaper and trusted in the community (Madamombe, 2013). With this knowledge western doctors should be more open for collaboration; the consequences are few compared to the immense amount of rewards.

Healers and doctors could work together to create new medicine and monitor illness within the community. This would prevent dangerous medicine mixtures and increase trust between the community and medical doctors. With this increased trust more patients would go to medical

doctors to get treated for things that healers cannot treat.

In the cases of mental illnesses when medical doctors diagnose a patient with a mental illness the healers can follow up with the patient and help develop a treatment plan that complies with cultural norms. The healer can also observe the patient to see if they have relapses or symptoms get worse. Also, mental health doctors can inform healers how to help people with minor mental illness and when a minor mental illness does become severe enough that the patient needs to get referred to a doctor. Furthermore, mental health professionals could provide guidelines to help the traditional healers determine when their clients with milder psychiatric conditions should be referred for more specialized treatment. "Close collaboration among psychiatrists and traditional healers offers the best hope of meeting mental health care needs in a timely, coordinated, ethical and cost-efficient manner" (Abbo S21). If healers and doctors worked together they may assist the patient to improve him or herself and dispose of their illness.

Conclusion

Collaboration between healers and doctors in Uganda is the best way to combat the overwhelming number of people suffering from mental illnesses. There are several mental illnesses within the Ugandan community that can only be cured by a traditional healer or a medical doctor and there are several mental illnesses that can be cured by both medical doctors and healers. The mental illnesses that only traditional healers can fix are abundant within the Ugandan community because spirits cause them. Medical doctors cannot cure illnesses that are caused by spirits meaning that healers are needed to cure them. Also, both a healer and a doctor can cure most illnesses that do not involve spirits. It is recommended that a doctor should be used to cure some illnesses, like epilepsy.

Doctors lack the necessary means to cure as many people as they have the potential to. Medical doctors are underfunded and lack hospital beds to cure the many people who want to get help. "The Ugandan government recognizes mental health as a serious public health and development concern, and has of recent implemented a number of reforms aimed at strengthening the country's mental health system (Kigozi, 2010). The government is only involved with medical doctors and mental illnesses not healers. This shows a distinct bias although most people go to healers rather than doctors.

Healers may have people who rather get cured by them but they do not have all of the resources. Healers often cannot cure mental illnesses that do not involve spirits and they are forced to recommend the patient to a medical doctor. But healers are community based and can help the patient with therapy and watch for relapses. Therefore it would be convenient for the doctors and the healers to work together.

Doctors and healers can collaborate and create a system that incorporates medicine, healing, and culture. Both healers and doctors use medicine to cure their patients. Often the chemically based medicines that doctors give and the herbal base medicines that healers give react with each other causing the patient to get ill. If the healer and doctor were working together this illness would be prevented. Healing also is needed to cure patients in a holistic way. Healers can talk to patients, observe their responses to the medicines given, and incorporate culture into their health plan. Culture is needed to make the patient comfortable and assist them in regaining themselves to become happier and healthier.

Overall, healers and doctors is the best way to help people, therefore what should be done? The power to change the healthcare system is in the hands of the healers, doctors, and government

officials of Uganda. All aspects of culture must be observed while incorporating western medicine. The health of the people of Uganda should be a priority within the country. Mental health patients should know that help is on the way. Therefore, who will be the change? What will be done? And everyone can make the difference.

References

- Abbo, C., Ekblad, S., Waako, P., Okello, E. & Musisi, S. (2009) The Prevalence and severity of mental illnesses handled by traditional healers in two districts in Uganda. *African Health Sciences* 9 (Suppl) S16-S22.
- American Psychiatric Association. *What Is Mental Illness?* Virginia: American Psychiatric Association, 2005. Print.
- Dagne, Ted. *Uganda: Current Conditions and the Crisis in North Uganda*. Rep. Washington DC: n.p., 2011. *Uganda: Current Conditions and the Crisis in North Uganda*. Congressional Research Service, 8 June 2011. Web. 3 Dec. 2013. <<http://www.fas.org/sgp/crs/row/RL33701.pdf>>.
- Goldberg, David P., and Peter Huxley. *Mental Illness in the Community: The Pathway to Psychiatric Care*. London: Tavistock Publications, 1980. Print.
- Kagolo, Francis. "32 Psychiatric for 34 Million Ugandans." *32 Psychiatric for 34 Million Ugandans*. N.p., n.d. Web. 17 Dec. 2013.
- Kigozi, F., Ssebunnya, J., Kizza, D., Cooper, S. & Ndyababangi, S. and the Mental Health and Poverty Project (2010) An Overview of Uganda's Mental Health Care System: Results from an Assessment Using the World Health Organization's Assessment Instrument for Mental Health Systems (WHO-AIMS). *International Journal of Mental Health Systems* 2010, 4:1
- Lazenbatt, A. (2010) The Impact of Abuse and Neglect on the Health and Mental Health of Children and Young People. NSPCC.
- Madamombe, I. (2006) Traditional Healers Boost Primary Health Care. *AfricaRenewal*. January 2006.
- Mental Disorders Affect One in Four People. WHO. N.p., n.d. Web. 17 Dec. 2013.
- Mental Illnesses. NAMI. N.p., n.d. Web. 15 Dec. 2013.
- Murali, Vijaya, and Femi Oyebode. "Advances in Psychiatric Treatment." *Poverty, Social Inequality and Mental Health*. N.p., n.d. Web. 15 Dec. 2013.
- Ndyababangi, Sheila, Michelle Funk, Joshua Ssebunnya, Natalie Drew, Sonia Dhillon, Kanna Sugiura, and Sarah Skeen. "WHO Profile on Mental Health in Development (WHO ProMIND): Republic of Uganda." *WHO ProMIND: Profiles on Mental Health in Development* (n.d.): n. pag. WHO. WHO, 2012. Web. 20 Nov. 2014.
- Orley, John H. *Culture and Mental Illness; a Study from Uganda*. Nairobi: Published for the Makerere Institute of Social Research East African Pub. House, 1970. Print.
- Ovuga, E., J. Boardman, and E. G. A. O. Oluka. "Traditional Healers and Mental Illness in Uganda." *Psychiatric Bulletin* 23.5 (1999): 276-79. *The Psychiatrist*. The Royal College of Psychiatrists. Web. 3 Dec. 2013.
- Uganda. *The World Bank*. The World Bank Group, 2013. Web. 30 Nov. 2013. <<http://data.worldbank.org/country/uganda>>.
- WHO-AIMS Report on Mental Health System in Uganda. Rep. Kampala, Uganda: WHO and Ministry of Health, 2006. World Health Organization, 2006. Web. 4 Dec. 2013.

Hypokalaemia and its clinical effects among children treated with nebulised salbutamol in Mulago Hospital - Uganda: A cross – sectional study

DAVID MNZAVA^{1*}, HELLEN AANYU TUKAMUHEBWA², SABRINA KITAKA³

¹Dodoma Regional Referral Hospital, Tanzania, P.O. Box 904, Dodoma, Tanzania; ²Mulago National Referral Hospital, PO Box 7072, Kampala, Uganda; ³College of Health Sciences, Makerere University, P.O. Box 7072, Kampala, Uganda.

Corresponding E-mail: mnzavadp79@gmail.com

Abstract: Potassium imbalance particularly hypokalaemia, is a common electrolyte disturbance in sick children. Studies addressing its incidence are few and mainly from developed countries. One of the iatrogenic causes of hypokalaemia is the use of beta 2 adrenergic drugs like salbutamol. The incidence and severity of Salbutamol induced hypokalaemia is not known when salbutamol is used in conditions in which children have normal potassium levels. This study has provided data on the incidence of hypokalaemia among children treated with nebulised salbutamol. Three hundred and ten children whose parents consented from the age of 2 months and twelve years were consecutively enrolled from 10th December 2013 to 13th June 2014. Data was collected through a structured questionnaire which was filled with patient demographic data, clinical data, blood sample results pre and post treatment for serum potassium levels. Children who develop hypokalaemia an ECG was obtained and further blood samples were obtained to assess the recovery trend. Three hundred and twenty two children were screened from December 2013 to June 2014. Out of 310 who were included for analysis 115 (39.8%) (34.1 – 45.4) 95% CI had hypokalaemia. Factors associated with hypokalaemia were older age above 5 years (p value of 0.007), salbutamol use within 24 hours (p value of 0.019) and history of steroid use (p value of 0.03). Eight out of 129 (6.2%) children who had hypokalaemia developed U waves on ECG. Six children (4%) had delayed recovery from hypokalaemia necessitating oral supplementation. The prevalence of hypokalaemia in children who are treated with nebulised salbutamol is high. The factors found to be associated with hypokalaemia include being older than 5 years, having a history of salbutamol use within 24 hours and history of use of steroid medication. From the above findings we recommend serum potassium monitoring for children at increased risk. Although no immediate severe adverse outcomes were associated with hypokalaemia in this study, caution needs to be taken when nebulising older children who have been pre-treated with salbutamol and steroids. We recommend further studies to establish predictors for the presence of hypokalaemia.

Introduction

Hypokalaemia is one of the common electrolyte imbalances in sick children. It's presence can be asymptomatic and finding identified only on routine electrolytes screening or it can be associated with symptoms ranging from mild weakness to sudden death [1, 2]. Causes of hypokalaemia include pseudo hypokalaemia, redistribution due to insulin, aldosterone and sympathomimetic. Extra renal causes of hypokalaemia include vomiting and diarrhoea due to large volume of stool loss. Renal potassium loss can occur either because of medications, endogenous hormones productions or intrinsic renal defects [2-4]. Among the common iatrogenic causes of hypokalaemia are sympathomimetic like beta -2 agonists drugs example of which is Salbutamol. Salbutamol work by relaxing and expanding the smooth muscle of the airways making it easier to breath.

Salbutamol act by stimulating the intracellular activity of cyclic adenosine monophosphate (cAMP). It suppresses the activity of immune and inflammatory cells and also leads to acute

relaxation of airway smooth muscle [5, 6]. Hypokalaemia effects of Beta 2 agonists are mediated by the Beta 2 receptor linked to the sodium potassium ATPase in the skeletal cells and other cells [7]. Side effects of beta agonists include rapid heart rate (Tachycardia), Tremors which is 6% [8], sleep disturbances, nervous tensions, peripheral vasodilatation, myocardial ischaemia, muscle cramps [9]. High doses are associated with hypokalaemia [10]. Beta adrenergic are indicated in conditions characterized by wheezing including bronchiolitis which is an acute inflammatory injury of the bronchioles due to viral infection. Guidelines recommend the use bronchodilators and response monitoring in bronchiolitis also as the trial therapy for first wheezers [11-13].

Prevalence of bronchiolitis in African setting is not well understood due to few researches which have been done in the subject in African setting. In one study it was found to be 8.6% in rural southern part of Mozambique [14]. The word Asthma comes from the Greek *ásthma*, which means "panting". Asthma is defined as a chronic disease characterized by recurrent attacks of breathlessness and wheezing, which vary in severity and frequency from person to person [15]. In Eastern Africa asthma prevalence is estimated to be 4.4% and currently at the chest clinic in Adult Mulago hospital it accounts for 16.9% of attendance [16]. The trend is on increase especially in children and in developing countries [17]. Among the few studies on the prevalence of asthma in children it has been reported to be 14% in Ifakara District in Tanzania, and 13.8% in children of primary school aged between 8 to 14 years in Kampala district [18, 19]. This trend is still on the low side due to under diagnosis of this disease due to overlapping symptoms with pneumonia in IMCI management protocol [20].

According to literature hypokalaemia is expected in about 39% of children with acute asthmatic attack treated with three doses of nebulised Salbutamol [21]. This percentage has not been verified by any other research moreover the research had small sample size of only 46 children, other research have smaller numbers and are not adequate to influence decisions on the use of this drug hence hypokalaemia has just remained an association [7, 22]. Potassium is the most affected electrolyte compared to magnesium and phosphate in asthmatic patients treated with Salbutamol [23].

Patients with hypokalaemia are usually asymptomatic, however increased lower levels presents with abnormal heart rhythms, increased blood pressure [24], Constipation, fatigue, muscle damage (rhabdomyolysis), muscle weakness or spasms and Paralysis (which can include the lungs) and even respiratory arrest [25, 26]. Hypokalaemia may also lead to paralytic ileus [27].

