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(Chama cha Afya ya Jamii Tanzania)

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OPENING SPEECH BY THE HON. DR. HUSSEIN A. H. MWINYI (M.P.), MINISTER FOR HEALTH AND SOCIAL WELFARE AT THE TWENTY NINETH ANNUAL SCIENTIFIC CONFERENCE OF THE TANZANIA PUBLIC HEALTH ASSOCIATION AND ANNUAL GENERAL MEETING AT THE TANGA BEACH RESORT, TANGA, ON NOVEMBER 26TH, 2012

National Chairperson of Tanzania Public Health Association, Dr. Adeline I. Kimambo,
Tanga Regional Commissioner
Distinguished Invited Guests
City Director/His Worship, the Mayor of Tanga City
Tanga Regional Medical Officer
Conference Participants
Ladies and Gentlemen,

From the outset, let me express my sincere gratitude for the invitation extended to me to officiate the opening of the Twenty nineth 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 opportunity to be among fellow public health stakeholders. May I therefore take this opportunity, on behalf of the Ministry of Health and Social Welfare and my own behalf, to thank the Conference Organizers for giving me the honour to officiate at the opening of this important event, your 29th Annual Scientific Conference and Annual General Meeting!

Madam Chairperson, I wish to also congratulate you, together with your Management Team and the entire membership of the Association for hosting this conference, which is your 29th, and still counting! Over the past 30 years you have handled advocacy on important public health issues that challenge the health of Tanzanians.There are few associations of your kind in Tanzania who can boast of such an illustrious achievement.

Madam Chairperson,
While in Tanga, I would like to remind you all that Tanga Region is one of the better placed tourist attractions in our country's north-eastern part. This area has a very beautiful geographical terrain, from low coastal plains to the Usambara Mountains which are the home of Amani Nature Reserve, a pristine area adorned with tea plantations around it. There are also the Amboni caves nearby, and Saadani National Park is not very far for those who love wild life. While in Tanga, please set aside some moments to enjoy these special attractions giving a health break to the endless scientific preoccupations.

I have been informed that this is a three 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: ***"Rethinking Disease Prevention and Control: Optimizing Existing Opportunities.*** Considering the current situation of public health policy and practice in Tanzania, and the available financial, material and human resources as well as the existing global scientific knowledge and technological advances, the notion of **rethinking** our approaches to how we do **"public health business"** is a fitting reflection at this juncture. I am looking forward to the outcome of this shared experience, and my Ministry will be keen

to get a feedback from the deliberations and recommendations of your conference. I am aware that, in the past, TPHA's recommendations from various conferences have been shared with the Ministry of Health and Social Welfare for mutual benefit. I hope this one will be no exception.

Madam Chairperson, Invited Guests, Distinguished Participants;
I have also been told that TPHA is now thirty-two years old and doing quite well in carrying out its mission and fulfilling its vision of promoting public health and advocacting for sound public health policy and good practices. I gather your Association has continued its important work even under the current economic down turn, where many local associations are finding it difficult to survive the economic hardships and competition from international NGOs, who are better placed to vie for the scarce resources. By our human standards, a thirty-two year old person is in the prime of productivity, mature and very energetic. I have all reasons to believe that TPHA is in that right stage at the moment!

Madam Chairperson, I have read and found that TPHA objectives cut across sectoral boundaries, thus giving you a leverage for furthering collaboration between public and private sectors in health as well as on cross-cutting health related issues. 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 you to take the lead in fostering such collaborative efforts even further with NGOs and other bodies while "**rethinking the public health practice**" in these challenging times.

Madam Chairperson,

It is exciting to note that TPHA has a long list of achievements, including publications of numerous proceedings from its many conferences.

TPHA initiated public health research interest among its members through capacity building in the early 1980's. In 1997, The Association came into the international arena by hosting the 8th Congress of the World Federation of Public Health Associations (WFPHA) the first time for the WFPHA international event to be held on the Africa Continent. At home, TPHA was 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 organising DMO's meetings and active participation in the PPP Technical Working Group (TWG). In addition, TPHA was instrumental in formulating and finalizing the Service Agreement template. 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. Currently the Association is in the process of developing its own landed property. Since the 1990's the Association gradually initiated the founding of Zonal and Regional Chapters from the original three to the current eleven chapters.

I am also informed that this Association has also got a long history of advocacy work in a variety of public health issues, from environmental sanitation and hygiene relating to cholera prevention, HIV/AIDS and Female Genital Mutilation and many others. I am also told that in recent years, TPHA has intensefied its work on tobacco and alcohol harm to consumers and the society. The Association is working hand in hand with others in raising

community awareness on the harm assocaited with alcohol, tobacco and substance abuse, with the aim of reducing the disease burden of non-communicable diseases in our society. All this work is complementary to what is being done in the formal health sector, 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 eleven Chapters country-wide, and expecting to establish more, I believe that this will strengthen community level activities to catalyse behaviour change for healthy life-styles countrywide

Madam Chairperson, Invited Guests, Distinguished Participants:

The objective of TPHA's 29th Annual Scientific Conference is to review progress made in the implementation of public health policy to improve health status in Tanzania, in the context of enhancing utilization of existing and emerging opportunities in the midst of global and local environmental challenges.
Personally, and on behalf of the Ministry of Health and Social Welfare, this forum could not have come at a better time in our country's history:
We are going through a critical period where opportunities abound but we are also faced with serious challenges, whereby this notion of "rethinking our approaches" offers a chance to generate alternative options.

Madam Chairperson, in the current millennium of science and technology, which is especially dominated by the Information and Communication Technology (ICT), the government and the people of this country expect the Ministry of Health and Social Welfare to plan strategically and make decisions based on evidence and to also monitor and evaluate policy and programme implementation using the emerging technologies. It is only through collaboration with vibrant organizations like the time tested TPHA, that we can shoulder such responsibility counting on synergies of action in partnership.
I, therefore, challenge you to play your part 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. In the current era of gloablization, free markets and all the hazards that come with unchecked consumerism, public health in our society can only be safeguarded through strong and concerted advocacy, sentitization, courtrywide education on healthy living and promtion of behaviors that reduce or control risks to human health.Your work is therefore very crucial, and its intensification will save many lives in the current and future generations. The government recognizes the importance of new knowledge generation, dissemination of information and the advocacy work you are doing. The governent also recognizes the existing gap between the knowledge we have and the implementation of our health policy guidelines, thus your work in bridging this gap is certainly appreciated. It should be intensified so that a greater proportion of the Tanzanian community, especially those living in hard to reach areas benefit from it. The Government will give your association and others of similar nature 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.

Madam Chairperson,

It is my hope that in the next three days that you will be here, you will exercise dilligence and prudence, engaging yourselves in a dialogue that will produce sound resolutions. Let me further urge you to come up with sound recommendations that my Ministry can use for improving on our current policy decisions and programme implementation that will greatly improve public health practice in Tanzania. We are all conscious of our fast moving global environment affecting all of us, so whatever your recommendations maybe, we do need to act on the viable ones now, so as to keep up with our rapidly changing environment.

Ladies and Gentlemen, having said so much, let me at this juncture wish you very fruitful presentations, discussions and deliberations for the next three days, and hereby declare the Twenty Nineth Annual Scientific Conference and Annual General Meeting of the Tanzania Public Health Association officially open.

Rethinking Disease Prevention and Control: Optimizing Existing Opportunities

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The theme I have been asked to address is ***"Rethinking Disease Prevention and Control: Optimizing existing opportunities"***. The theme is very appropriate given the myriad of health challenges that we face. The Chinese have a saying "May you live in interesting times" and these are truly interesting times for all of us working in public health. We have several challenges and yet we also note positively that health issues have found their way onto the Global Agenda raising unprecedented interest. It is against this backdrop that I wish to deliver my keynote address.

The world today has more challenges than ever before. Resources are dwindling while the population growth rate is alarmingly high. The climate change affects the welfare of the world citizens negatively, the food chain is diminishing and the world economy is in crisis. As a result there is hunger, loss of jobs and income, hence the vicious cycle of poverty and ill health. All these including the increasing double burden of diseases both communicable and non-communicable undermine the health of the populations thus sending what some might consider a shock wave in the public health arena.

There used to be a clear difference between the burden of diseases of the affluent countries and the poor countries. However the two sets are moving towards a confluence(Remais*et al* 2012). The poor countries are experiencing double burden of diseases, with the NCDs taking an unprecedented toll (Abegunde*et al* 2007). The health impact is worse than the rich countries given the mere fact of poverty and the underlying effects of it. Studies carried out in countries have shown the clear health disparities even within the same city. Studies carried out in cities (Friel*et al*2011)have shown that people living in he poorer areas have a higher burden of NCD's than the affluent areas. So overall country figures can sometimes be misleading.

Of recent we have also witnessed unprecedented disasters in terms of floods and hurricanes, epidemics of various kinds including hemorrhagic fevers, diarrhoea, cholera (Muyembe-Tamfu*et al* 2012; Poirer et al., 2011) and many others including resurgence of those diseases which were already under control. This is a major threat to public health and a concern for all of us hence making theme of this year's meeting all the more relevant.

The challenges mentioned are being addressed through several approaches. It is clear however that we need a multifaceted approach and concerted global regional and national efforts to address these challenges. At global level there are several partners working on the area of health, and hence several Global Health initiatives including financing and implementation of various programs. Issues high on the agenda include of health financing, nutrition, maternal and child health, information technology and research for evidence. It is a fact that at regional and national levels we have evidence of good policies, strategies, guidelines and implementation plans but most of these efforts

fall short of expected results. As public health practitioners we not only need to ask why but also offer solutions to address these problems. It is in this context that we need to rethink how we address disease control and prevention.

Whilst these challenges do exist; Global health issues are currently enjoying unprecedented attention, focus and finance. We note that a number of health issues, which used to be discussed under the auspices of the World Health Assembly are now being discussed by Heads of State at the UN General Assembly (UN General Assembly 2011). It is extremely encouraging in that health issues are being addressed in a multi sectoral, multi stakeholder manner.

Hence with this level of focus on global public health there are also emerging opportunities; like Global health initiatives such as Woman Deliver dealing with Reproductive and child Health, bilateral support and others to mention only a few. Let us also taken note that there has been a strong push to revitalize Primary Health Care (PHC) through the Ouagadougou declaration. Secondly there is a good progress in the implementation of the MDGs 4 & 6 with minimal response to MDG 5, and the other goals. In sustaining these gains and moving forward we need to accelerate improvement of the health systems, focusing on a better health infrastructure, and robust and reliable supply systems. Over and above we need to address the double burden of communicable and Non Communicable diseases. We also need to continue in our efforts to fight Neglected Tropical Diseases. Advocating for behaviour change is also a challenge, which needs to be tackled. We have to advocate for change in lifestyles and behaviour as well to cope with the NCDs. Here I am reminded of a quote from Thomas Alva Edison "*The doctor of the future will give no medicine, but will interest his patients in the care of the human frame, in diet, and in the cause and prevention of disease.*"

Applied research continues to be the key to further gains in the implementation of the policies and programs. If we are really to make progress then research has to be an integral part of our system it should inform implementation and drive policy. The mantra "no research no right to speak" should not be taken lightly.

There is no doubt that good policies and strategies are in place and we find several examples here in Tanzania. There is Public Private Partnership through the Sector Wide approach, Adaption of new and modern technology including e-health. We have the opportunity to scale up on applied research in areas that can quickly translate to maximum impact on disease prevention and control.
The Primary Health Service Development Programme was articulated 5 years ago and is targeted to reach completion in 2017 (MOHSW 2007). We need now to use available resources more efficiently and effectively including enforcement of good leadership, management of the sector and good governance at all levels. Community ownership should be emphasized and put in practice. It is amazing how much progress can be made by putting communities at the centre of our efforts. This will mean a major shift in the way we work addressing communities as partners and not just implementers of our strategies.

The issue of communities inter-phase very nicely into the issue of Primary Health Care. Most countries have made considerable achievements in developing a health care system based on PHC model. Despite this effort, there has been a discrepancy between the PHC strategy and its implementation. Implementation of PHC has also varied across countries. Whereas countries made considerable efforts to integrate PHC principles and elements into their health systems, the broad-based PHC approach of ensuring that PHC was central function and main focus of health systems had been abandoned in most cases in favour of the "selective PHC" in form of vertical disease specific programs to date. The reinvigoration of PHC recognizes that no progress can be made towards Universal Health Care if there is no strong PHC system in place. It is important that as a country we learn from this experience of oscillating between Alma Atta, Health for all by the year 2000 then selective PHC and now back to the Primary Health care Development Plan. This experience should tell us what works best in our settings and it is important for the researchers among us to document the issues as it easy to make the same mistakes again.

Despite these efforts, health systems development has been hampered by poverty; political mismanagement; poor economic performance; heavy disease burden; lack of qualified and experienced health workers; poor health infrastructure; low access to and quality of essential health technologies and weak stewardship. This has slowed down progress in improvement of public health, attaining MDGs and meeting targets of other national, regional and global initiatives. This indeed is a product of a weak health system.

Other Challenges include failure of the country to cope with multiple new technologies and hence a wide knowledge gap this is coupled with an already weak human resource for health base to run the health services. Most of the international development assistance is tied or targeted. As a result the planning process is micromanaged (Ext Review 2007). It is also true that most of the supplies into the health system are imported (60%). Local manufactured products are less than (40%). Thus this system is expensive as is operated by market forces, externally influenced. This phenomenon is not sustainable.

The population growth rate does not match the economic growth of the countries. This has led to unplanned urbanization, leading to areas with low or non-existent sanitation that endanger public health and invariably the welfare of the citizens. If we still have cholera epidemics, this is clear evidence of poor sanitation. The pressure on the available resources is telling. There is weak supervision and monitoring for results. The mentorship is lacking.

As we look to the years ahead the TPHA has an extremely important role to support the government through the Ministry and international engagement to promote public health practice and ethics. This also includes focus on the neglected area of public health legislation. Public health legislation as well as public health community engagements are areas that could be a niche for TPHA. It is the Public Health community in Australia that helped win the war for plain packaging of cigarettes. The Health sector cannot go it alone and it is through close interdisciplinary and intersectoral collaboration that you will succeed as an organization. This is an opportunity to engage those outside the health

sector but whose activities are needed for any public health initiatives to succeed. It is time to stop preaching to the converted- they know what the issues are.

TPHA has a strong role in advocating for Primary Health Care and should strive to do periodic monitoring and evaluation of PHC with reliable data on health services and support to establish comprehensive and functional health information systems. This problem is compounded by shortage of appropriate trained personnel to handle and interpret data.

TPHA could also form policy lobby groups to push for policy change when the evidence is available. This is a role that you cannot shy away from if you really want to improve Public Health in our country. You are going to have to talk about waste disposal in our cities, you are going to have to discuss the effects of bad sewage systems and unclean drainage, and you are going to have to discuss substance abuse and several other issues which sometimes we would rather not talk about. You have a voice and platform this is our voice and our platform we must use it.

TPHA must move with the times, there is nothing that gets people's attention like social media and for those "Born Before Computer" this is last thing you want to hear but friends and colleagues to get the younger generation involved you will need to embrace social media and use it to your advantage.

It is easy to talk about what wasn't done and how bad things are but our true strength can only come from seeing what role the organization can play and go ahead and do it. In the words of Mahatma Ghandi "Be the Change you wish to see in the world."

Public health is nothing more than human development. In order to attain socio and economic development we need to work hard to express our commitments for development.

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One Health and Ecohealth for Shaping Practice of Health Professionals to Combat Emerging and Re-Emerging Communicable Diseases

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There is a growing recognition that many health issues are complex and can be best understood by examining the relationship between complex ecosystems in which people live. Two approaches, One Health and EcoHealth, are increasingly been recognized as modern toolkits that can help us to better understand the intricate and complex connections that have made actors fail to solve health challenges using traditional approaches. The broad economical, social, health and environmental consequences of emerging and re-emerging infectious zoonotic diseases, for instance, demand interdisciplinary and transdisciplinary solutions. One such solution, is "*One Health Approach*", a growing global strategy that is being adopted by International health organizations and policy makers in response to this need. It recognizes recognises the inextricable linkage of human and animal health and their environment; and the added value and synergistic benefits of closer cooperation of human and animal health professionals in an attempt to inform health policy, expand scientific knowledge, improve healthcare training and delivery, and address sustainability challenges. On the other hand, *Ecohealth* recognizes that health is interlinked with social-ecological systems "*ecosystem integrity*" and sustainable development. The key principles being systems thinking, transdisciplinary research and participation, gender and social equity and knowledge to action without necessary thrust to policy influence. This has created a new demand for paradigm shift in training of human, animal and environmental health professionals. In essence, education, training and skill building with support from the International and National organizations have shown a significant role in realization of One Health concept by various health sectors. Citing experiences from activities carried out by "One Health Central and Eastern Africa (OHCEA)" a network of fourteen Public Health and Veterinary Higher Education Institutions located in six countries in the Eastern and Central Africa region, this paper highlights the role and challenges of academia in designing and offering education, training and skill building platforms for a new generation of one health and Ecohealth professionals. Solutions to unlock challenges that impede progress in realization of one health and Ecohealth in the changing world are discussed while taking into account key principles and requirements in shaping the practice of health professionals to cope with 21st century dilemmas and demands to solutions linked to emerging and re-emerging communicable diseases.

Introduction

Emerging infections (EIs) are defined as infections that have newly appeared in a population or have existed previously but are rapidly increasing in incidence or geographic range (Morse, 1995). Re-emerging diseases refers to diseases that have been known for some time, had fallen to such low levels that they were no longer considered as a challenge and are now showing upward trends in incidence or prevalence. The term was first used to describe new diseases in humans such as AIDS that surfaced in the early 1980's. Since then, the emerging and re-emerging diseases have shaped the course of human history and have caused incalculable misery and death. Factors responsible for emerging infectious diseases include microbial adaptation and change, increased human susceptibility to infections, climate and weather changes, changing ecosystems, human demographics and behavior, economic developments and land use, increased international travels and trade, development in technology and industries, inefficient delivery of public health services, poverty and social inequality, war and famine, lack of political will and intent to harm (Morens et al., 2004).

Emerging and re-emerging communicable diseases argued as global health threats have

been agreed by the International community to demand for a longer-term, more strategic approach to global health preparedness. Underlying the increase in new infectious diseases has been the growing interaction between human and animal populations driven by growth in human population, new trends in animal production practices, changing patterns of wildlife populations, human intrusion on new ecosystems, and trans-border mobility of humans, animals, food and feed products. The speed with which these diseases can surface and spread, as illustrated by the recent avian and pandemic influenza caused by H1N1, presents serious public health, economic, security and development concerns. It also underscores the global interdependence of human and economic security and the need for a more systematic effort to identify and respond to sudden global public health emergencies (Carroll, 2013).

Reducing the threat caused by emerging, re-emerging and recurring diseases requires a "One Health" (OH) strategic approach that builds on the understanding that the future well-being of humans, animals and the environment are inextricably linked; promotes cross-sectoral coordination that spans the animal health, public health, educational, environmental and conservations communities; targets promotion of those policies and the strengthening of those skills and capacities critical for both minimizing the risk of new disease emergence and the ability to limit their social, economic and health impact; and uses a "risk" based approach to target investments to those places, populations, times and situations where the likelihood of disease emergence is greatest (Carroll, 2013).

One Health recognizes that the health of humans, animals and ecosystems are interconnected. As an approach, it involves the application of a coordinated, collaborative, multidisciplinary and cross-sectoral approach to address potential or existing risks that originate at the animal-human-ecosystems interface. Overall, the OH approach centered on collaboration across sectors that have a direct or indirect impact on health involves system thinking and working across silos and optimizing resources and efforts while respecting the mandate and autonomy of the various sectors. To improve the effectiveness of the OH approach, there is a need to establish a better sectoral balance among existing groups and networks, especially between veterinarians and physicians, and to increase the participation of environmental and wildlife health practitioners, as well as social scientists and development actors.

The concept of OH is rapidly gaining recognition and acceptance, internationally, articulated through the official statements being made by governmental agencies and by a range of professional associations and international bodies, and expressed through a number of forums in particular the ecohealth and one health conferences. Increasingly, OH approach is becoming translated into research, training and developmental practice. In addition to the understanding that the health of humans, animals and of the environment is inextricably linked, OH underscores the need for promotion of the wellbeing of all species through co-operation across sectors, professions, disciplines and national borders; and a sustained collaboration between donor agencies and those organizations responsible for delivery. Fundamental to OH approach is that research, training and development are implemented jointly in inter-disciplinary manner by a pool of human health, veterinary and environmental professionals with a clear and focused understanding that what work optimally are the bridged rather than individual vertical silos. To ensure goals are met, attention must be paid

to the nature and quality of the training programmes of the future leaders and implementers of health programmes.