ECG changes of hypokalaemia include ST-segment depression, inversion of the T wave and increased U wave prominence. In severe hypokalaemia, an increase in amplitude of the P wave, prolongation of the PR interval, and widening of the QRS complex may all occur. If untreated it leads to premature ventricular contractions and arrhythmias [28-30]. Various studies have demonstrated a number of drugs with capability of lowering potassium levels like furosemide, corticosteroids like prednisolone and hydrocortisone [31, 32], and antibiotics like penicillin and penicillin analogous drugs [2].

Clinical conditions mostly associated with hypokalaemia are renal disease, septicaemia, diarrhoea, malnutrition, heart disease with congestive heart failure and meningoencephalitis [1]. Hypokalaemia is treated by potassium replacement, the urgency and route depends on ECG changes and serum levels [33]. In patients with severe hypokalaemia or with ECG changes potassium chloride slow intravenous infusion 1–2 mmol/kg/ day replacement is recommended with close monitoring of the ECG. In less severe form of potassium depletion without ECG changes slow oral replacement is the preferred modality of treatment [3].

The use of B-2 agonists have been associated with mortality in one study showed crude odds ratio of 1.5 and adjusted odds ratio of 4.1 with 95% CI [34]. The increased risk of death has been associated with side effects of Salbutamol and less with the severity of the disease [35]. Other studies have demonstrated by higher levels of bronchodilator drugs in post-mortem of these patients up to 2.5 times the therapeutic doses with p value of 0.001, 95% CI [36].

Avoidance of potassium depletion and hypokalaemia and certain drug combinations – and maybe in a subset of patients – administration of potassium supplementation or aldosterone antagonists might prove lifesaving. Various studies have demonstrated the role of salbutamol in the management of severe hyperkalaemia with resultant mean plasma potassium concentration falling significantly by 0.87 and 0.61 mmol/L after IV and nebulised administration respectively [37]. In another study on Serum Electrolytes levels during Nebulised Salbutamol therapy they found that Salbutamol is associated with statistically significant decreases in serum levels of potassium, magnesium and phosphate [23]. Serum potassium have also been reported to decrease significantly in outpatient treated with oral Salbutamol 6 mg in 24 hours on average of 0.53 mmol/L [38].

According to literature hypokalaemia is expected in about 39% of children with acute asthmatic attack treated with three doses of nebulised Salbutamol [21]. Therefore with the evidence reviewed above it is well elaborated that Beta 2 agonists are likely to cause deaths due to adverse effects of the drug of which hypokalaemia induction is the worst. However the available evidence is not adequate to conclusively determine its incidence among paediatric population on treatment with beta – 2 agonists.

Methods

A cross sectional study for the incidence of hypokalaemia and clinical features and prospective component among those who have developed hypokalaemia to follow the trend of recovery of serum potassium levels. Subjects were Children admitted in acute care unit with wheezing/rhonchi and indication of salbutamol nebulisation. It was done in Acute care Unit in Mulago Hospital. Tools were a structured questionnaire which was filled with patient demographic data, clinical data, blood sample results pre and post treatment for serum potassium levels. Children who will develop hypokalaemia an ECG will be obtained and further blood samples will be obtained to access the recovery trend.

Children who met study criteria were consecutively enrolled until the sample size was reached. Data entry was done using Epidata 3.1 then exported to STATA 12 for analysis. The study aim to shed light on the incidence of hypokalaemia in children with wheezing attack that need nebulisation with salbutamol and factors which predispose them to develop hypokalaemia. This will help to determine the need for supplementing children with potassium to avoid fatal complications.

Results

From December 2013 to June 2014, 322 children who needed to be treated with nebulised salbutamol were screened in Acute Care Unit Mulago Hospital. Six care takers didn't consent to participate in the study, and two more withdrew their consent latter. Four of the patients needed urgent resuscitation and were not recruited. Majority of the study participants were below the age of 5 years 244 (78.71%) and more males were seen than females about. Other baseline parameters are as in the table below.

Table 1: Baseline characteristics of the patients before nebulisation

Variable	Distribution of participants characteristics	
	Number (n = 310)	Percentage (%)
Age categories in years		
< 5 yrs	244	78.7
>5	66	21.3
Sex		
Male	177	57.1
Female	133	42.9
Mid upper arm circumference		
Normal (>11.5 cm)	297	95.8
Wasted (< 11.5 cm)	13	4.2
Weight for Height		
Normal (> -1 SD)	276	89.0
Malnourished (< -1 SD)	34	11.0
Respiratory Rate		
Normal	88	28.4
Tachypnoec	222	71.6
Oxygen Saturation		
Normal	147	47.4
Low Saturation of O ₂	163	52.5
Temperature		
Normal	259	83.6
Febrile (> 37.5 ° C)	51	16.4
Blood Pressure Systoli		
Normal	295	95.2
Hypertensive	15	4.8
History of steroid use		
Yes	35	88.7
No	275	11.3
Pulse Rate		
Normal	220	71.0
Abnormal	90	29.0
Potassium level		
Normal	289	93.2
Hypokalaemia	14	4.5
Hyperkalaemia	7	2.2

Key: Normal Potassium levels 3.5 mmol/l – 5.5 mmol/l, hypokalaemia< 3.5 mmol/l and hyperkalaemia> 5.5 mmol/l.

Prevalence of hypokalaemia

The prevalence of hypokalaemia was found to be 39.8% (115/289) with interquartile range of 34.12% – 45.47% at 95% CI.

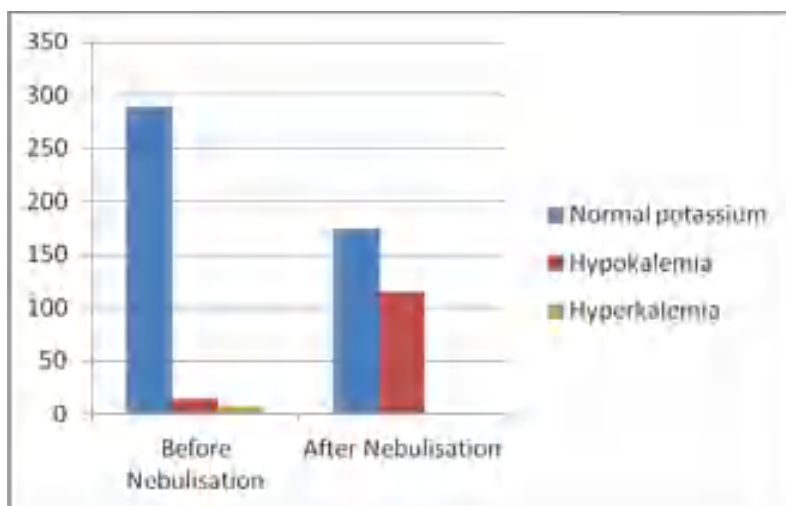


Figure 1: Potassium levels of participants before and after nebulisation

Two hundred eighty nine (93.2%) children had normal and 14 (4.5%) had low potassium levels before treatment. Seven (2.25%) children had high levels of potassium before treatment which was corrected to normal levels after treatment. Among those who had hypokalaemia 61 (47.28%) of them had mild hypokalaemia, 66 (51.16%) had moderate hypokalaemia and two of them had severe hypokalaemia.

Factors associated with Hypokalaemia

Factors found to be significantly associated with hypokalaemia were age above five years with p value of 0.001, high dose of salbutamol at 5mg per nebulisation with p value of 0.016, history of salbutamol use within 24 hours, no medication with p value of 0.007 and 0.008 respectively and history of steroid use with p value of 0.019 on unadjusted odds ratio as shown in the table below.

Table 2: Factors associated with hypokalaemia among children who are treated with nebulised salbutamol

Variable	Hypokalaemia status		Odds	Unadjusted OR (95% CI)	P - Value
	No Hypokalaemia	Hypokalaemia			
	Numbers (%)	Numbers (%)			
Age Category					
<5 YRS	157 (86.7)	87 (78.7)	0.55	Reference	
> 5	24 (13.3)	42 (21.3)	1.75	3.16 (1.76 – 5.66)	0.001
Gender					
Male	106 (58.6)	71 (55.0)	0.67		
Female	75 (41.4)	58 (45.0)	0.77	1.15 (0.73 - 1.82)	0.537
Weight for Age					
Normal	157 (86.7)	119 (92.2)	0.76	Reference	
Malnourished	24 (13.3)	10 (7.7)	0.42	0.55 (0.25 – 1.20)	0.127
Diarrhoea					
Yes	12 (6.6)	8 (6.2)	0.67		
No	169 (93.4)	121 (93.8)	0.72	1.07 (0.43 – 2.71)	0.878
Dose of Salbutamol (mg)					
2.5	160 (88.4)	101 (78.3)	0.63		
5	21 (11.6)	28 (21.7)	1.33	2.11 (1.13 - 3.95)	0.016

Concurrent Medication

Antibiotics	94 (51.9)	78 (60.5)		Reference	
Salbutamol use (within 24hrs)	1 (0.6)	14 (10.8)	14	16.87(2.17 - 131.17)	0.007
No medication	86 (47.5)	37 (28.7)	0.43	0.52 (0.32 – 0.85)	0.008

History of Asthma Drugs

Yes	14 (7.7)	21 (16.3)	1.5		
No	167 (92.3)	108 (83.7)	0.65	0.43 (0.21 – 0.89)	0.019

Note:Antibiotics; Chloramphenicol, Ceftriaxone, Ampicillin and Gentamicin, Amoxycillin and Erythromycin

The factor which were below p value of 0.2 were taken to multivariate analysis for adjusted odds ratio and the age, history of salbutamol use within 24 hours, no medication and history of steroid use were still significant after adjusting for the other factors as shown in the table below. After adjusting for age, steroid use, weight for age and concurrent medication dose of salbutamol was not significant in multivariate analysis.

Table 3: Multivariate analysis

Variable	Unadjusted OR (95% CI)	P - Value	Adjusted OR (95% CI)	P - Value
Age Category				
<5 yrs				
>5 yrs	3.16 (1.76 - 5.66)	0.001	3.50 (1.41 - 8.69)	0.007
Weight for Height				
Normal				
Malnourished	0.55 (0.25 - 1.20)	0.127	0.73 (0.32 - 1.67)	0.458
Dose of Salbutamol				
2.5				
5	2.11 (1.13 - 3.95)	0.016	0.93 (0.61 - 1.39)	0.712
Concurrent Medication				
Antibiotics				
Salbutamol use within 24 hours	16.87 (2.17 - 131.17)	0.007	12.03 (1.50 - 96.25)	0.019
No medication	0.52 (0.21 - 0.89)	0.008	0.45 (0.26 - 0.77)	0.003
History of Steroid use				
Yes				
No	0.43 (0.21 - 0.89)	0.019	1.21 (0.20 - 0.92)	0.03

Note: Adjusted for age, gender, weight-for-height, diarrhoea, dose, medication and history of steroid use

Clinical features developing after nebulisation

The clinical features assessed to develop after hypokalaemia include tachycardia, tremors and muscle weakness.

Table 4: Clinical features after nebulisation

Clinical features	Potassium Status		Odds	OR (95 % CI)	p - Value
	No hypokalaemia	Hypokalaemia			
	Number	Number			
Respiratory Rate					
Normal	51 (28.18)	63 (48.84)	1.24		
Tachypnoec	130 (71.82)	66 (51.16)	0.51	0.41 (0.25 - 0.66)	0.001
Temperature					
Normal	142 (78.45)	112 (86.82)	0.79		
Febrile	39 (21.55)	17 (13.18)	0.43	0.55 (0.30 - 1.30)	0.06

Blood Pressure						
Systolic						
Normal	175 (96.69)	121 (93.80)	0.69			
Hypertension	6 (3.31)	8 (6.20)	1.33	1.93 (0.65 - 5.72)	0.228	
Oxygen Saturation						
Normal	131 (72.38)	97 (75.19)	0.74			
Low saturation	50 (27.62)	32 (24.81)	0.64	0.86 (0.52 - 1.45)	0.31	
Tremors						
NO	181 (100)	128 (99.22)	0.71			
Yes	0	1 (0.78)	0			
Muscle weakness						
Grade 4	0	2 (1.55)				
Grade 5	181 (100)	127 (98.45)	0.7			
Pulse Rate						
	Mean (Standard deviation)		Mean difference			
	157.18 (28.94)	156.96 (21.17)	0.22			0.941

None of these features were found to be significant between the group with normal potassium levels and the group with hypokalaemia. However we found a significant difference in improvement of respiratory rate between the group without hypokalaemia and the group with hypokalaemia with an odd ratio of 0.41 (0.25 – 0.66) and p – value of 0.001. This expected when children are nebulised.