Educational programmes, joint disease outbreak investigation and surveillance and in inter-sectoral collaboration for combating diseases at human-animal-environmental interface are regarded as key principles for the implementation of OH practice. Although these principles are widely accepted and viewed as pillars for cross-sectoral solutions, how these translate into practice, in different contexts is still evolving. Since OH is being interpreted in different ways, and at different rates in different countries, this fluidity provides institutions and agencies with a unique opportunity to play a very significant role in shaping the health professionals.

Genesis and history of One Health Concept

The concept and practices related to OH and Ecohealth are not new. It started in 460 BC and with recognition that interactions of humans, animals, and the environment affect the health of all (Anon, 2012). Hippocrates suggested that to investigate medicine properly, one must first consider the seasons, and then the wind, the water, and the ground, as they are all alike (on “Airs, Waters, and Places”). During mid of 17th Century, Pope Clement XI instructed his Italian physician, Dr. Giovanni Maria Lancisi, (1654–1720), a pioneering epidemiologist, physician, and veterinarian, with a fascination in the role the physical environment to devise a mechanism to control rinderpest, a highly fatal and devastating viral disease of cattle that was seriously affecting the human food supply. Lancisi recommended all diseased and suspect animals be killed; the principle was a milestone accepted to date in controlling the spread of contagious diseases in animals.

The idea that human, animal and environmental health are linked was further revived during the French Revolution, where Drs. Louis-Rene Villerme (1782–1863) and Dr. and Alexander Parent-Duchatelet (1790–1835) first developed the specialty of public hygiene. During the 19th Century, Rudolf Virchow (1821-1902), a German physician and pathologist stated that between animal and human medicine there are no dividing lines, nor should there be, hence the term “zoonosis” evolved (Kahn *et al*., 2007). Canadian physician Sir William Osler (1849–1919) travelled to Germany to study with Virchow. Sir William Osler was active as a clinical pathologist and internist at the Montreal General Hospital, but was also active in the promotion of veterinary health, and helped investigate a swine typhoid outbreak near Quebec City in 1878. He co-authored a monograph on parasites in Montreal's pork supply with A.W. Clement, a veterinary student at Montreal Veterinary College.

In 1947, James H. Steele, furthered the One Health concept and established the field of veterinary public health at the Centre for Disease Control (CDC). The term "One Medicine" was developed and promoted by Calvin W. Schwabe (1927–2006), a veterinary epidemiologist and parasitologist in his textbook, "Veterinary Medicine and Human Health”. In the 1960s, a veterinary epidemiologist spoke of “one medicine”, calling for a unified human and veterinary approach to combat zoonotic diseases, and providing a modern foundation for the concept of One Health. While the term One Health had already been in use, in 2004, the Wildlife Conservation Society held a meeting of health experts from many fields, and referring to “One World-One Health”. In 2007, a Joint Task Force including the

American Veterinary Medical Association (AVMA) and the American Medical Association (AMA) adopted a vision, definition, and scope in support of One Health Concept. This definition, "The collaborative effort of multiple disciplines working locally, nationally, and globally to attain optimal health of humans, animals, and our environment", was also referenced in a 2008 document on One Health by a joint United Nations' organizational consultation that included FAO, OIE, and WHO.

In 2008, WHO, FAO, and OIE published a zoonotic diseases guide for establishing collaborations between animal and human health sectors. The guide identifies and proposes a sustainable coordinating mechanism for collaboration in three areas; surveillance and information sharing, coordinated response, and risk reduction. In 2010, FAO, WHO, and OIE developed a Tripartite Concept Note that further identified the "sharing of responsibilities and coordinating global activities to address health risks at the animal-human-ecosystems interface". This concept note was shared with the international community at the International Ministerial Conference on Avian and Pandemic Influenza in Hanoi, Vietnam. The Tripartite Concept Note provides a background, strategic alignment, collaborations and joint actions, and the way forward that partners may consider when conducting One Health activities. This includes identifying complementary animal-human agendas, and a strategic alignment identifying collaborative needs. Finally, the Concept Note identifies a number of collaborative and joint actions that may occur to meet these agendas and needs.

Tanzania perspective

Tanzania with unprecedented landmass protected for wildlife (Figure 1), rapid human population growth, intensive agricultural production, increase interaction between human, livestock and wildlife, presence of fragile ecosystems and hotspot for emerging diseases is considered as an ideal place to benefit from One Health/Ecohealth concept. Despite growing recognition that closer collaboration among sectors is necessary and often having leaders with the competencies and skills needed for such collaboration, obstacles (jurisdictional organizational lines, competing agendas, struggles for limited resources, and being steeped in differing disciplinary cultures) still exist and well oriented in vertical silos. The "siloed" approaches to detecting, and responding early and effectively to diseases threats and more so to emerging and re-emerging infectious diseases have often proved to be ineffective. This has resulted in continued loss of human life and livelihoods, compromised nutrition, stressed health delivery systems, and threatened wildlife and ecosystem health.

In recognition of this, several attempts have been promoted since early 1990's. (Incomplete)

Reinforcing resilience at interfaces

Collaborative work on the health of humans, animals and ecosystems reinforces the resilience of societies in the face of disease risk, reduced access to food or the threat of malnutrition. It means focusing on the interfaces between disciplines and systems in ways that give greater priority to people's needs than to professional boundaries or organizational simplicity.

The one health approach builds on work done on avian and pandemic influenza preparedness and response, forging strong linkages between non-traditional partners from

different sectors—agriculture, animal health, public health, military, and the humanitarian community— increased "whole-of-society" capacity for pandemic preparedness and response. It called for (a) building trust amongst the diverse community of actors that is needed in a major crisis; (b) bringing stakeholders together to agree on their roles and responsibilities; (c) building constructive relationships through collaborative planning; (d) testing the effectiveness of collaboration through immersion in simulations.

The Hanoi conference was also the venue for the release of both the FAO–OIE–WHO Tripartite Concept Note on "Collaboration – Sharing responsibilities and coordinating global activities to address health risks at the animal–human–ecosystems interfaces" and the Global Progress Report Framework for Sustaining Momentum on Animal and Pandemic Influenza.

The potential threat posed by livestock to public health – via agriculture-associated diseases – is played out at the intersection between human health, animal health and agro-ecosystems. It includes neglected zoonoses (like TB, brucellosis), emerging infectious diseases (like SARS and Avian Influenza), and food-borne diseases. They are all best addressed through the One Health (OH) approach.

The one-health approach is particularly relevant when efforts are made to reduce threats in settings where resources are limited. Applying the approach depends on people being able to access and apply relevant information in ways that enable them to reinforce their resilience in the face of multiple threats. They can only do this effectively when empowered through incentives and a positive regulatory environment. Hence the increasing interest at policy level in options for improved livestock sector governance, together with appropriate investment in veterinary and other services appropriate for securing livelihood and environmental well-being.

The One Health approach is an example of investing in resilience: it combines a focus on the long term security of our planet's natural resources, the security of people's access to nutritious food at all times, human security in the face of threats to their health, and the links between them that define people's resilience in the face of stresses or shocks. Such novel approaches are best pursued as multi-actor movements - by youth groups, business leaders, government leaders, civil society at local regional and global levels.

The One Health approach is an example of a vibrant movement with soft governance - no new institutions or new laws are needed to make it happen. Instead, it relies on existing institutions and capacities to create new ways of dealing with threats at the interfaces. The direction provided by governments for One Health issues is critical to the success of prevention, management and preparedness strategies for diseases at the animal-human-ecosystem interface. The heart of this effort is professional training –ensuring that practitioners are skilled in the One Health approach and their skills are tested within their professional examinations.

Discussion

Establishing, promoting and implementing One Health collaborative mechanisms and activities at the international level is both challenging and rewarding; with potential benefits to human, animal, and environmental health, at the national, regional, and global levels.

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Approaches in control and prevention of communicable diseases in Sub-Saharan Africa need re-thinking

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Abstract: In Sub-Saharan Africa, communicable diseases are the leading public health problems. Communicable diseases cause significant individual suffering, disrupting everyday life and threatening livelihoods. According to the World Health Organization reports, communicable diseases cause one-third of the years lost to illness or death worldwide. They are the single most important contributor to morbidity and mortality in developing countries, and new diseases are emerging at unprecedented rates. The disease situation is markedly diverse even within localized geographical areas. While in recent years, the burden of HIV/AIDS, Tuberculosis and Malaria have helped to mobilize large amounts of resources to address them, many of communicable diseases, particularly those affecting the poor, have been neglected. Poor people are also likely to be politically marginalized and living in degraded environments. They often lack assets, knowledge, and opportunities to gain access to health care or protect themselves from infections. As a matter of fact, many communicable diseases are rooted in environmental and livelihoods conditions and mediated by social, cultural and individual determinants. It is now increasingly recognized that a much broader, coordinated and multisectoral ecohealth approach is required to address communicable diseases in Sub-Saharan Africa. An ecohealth approach has been shown to be more robust in public health interventions than the traditional medical approach. Ecohealth research helps to prevent communicable diseases by generating an understanding of ecosystem factors that influence the emergence and spread of both old and new diseases. Through a better understanding of the complex interactions between ecological, economic, and social factors, ecohealth approach gets at the roots of communicable diseases. The objective of this paper is to analyse the current strategies in the control and prevention of communicable diseases in Sub-Saharan Africa and to suggest the appropriate approaches in relation to the current changing epidemiological profiles.

THE BURDEN OF COMMUNICABLE DISEASES

A communicable disease is an illness due to a specific infectious agent or its toxic products that arises through transmission of that agent or its products from an infected person, animal or inaminate reservoir (e.g. from a food source or contaminated water) to a susceptible host. Infectious diseases are human illnesses caused by viruses, bacteria, parasites, fungi, and other microbes. They can be spread by direct contact with an infected person or animal, through ingestion of contaminated food or water, by arthropods like mosquitoes or ticks (disease vectors), or by contact with contaminated surroundings like animal droppings or contaminated air. Demographic and environmental factors such as population growth, increased urbanization, and alteration of habitats of disease-carrying insects and animals (e.g., irrigation, deforestation) may promote the spread of infectious diseases (CDC, 1998a).