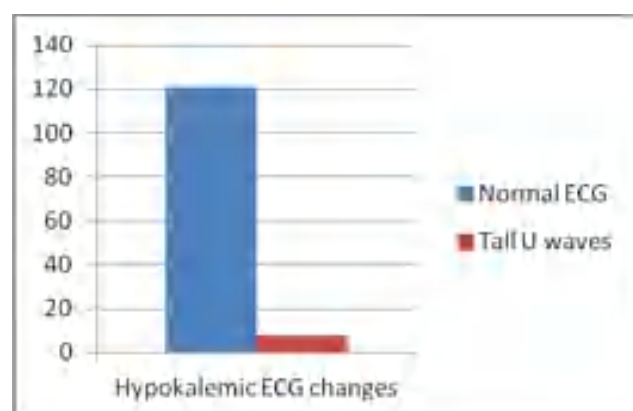


Figure 2: Graph of ECG changes observed in children who had hypokalaemia.

ECG changes for those with hypokalaemia

Figure 1 explains the ECG changes which developed among children who had hypokalaemia. Eight children (6.2%) out of 129 with hypokalaemia with potassium levels ranging from mild (6 children) to moderate (2 children) developed tall U waves in their ECG strips, there was no other ECG abnormality detected and 118 ECG's were normal.

Table 5: Characteristics of children with ECG abnormality

Case	Age	Sex	Level of Potassium	ECD abnormality	Heart rate	Temperature °C	QTC
1	1yr 7 months	F	3.1	U waves in V3	187	37.8	415
2	1 year	M	3.0	U waves in V2, V5, V6	180	36.8	415
3	6 years	M	2.6	U waves in V4	163	36.6	420
4		M	3.1	U waves in V3	171	36.8	406
5		F	3.2	U waves in V3	158	37.0	379
6		M	3.3	U waves in V4	164	37.0	339
7	4 years	M	2.9	U waves in V2, V3, V4	173	-	441
8	1 year	Female	3.0	U waves in V3	119	-	376

Note: Potassium is in mmol/l; Heart rate in beats per minute; QTC= for Corrected QT interval in milliseconds

Table 5 provides clinical characteristics and serum potassium levels of the 8 children who developed the ECG changes relevant to hypokalaemia.

Recovery of hypokalaemia to normal levels

Majority (96 %) of those who had hypokalaemia had full recovery within 24 hours and 4% had delayed recovery of more than 24 hours but within 48 hours. The recovery was spontaneous without intervention except for 6 patients among those who had delayed recovery. The six children who had delayed recovery were treated with potassium chloride at the dose of 0.5 - 1 mmol (mEq)/kg orally every 12hrs.

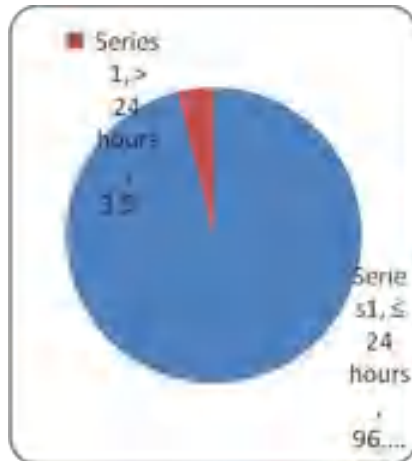


Figure 2: Recovery time of hypokalaemia in children who had Hypokalaemia

Discussion

This prospective study with cross sectional component on the prevalence of hypokalaemia was conducted to determine the prevalence of hypokalaemia, its clinical effects, and factors associated and to access its recovery among children who are treated with nebulised salbutamol between the age of 2 months and twelve years in Mulago Hospital. Prevalence of hypokalaemia among children treated with three doses of nebulised salbutamol is 39.8%. This prevalence is similar with the study done in India which put the prevalence of hypokalaemia to be at 39% and several other studies which had a prevalence of 42% [17, 44, 45]. The study done in India by Singh S.C. et al [17] was similar to our study in which they determined the hypokalaemia status of children who had received three doses of nebulised salbutamol, however the study had only 46 children. In Muhammad et al [44] they found the prevalence of hypokalaemia to be 42% in children who had chronic stable asthma drugs in multiple medication including Beta 2 agonists. Also this figure is similar to the prevalence we got which shows that the risk of hypokalaemia is not only limited to the acute treatment and hence children who are in acute treatment but with asthma medication use may be more susceptible due to cumulative effect of medication to electrolytes.

Also the findings were slightly higher in a study by Mazhar et al [46], where they found prevalence of hypokalaemia to be 44%. In their study they treated everyone with nebulised salbutamol but some were also given intravenous salbutamol which could be the reason of the slightly higher prevalence. Our study had included both first time wheezers who could be asthmatic or children with bronchiolitis and children who had already been on salbutamol. In this study the age span was wider including children below two years and the numbers of children were more compared to the above studies which included only children who were diagnosed and on medication for asthma.

Factor which were analysed for association with hypokalaemia following Salbutamol nebulisation treatment included age, antibiotic use, history of salbutamol use within 24 hours, history of steroids use, history of diarrhoea, gender and nutrition status. The factors which were significantly associated was age in which older age above 5 years was more associated with hypokalaemia with p – value of 0.007 (adjusted) compared to those who are below five years. This could be as a result of faster metabolism of the drug in younger ages or due to the dose effect of 5 mg. However in this study before adjusting for other above factors dose of salbutamol per nebulisation at 5 mg per nebulisation was associated with hypokalaemia as compared to 2.5 mg with the odd of 1.33 and odds ratio of 2.11 with a range of 1.13 – 3.95 at 95% CI and p – value of 0.016. This dose association however was not significant after adjusting p value of 0.712.

History of salbutamol use within 24 hours prior to the recruitment was also associated with increased risk of developing hypokalaemia in these patients who were treated with nebulised salbutamol with adjusted odds ratio of 12.03 and P – value of 0.019. History of being nebulised within 24 hours is expected to be associate with hypokalaemia because of the cumulative dose of salbutamol before is initial effect has recover. This effect has been demonstrated in other studies where by additional doses have been shown to decrease further the potassium level [40]. The above cited study by Mclure et al, was done in children who had hyperkalaemia as a result of renal failure compared to this study which was done on children with normal potassium levels.

History of using steroid medication like hydrocortisone and prednisolone was among the factors which was associated with increased risk of developing hypokalaemia in children treated with nebulised salbutamol with odds ratio of 2.32 (1.12 – 4.79) and P – value of 0.019 respectively. These medication have been associated with hypokalaemia in case reports and some other studies [37, 47], and this can be due to prolonged treatment in that group compared to children.

The clinical features which were assessed for association with hypokalaemia were ECG changes, muscle weaknesses and tremors. The main ECG abnormality found among children with hypokalaemia was the presence of tall U waves among various precordial leads in 8 children who are described in the table below in detail. The level of serum potassium in these children was between 3.3 mmol/l and 2.6 mmol/l and one of them had a prolonged QTc interval of 441 msec which has been linked to torsades de pointes and sudden death [33]. The level at which ECG changes are expected to appear in hypokalaemia is 2.7 mmol/l [48], however in our study we noted that changes in even higher levels showing that not all patients will conform to that rule. Hence there is need to monitor patients treated with repeated doses of salbutamol for arrhythmias [49].

The other clinical features of the drug looked for including muscle weaknesses; tremors had only one patient after nebulisation and on the analysis were not clinically significant. This can be explained by the fact that majority of the patient had mild to moderate hypokalaemia about 98.44% and only two had severe hypokalaemia. Mild to moderate hypokalaemia is usually symptomless [21], while muscle paralysis in hypokalaemia is expected in severe hypokalaemia[50].

Majority of children who had hypokalaemia 123 children had a quick recovery with 24 hours and the recovery was spontaneous without intervention, while about 6 children had delayed recovery which necessitated intervention with oral potassium chloride and later on they recovered within 48 hours. This is similar with other findings in other studies were by hypokalaemia has been reported to be a transient effect. However with continuous use of salbutamol in patients who are

severely obstructed there is a high chance of that effect to be prolonged as we had seen in those 6 patients who had delayed recovery.

This study had a much larger sample size compared to most of the studies in this topic. The study was also able to assess for factors associated with hypokalaemia which is a parameter which had not been assessed in other studies. Moreover, the prospective nature of this study also allows for further understanding on time to recovery from hypokalemia. The limitation of this study was that patients were not checked for consecutive serum potassium levels on every nebulisation and follow up blood samples to check recovery trend was only possible after every 24 hours. The values of baseline potassium level was obtained 3 – 6 hours, hence children who had baseline hypokalaemia were not identified in time and were all nebulised. In this study I was also not able to assess for other electrolytes like magnesium and phosphate which can also be affected in children who are treated with nebulised salbutamol.

Conclusion

The prevalence of hypokalaemia in children who are treated with nebulised salbutamol in Mulago hospital was 39.8%. The factors found to be associated with hypokalaemia are older ages above 5 years, salbutamol use within 24 hours and history of steroid use. ECG abnormality were found in 8 children (6.2%) who had U waves in their ECG strips, however there were other clinical factors like muscle weaknesses or tremors recorded. Percentage of the children with hypokalaemia had delayed recovery necessitating supplementation. With the high incidence of hypokalaemia among children treated with nebulised salbutamol we recommend potassium monitoring in those children who are at a high risk including those on steroid, children older than 5 years and those with repeated salbutamol nebulisation to identify those who will need supplementation. Further studies on the incidence of other electrolyte imbalances in children on acute asthma attacks are warranted and more studies of the clinical significance of the hypokalaemia in these children are needed since the proportion of children at risk is high 39.8%.

Competing interests

We declare that there are no competing interests in this research.

Authors' contributions

MD participated in study design, data collection, data analysis and manuscript preparation. HA participated in study supervision, designed the manuscript structure, and reviewed the data and is reviewing manuscript. SK participated in study design, provided primary oversight of study activities and reviewed the data and is reviewing the manuscript.

Acknowledgements

We acknowledge Dr. Lubega Suleiman, Sr. Khamis Zam, Sr. Akiror Lydia A., Mr. Musingo Sulai Moses, Ms. Kisakye Sarah, Sr. Makisige Monica and Sr. Ochan Kate of the Department of Pediatrics and Child Health, Uganda Heart Institute for their technical assistance. All study participants and their parents/ guardians are thanked for their consent to participate in the study.