While health systems face an increasing burden from chronic non-communicable diseases, communicable diseases continue to be the single-most important contributor to the burden of disease in developing countries. Population growth and migration, environmental change and transformation of landscape, and globalization of trade and economies have changed the kinds of health challenges faced by populations around the world. Despite substantial gains in socio-economic development around the world, and enormous advances in sanitation and medical knowledge and technologies, many communicable diseases continue to pose an unacceptable burden to people in developing countries. A further threat is posed to people all around the world by the emergence of new infectious diseases, most of them, zoonotic in nature, which appear to be on the rise (Jones et al., 2008).

Zoonotic diseases are a group of communicable diseases that are naturally transmissible between vertebrate animals and humans, and the vice versa. Animals thus play an essential role in maintaining zoonotic infections in nature. As well as being a public health problem, many of the zoonotic diseases prevent the efficient production of food of animal origin and create obstacles to international trade in animal products. This means, zoonotic diseases impose a heavy burden on human health and livestock productivity of countries in Sub-Saharan Africa. The greatest risk of transmission of zoonotic diseases occurs at the human-animal interface - a continuum of direct or indirect human exposure to animals, their products and/or their environments. Available statistics suggest that between 60 and 75% of new/emerging infectious diseases of humans in the last half century had originated from animals, of which perhaps 71% of these were of wildlife origin. Many existing diseases will remain important, but new diseases will emerge in the future. The drivers of many emerging disease are mostly related to human behaviour and actions, socioeconomic (e.g. globalisation of travel and trade), environmental and ecological factors.

Important zoonoses infections that have posed health threats in Sub-Saharan Africa include: Avian Influenza, Ebola, Marburg, Lassa fever, Rift Valley fever, new Arena virus (Lujo), Anthrax, Plague, Human African Trypanosomiasis, Bovine Brucellosis, Bovine Tuberculosis, porcine cysticercosis, and rabies. For instance, 20 major outbreaks of Viral Haemorrhagic Fever due to Ebola and Marburg viruses have since 1976 been reported in Sub-Saharan Africa. Dengue is emerging as a new threat in the African Region. A large dengue fever outbreak in the region has been ongoing in Cape Verde since Nov 2009 affecting the whole country.

COMMUNICABLE DISEASES, ECOSYSTEMS AND LIVELIHOODS

The persistency of most communicable diseases and the emergence of zoonoses disease is complex and multi-factorial, driven by factors which include evolving ecology, microbial adaptation, human demographics and behaviour, international travel and trade, agricultural practices, technology and industry. The persistence or re-emergence of infectious diseases, and the emergence of some new ones, may be indicative of wider problems affecting the dynamics of socio-ecological systems. Ecosystem health examines changes in the biological, physical, social and economic environments and relates these changes to impacts upon human health.

Major communicable diseases that are endemic in Africa constitute a high risk for health and livelihoods and future marginalisation of Africa through trade restrictions and sociopolitical impacts. The top three risk factors for human and animal epidemic diseases revolve around systems of governance; movement of humans, animals and commodities; and human behaviour (Rweyemamu et al, 2006). In general in Africa communicable diseases constitute a disproportionately higher burden level than in the rest of the world, with 72% of the disease burden attributable to poverty, interactions between socio-economic opportunities and the health of animals, people and ecosystems, compared to 27% in the rest of the world (WHO, 2006).
The environmental aspect is a key feature in Africa. Smith et al. (1999) estimated that about 40% of the burdens of disease in sub-Saharan Africa are environmentally determined. Another important aspect of health in Africa is climate change and variability which is reported to have impacted more heavily in Africa than most other parts of the world. Generally, vulnerability of individuals and communities to communicable diseases is influenced by multiple factors (environmental, economic and socio-ecological) in addition to host and causative agent factors (Wilson, 1995; Farmer, 1996; McMichael, 2004). Understanding the determinants of health is fundamental to understanding how communities and individuals adapt to avoid risk and illness. Vulnerability is also tightly linked to inequity with respect to access to resources, decision-making power and capacity to cope. The continued prevalence of illness and vulnerability stems itself in part in the continued inequality within and between households, communities and countries. Inequality affects vulnerability directly

by constraining the options available to communities, households and individuals when faced with external shocks, and indirectly through its various links to poverty.

For most of the high impact communicable diseases, appropriate technical solutions exist to detect them and control them, whether through drugs, vaccines or applying better management practices. Poor execution or inability to apply management practices, and known solutions for reasons of the inadequate resources including capacity, infrastructure, knowledge and policy has prevented health services in Sub-Saharan countries to control communicable diseases. The absence of effective health systems and weak disease surveillance in Africa means at best there is syndromic information on disease with little specific local knowledge. This means some diseases are probably over-reported and many others underreported. Pharmaceutical costs are likely to remain high given the reluctance of commercial pharmaceutical companies to invest in accessible, affordable products for use in animals to prevent or reduce the risk of zoonoses, since these are of little commercial value. This is on top of weak community infrastructure (housing, animal facilities, waste systems, water supplies), poor nutrition and poor hygienic practices mostly due to lack of basic facilities and weak health services. Public education and awareness can also play a part. Given the basic living conditions, exposure to the environment and, reliance on animals for survival and daily food, poor communities are at risk from zoonoses, with a disproportionate number of women and children exposed through their particular domestic roles in animal management.

There is a general consensus that Sub-Saharan Africa is lagging behind in the implementation of the UN Millennium Development Goals (MDGs). Considering that 4 of the 8 MDGs are directly linked to communicable diseases with the other 4 MDGs indirectly linked, the continuing burden of communicable diseases in the contributes to the slow progress in the MDGs and in general result in under-nutrition (Waage et al 2010). Underlying trends to this disease status are increasing natural and man-made shocks and emergencies which further increase vulnerability of African communities (Ndiyoi et al 2006). The same study suggested that the chronic or underlying shocks had been due to HIV/AIDS, increased mobility between countries and the evolving impacts of climate change.

Studies on future public health risk have indicated that communicable diseases are and will continue to be a formidable challenge to human welfare and economic development in Sub-Saharan Africa over the next 25 years, and thereby impede Africa's ability to meet the targets of the MDGs (King et al, 2006; Brownlie et al 2006; Brownlie et al 2005; Rweyemamu et 2006; Jones et al 2008; Kock et al 2012; Woolhouse, 2006, 2008; FAO/OIE/WHO, 2008; World Bank 2010; Zinsstag et al 2011).

It is therefore, evident that environmental, economic and socio-ecological factors are inextricably linked with burden of disease. The latter is generally measured in terms of commonest diseases, direct and indirect costs incurred on disease treatment, control and prevention; years lived with disability and years of life lost due to disease. Rarely captured in the burdens are the linkages with animals and the environment. This is particularly relevant to the livestock livelihood communities which are a focus of this proposal.

A close link is identified between local climate and the occurrence or severity of communicable diseases. The effects of climate change on ecosystem health are multiple and include interrelated environmental factors (e.g., pollution, water scarcity, environmental degradation), food security factors (e.g., poor yield, insufficient management), health factors (both communicable and non-communicable diseases), socio-economic factors (e.g., poverty, social conflicts), and governance factors (e.g., poor institutional capacity, legal barriers) (Figure 1).

INTEGRATED DISEASE CONTROL EMPLOYING AN ECOSYSTEM APPROACH

Most of communicable diseases are linked to the environment-whether vector-borne diseases like malaria or water-borne causes of diarrhoea (Weiss & Michael, 2004; Prüss-Üstün & Corvalán, 2006). The prevailing approach to communicable disease control, a highly successful one, has rested on mass immunisation or rapid diagnosis, isolation, and treatment for non-vaccine preventable diseases. The emergence late in the 20thCentury of antimicrobial resistance, the difficulties in finding effective vaccines for diseases such as HIV and malaria, the experiences from SARS and pandemic influenza have highlighted the need for alternative or complementary approaches that emphasize disease prevention, in addition to control. Because of the importance of environmental conditions to the presence, reproductions, and survival of vectors, as well as the environmental context for vector-human contact, diseases transmitted by invertebrate vectors are emblematic of the close connection between human health, ecosystems, and socio-economic activities (Campbell-Lendrum & Molyneux, 2005).

An ecosystem approach to preventing communicable diseases considers drivers of risk in terms of the ecological, social, cultural, political, and economic underlying factors of transmission dynamics. Like other health problems, the ecology and transmission of most communicable diseases can be linked to interactions among several factors, such as demographic changes, poverty, urbanisation, deforestation, changes in agriculture modes of production, changed relationships between people and animals, natural resource management and gender differences and cultural patterns. An understanding of the complex interactions among these factors, and their local manifestations and risk factors for disease, require research across current boundaries of scientific disciplines and sectors (Waltner-Toews, 2001; Spiegel et al., 2005; Boischio et al., 2009). The prevention of disease and the prevention of serious harm to livelihoods from disease depend on sound and resilient environments in ecological, social, and economic terms. It is therefore, essential to build multi-sector policy options that target disease prevention (Bazzani & Wiese, 2012). Bringing different people and their contributions together in pursuit of a shared goal is a widely recognised strategy to harness capacity to address complex societal challenges.

Despite major progress in understanding communicable diseases and substantial investments into control, the diseases remain the major public health problems and serious challenges to development. The burden of communicable diseases in Africa is influenced by poverty, rapid and transformative economic development and chronically weak health systems. Under these conditions, innovative approaches are needed to develop and deliver communicable diseases control in more context-adapted, effective and sustainable ways. The lessons learnt from previous efforts provide some guidance toward achieving these innovations: Communicable Disease control needs to be better integrated within highly variable local realities of community livelihoods, environments, and health services. Integrated disease control can be defined as *applied research that explores and creates synergies among environmental, health systems, and community-based approaches to disease control*. It has the potential to tackle root causes of CDs beyond the medical and public health aspects of the disease. Working together across sectors and disciplines to tackle complex interactions between health, environment, and equity is now widely recognised to be beneficial in addressing health and livelihoods.