References

1. Singhi, S. and A. Marudkar, *Hypokalemia in a pediatric intensive care unit*. Indian Pediatr, 1996. 33(1): p. 9-14.

2. Weiner, I.D. and C.S. Wingo, *Hypokalemia--consequences, causes, and correction*. Journal of the American Society of Nephrology, 1997. **8**(7): p. 1179-1188.
3. Gennari, F.J., *Hypokalemia*. New England Journal of Medicine, 1998. **339**(7): p. 451-458.
4. Sung, C.-C. and S.-H. Lin, *Drug-induced hypokalaemia: Part 1. Adverse Drug Reaction Bulletin*, 2012(273): p. 1051.
5. Juergens, U.R., et al., *Different mechanisms of action of beta2-adrenergic receptor agonists: a comparison of reproterol, fenoterol and salbutamol on monocyte cyclic-AMP and leukotriene B4 production in vitro*. Eur J Med Res, 2004. **9**(7): p. 365-70.
6. Torphy, T.J., *Phosphodiesterase isozymes: molecular targets for novel antiasthma agents*. Am J Respir Crit Care Med, 1998. **157**(2): p. 351-70.
7. Gelmont, D.M., J. Balmes, and A. Yee, *Hypokalemia induced by inhaled bronchodilators*. CHEST Journal, 1988. **94**(4): p. 763-766.
8. Citron, R., *G RACE WAY*. 2008.
9. RN., L.D., *A closer look at Bronchodilators in treatment of COPD, Beta adrenergic agonists anticholinergics and Methylxanthenes*. About.com., August 2011.
10. Committee, P.F., *BNF for Children 2010-2011* 2010: BMJ Publishing Group, RPS Pub., RCPCH Pub.
11. Barben, J. and J. Hammer, *Current management of acute bronchiolitis in Switzerland*. Swiss medical weekly, 2003. **133**(1-2): p. 9-15.
12. Brand, P.L. and A.A. Vaessen-Verberne, *Differences in management of bronchiolitis between hospitals in the Netherlands*. European journal of pediatrics, 2000. **159**(5): p. 343-347.
13. Walsh, P., et al., *Comparison of nebulized epinephrine to albuterol in bronchiolitis*. Academic Emergency Medicine, 2008. **15**(4): p. 305-313.
14. Loscertales, M.P., et al., *Epidemiology and clinical presentation of respiratory syncytial virus infection in a rural area of southern Mozambique*. The Pediatric infectious disease journal, 2002. **21**(2): p. 148-155.
15. Organization, W.H., *Asthma, fact sheet no. 307, May 2011*. [Actualizado el 1 de mayo de 2011].
16. Kirenga, J. and M. Okot-Nwang, *The proportion of asthma and patterns of asthma medications prescriptions among adult patients in the chest, accident and emergency units of a tertiary health care facility in Uganda*. African Health Sciences, 2012. **12**(1): p. 48-53.
17. Pearce, N., et al., *Worldwide trends in the prevalence of asthma symptoms: phase III of the International Study of Asthma and Allergies in Childhood (ISAAC)*. Thorax, 2007. **62**(9): p. 758-766.
18. Sunyer, J., et al., *Prenatal risk factors of wheezing at the age of four years in Tanzania*. Thorax, 2001. **56**(4): p. 290-295.
19. Harrieth, B., *Pravalence of Asthma and characteristics of primary school children with asthma in Kampala District*. Unpublished, 2011.
20. Østergaard, M.S., et al., *Discussion Paper Childhood asthma in low income countries: an invisible killer?* Childhood, 2012. **21**(2).
21. Singhi, S.C., K. Jayashree, and B. Sarkar, *Hypokalaemia following nebulized salbutamol in children with acute attack of bronchial asthma*. J Paediatr Child Health, 1996. **32**(6): p. 495-7.
22. Shrestha, M., et al., *Continuous vs intermittent albuterol, at high and low doses, in the treatment of severe acute asthma in adults*. CHEST Journal, 1996. **110**(1): p. 42-47.
23. VITTAL, B., et al., *A Study Of Serum Electrolyte Levels During Nebulised Salbutamol Therapy*.
24. Kaplan, N.M., et al., *Potassium supplementation in hypertensive patients with diuretic-induced hypokalemia*. New England Journal of Medicine, 1985. **312**(12): p. 746-749.
25. Gennari, F.J., *Disorders of potassium homeostasis: hypokalemia and hyperkalemia*. Critical care clinics, 2002. **18**(2): p. 273-288.

26. Schaefer, T.J. and R.W. Wolford, *Disorders of potassium*. Emergency Medicine Clinics of North America, 2005. **23**(3): p. 723-748.
27. Bradberry, S.M.B. and A. Vale, *Disturbances of potassium homeostasis in poisoning*. Clinical Toxicology, 1995. **33**(4): p. 295-310.
28. Petrov, D.B., S.I. Sardovski, and M.H. Milanova, *Severe Hypokalemia Masquerading Myocardial Ischemia*. Cardiology Research, 2012. **3**(5): p. 236-238.
29. Van Mieghem, C., M. Sabbe, and D. Knockaert, *The clinical value of the ECG in noncardiac conditions*. CHEST Journal, 2004. **125**(4): p. 1561-1576.
30. Tveskov, C., et al., *Potassium and magnesium distribution, ECG changes, and ventricular ectopic beats during β_2 -adrenergic stimulation with terbutaline in healthy subjects*. Chest, 1994. **106**(6): p. 1654-1659.
31. Ramsahoye, B., et al., *Lesson of the Week: The mineralocorticoid effects of high dose hydrocortisone*. BMJ, 1995. **310**(6980): p. 656-657.
32. Tsai, W.-S., et al., *Life-threatening hypokalemia in an asthmatic patient treated with high-dose hydrocortisone*. The American journal of the medical sciences, 2004. **327**(3): p. 152-155.
33. Webster, A., W. Brady, and F. Morris, *Recognising signs of danger: ECG changes resulting from an abnormal serum potassium concentration*. Emergency medicine journal, 2002. **19**(1): p. 74-77.
34. Spitzer, W.O., et al., *The use of β -agonists and the risk of death and near death from asthma*. New England Journal of Medicine, 1992. **326**(8): p. 501-506.
35. Anderson, H.R., et al., *Bronchodilator treatment and deaths from asthma: case-control study*. BMJ, 2005. **330**(7483): p. 117.
36. Abramson, M.J., et al., *Are asthma medications and management related to deaths from asthma?* Am J Respir Crit Care Med, 2001. **163**(1): p. 12-8.
37. McClure, R., V. Prasad, and J. Brocklebank, *Treatment of hyperkalaemia using intravenous and nebulised salbutamol*. Archives of disease in childhood, 1994. **70**(2): p. 126-128.
38. Nagdeote AN, P.Y., *The effect of oral salbutamol on the metabolism of electrolytes in asthmatic children*. Journal of clinical and Diagnostics Research, 2011. **5**(2): p. 176 - 178.
39. Mohammad, H.A., et al., *A study of electrolyte disturbances in patients with chronic stable asthma and with asthma attacks*. Egyptian Journal of Chest Diseases and Tuberculosis, 2014.
40. Fiel, S.B. and W. Vincken, *Systemic corticosteroid therapy for acute asthma exacerbations*. Journal of Asthma, 2006. **43**(5): p. 321-331.
41. Kay, G.N., *Torsade de pointes: the long-short initiating sequence and other clinical features: observations in 32 patients*. Journal of the American College of Cardiology, 1983. **2**(5): p. 806-817.
42. Ortiz-Alvarez, O., A. Mikrogianakis, and A.C. Committee, *Managing the paediatric patient with an acute asthma exacerbation*. Paediatrics & child health, 2012. **17**(5): p. 251.
43. Lin, S.-H., et al., *Laboratory tests to determine the cause of hypokalemia and paralysis*. Archives of internal medicine, 2004. **164**(14): p. 1561-1566.
44. Paul, A., *Management Of Acute Asthma In The Pediatric Patient: An Evidence-Based Review*. 2013.
45. Rathore, K., et al., *Comparative study of effects two β_2 adrenergic agonists on biochemical parameters in moderate to severe bronchial asthma patients*. International Journal of Pharmaceutical Sciences & Research, 2013. **4**(6).

Motor traffic accidents in Tanzania

HIPOLITE T. TARIMO

Kilimanjaro Christian Medical Centre, Moshi, Tanzania

Summary: MTAs are recognized as major public health problem worldwide, the mortality rate is about 20 per 100,000 populations in Sub Saharan Africa and 10.3 per 100,000 populations in developed countries (World Health Organization (WHO) 2009a). Tanzania had 12,124 traffic accidents in 2011 and 11,223 incidents in 2010, within the first six months. 1,764 victims were killed, which is an 18% increase on fatalities recorded from January to June in 2010. Total injuries during first halves of 2010 and 2011 were 9,059 and 10,120 respectively (The Citizen Newspaper, 2nd September 2011). Retrospective case study at Moshi regional traffic police. MTAs annual reports from 2008 to 2009 were reviewed in July 2012, for causes of accidents. Data collected was analysed by STATA and the magnitude of morbidity and mortality in the region was determined quantitatively. The literature of MTAs epidemiology in Tanzania was also reviewed. A total of 906 and 1,125 traffic accidents were recorded in 2008 and 2009 respectively. 219 (24%) episodes increased. 147 victims died in 2008 and 202 in 2009 with an increase of 55 (37%). 622 people got injured in 2008 and 933 in 2009 accounting for 311 (50%) increase. Two major risk factors were identified; Human factors accounted for 76% of all MTA and concern driver's excessive alcoholic use above blood alcohol concentration of 0.05g/100ml, reckless driving and excessive speed. External factors like poor road infrastructure and vehicle conditions accounted about 24 per cent (Kilimanjaro traffic reports, 2012). This appraisal indicates a consistent increase of MTAs 24%, fatality rate 37% and injuries 50%. The government should equip traffic police with modern equipment like breathalysers, video and speed cameras and instituting Global Positioning Systems (GPS) for locating the MTA spots on the map. Documentation of MTAs should include factor mapping in a prospective study.

Introduction

Motor traffic injuries are recognized as a major public health problem worldwide. The mortality rate due to MTAs in Lower and Middle Income Countries (LMICs) including Sub Saharan Africa is about 20 per 100,000 population while in High Income Countries (HICs) is about 10.3 per 100,000 population. MTAs currently represents the ninth leading cause of Disability Adjusted Life Years (DALYs) lost and it is forecasted by WHO to be the third leading cause of DALYs lost by 2020 (WHO, 2009a).

Generally in Tanzania Mainland, 12,124 accidents took place in the first six months of 2011 compared to 11,223 incidents during the same period of 2010. Most road accidents occurred in Mbeya and Dar es Salaam regions of which Dar es Salaam alone accounts for 35 per cent of all road accidents in Tanzania. A total of 1,764 people were killed, which is an 18 per cent increase on fatalities recorded from January to June in 2010. A total of 10,120 people were injured in the first half of 2011 compared to 9,059 casualties during the same period in 2010. As the road carnage continues unabated, four highways have been identified as the deadliest roads in Tanzania. The bulk of serious accidents, many killing multiple victims, occur on the Morogoro-Iringa, Morogoro-Chalinze, Chalinze-Tanga and Tanga-Arusha highways, according to official statistics (The Citizen Newspaper, 2nd September 2011).

Methodology

Retrospective case study of MTAs that occurred in Kilimanjaro region from the regional traffic police in Moshi. MTA annual reports that occurred from 2008 to 2009 were reviewed in July 2012, for the causes of traffic accidents and associated outcomes (morbidity and mortality). The data

collected was used quantitatively to determine the magnitude of morbidity and mortality in the whole region of Kilimanjaro. Data analysis was done using STATA. Systematic review of latest World Health Organization (WHO) documentation of MTAs done on July 2012 and the literature of MTAs epidemiology in Tanzania and relevant reports from Transport Research Laboratory (TRL) were also reviewed

Results

Impact of MTAs

Mortality due to MTAs is predicted to increase by 80% in LMICs and to decline by 30% in HICs by 2020 (Kopits & Cropper, 2003). Burden of morbidity and mortality for Traumatic Brain Injury (TBI) due to MTAs demonstrates a higher rate of 170 per 100,000 populations in SSA compared to a global rate of 106 per 100,000. (WHO Regional Office for Africa).

The mortality per 10,000 vehicles is high in SSA about 2000 also the injuries per 10,000 vehicles in SSA is very high i.e. 16,000. These data values exceed those of HICs like the United States as shown in the figure 1 below (Transport Research Laboratory, 2000).

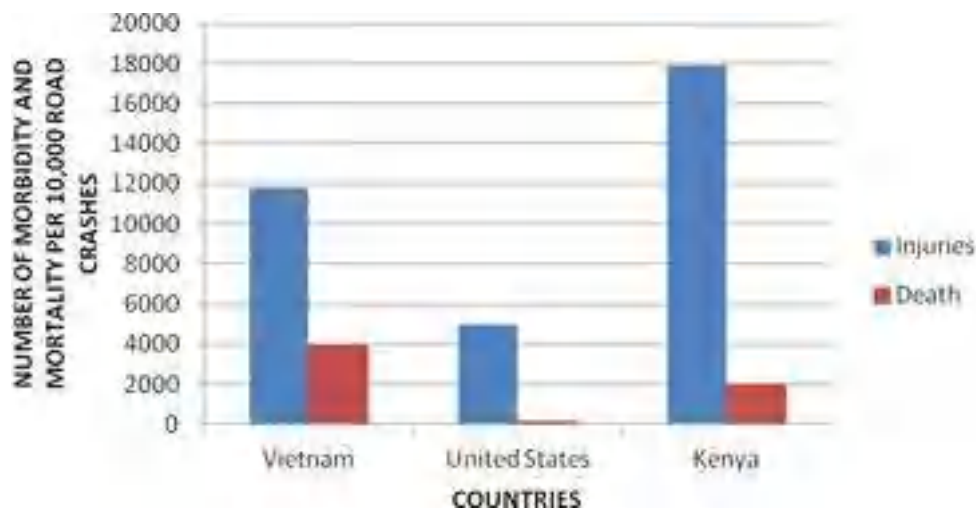


Figure 1: Comparison of morbidity and mortality per 10,000 vehicles between Vietnam, United States of America and Kenya

Total number of reported accidents in Kilimanjaro region in 2008 was 906 while in 2009 was 1,125 accounting for an increase of 219 (24%), the total mortality reported in 2008 was 147 and in 2009 was 202 with an increase of 55 (37%) and the total morbidity was 622 in 2008 and 933 in 2009 accounting for 311 (50%) increase as shown in table 1 below

Table 1: Morbidity and mortality due to MTIs in Kilimanjaro region within 2008/2009

Year	2008	2009	% INCREASE
Total number of accidents	906	1,125	24
Total mortality	147	202	37
Total morbidity	622	933	50

Source: Kilimanjaro Regional Traffic Office (2010)

Vulnerable groups among road users

Pedestrians, Cyclists and passengers are vulnerable group among road users with a high risk of mortality due to MTAs i.e. about 46% in SSA countries which is contrary to HICs (US) as depicted in Fig. 2 below. (WHO, 2009a).

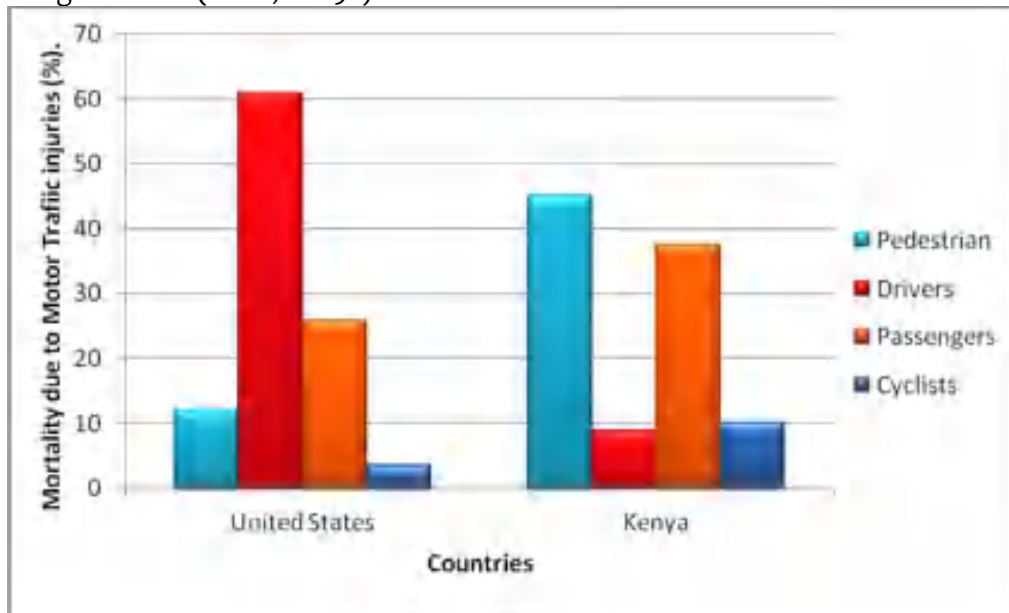


Figure 2: Mortality due to motor traffic among road users in United States of America and Kenya

MTAs is also predicted to become the top cause of Disability and premature death for children aged 5-14 years in LMICs by 2015 (WHO, 2009a)

Risk factors: Three major risk factors were identified as causatives of MTAs as categorized below.

Human factors: These include driver's excessive alcohol abuse above blood alcohol concentration of 0.05g/100ml, reckless driving, excessive speed and overtaking errors also negligence of pedestrians, passengers, cyclists and cart pushers.

External factors: Poor road conditions like having bad surfaces which causes the vehicle to be driven erratically in its direction, it also reduces the safety of brakes, steering and tyres.

Lack of road signs and markings brings to driver confusion about direction or speed limitation especially on road curvatures. Poor road engineering and alignment like having narrow width which makes it difficult to overtake likely for big trucks and cars with broad width.

Vehicle condition: Poor mechanical condition of vehicles like nondurable tyres, poor body work, defective brakes and loose wheel nuts.

Discussions

The high mortality rate in SSA of about 20 per 100,000 populations observed so far is contributed mainly by human factors with the major being reckless driving and negligence of drivers, pedestrians and passengers. The percentage increase of morbidity and mortality due to MTAs is increasing gradually overtime as shown through the recent years from table 1 above, this agrees with the prediction of increasing mortality by 80% in SSA by 2020 (Kopits & Cropper, 2003). Increasing number of vehicles per inhabitant has not been the solution to combat MTAs in

SSA, this is seen as an example for the case of South Africa the most developed African country having about 17 licensed vehicles per 100 inhabitants in 2005 yet NO decline of mortality due to MTAs has been observed so far (Road Traffic Management, 2006).

The high burden of mortality for Traumatic Brain Injury (TBI) due to MTIs in SSA is found to be caused mainly by intracranial haemorrhage as a result of autopsies carried out on dead victims to ascertain the cause of death due to legal procedures. The major contributing factor which will increase child pedestrian Disability as vulnerable group among road users by 2015 is lack of/poor adult supervision to those children aged 5-14 years who are not yet aware of adhering with the road safety rules.

Conclusion

This appraisal indicates a consistent increase of MTAs i.e. 24%, fatality rate 37% and injuries 50%. These has been contributed mainly by human factors especially driver's excessive alcohol abuse above blood alcohol concentration of 0.05g/100ml, reckless driving, excessive speed and overtaking errors. It has been deduced that pedestrians, passengers and cyclists are vulnerable group among road users with a high mortality risk i.e. about 46% (WHO, 2009a) thence deliberate and stern measures to be taken on educating all road users about road safety rules through the Mass media and other information sources and the governments should invent road safety policies for all road user's and formulate road safety Motto's annually to be emphasized throughout the society.

The aforementioned MTAs data depict a deadly situation in public health that needs stern and deliberate measures in order to reverse the trend also risk factors mapping should be documented in a prospective study. I hereby conclude with the Motto by the National Road Safety Council of Tanzania which says "Road safety is no accident" and that "Road safety is for sharing" (TPHA, 2004).

Acknowledgement

First and foremost, I thank the Almighty Lord for giving me energy, wisdom, motive and attitude of data collecting, proving, compiling and finally writing the whole report. I send our gratitude thanks also to the Kilimanjaro Regional Traffic Police for their cooperation in my report preparation especially the Regional Traffic Officer. I also thank Dr. Mtwewe and Dr. Njau of Community Department Kilimanjaro Christian Medical Center (KCMC) and Mrs. Lucy Lyaruu of Tanzania Pesticide Research Institute (TPRI) for their great support without forgetting Dr. Adinan Juma former Epidemiologist at KCMC, Dr. Mohamed Kazim Alwani, Mr. Solomon Yusuph and my fellow Colleagues Dr. Anzibert Rugakingira, Dr. Frank Kabissi, Dr. Othman Wamalla, Dr. Francis Lengai, Dr. Kevin Msuya and Dr. Daudi Marisani for their encouragement and support to the accomplishment of this manuscript.

References

1. Kilimanjaro Regional Police Station, (2010). Morbidity and mortality of Motor Traffic Injuries in Kilimanjaro region.
2. <http://www.who.int/world.health/day/2009/informaterials/worldreport/en>. (Accessed 5 July 2012).
3. Tanzania Public Health Association, (2004). Motor traffic accidents in Tanzania.
4. Kopits E & Cropper M, *Accid Anal Prev*, (2003). Traffic fatalities and economic growth: 37: 169-178.

5. Burden of morbidity and mortality in High Income Countries and Lower and Middle Income Countries. Transport Research Laboratory Report, 2000.
6. T. Rwebangira, T. Pearce, DAC Maunder, (1999): Public Transport Safety in Tanzania.
7. Aeron Thomas and Astrop,(2000).Exploring the relationship between Road traffic injuries and economic development.
8. Editorial Opinion: Morbidity and Mortality of Motor Traffic Injuries in Tanzania. The Citizen Newspaper, 2nd September 2011.
9. Road Traffic Management Corporation. (2006). December 2005 road traffic report on number of registered, un-roadworthy and un-licensed vehicles, driving licenses, PrDPs, traffic volumes, speed, distance travelled and fatal crashes. Available: <http://www.arrivealive.co.za/documents/stats/2005part1a.pdf>. Accessed 6th July 2012.
10. Myers RA, Taljaard JJ, Penman KM. Alcohol and road traffic injury. *S Afr Med J.* 1977; 52:328–330.
11. Sheffer R, (2000). Road traffic accidents lecture notes.

Regulation of the electronic cigarette

ROBERT S. MACHANG’U & PHILBERT NYINONDI
Sokoine University of Agriculture, Morogoro, Tanzania
E-mail: Rmachangu2013@yahoo.co.uk

Abstract: The electronic cigarette is a relative new invention of a nicotine delivering device. Unlike tobacco smoking, the electronic cigarette provides a relatively purified nicotine in a vaporized form, which is inhaled by the user. While some pro tobacco sentiments claim the electronic cigarette to be safer than tobacco smoking, concerns are being raised by WHO and other international health monitoring organizations, for the electronic cigarette and its use to be regulated just like tobacco, as prescribed in the Framework Convention on Tobacco Control. This is primarily because the electronic cigarette is highly addictive, its contents are not fully disclosed by the manufacturing companies and the effects of the electronic cigarette on the health of the user are not fully established. Given that the electronic cigarette use is making its way also into the Tanzanian community, TPHA should urge than government to support WHO in calling for regulation of the importation, marketing and use of the electronic cigarette in the country

Introduction

The electronic cigarette (e-cigarette or e-cig), also commonly known as in the person vapourizer (VP), or electronic nicotine delivery system (ENDS) is a battery driven device that transforms liquid nicotine solution, into vapour, which is then inhaled by the user similar to tobacco smoke (1,2). Although some arguments suggest e-cig is safe than tobacco smoking, or even useful in tobacco cessation, this has been disputed for lack of scientifically proven data to support this “hypothesis” (3,4). The e-cig certainly enhances nicotine addiction with all health hazards associated with, especially cardiovascular disease.

The increasing restriction of tobacco use, after the adoption of the WHO Framework Convention on Tobacco Control (WHO-FCTC) has partly contributed to increase in e-cig use in many countries developed. Nonetheless, the majority of e-cig users continue to smoke tobacco or use other smokeless tobacco products (chew tobacco and snuff) (1). WHO(2013) strongly warned against the use of e-cig because its contents are not always disclosed by the manufactures, and hence have not been regulated. WHO further urged governments to control e-cig along the same principles regulating tobacco smoking as stipulated in FCTC (9,5).

Historical background of e-cig

The earliest nicotine vapourizer was invented by Herbert Gilbert in 1963, which conned it “smokeless non tobacco cigarette. However, the modern e-cig and its patenting is credited to a Chinese pharmacist, Hon Lik (2003) who developed a device to vaporise liquid nicotine diluted with polyethylene glycol, also referred by users as e-liquid. or e-juice. Other additives and impurities found in the e-juice include ethylene glycol, alcohol, vegetable glycerine and diverse flavourings (vanilla, strawberry, menthol). Vaporised e-juice produces an intense cloud of smoke, which once inhaled it reaches the blood stream within a very short time (28,29).

The e-cig continues to evolve to become a sophisticated nicotine delivery device of variable shapes and sizes (30). Currently most e-cigs are manufactured in China, but also in USA, UK France and many other countries (1). Naturally the tobacco industry viewed the emergence of e-cig a threat, which could render the conventional cigarette old fashioned or even obsolete (83) Consequently the tobacco industry entered the e-cig race by producing its own brands such the

Vype® by BAT (2013) or the Blu® by Philip Morris, or simply bought off smaller e-cig companies at attractive deals (27,32)



Fig. 2 Structure of a standard electronic cigarette



Figure 3: Electronic cigarettes in different shapes and sizes

Structure (components) of e-cig

Most e-cig devices are cylindrical in shape and it's not totally surprising that first generation gadgets resembled the conventional cigarette (19). The e-cig has three essential components: i) the atomizer, which contains the e-juice and a heating coil, ii) a battery, and iii) a cartridge (mouthpiece). Reusable e-cig types have a battery recharger as accessory, and in some types, the cartridge and the mouthpiece are assembled together to give what is known as the cartomizer (35).