A number of studies have indicated that an ecohealth is the most appropriate way to address communicable diseases. The approach strives for improved human health and well-being, based on sustainable ecosystems, with more equitable development and less poverty. The ecohealth approach supports systems based, policy-relevant research on the relationships between ecosystems, human livelihoods and health to define, assess, and mitigate priority problems that affect the wellbeing of people and the services provided by ecosystems they depend upon. In seeking to improve human health and well-being while simultaneously maintaining ecosystems and their services, the ecohealth puts forward an approach that requires a holistic framing of health-

environment issues. In doing so, ecosystem and human dimensions along with gender and social equity issues are considered through different disciplines and non-academic knowledge, working together in a trans-disciplinary fashion and at the research-policy interface. Multi-stakeholder participation is encouraged, particularly those from the community and research end-users, including policy-makers.

Conclusion

The new approach to disease control should take into consideration the following:
a) socio-ecological and socio-economic approach as key elements for the risk management of disease;
b) understanding ecological processes (social, cultural, environmental and economic factors) contributing to disease occurrence and persistence at a time of rapid population growth, urbanisation, food system and environmental change;
c) improving specific determination of disease aetiologies and their drivers in poor and vulnerable communities;
d) appropriate policies and health delivery systems (from self - to public good funded services).

Large groups of people continue to be vulnerable to communicable diseases due to poverty, absence of adequate infrastructure, lack of access to health services, and degraded living environments, and these need to be addressed to protect people. Further progress in controlling infectious diseases almost certainly requires some combination of biomedical technologies and social and environmental strategies coordinated among relevant sectors.
Addressing communicable diseases requires multi-sectoral cooperation and strong partnerships.

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Implementation of health and health related policies in Tanzania: success, challenges and lessons learned from health sector reforms

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Abstract: Demand for health care is ever increasing. This is more so in the last three decades. There is population explosion, poverty is on the rise. The lower income groups are more disadvantaged. We have witnessed double burden of diseases and, cross-border epidemics. The dynamics of disease spread in the world have changed greatly contributed by climate change. This has made all nations vulnerable to new diseases, but also to the economic, political and social shocks. Shared vulnerabilities imply shared responsibilities and create a need for strong collective action to protect lives and livelihoods from diseases. In order to meet these challenges we have to undertake health systems and health services delivery reform. We are doing this by necessity but not by choice. How we do these reforms is the key to success. This paper covers on what need to be done and outlines briefs of policies and reform agenda. I will discuss the health policies as anchored on the Vision 2025, the National Strategy for Growth and Reduction of Poverty (NSGRP) and hence the need for reforming the sector. The systemic challenges and available opportunities would also be discussed. It will be our duty to define our role of TPHA now and in the future to serve the communities, working abreast with the government and other stake holders. We need to fix the systemic issues in the sector and influence other sectors to invest in health investments. Have the correct technology and use cost effective ways to prevent and control diseases. We need to 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 BoD. Without more resources allocated to the sector, effective and efficient use, the challenges would remain. We need also to focus on the climate change and associated disasters. The world economy is under recession and new policies are being put in place to respond to the situation including the Global health policies. This is evidenced in the UN reforms and WHO reform agenda. The intention is to have better results for the same investments or less costs for same outcomes. Tanzania is on of the countries under Delivering as One pilot of the UN. Health sector is also supported on DaO. Tanzania health reforms intend to achieve the objectives of the primary health care within the current situation. It is to realign with the changing world and to have better health for all at least cost, well managed health services with special focus to the indigent. Decentralization by Devolution is the best media to deliver the results with communities participating and taking ownership of the Primary Health Care.

Introduction

Demand for health care is ever increasing. This is more so in the last three decades. There is population explosion, poverty is on the rise. The lower income groups are more disadvantaged. We have witnessed double burden of diseases and, cross-border epidemics. The dynamics of disease spread in the world have changed greatly contributed by climate change. This has made all nations vulnerable to new diseases, but also to the economic, political and social shocks.

Shared vulnerabilities imply shared responsibilities and create a need for strong collective action to protect lives and livelihoods from diseases. In order to meet these challenges we have to undertake health systems and health services delivery reform. We are doing this by necessity, not by choice. How we do these reforms is the key to success. This paper covers on what need to be done and outlines briefs of policies and reform agenda. I will discuss the health policies as anchored on the Vision 2025, the National Strategy for Growth and Reduction of Poverty (NSGRP) and hence the need for reforming the sector. The systemic challenges and available opportunities would also be discussed. It will be our duty to define our role of TPHA now and in the future to serve the communities, working abreast with the government and other stakeholders.

Health systems challenges

The systemic challenges are the same in many countries especially those which are impoverished. The human resources is in crisis with less than 3 health professionals to 10,000 of the population. The financing outlay for health is weak. Most of the countries have no financing strategies or such strategies are under development. Most of the investments in health care depend on the government budget which is not enough and is supplemented by out of pocket payments which are very inequitable and at times catastrophic, evidence indicate that, while government spending on health has been on the rise, the reverse trend is observed in SSA {Lu, 2010 #11459}. Much as the essential health package require at least 54 USD per capita (WHO) most of the poor countries spend less than 24 USD per capita both public and private funds. The health Information System is usually weak and unreliable for data and evidence of the information derived from such data base. There is usually under supply of medicines and pharmaceuticals, medical equipment and instruments and characterized by weak infrastructure. As a result, there are poor health services and poor quality of the available care.

The situation is worsened by weak management and leadership at all levels, the information system is not robust enough and the PPP is not yet at the mark.

Rationale for health reforms

The reforms are meant to align with the global health reforms and policies which affect most of the countries especially the poor ones which carry the heaviest disease burden. Other reforms in the world including economic reforms, UN reform agenda, WHO reforms affect the health sector as well. At the national level we have many reforms which are going on in parallel with the health sector policy reforms. Public Service Reform Programme, the Local Government Reform agenda, the education reforms, agricultural reforms and governance reforms all these justify reforms to be accelerated in the health sector. The population is growing while the economy can not meet the needs of all the sectors. The new population (1.7 million annually) needs health care as well. The epidemiological transition has resulted to a double burden of diseases both communicable and non communicable diseases. This is further fueled by changing life styles. The climate change has scaled up disasters of all kinds and especially disease epidemics and floods. The increased public awareness of consumption of health care, the special needs of vulnerable groups has further necessitated reforms in health service delivery at all levels.

We now have many actors on the health arena including; UN organizations, international and local NGO's, and other stake holders. All this require coordination, better alignment and harmonization of their interventions in order to maximize on the efficiency and effective use of the available resources. There is a need for managing for results.

Strategic health reform interventions

The health reform policies and strategies need to ensure *"attainment by all the peoples the highest possible level of health".* This can be achieved by 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 setting norms, standards and targets. Specifically we need to do the following;

To reduce the social and economic burden of communicable diseases affecting health status, combat HIV/AIDS, tuberculosis and malaria, prevent and reduce disease, disability and premature death, address MNCH to reduce morbidity, mortality and improve sexual and reproductive health and care

for the elderly, reduce the health consequences of emergencies, disasters, crises and conflicts, promote health and development, to reduce risk factors associated with use of tobacco, alcohol, drugs and substance abuse, unhealthy diets, and physical inactivity.

Furthermore, is to address the underlying social and economic determinants of health through advocating for behavior change and counseling 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 to 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, informed by reliable and accessible evidence and research (HSS). It is also to ensure improved access, quality and use of medical products and technologies, provide leadership, strengthen governance and foster partnership and collaboration with countries, the United Nations system, and other stakeholders advancing the global health agenda and develop & sustain flexible, learning organization, enabling it to carry out its mandate more efficiently and effectively

What need 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. We need to acquire new knowledge and technology and strengthening good governance and leadership. We also need to influence other sectors to invest in health investments. Use cost effective ways to prevent and control diseases. We need to 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 BoD. Without more resources allocated to the sector, effective and efficient use, the challenges would remain. We need also to focus on the climate change and associated disasters.

In essence we need to implement the myriad international agreements and declarations of which we have subscribed and here is a short list of some of the key ones binding the health sector:

- Abuja-on financing health 15% of the government budget
- Ouagadougou- on PHC revitalization
- Libreville-on the SANA
- Algiers Declaration-on research budget of 2%
- Paris Declaration-on ownership, alignment and harmonization.
- 8 Millennium Development Goals
- And many more others which are key to moving public health forward

Policies and reform agenda

The world economy is under recession and new policies are being put in place to respond to the situation including the Global health policies. This is evidenced in the UN reforms and WHO reform agenda. The intention is to have better results for the same investments or less costs for same outcomes. Tanzania is on of the countries under Delivering as One pilot of the UN. Health sector is also supported on DaO.

Tanzania health reforms transform the roles and responsibilities in the provision and financing of the health care services, in order to ensure a cost-effective use of resources and emphasise priorities towards outcomes rather than inputs. It seeks to achieve the objectives of the primary health care within the current situation. It realign with the changing world and to have better health for all at least cost, well managed health services with special focus to the indigent. Decentralization by

Devolution is the best media to deliver the results with communities participating and taking ownership of the Primary Health Care.

Conclusion and Recommendations

We need 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. Furthermore, we need to advise for better management and leadership of health system foe 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 cohesive PPP engagement, and avoiding polarization of the management and the providers of services. The ethical code need to be revisited and strengthened for more effective professionalism and better services to the users of the services.
We have to take note that, nearly if not all countries in the world, today have challenges in the health services and more specifically due to HRH-Crisis. Time has come to 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 advise on this noble course.

Assessment of patient costs and patient perspectives of Tuberculosis treatment in Mwanza, Tanzania

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Abstract: Clinical trials of new anti-TB drugs with shortened four-month duration are underway. Health systems would benefit from treatment shortening but the perspectives of patients are rarely considered. This mixed-method study compares the costs of current TB treatment in the intensive and continuation phases, and considers whether patients might value shorter regimens. A questionnaire assessing TB patients' expenditures (n=94) was complemented with focus group discussions (n=12) to understand the broader impact of TB treatment, 24 Patient narratives in depth interviews that are purposively selected based on the questionnaire survey based on people who have faced particularly high or particularly low levels of cost and who are from different socioeconomic groups and 08 patients' advocacy in depths interview. Borrowing money (35.1%) and selling property (43.6%) typically occurred during the first 2 months of treatment. All hospital admissions (18.1%) occurred prior to the 5th month of treatment (mean cost=US$73.0). Most of the patients (81%) bought food supplements in the intensive phase, but half of them did not do so in the last 2 months, reducing mean cost from (US$21.5) to (US$12.0). Monthly healthcare expenses in the last 2 months remained US$4.7 higher than before TB illness. In the last 2 months of treatment the total direct average monthly health care expenditure per patient was US$17.3 representing 80% of the 2007 monthly household income. Qualitative analysis confirmed that greater hardship occurred during the intensive phase: loss of earnings coupled with higher medical, transport and food costs; substantial side-effects; fear and some discrimination. Patients were well-informed about treatment duration and adherence and were therefore motivated to complete treatment. In conclusion, initial analyses show the intensive phase is physically, financially and emotionally difficult for many patients. Nevertheless in the last 2 months healthcare expenditure remained very high.