First generation e-cigs were single use (disposable), whose components were permanently fused together. Their capacity, and hence cost, are determined by the potential number of puffs inhalable before the e-juice is used up. Among the new generation e-cigs are also the reusable types, also known as mods or advanced personal vapourizer –APVs, most of which are more sophisticated in their appearance. APVs have standard replaceable parts, and can be refilled several times as the e-juice is used up (20). The battery is initiated to create a current in the heating coil, which then boils the e-juice into e-vapour for inhalation through the mouthpiece. Second hand vapour is discharged by the user, just like in ordinary tobacco smoking. E-cig brands are not uniform and their e-liquid formulation comes in varying constitution, purity and nicotine content (10,12)

E-cig usage statistics

Global e-cig sales have been increasing rapidly, eg. from 50,000 users in 2008 to over 3million in 2012 (23). In a survey conducted in the UK (2014), 52% of regular cigarette smokers testified to have used e-cigs. In the US, the number of 6 to 12 grade students using e-cigs increased from 6.5% (2011) to 1.1% (2012), while those using conventional cigarettes reduced from 7.5% to 6.6%. It appears, from this study at least, that the youth are switching from conventional cigarette use to e-cig. However some nicotine addicted persons continue to use both e-cig and conventional cigarettes interchangeably depending on situation (1,7). In France, about 1.5million people use e-cigs regularly. Most of the smokers interviewed claimed to use the e-cig as a way to stop tobacco use (26). There is no doubt that banning of tobacco smoking in public places (Article 8 of the FCTC) has contributed to this switch. Despite being world number one producer, e-cig use in China is relatively low.

Overall in Africa, e-cig use is a novelty, and relatively few people are knowledgeable of this emerging problem. However, e-cigs can be found in selected supermarkets and hotels in big cities (personal observation). No study has yet been done to determine the e-cig marketing trends or the incidence of e-cig use in Tanzania.

Social, cultural and economic impact of e-cig usage

Users of e-cigs are also known as *vapers*, and are strong supporters of the e-cig, having the misconception that it is a safer nicotine delivery system, or even believe it is a step towards quitting tobacco use altogether (3). A subculture of *vapers* has developed in many countries, which has made vaping a hobby. This cult has further developed improvised (non brand) e-cig devices that create large clouds of e-vapour, a practice they call cloud chasing (21,33). Cloud chasers usually gather in groups to *vap* together. (Compare with shisha bars in Tanzania). E-cig use is relatively more expensive than tobacco smoking. A disposable PV costs up to 30,000Tshs a piece (ca 20USD), while a reusable kit can cost up to 100,000 Tshs (ca 60USD) (personal observation)

The increase in e-cig use attributed to aggressive campaigns by e-cig companies, some of which are the traditional tobacco companies), using the same advertising and promotional tactics of tobacco products, which have been restricted or totally banned by many countries, party to FCTC (36). Tanzania is party to the FCTC since 2007.

Some facts on potential health effects of e-cig

Similar to tobacco smoking, there is clearly no single health benefit of e-cig use, while nicotine addiction is the most obvious health hazard to the user. There are serious concern that e-cig use may induce nicotine addiction faster than tobacco smoking, especially among the first users (6, 37). These concerns have been expressed by global health watchers including the Centers for Disease Control and Prevention (CDC), the International Union against Tuberculosis and Lung Disease (IUATLD) and WHO (5, 38,14). Furthermore impurities found in the e-juice can cause serious damage to the health of the user. These include the carcinogenic tobacco specific nitrosamines and other impurities associated with tobacco such as anabasine, myosmine, and beta-nicotyrine (13). Although propylene glycol is commonly regarded as safe solvent in e-cigs, the effects of its vapour to the lung after prolonged are not fully understood, and hence the public health concern (11,12). Other reported hazards are associated with nicotine poisoning after accidental ingestion of the e liquid, or its exposure to skin following spillage. Burns following explosion of e cigs during use have also been reported (15)

Relative to tobacco smoke, the exhaled e-vapour contains less toxicants, and its contents are expected to cause relatively less harm to second hand vapers, in that sense (82,16,1,12). However studies have demonstrated the presence in exhaled vapour of cancerogenes, ultra-fine particulates and heavy metals with potential deleterious effects to the lungs (36) .The proponents of e-cigs contest that these products are of no significant concern to persons exposed to the second hand vapour (17)

Conclusion

The emergence of thr e-cig is of great concern to health professionals, pharmaceutical industry, food and drug authorities, and governments worldwide. (2). Given the novelty of the e cigarette technology and its rapid expansion globally, it is imperative that these concerns are taken seriously, especially now that some scores have been made in curbing tobacco use through the FCTC. At present regulations and legislation on of e-cig have been variable from country to country. Some countries, such as Tanzania, have no regulations at all, while others , such as Australia, have established restrictions to totally banning the use of e-cig. Some jurisdictions are regulating the use of e-cig in public places. (39,34)

It is justified, and perhaps it is common sense, that since the single purpose of inventing the e-cig is to induce nicotine addiction, just like the use of conventional cigarette, both should be regulated along the same lines globally.

Tanzania Public Health Association, Tanzania Food and Drug Authority, Medical Association of Tanzania, research organizations, consumer societies and other health concerned organization in Tanzania, should call for strict controls of e-cig, now, before its use becomes widespread in the country. Such controls should cover: Importation, marketing (advertising and promotion), sales, use and disposal of e-cig devices. Particular attention should be given to preventing the underage from accessing e-cigs, second hand smoking of e vapour corporate social responsibility

associated with e-cig. Enough is known now of the hazards of tobacco use to allow yet another device that will deliver nicotine to the body most efficiently, fastest and most conveniently.

References

1. Grana, R., Benowitz, N., Glantz, S., (13 May, 2014). "E cigarettes: A scientific review". *Circulation* 129 (19): 1972-86. Doi:10.1161/circulationaha.114.007667 (<http://dx.doi.org/10.1161%2Fci-circulationaha.114.007667>) PMID24821826 (<http://www.ncbi.nlm.nih.gov/pubmed/24821826>).
2. Saitta, D., Ferero, G.A., Polosa, R., (Mar 2014). "Achieving appropriate regulations for electronic cigarettes". *Therapeutic advances in chronic diseases* 5(2): 50-61. Doi: 10.1177/2040622314521271 (<http://dx.doi.org/10.1177%2F2040622314521271>). PMID 24587890 (<https://www.ncbi.nlm.nih.gov/pubmed/24587890>)
3. Britton, John; Bogdanovica, Ilze (15 May 2014), *missioned by Public Health England, Public Health England*
4. Caponnetto P; Russo C; Bruno CM; Alamo A; Amaradio MD; Polosa R. (Mar 2013), *Electronic cigarette: a possible substitute for cigarette dependence. Monaldi Archives for Chest Disease* 79 (1): 12-19, PMID 23741941
5. "Tobacco Free Initiative (TFI)". *World Health Organization*. 9 July 2013.
6. Electronic cigarettes (e-cigarettes) ([Http://www.drugabuse.gov/publications/drugfacts/electronic-cigarettes-e-cigarettes](http://www.drugabuse.gov/publications/drugfacts/electronic-cigarettes-e-cigarettes)). National Institute on Drug Abuse. Nov 2013. Retrieved 24 May 2014. "There is also the possibility that they could perpetuate the nicotine addiction and thus interfere with quitting"
7. Carroll Chapman, SL; Wu, LT (18 Mar 2014). "E-cigarette prevalence and correlates of use among adolescents versus adults: A review and comparison." *Journal of Psychiatric Research* 54: doi:10.1016/j.jpsychires.2014.03.005. PMID 24680203.
8. ASH UK (28 April 2014). "Over 2 million Britons now regularly use electronic cigarettes". Retrieved 30 May 2014.
9. "Electronic cigarettes (e-cigarettes) or electronic nicotine delivery systems" (http://www.who.int/tobacco/communications/statements/electronic_cigarettes/en/index.html). *World Health Organization*. 3 June 2014
10. O'Connor, RJ (March 2012). "Non-cigarette tobacco products: what have we learnt and where are we headed (<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3716250>). *Tobacco Control* 21(2):181-90. Doi:10.1136/tobaccocontrol-2011-050281 (<http://dx.doi.org/10.1136%2Ftobaccocontrol-2011-050281>). PMC 3716250 (<https://www.ncbi.nlm.nih.gov/PMC3716250>). PMID22345243 (<https://www.ncbi.nlm.nih.gov/pubmed/22345243>)
11. Britton J and Bogdanovica, I. (May 2014). "Electronic cigarettes" (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/311887/E-cigarettes_report.pdf). Public Health England. Retrieved 21 May 2014.
12. Palazzolo, Dominic, L. (Nov:2013). "Electronic cigarettes and vaping: A new challenge in clinical medicine and public health. A literature review" (<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3859972/>) *Frontiers in Public Health* 1(56), doi:10.3389/fpubh.2013.00056 (<http://dx.doi.org/10.3389%2Fpubh.2013.00056>). PMID 24350225 (<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3859972/>), PMID 24350225 (<http://www.ncbi.nlm.nih.gov/pubmed/24350225>)
13. FDA (22 July 2009). "Summary of Results: Laboratory Analysis of Electronic Cigarettes conducted by FDA" (<http://www.fda.gov/NewsEvents/PublicHealthFocus/ucm137146.htm>). Retrieved 22 July 2009
14. Position Statement on Electronic Cigarettes (ECs) or Electronic Nicotine delivery Systems (ENDS) (http://www.Theunion.org/what-we-do/publications/official/body/E-cigarette_statement_FULL.pdf) (PDF): The International Union Against Tuberculosis and Lung Disease. October, 2013

15. “New CDC study finds dramatic increase in e-cigarette-related calls to poison centers” (<http://cdc.gov/media/release/2014/p0404-e-cigarette-poison.html>).CDCNewsroom (Press Release). Centres for Disease Control and Prevention. April 2014
16. Hayden McRobbie, National Center for Smoking Cessation and Training, 2014. Electronic Cigarettes (http://www.ncsct.co.uk/usr/pub/e-cigarette_briefing.pdf)
17. Burstyn, I. (9January 2014)” Peering through the mist: Systematic Review of what the chemistry of contaminants in electronic cigarettes tells us about health risks” (<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3937158>)BMC Public Health 14:18.doi10.1186/1471-2458-14-18(<http://dx.doi.org/10.1186%2F1471-2458-14-18>).PMC 3937158
18. Palazzolo, D.L. (2013). Electronic cigarettes and vaping: (see Ref.12)
19. Farsalinos,K.E., Spyrou, A., Stefopoulos, C., Romagna,G., Voudris, V. (2014) “Nicotine absorption from Electronic Cigarette Use: comparison between first and new generation devices” (http://www.ncbi.nlm.nih.gov/pmc/articles/PMC_3935206) Scientific report 4:4133
20. http://77www.clubic.com/materiel_informatique/article-704447-l-cigarette-electronique.html%7C
- 21.Couts Andrew (13 May, 2013). “Inside the world of vapers, the subculture that might save smokers lives” (<http://77www.digitaltrends.com/features/inside-the-world-of-vapers-the-subculture-that-might-save-smokers-lives/>) Digital Trends (Retrieved 20 November, 2013)
23. E-cigarettes: “No Smoke but Fiery debate over safety” (<http://usatoday.com/news/health/story/20122012-08-18/electronic-cigarettes-smokeless-vaping-risks/57121894/1>). IUSA Today. Retrieved July 2013
24. USFDA. Federal Register. Deeming tobacco Products to be Subject to the Federal Food, Drug and Cosmetic Act, as Amended by the family Smoking prevention and Tobacco Control Act; Regulations on the Sales and Distribution of Tobacco products and Required Warning Statements for tobacco products. A proposed Rule by the Food and Drug Administration on 04/25/2014 (<https://www.federalregister.gov/articles/2014/04/25/2014-0949/deeming-tobacco-products-to-be-subject-to-the-federal-food-drug-and-cosmetic-act-as-amended-by-the>)
25. Centres for Disease Control and Prevention,MMWR, 15 November 2013 tobacco Product Use Among Middle and High School students-United States 2011 and 2012 (http://www.cdc.gov/mmwr7preview/mmwrhtml/mm6245a2.htm?s_cid=mm6245a2_e), Retrieved 20 November 2013
- 26.Observatoire Francais de s drogues et des Toxicomanies, Prevalence, comportements d’achat et d’usage, ,otivations des utilisateurs de la cigarette électronique (<http://www.ofdt.fr/BDD/publications/docs/eisxalu2.pdf>), retrieved 28 March 2014
27. http://www.cspnet.com/category-news/tobacco/articles/Nielsen-electronic_cigarette-dollar-sales-decline
28. Who Invented Electronic Cigarettes?” (http://inventors.about.com/od/estartinventions/a/Electronic_Cigarettes.htm). Inventors.about.com. Retrieved 20 November 2013.
29. CA Patent 2518174-“A Non-Smokable Electronic Spray Cigarette” (http://www.wikipatents.com/CAPatent2518174/a_non-smokable-electronic-spray-cigarette). WikiPatents. Retrieved 15 August 2012
30. “Brothers who took a punt on a new market “ (<http://www.cityam.com/article/brothers-who-took-punt-new-market>). CityAM. Retrieved 4 April 2014
31. The Economist, 28 Sep 2013. Kodak Moment (<http://www.economist.Com/news/business/21586867-regulators-wrestle-e-smokes-tobacco-industry-changing-fast-kodak-moment>), retrieved 11 March 2014
32. “Altria expands in E-cigarettes With Green Smoke” (<http://online.wsj.com/news/articles/SB10001424052702304626804579360552508696542>). Wall Street. 3 February 2014. Retrieved March 2014

33. “Crutch or cure: Issues around use of e-cigarettes” (http://fremonttribune.com/news/local/crutch-or-cure-issues-around-use-of-e-cigarettes/article_0c7c6547-45a-5d2f-8b3c-515f2c1f1c9b.html). *Fremont Tribune* 9 November 2013
34. “E-Cigarette message goes up in smoke” (<http://www.watoday.com.au/news/ecigarette-message-goes-up-in-smoke-20140626-zsljx.html>)
35. Cassidy, Susan (26 October 2011) “HowStuffWorks” How electronic cigarettes work” (<http://science.howstuffworks.com/innovation/everyday-innovations/electronic-cigarette1.htm>). Science howstuffworks.com. Retrieved 27 August 2013
36. Cheng, T. (2014) Chemical evaluation of electronic cigarettes. (<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3995255>. *Tobacco Control Supplement 2*): ii 11- ii 17
37. “Citing Health Concerns. The American Cancer Society calls for Action ([http://www.cancer.org/myacs/eastern/areahighlights\)cancernyj-news-ny-ecigs-health-vote](http://www.cancer.org/myacs/eastern/areahighlights)cancernyj-news-ny-ecigs-health-vote). American Cancer Society (Retrieved 12 Nov 2013)
38. Edgar, Julie: “E-cigarette-expert Q&A. With CDC” (<http://www.webmd.com/smoking-cessation/news/20131112/e-cigarettes-cdc>)WebMD. Retrieved 17 November 2013
39. Etter, J.F., Bullen, C., Flouris, A.D., Laugesen, M., Eissenberg, T. (2011): Electronic nicotine delivery systems: a new research agenda. *Tobacco Control* 20(3):243-8

Baseline survey on the extent of alcohol consumption and abuse

SEVERINE KESSY & GLADNESS MUNUO

Tanzania Media Women's Association, Dar es Salaam, Tanzania

Introduction

The problem of alcohol consumption, drug dependency and trafficking is a worldwide issue and it produces dramatic costs to society in terms of loss of productivity, infectious disease transmission, family and social disorder and crimes. This include the existence of violence among society, which motivated Tanzania Media Women's Association (TAMWA) and its Crisis Resolving Centre over the year to implement an IOGT funded project aimed at reducing alcohol related domestic violence against women and children in Kinondoni District, Dar es Salaam. In the process of implementing these activities, TAMWA realized that, it is important to conduct a baseline survey that will enable the implementation and monitor the project. The baseline survey will be used as a benchmark that will enable TAMWA to assess the successfulness of the planned and executed activities and campaigns for anti-alcohol consumption.

The main objective of this baseline survey was to examine the extent of alcohol intake and the relation between alcohol consumption and gender based violence in three wards in Kinondoni district, Dar es Salaam. Specifically, the baseline survey aimed to collect, compile and analyse information on alcohol use, prevalence and factors associated with alcohol consumption, negative effects, availability and awareness in three wards.

Materials and Methods

The survey was conducted in three wards of Kinondoni district – Dar es Salaam. These wards are Makumbusho, Saranga and Wazo. The respondents comprised of different groups including youth, elders (parents or guardians) and government officials. Due to difficulties in allowing equal chances for all respondents to be selected for the study, a non-probabilistic sampling technique in the form of quota sampling was adopted to divide the population and then convenience sampling was used to pick the respondents from each group.

In total 506 questionnaires were successfully collected from the respondents. Additionally, four focus group discussions (women, men, children and youth) were conducted in all wards. Also in-depth interviews were conducted to the ward executive officers or their assistants from the selected wards. Data collected from the respondents were mainly analysed descriptively. In this regard, the collected data were entered into SPSS and then cleaned before the actual analysis. Qualitative data was analysed by taking individual reports which were upgraded to categories of the related findings.

Results

The findings of this baseline survey revealed that a total of 506 respondents with 52% males and 48% females participated in the study. Out of these respondents, 48.2% had already used alcohol while 51.8% had never used alcohol. The results further show that 55.5% and 44.5% of male and females respectively had already used alcohol. In total, respondents aged 24 years and above had highest percent of the respondents who were using alcohol. In this regard, the group accounted for the 70.1% of all respondents who had already used alcohol. The findings of alcohol use in different locations revealed that Makumbusho ward had highest rate of alcohol use as compared to Wazo and Saranga wards.

The results show that 57.1%, 41.5% and 48% of respondents from Makumbusho, Wazo and Saranga wards respectively had already used alcohol. With regards to the age of the first time to use alcohol, the findings revealed that majority (44.5%) of the respondents started at the age between 18 and 24 years, followed by the respondents with above 24 years, which accounted for 17.2%. The respondents who started using alcohol in the age groups of 14 to 17 and below 14 years formed 26.5% and 11.8% respectively. These results indicate that 38.3% of the respondents, who were using alcohol, started using it when they were children. The descriptive statistics further show that the minimum age of first time to use alcohol was five years; while the maximum age of the first time to use alcohol was forty years. The analysis also shows that the average age of first use of alcohol was 18.97, which is almost 19 years. The age with the highest frequencies was 20 with a standard deviation of 5.6.

When compare the age of the first time to use alcohol across sex, the results show that the percentage of females started drinking alcohol before the age 17 was higher than that of males. This was observed through FGDs, where most of workers at alcohol selling points were young females.

Further results on who introduced alcohol to the respondents revealed that 39% of respondents started drinking from their own decisions. This was closely followed by the respondents who were influenced by friends, which accounted to 38% of all respondents who had already used alcohol. These results indicate that peer groups play a significance role in influencing decision to use alcohol. The results on frequency of using alcohol revealed that 19.6% of the respondents go for drinking 2 to 4 times a week.

Additionally, respondents who drink every day were 19.2% of all respondents who had already used alcohol. The results also show that majority (31%) of the respondents takes five or more drinks every time they go for drinking. The respondents who take 3 or 4 drinks per visit consisted of 26.4% of all respondents who had already used alcohol. Furthermore, the respondents who take two drinks accounted for 23.6% of all respondents who had already used alcohol.

The results on alcohol effect as expressed by all respondents in this report shows that alcohol or someone under the influence of alcohol had already affected the respondents. For example, more than 40% of all respondents had either agreed or strongly agreed that someone had already harassed them under the influence of alcohol while more than 26% of the respondents agreed to have been beaten by someone due to alcohol.

The effects of alcohol use were also associated with the existence of street children due to violence and less caring in the families. Health problems, violence at home and less caring of families; where all strongly mentioned by the respondents as the effect of alcohol use. All these effects and others discussed above show that alcohol use has some negative impacts to the surrounding society. The results on alcohol availability show that most of the respondents were surrounded by alcohol selling points. This was observed through the study as 63% of all respondents admitted that there were selling points in less than 100 meters proximity from their residences. The findings on the awareness of alcohol show that majority of respondents receive information promoting alcohol through radio and televisions. In this case, 59% and 58% of respondents admitted to get such information through radio and televisions respectively. On the other hand Billboards accounted to 51% as a source of information promoting alcohol use.

With regards to location, the three wards did not differ very much on the sources of information related to alcohol use and its effects. In this case radio, televisions and billboards featured out

highly in the three wards. The overall analysis revealed that most of the respondents considered alcohol use as a problem although the extent of alcohol use is considered to be high among people in the surveyed wards.

Conclusion

The overall findings show a trend of alcohol use and its effect among the respondents, and also the general availability. The general observations indicated high rate of alcohol use to males as compared to females. The findings of the age of the first time to use alcohol revealed that some of the respondents started when they were very young, whereby of all alcohol users more than 38% started when they were children (i.e. below 18 years).

Although this was less than half, but the use of alcohol before 18 years is officially restricted by law. The results further indicated that some of the respondents do drink 5 or more drinks in a single visit. This indicates that the amount taken at one time is very high which create not only health problems but also social problems. The results further show that 19.2% of the respondents go for drinking every day. Those who go 2 to 4 times a week constituted 19.6%. These results indicate high level of frequencies in alcohol use, which not only account for significant amount of resources used but also possibilities to cause family problems including gender based violence (GBV). The results lead to the conclusion that existence of street children, health problems, violence at home and less caring of families; were among the mentioned effects of alcohol use. Despite the effects of alcohol use, most of the respondents were surrounded by alcohol selling points. This calls for action that will reduce the use and therefore reduce the effects of alcohol use.

References

1. Baseline Survey on the Extent of Alcohol Consumption and Abuse Report, Done by TAMWA , May, 2014; and
2. Survey ASA Questionnaires, 2014.

CONFERENCE RECOMMENDATIONS

Conference participants identified the following to be the role of TPHA in the coming decade:

- 1) Advocate for public health and more Public-Private engagement – move beyond partnership into engagement
- 2) Advise better management and leadership of the health system
- 3) Participate in emergencies, epidemics and provide technical guidance to the MOHSW
- 4) Advocate for the support of private sector to participate in the production of human resource for Financing modalities – have more private sector participation and motivate them to invest more in service provision; scale up social schemes and community involvement
- 5) Lobby for the enforcement of policy enactment of the Alcohol Act and enforcement of protective legislation on alcohol use – e.g. through control of access. Alcohol consumption affects 7 out of 8 MDGs. These included MDG1, MDG2, MDG3, MDG4, MDG 5, MDG 6 and MDG 7.
- 6) In addition, intoxication leads to impaired judgement with regard to safe sex. It is also a significant cause of NCDs including cancer, diabetes, hypertension, liver and kidney disease and mental disorders. Moreover, the packaging (sachets) used to package alcoholic drinks are an environmental eye sore.
- 7) TPHA to extend the fight against tobacco to include E-cigs