Keywords: Tuberculosis regimen, patient cost, health facilities, Tanzania

Background

One third of the world population is infected with *Mycobacterium tuberculosis* (MTB) and hence at risk of developing active tuberculosis (TB)[1]. Each year 8.8 million patients are newly diagnosed with active TB and 1.6 million patients die of TB globally [1]. Poverty, under nutrition, alcoholism, smoking and HIV infection [2, 3] increase the risk of developing active TB, and may also increase the risk of poor treatment outcomes include mortality [4, 5]. Although effective treatment exists, the duration of treatment is six months for newly diagnosed patients and up to eight months for re-treatment cases. These longer treatment durations may contribute to non-adherence to regimens which could contribute to a higher risk of drug resistance and mortality due to poor drug adherence.

There are multiple influences both on patient adherence to treatment and on the impact that treatment has in their lives. Major factors affecting adherence include poor patient understanding of the disease or treatment requirements, drug side effects, drug resistance, social and economic factors, and health system factors [8]. Studies have documented the economic and psychosocial impact of TB disease and TB treatment on patients' lives, and there is a growing literature on patient perceptions of treatment and quality of life [9]. The link between TB and poverty is recognized and the impact of TB disproportionately affects poor patients at each stage of the disease. The poor are more vulnerable to TB infection and then experience multiple barriers in accessing diagnostic services; the costs relating to (free) treatment are more pronounced for them and they have worse treatment outcomes [10-15].

The link between socio-economic status (SES) and treatment outcomes is still not clearly understood but may be influenced by factors such as income, and unemployment [16, 17]. The interaction is complex, but financial difficulties are common amongst TB patients and have been linked to poor adherence [18, 02]. TB disease and the challenges of daily treatment observation have been found to influence patients' employability and opportunities to work, for some this may involve a choice between continuing treatment and returning to work [18, 20-22]. Although TB treatment itself is usually free, patients are likely to incur costs relating to it. These costs may be experienced at any point along the treatment and care pathway and include direct, indirect and coping costs.

Direct costs are medical expenditures such as administrative charges or consultation fees at health facilities and non-medical costs such as transport, accommodation and subsistence associated with patients and their caregivers attending health facilities. Indirect costs comprise loss of earnings, productivity and other time or opportunity costs associated with seeking health care.

Coping costs are those associated with loans and the sale of assets. The private sector is an important provider of TB services in many high burden countries and in such settings this has a strong impact on direct costs experienced by patients [23]. TB disease and care-seeking may constitute a significant economic burden, leading to loss of 20 to 30% of annual wages among the poor and resulting in some non-poor patients slipping in to poverty [24].

Improving understanding of the economic realities of patients, and their preferences about treatment services and regimens, could help service providers to deliver treatment that is more appropriate and realistic for patients, and give empowered patients the data with which to lobby for changes [25]. The voices of poor TB patients need to be heard in order to address barriers to services in a way that engages policy makers, practitioners and communities [26].

This study aimed to understand and document the impact of current TB treatment regimens on the lives of patients, and thus assessed the potential impact of shorter regimens on patients. By understanding these issues we thought to improve TB care and acceptability of potential shorter TB regimens when they become available.

Methods

Study setting and sample selection

The study was conducted in Mwanza region, Tanzania. The study population included pulmonary TB patients aged 18 years who were living in seven of the eight districts in the region (i.e. Geita, Misungwi, Kwimba, Magu, Ilemela, Nyamagana and Sengerema). Ukerewe district which is an island was excluded because of the anticipated difficult in reaching the TB clinics in the district. Before data collection we contacted both regional and district TB coordinators who gave a list of all TB clinics in the study districts from which we sampled our patients. Patients were selected with appropriate representation from rural and urban areas, from high, median and low cost groups, including those who near (within 2-5 kilometers) and far (beyond 5 kilometers) from the TB clinics, and from different socioeconomic groups.

All patients who were in their 5^{th} or 6^{th} month of treatment or those who had completed treatment within two months were eligible to participate.

Data collection

The data were collected between September 2011 and July 2012 and were derived from focus group discussions (FGDs), a patient costing questionnaire, and In depth interviews (IDI). Locally recruited

and trained research assistants explained the study and obtained informed consent from patients before the interview was commenced. The selection of patients for In depth interviews was done among those who had been involved in the cost questionnaire. Those selected for these in depth interviews were those who had experienced either high or low TB treatment cost from the different social-economic groups (better, poor and very poor).

Data analysis

The In-depths interviews and FGDs were conducted in the Kiswahili language and digitally recorded with permission from the subjects. The recording was 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 09.

The patient cost data were collected by administrating the questionnaire in face-to-face interviews. The study had four data collectors (enumerators). The questionnaire was administered to 113 patients. Most of the patients (83%) were from the preselected list according to the selection criteria. The interviews were conducted at 5 urban and 12 rural health facilities of Mwanza region. Some of the pre-selected patients were not located on the day of the interview, resulting in the substitution of these patients for others who were more readily available. Some of the substituted patients did not match the inclusion criteria and were subsequently excluded from the data set, resulting in the final sample of 94 patients and analysis was conducted in Stata version 10.

Ethical Consideration

Ethical clearance was obtained from the Tanzania from the national ethics committee at the National Institute for Medical Research and permission to conduct the study was provided by regional and district administrative secretaries. Verbal and written consent was sought from all patients before they were enrolled into the study. Confidentiality was strictly maintained for study subjects.

Results

Table 1: Patient Characteristics

Characteristic	**% of total of Respondents**
Total Sample	94(100)
Male	57(61)
Female	37(39)
Mean Age(SD)	39.0
Pulmonary smear + TB	74(79)
Pulmonary smear – TB	20(21)
EP – TB	0
Number of retreatment Patients	17(18)
Return after defaulter	3(3)
Rural	66(70)
Urban	28(30)
Close(<1km) to Facility	N/A
Father(1-5km) to facility	N/A
Patients interviewed from Provisional Hospital	0(0)
District Hospital	57(61)
Health Centre	23(24)
Dispensaries	14(15)
Public Facility	66(70)
FBO/Mission Facility	20(21)

NGOs Facility	0(0)
Private	8(9)
Number with treatment interruption (month of interruption)	1(2month)
HIV +	52(55.3)
HIV -	42(44.7)
HIV Status Unknown	-

Sample characteristics

Sample was fairly representative of the national population and TB statistics, with 61% males (versus 63% reported by the NTP), 70% rural (versus 76% reported [66]). There are a variety of estimates of the proportion of poor in the 30 Tanzanian population and no reliable data on the proportion of poor among TB patients. According to the DHS there were ~20% of Mwanza's residents in each national income quintile [67], so we felt confident in choosing Mwanza as a region with representative poverty levels; facilities were also chosen with consideration of poverty levels in the surrounding area. For the study sample, we did calculate an SES index.

Ideally, we could have compared the median SES values from this study and from the 2009 Demographic and Household Survey and thus assessed whether our sampling was nationally representative with respect to poverty. However, these SES indices were not comparable, as they were calculated based on 11 (this study) or >60 (DHS) assets, respectively. Therefore, for the purpose of analysis, we simply assigned a "low SES" and "higher SES" status to patients who were respectively below and above the study median.

Table 2: Socioeconomic indicators

Indicator	**# Rural (%) N= 66**	**# Urban (%) N = 28**	**# Total (%) N= 94**
Electricity Supply			
Own	3(5)	3(11)	6(6)
Shared	4(6)	12(43)	16(17)
None	59(89)	13(46)	72(77)
Source of Drinking water			
Rain Water	1(2)	0(0)	1(1)
Lake/pond/dam/river	16(24)	2(7)	18(19)
Public well	26(39)	7(25)	33(35)
Private well/bored hole	3(5)	1(40)	4(4)
Piped water	20(30)	18(64)	38(40)
# who own the residence	38(58)	12(43)	50(53)
Own standard assets			
Mobile phones	30(46)	24(86)	54(57)
Television	5(8)	8(27)	13(14)
Bicycle	43(65)	10(36)	53(56)
Land	35(53)	11(39)	46(49)
Livestock	19(29)	3(11)	22(23)

Rural versus urban differences are clear from these data. Rural patients were less likely than urban patients to have an electricity supply (11% vs 54%), piped water (30% vs 64%), mobile phone (46% vs 86%) or TV (8% vs 27%). By contrast, rural patients were more likely than urban patients to have a bicycle (65% vs 36%), land (53% vs 39%) and livestock (29% vs 11%).

Table 3: Education Level

Variable	**Patients' education (%)**	**Primary income earner (%)**	**Head of the Household (%)**

Illiterate	16(17)	17(18)	18(19)
Primary	68(72)	64(68)	62(66)
Secondary	8(8)	10(11)	10(11)
Graduate/Certificate	2(2)	3(3)	3(3)
Other	0(0)	0(0)	1(1)

The majority (66-72%) of the patients, primary income earners, and heads of households received only primary education. For the remaining people in each category, illiteracy was more frequent than secondary or higher education.

Patients Cost

The mean total cost per trip (including food) in 94 patients was TZS 3,745.00 (SD=4,932.3) . The mean cost was more than double for rural patients compared to urban patients. This may be compensated by rural patients choosing to travel less frequently. The cost distribution for patients in urban areas was approximately normal, but that was not the case in the distribution of costs of a single trip in rural patients, where distribution was right skewed with 5 patients incurring costs over TZS 10,000 with a maximum cost of TZS 36,500

Apart from travel costs, other out-of-pocket direct health care costs include the administrative charges associated with medical tests and investigations. Only four out of 94 respondents said they had some form of insurance, but none of the patients had received any reimbursement. During the last two months of treatment, 34 (36.2%) out of 94 patients went to the health care facility for additional tests related to TB. The frequency of visits ranged from 1 (15 patients) and 2 (11 patients) to 3 (5 patients) and 4 (3 patients) (total of 64 visits). All of these patients may have been subject to transport costs for these visits but, once at the health facility, there were no fees paid by 29 (85.3%) out of these 34 patients. The size of fees paid by the remaining 5 patients ranged from TZS 500 to TZS 15,000.

In addition, fees were paid by two patients for X-ray examinations in the amount of TZS 10,000 and TZS 15,000. For the total sample of 94 patients the mean cost of test fees per patient was TZS 3,079, but there was a considerable range as some patients had to pay for multiple round trips beyond their usual visits to pick up drugs (minimum is one trip, no other costs TZS 20,362, the maximum is TZS 91,086 for the patient who paid for X-ray and sputum test (15,000 each time) and travelled 3 times.)

More than half of the patients (52 and 55; 56% and 58%) had a supporter accompanying them to collect drugs in the first and the last two months of treatment, respectively. A large majority (47 of the 55 patients; 86%) indicated that they were too ill to travel alone. Other reasons for a need of a guardian/supporter included distance (1 patient), security (1 patient), administrative barriers (2 patients), treatment requirement (1 patient) and a personal desire of a guardian (1 patient).

The remaining patients did not indicate any particular reason for having a supporter accompanying them. The number of trips that were undertaken by patients in the company of the guardian did not change much between the first and the last 2 months of treatment. On average, there were 4.29 (SD=2.5) accompanied trips in the first 2 months and 4.22 (SD=2.5) accompanied trips in the last 2 months. Only 5 (9%) out of 55 supporters had paid employment and might have lost some earnings. The mean amount of lost earnings was 4,099.00 per working supporter/guardian. 52 patients answered questions about the frequency of accompanied trips for the first and the last two months, cost of transport, food and accommodation for the guardian. Assuming that the costs of transport and food per trip did not change over the period

of treatment, the guardian costs were on average TZS 29,704 per patient in the first two months and TZS 32,530 in the most recent two months.

Eighteen patients (19%) were hospitalized for their TB illness. Out of this number, 5 patients (5%) were hospitalized prior to treatment, all of whom had more than one hospital admission in the subsequent first to fourth months of treatment. A total of twelve patients (13%) were hospitalized during the first 2 months of treatment; one patient (1%) was hospitalized during the 3rd and 4th months of treatment and no patients were hospitalized during the last 2 months of treatment. The length of a hospital stay ranged from 3 to 30 days. Seventeen patients answered the questions about cost of hospitalization. The total cost of the most recent hospital stay included administration costs, linen, food, return transport, drugs and tests and ranged from 0 (2 patients) to TZS 394,000.

The mean total personal cost – plus the costs incurred by visitors and friends – for the 17 patients who provided the answers on hospitalization costs was TZS 310,671. Ten (53%) of the hospitalized patients had a relative staying with them at the hospital. Five patients indicated that there was no associated cost while other relatives paid for their food, transport and also had faced some lost earnings while caring for the hospitalized patients.

Most patients (79; 84%) bought supplements to their diet at some time during TB treatment. The supplements included fruits (47; 50%), drinks (including milk) (27; 29%) and vitamins (5; 6%). No patients indicated that they bought meat or other medicines for their TB illness. However, the number of patients who bought supplements during the first 2 months of treatment (76; 81%) was almost 3 times higher than the number of patients who bought supplements during the most recent two months of treatment (30; 32%). Mean cost of supplements over the last month when the supplement were bought was 27,550 (doubled to 55,100 for Table 21, which covers 2 months) and ranged from 0 to 300,000, representing a large variation between patients. It was assumed that any patient buying food supplements in the first two months spent at least as much per patient as was spent in the most recent two months However it appears that although more patients bought supplements in the first two months, the patients who spent less were also the ones who stopped buying supplements in the last two months which may explain the difference in average sum spent on supplements in the first and the last two months of treatment.

According to the medical records some patients had HIV and other chronic diseases. This is confirmed by the self-reported data from the patient cost questionnaire: 49 patients (52%) stated that they are HIV positive and one patient (1.1%) had another chronic disease in addition to HIV and TB. All patients with concomitant HIV diagnosis took antiretroviral drugs. Only 6 (6.4%) out of 50 patients reported incurring additional costs associated with HIV. Mean additional cost of a chronic illness over two last months was TZS 19,800 (SD=20,501). However, the nature of the lifelong disease makes it difficult to associate HIV related costs with costs incurred by TB patients; therefore, these costs were excluded from the total mean cost per patient.

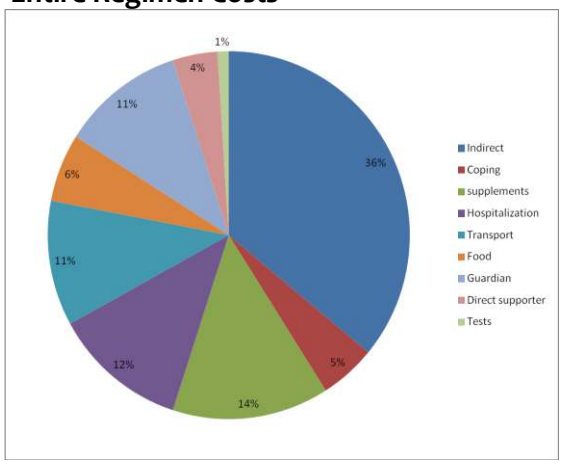
Coping costs The total number of patients who borrowed money due to TB illness was 34 (36.2%). Most borrowed from family members (14; 41%) or neighbors'/friends (17; 50%), and they borrowed a mean amount of TZS 81,400 (median: TZS 45,000). Only five of the 32 patients (16%) were paying interest rates, which ranged from less than 5% per month (one patient) to between 5% to 10% per month (4 patients); the remainder were paying no interest (2 patients) or were not expected to pay back the loan (27 patients; 79%). Thirty of the patients (88%) borrowed money in the first 2 months of treatment; only one patient borrowed money for the first time in the most recent two months of treatment, but he was not expected to repay the loan. The sum borrowed

ranged from 10,000 to 350,000 with a median of 45,000 in the first two months. The sum borrowed in the last two months was 8,000 for one patient and 200,000 for another with a median of 104,000.

Almost half of the patients (44; 47%) sold some assets to cover expenses associated with TB illness; for these 44 patients, the average market value of all assets sold was TZS 189,118, and the sale price was on average TZS 164,705. Thirty (71%) out of 44 patients who sold their assets to cover the cost of TB illness sold them at a loss in comparison to the estimated market value. The mean loss was TZS 37,772 (SD= 51,396), close to the median value of 20,000. However, 13 patients (30%) did not incur any loss at the sale of the assets, Most of the 44 patients (39; 88%) sold the assets in the first 2 months of treatment.

The questionnaire included a number of questions about the current and pre-TB employment status of the patients, periods of work termination due to TB, and the associated change in earnings. Questions 71-85 were used to estimate loss of productivity (indirect cost) due to TB illness. Out of the 94 patients, 82 (87%), including those whose main occupation was housework, stated that they worked throughout the year preceding TB illness; 9 (10%) had only seasonal work and 3 (3%) were day labourers or had an "other" occupation (Q79). Almost half of the patients (45; 48%) stated that they had to change jobs when they became ill with TB and 79 (84%) stopped going to work or doing housework due to TB illness.

Entire Regimen Costs



Patients' profile

The qualitative data comprised twenty four KII respondents and seventy five FGD participants spread across 12 group discussions. The selection criteria represented a range of income groups and patients who travelled various distances for their treatment. Observation by the research team (during data collection and analysis) suggests that despite these criteria they could largely be considered 'poor' and participants often felt they lived far from their health service provider. The educational level of the participants was low and many (particularly women) were illiterate; some were unable to speak Swahili fluently and responded to questions in their local language. Very few participants were engaged in formal wage employment. Agriculture (sometimes including raising livestock) was important for the livelihood of these participants, either purely as subsistence, or through the marketing of surplus. Many appeared to have no disposable income to speak of and often relied on credit from relatives or traders. One well-educated, employed participant stood out as an exception: she described her health insurance package and knowledge of employment law with regards sick leave. One FGD took place with male inmates in a prison. The researchers were unable to recruit the selected Tanzanian patients who lived more

than five kilometres ('far') from the health facility where they received treatment, but this group is well represented in the FGDs in which forty-two out of seventy-five FGD participants lived 'far'. Sixteen of the interview respondents lived a medium distance of between two and five kilometres from the health facility.

The relatively small distances that participants covered constituted a considerable challenge for this group, a great many of whom lacked the resources to access public or private transport. The participants from KIIs and FGDs were unanimous in their acceptance of the value of conventional medicine, although this was often in conjunction with traditional beliefs and a conviction of the value of traditional medical practitioners and 'witch doctors'. Some community members apparently believed that those with TB symptoms were victims of witchcraft. Some participants expressed the importance of praying and help from God as an important part of their lives, although specific churches or religions were not mentioned.

Pre-treatment health seeking and delays in diagnosis

Many patients seemed to have started their treatment late due to different reasons. Some patients delayed because they first consulted traditional healers after failing to know what they were suffering from. Other patients delayed because of poor economic situation, they were unable to go to the hospital for medical tests since they had no money for registration and diagnosis. Thus, decision to seek treatment come after patients became very sick. Also delay happened due some patients stayed far away from health facilities which they could go to for TB check-up. One in depth interview patient said *"[….] I think that depending on one's understanding about where the service will be obtained according to his/her problem, some people do go to the health centre, others to the shops, and others to traditional healers…." [IDI # 11041602].* One patient from Nzera health center said: *"[……..] I was coughing regularly and seriously finally I was tired, I used various medicines but coughing did not stop, until I decided to come to the hospital for test while the chest was still paining and cough was so serious that I could cough sputum. Then after the diagnosis they gave me the drugs for only relief……"*[FGD Female, Health Centre].

Patients were taken from private facilities to the government health facilities (by relatives/friends), and most patients decided to go there on their own after coughing blood sputum. Another patient from the same place (Health Centre) , said: "*I went to the private hospital for diagnosis, after the medical test, I was treated and felt ok but it did not take time before I started feeling sick again. When my uncle came he told me to go to the hospital and specifically Geita hospital. However, other people advised me to go to the health centre first for the medical test, so I agreed and decided to come to the doctor. He examined my sputum, and found that it was TB [……]."[FGD Male, Health Centre].*

Women described some unique challenges, and generally their testimonies and explanations about their pathways to diagnosis showed more complicated experiences than those of men. Women appeared to describe more experiences of misdiagnosis, but also were limited by underlying restrictions in their lives, particularly if they lived in remote areas. Women talked more about experiences with traditional medicine, and this was not always of their own volition. It also seems that, as women had less autonomy in the household, they would sometimes need to seek permission or funds for transport before they could go to a health facility and their male partners and relatives did not necessarily take their symptoms seriously.