LIST OF PSRTICIPANTS

S/N	NAME	OCCUPATIO N/DE SIGNATION	ORGANIZATI ON/ INSTITUTIO N	MOBILE	EMAIL
1	Dr. Robert Ntakumulenga	Engineer	NEMC	784526470	ntakumulenga@yahoo.com
2	Dr. Eli Nangawe	PH Consultant	TPHA Chair	754784405	nangawemie@gmail.com
3	Dr. Fidelis Owenya	Medical Doctor	TPHA	754300104	fowenye@yahoo.com
4	Dr. Yereingelo Kossa	Advisor	GIZ/TGPSH	755507975	
5	Domino Rutayebesibwa	PO (SA)	TPHA	754434031	tpha1980@yahoo.com
6	Elizabeth Nchimbi	Journalist	TPHA	754261661	elizabethnchimbi@hotmail.com
7	Joyce E. Mjema	Nurse	Kondoa District Hospital	758468039	joymjema@yahoo.com
8	Dr. A. I. Kimambo	Doctor	TPHA	754304267	aikimambo@hotmail.com
9	Lightness J. Mbagwa	Nurse	Tanga City	784818429	mbagalightness@gmail.com
10	Dr. O.M.E. Kisanga	PH MD	MoHSW	753071373	oberlin.kisanga@gmail.com
11	Dr. Mariam Ongara	NPPPC	MoHSW	754262366	mariamdoge@yahoo.com
12	Mectilda Byamungu	Research officer	TTRI-Tanga	784585763	bmechtilda@gmail.com
13	Lightness Mkony	Nurse	Tanga City	715088775	lighnesmkony@yahoo.co.uk
14	Dr. Anna Nswilla	P H Specialist	MoHSW	754293617	answilla@yahoo.co.uk
15	Dr. Cyrialis Mutabuzi	Medical Doctor	Dodoma	754307768	cyrakus@yahoo.com
16	Peter Dattani	Surgeon	Tumbi Hospital	713601478	dattani12@yahoo.com
17	Dr. Beatrice Byalugaba	Doctor	RS - Pwani	754319764	bjkami@yahoo.com
18	William Nelson	Env. Health	RS - Pwani	717038512	willykitwi@yahoo.com
19	Mhando Muya	PHO	RS-Pwani	786888886	muyazmuya@yahoo.com
20	Didas Balimanya	S/W	IOGT-NTO Movement	765192726	didas@iogt.se
21	Dr. Japhet Z.L. Ng'weshemi	Retired Officer	Mhola H.C	764638628	imashinge@hotmail.com
22	Dr. Jacob Chembele	Exec. Secretary	RAS Dodoma	75783336	chmbelej@yahoo.com
23	Zainab Komba	Nurse	Dodoma RRH	752996417	
24	Mwanahamis Mwaga	Nurse	Dodoma Bahi District	754740568	manahamisimbogo@yahoo.com
25	Mnzava David	Paediatrician	TPHA	782515918	mnzavdp79@gmail.com
26	Tunu Mwinyimkuu	Records	RAS Pwani	718859333	tunumwinyi@gmail.com
27	Geofrey Maritani	Driver	MDHSW	759459474	
28	Dr. Edith Ngirwamungu	Med. Doctor	TPHA -EC	783903451	engirwamungu@yahoo.com
29	Dr. Ezekiel Mpuya	RMO	RHMT Dodoma	754312959	mpuyadr@yahoo.com
30	Sr. Flora Kamwela	Nurse	Kibaha	755372577	fekamwela07@gmail.com
31	Veronica Howe	Nurse	Bagamoyo	713425465	
32	Dr. Ali A. Mzige	Doctor	AAMIKT RCH Clinic	713410531	amzigevetz@yahoo.com

33	Erick G. Moshi	ADMIN	TPHA	766582723	ericeliam89@gmail.com
34	Jerina Ndongwe	OS	TPHA	751079423	ndangwei@gmail.com
35	Dr. Dominick Chalu	M.O.	BOT Clinic	75569919	ochalu06@yahoo.co.uk
36	Rose Mbijima	Lecturer	UDSM	754624682	rmbijima@yahoo.com
37	Lukumay NN	DPC	Care Intern. Tanzania	754442053	ndayanilukumay@gmail.com
38	Kelli Kiffer	Student	Ohio Wesleyan University	NA	kckiffer@owu.edu
39	Carly Levullo	Student	Ohio Wesleyan University	NA	celavull@owu.edu
40	Shareeque Sadiq	Student	Ohio Wesleyan University	NA	sasadiq@awu.ed
41	Dr. Johnson Katanga	M.O.	mirembe Hospt.	713310065	lusheke2001@yahoo.com
42	Aron Nzallah	Public H Specialist	Mkuranga DC	754516277	aronwilly@yahoo.com
43	Shelli Reeves	Student	Ohio Wesleyan University	NA	slreeves@owu.edu
44	Adelaide Dyrek	Student	Ohio Wesleyan University	NA	aldyrek@yahoo.com
45	Dr. Mashdia Rutaihwa	Medical Doctor	Bagamoyo		krutaihwa@yahoo.com
46	Elisian Towo	Nurse	Kibaha Tumbi	715618122	ndeonatowo44@yahoo.com
47	Dr. Nelson J. Bukuru	Medical Dr.	Nyangw'ale DC	769361322	nelsonbukuru@yahoo.com
48	Dr. Faustin Njau	Doctor	Private	769361322	faustinnjau@gmail.com
49	Violet V. Shirima	Nurse Officer	Kinondoni	766981413	violetshirima@gmail.com
50	Stella Kawale	Pharma	EMMAU	655206682	stanley@yahoo.com
51	Shadrack Maximillian	F. Health Observer	Bagamoyo DC	754944504	shedrack_maximmilian@yahoo.com
52	Betty Jayne Humplick	Consultant	Private	787000155	bj1707@gmail.com
53	Peter I. Mbaji	Member	Kibaha	754979370	
54	Tunu Mwinyimkuu	Record	RAS Pwani	718854535	tunumwinyi@gmail.com
55	Anna Shitima	OMS	TPHA HQs	754399130	arshitima@yahoo.com
56	Erick S. Msoffe	Tech Advisor	GIZ	715742977	erick.msoffe@giz.de
57	Silvanus Ilomo	CSA	MoHSW	717744714	ilomo@moh.go.tz
58	Bernard Mussa	Assit. Lecturer	UDSM	713304458	bernadmussa@gmail.com
59	Dr. Bertha T. A. Maegga	Researcher	TPHA	754863441	bmaegga@yhoo.com
60	Tecla Paul	Researcher	TPHA/VAW	716212341	tpteclapaul@gmail.com
61	Bernadetha Matle	Accountant	TPHA 7785 DSM	756701474	bernadetha.matle@gmail.com
62	Feliciana Mmasi	Nutrition	Tumbi Hospital	754392780	felicianammasi@yahoo.com
63	Saidi Mtambalike	Driver TPHA	TPHA 7785 DSM	71231171	
64	Ally Ponza	Clinician	Bagamoyo Hospital	6555845667	aliponza@yahoo.com
65	Dionesia Matle	Student	TPHA		
66	Aleswa Z. Swai	Clinician/Resea rcher	Kinondoni MC	768843454	mainukamukasa@gmail.com

67	Dr. Ngalula Willie-Anne	Denstist	Morogoro Ref. Hospital	713705335	kigongoanne@gmail.com
68	Prof. Japhet Killewo	Professor	MUHAs	754853257	jkillewo@yahoo.co.uk
69	Dr. Mashombo Mkamba	Doctor/Researcher	Temeke M.C.	754560028	shaibumashombo@yahoo.com
70	Atuganile Mwasunga	Nurse/MSC ANT	Bagamoyo Hospital	765443331	atuganilesamwel@yahoo.com
71	Basilisa Nanna	Public H Promotion	Emelio Mzena Memorial Hosp	786216767	basilisananna@yahoo.com
72	Godefrida Karumuna	Social worker	Emelio Mzena Memorial Hosp	713352208	
73	Maximillian Mapunda	Economist	WHO	754228848	mapunda@who.int
74	Hiltruda Temba	Medical Doctor	MoHSW	754397789	trudauk@gmail.com
75	Dr. Badriya Gurnan	Medical Doctor	BOT Clinic	756289896	bgurnahy@bot.go.tz
76	Dr. Msengi H. Mwendu	Medical Doctor	Ludewa DC	763242199	hmsengi@yahoo.com
77	Dr. Zulu R. Ikaji	Doctor	Kondoa District Hospital	784753447	ikajijunior@yahoo.com
78	Catherine Bunga	Researcher	NIMR		catly.bunge@yahoo.com
79	Dr. Gunini Kamba	Doctor	Kinondoni MC	754344079	guninik@yahoo.com
80	Vedasto Rwiza	Katibu	DSM Health Board	754571297	
81	Dr. Bunini Manyilizu	Medical Doctor	Mzumbe University	784429400	wmanyilizu@gmail.com
82	Adeline Munuo	Nutritionist	TFNC	754448636	adelinemunuo@yahoo.com
83	Prof. Robert Machangu	Microbiologist	SUA Morogoro	754691981	rmachangu2013@yahoo.com
84	Masekela L.S.	H/Administrator	President's Office	713270878	masekela@yahoo.com
85	Ezra Ngereza	AMO	Kinondoni	758381380	ngereza@yahoo.com
86	Ambrose Nzanje		Kinondoni MC	68566010	
87	S. Kawale	Pharma Tech	EMMA	655206682	Staneyi@yahoo.com
88	Crispin Gerald	Journalist	The Guardian	713288246	crispin_gerald@ymail.com
89	Dr. Katanga	M.O.	Mirembe Hospital	713310065	lusheke2001@yahoo.com
90	Catherine Sekwao	Retired Teacher	TEN/MET	754608798	coordinator@tenmef.org
91	Dr. R. T. Kahwili	DDS	RS Pwani	764439835	r.kahwili@yahoo.com
92	Mwanaisha Kichao	Nurse	BOT DSM	754380077	mkichao@yahoo.co.uk
93	Grace Mbekem	P Health Specialist	H M Foundation	655300503	mbekemg1997@yahoo.com
94	Dr. Marti Koehler	Medical Doctor	GIZ Lindi Office	755434276	marti.koehler@giz.de
95	Prof. Livin Mosha	Consultant	K & M Arch Plans (T) Ltd	754267370	livinmosha@yahoo.com
96	Dr. R. Mkerenga	Doctor	UNICEF, Box 62924 DSM	763308316	rmkerenga@gmail.com
97	Arch. Albert Mwambafu	Director	K & M Arch Plans (T) Ltd	713760330	almwamba2007@yahoo.com
98	Arch. Caleb Kimaro	Ass. Architect	K & M Arch Plans (T) Ltd	65578449	calebkims@yahoo.com
99	Philbert Nyinondi	Researcher	COSTECH		pyinondi@yahoo.com

100	Christine Mwambipile	Nurse PH Specialist	BOT	713530800	Mwambipile@yahoo.com
101	Hipolite J. Tarimo	Doctor	KCMC Hospital	753642882	hipolitethomas@yahoo.com
102	Munuo Gladness	Social Worker	TAMWA	754285701	gladness.munuo@tamwa.org
103	Leonard Mboera	Researcher	NIMR	754314701	lmboera@nimr.or.tz
104	Willam Ngela	Driver	Tumbi Hospital	718148802	
105	Ramadhani Kanenda	Driver	Bagamoyo Hospital	757013371	
106	Michael A. M.	Driver	Dodoma	755237771	
107	Godfrey Martin	Driver	MoHSW	754459974	
108	Beauty Mwambebule	PHMO	Ilala	754695255	mwambebulebeauty@yahoo.com
109	Mary Mpangala	PHMO	Ilala	756202525	
110	Gisela Berger	Advisor	CCBRT	766200911	gisela.berger@ccbrrt.or.tz
111	Dr. Ezra Ngereza	Dentist	Kinondoni MC	758381380	ngerezaezra@yahoo.com
112	Aleswa Zebedayo	Clinician	Kinondoni MC	768843454	mainuka.ukasa@gmail.com
113	Andrew Chale	Journalist	Tanzania Daima	719076376	chalefamily@yahoo.com
114	Katakweba Arnold	MO	BOT Clinic	717799087	
115	Grace Chuwa	Nurse	RAS Pwani	717834448	gracechuwa@yahoo.co.uk
116	Lucy Lyimo	Nurse	Kibaha	777372577	
117	Echikaka Mbozi	Anaesthest	Imilio Mzina Hospital	655300503	
118	Wiliam Nguo	Dereva	Tumbi Hospital	718148803	
119	Arnold Katakweba	MO	BOT Zanzibar		
120	Masekela L.S.	H/Administrator	President's Office	713270878	masekela@yahoo.com
121	Dr. Severine Kessy	Lecturer	UDSM	713370209	severinesk@yahoo.com
122	Onesmo Mella	SPO	TFNC	64596175	onvilula1959@gmail.com
123	Aleswa Z. Swai	Clinician	Kinondoni MC	768843454	
124	Michael Amosi	Driver	Dodoma	755237771	

ISBN 978 9987 9352-5-3

© 2015 Tanzania Public Health Association Tanzania, Dar es Salaam