[…..] He [her brother] wanted to bring me orange and grape juice but I said 'no, I don't want them, what I want is to go to test because I am feeling pains in the chest'…Let me say that I stayed at home for about one year with pains in the chest. (Woman, Hospital FGD)

Treatment knowledge

Almost all patients were aware of the treatment duration, which for most of these patients was six months. Most had received this information from their doctors or 'medical attendants' and it had been reinforced at other points during treatment and from their hospital '*cards*'. A small minority had heard it from acquaintances or relatives that had TB previously. Only one patient did not know the treatment duration, and said that she had not been told. A few respondents remembered that they had been told the duration of treatment was dependent on '*if the bacteria are finished*' and that they could expect longer treatment if this was not yet the case. Others recalled the explanation that they would have two '*rounds*' of medicine, first for two months and then a second round of four months.

Opinion of TB services

Participants of FGDs and KIIs rarely criticised the services that they received. Staff and services at all levels were not considered as excellent, but were seen as good, not bad or satisfactory by almost everyone. Young male respondents seemed more likely to describe a negative impact on their lives as a result of restrictions during TB treatment, such as abstaining from smoking and alcohol, frequent trips to report to the health centre and regular medicine timing. The patients appeared to associate the service provider with the fact that they believed they were being cured by TB, and this was therefore positive.

Perceptions of side effects and health status during treatment

Approximately all patients argued that the TB drugs especially *during the first two months* caused them some adverse or side effects such as leg pain, nausea, weakness of the body especially in the joints, feeling hungry, and rashes. *"[…….]The biggest problem was during the first two months because, first of all when I started getting treatment those drugs affected me, I lost most of my strength although I had some little strength but I lost most of my time…..". [FGD, Female].* Likewise, most of supports/advocacy patient said that the problem of drugs seemed to be serious at first two months of treatment. *"[……] It is just leg pains especially at the joints; in some patients their eyes do change to yellow……"* And *"….Yes, there is a certain period when it can erupt just like someone who has been burnt with fire. Yes, those are the adverse effects, the eyes become yellow and you discharge yellow urine…." [IDI, Advocacy Female].*

On the other side at the middle and towards the end of treatment the drugs seemed to have few side effects. In this regards, supporters and advocacy didn't get much complain from patients about those medication after the first two months of treatment. Most patients complained about the first line pills. They enjoyed taking small pills which they start taking from middle line to last line. *"[……]But afterwards when we change them after two months when we give them the small tablets they… appear that they like them most. Even at the end, if you tell someone that the tablets are finished, treatment is over, they somehow don't believe if the tablets are finished, they only want to continue taking medicine."[IDI Advocacy Female, hospital]*

Views about reducing treatment duration from six to four months

The majority of respondents (both patients and supporter/advocacy representatives) revealed that changes in TB medication could help patients to finish the full dose of TB tuberculosis. Both patients and health care providers acknowledged that if TB medication will be reduced from six months to four months this will be a big improvement. This was perceived so due to the fact that it will take a shorter time to finish treatment and allow patients to return back to economic activities such as farming much earlier. *"[……] First of all it would help the patient; like I said at the beginning to get motivation that she/he will finish her/his treatment earlier" [IDI Geita Advocacy]. " For example the question which you asked, I would like four months TB treatment if the period would have been shortened…people can take the drugs for four months rather than six*

months in order to avoid some annoyance "[IDI Katoro, Supporter]. "Therefore I am thanking you if you will reach that aim it will help the community very much to use drugs for tuberculosis for a short period and people will have time to continue with their activities to build the nation."[IDI, Geita, Advocacy]. Even though most of supporters and advocacy representatives supported the introduction of four months TB treatment, some respondents showed doubts and worries on four months treatment which will have a lot of side effects.*"[……]Then it is better those six months which don't have annoyances rather than four months which have annoyance." [IDI, Sengerema, Supporter].*

Costs associated with treatment

Patients had not paid for TB services or drugs and some felt that they had not incurred any costs at all as a result of their TB treatment. In reality patients incur costs when they present to hospital for diagnosis, when their file is opened and costs of getting to the health facilities for collection of drugs over six months could therefore be an important concern to patients who are poor, or live far from health facilities. Patients receiving drugs from rural dispensaries were sometimes required to visit more distant facilities for follow up tests.

[……] Generally I know that the treatment is free, but when he was admitted before confirmation that was TB, we paid all the cost, and when he was shifted to Sekotoure hospital also we paid the money. But after the diagnostic showed that it was TB, we started getting the service free. (Patient supporter, Hospital interview 602)

Paying someone to provide bicycle transport was quite common, as was paying for the transport of the DOT supervisor or other family member to go to collect the medication by minibus or motorcycle. Costs for transport appeared to range from 500 (bicycle) to over 30,000 (motorcycle) Shillings, for the round trip. Costs for the participants experiencing drug stock-outs were noted as a particular problem. Several participants described had they found it difficult to travel to the health facility so had moved their accommodation, several of these stayed with relatives who were closer to their treatment facility, *[……] They told me that since I am living far it is better to get the drugs here, because there was my son living here close to the health facility]. Therefore I moved here to my son.* (Man, Health Centre FGD)

[……] I had my place, but I had to leave and went back to my younger brother. I lived there and my Brother told me that I shall live there until my condition comes to be ok. (Man, Hospital FGD)

Food costs on clinic days were also occasionally mentioned by patients who had some distance to travel, but these food costs appeared much less significant to them than the additional food costs required in order to restore their strength whilst on treatment. Some patients ate only once a day; others ate twice. Consuming sufficient, good quality food (particularly fruit) was well recognized by patients as an essential part of their recovery and also a major challenge.

Preferences relating to drug presentation

The number of pills appeared to be less of a concern than their size. Although size appears to have been a legitimate concern, there may also have been a tendency to conflate two issues both present in the intensive phase: large pill size; and a high level of side effects and general sickness. One woman described how she didn't have any preference for few or many pills, only that she would rather not take the big 'scary' drugs, so more small drugs would be marginally better than few big ones.

[……]The tablets from the starting period, that is when they disturbed us, but these ones of the ending period, we use them easily. (Male inmate, Butimba prison FGD)

Community stigma to the TB patients

Stigmatization to the TB patients seemed to be a common case to many patients. This is because first, many people associate TB with HIV/AIDS and others know that TB can be transmitted from the patient to another person through air. In most cases, TB patients were separated from other members in the family. But the degree of stigmatization varied from one patient to another. One patient said *"[……] when I started becoming sick, the situation changed drastically, I became slimy, others said that it was HIV/AIDS, so they stigmatized me and as you know I was coughing seriously……"* and *"……Yes, because on the other hand I had…even my other friends we had to segregate ourselves for fear of being infected, sometimes even the people at home….."[FGD Female, Health centre].* These problems occurred during the first two months; *"…..sometimes even the utensils, sometimes you eat using your own utensils, I mean family members segregate you [FGD Female, Health centre].*

Patients' knowledge about TB drugs names

The entire TB patient population demonstrated lack of knowledge on the names of the drugs they were taking, but they all admitted that they know the drugs by their structure and color, and most of them were able to differentiate them. Here the problem was that, the names of these drugs are in a complex language to them (medical language) as one patient from Butimba hospital said: *"……I don't know their names but I can differentiate them by size, structure, and color. No, I don't know them by their names……" [FGD Male, Butimba Health centre]* Occasionally respondents experienced side effects, but could endure them, *'[…] these big ones, when you are starting they are good, but they intoxicate' (*Man, Hosp, FGD). Another woman explained how she needed to continue to work when she initiated treatment so that she had enough money for food and extra fruit, because her husband had isolated her, *[……] if you lie down you cannot get all those things you need, so you must get up even if you are weak and don't have energy*. (Woman, Igoma, FGD)

Patients views on ideal way to treat TB

The study revealed that both patients and supporters agreed that the ideal way to treat TB is to use oral TB medications rather than injections. *"[……] I think a drug is better than injection.…."* [IDI, Supporter, Geita]. Patients also agreed on the idea of shortening the duration of the TB treatment to four months or less as the ideal way to treat TB, though they seemed to be afraid of side effects.

Directly observed therapy (DOT) visits

DOT treatment supporters' visit to their patients was not a problem to all patients. All patients were happy to have them, and their visit seemed to be more important to them. *"[……]Actually it didn't mess up anything because a visitor coming to see how my condition was progressing […….]" [FGD Female Health Centre]*

Discussion

The treatment and supervision structure in Tanzania required that patients travel for treatment once a week in the intensive phase and once a fortnight in the continuation phase. Nearly all Tanzanian patients had a treatment supporter at home and so they incurred no daily travel expenses. The delivery system was flexible to patients' needs and this had an impact on costs, for example, there was flexibility in the frequency that they were required to collect their drugs, and by the option to delegate medicine collection to a patient supporter. It was not uncommon for patients to choose to pick up their drugs frequently (on a weekly – and sometimes daily – basis) even in the continuation phase.

Burden on the poor and rural poor

There were a higher proportion of poor patients residing in rural areas than in the urban areas. The poor spent relatively and absolutely more on travel as patients in rural areas and generally travelled further to health facilities, therefore the cost of travel to them was higher for those living in rural areas than in urban areas, there is therefore a disproportionate burden on poor patients. In relation to household income the poor spent more on nutritional supplements, and concerns about nutrition and the impact of poor nutrition on side effects were a cause of considerable anxiety. Results showed the average cost of the supplements were higher in the last two months than in the first two months; which is counterintuitive. It is likely to reflect that poorer patients bought only the minimum supplements and spent less on them in the first two months and that they also stopped buying them earlier than the wealthier patients.

Income loss during TB treatment

In the present study we revealed that TB patients acknowledge that during TB treatment they stop working and this poses a significant economic burden on the whole household. Further losses are incurred during travels to health facilities and if they have to shift to areas close to TB clinics in order to access treatment. This is similar to the study conducted in Dare s salaam, Tanzania where transport and financial loss related to inability to work were ranked high contributing about two thirds of loss of income to households during TB treatment [13]. Although this was a qualitative study and thus did not quantify the levels of these costs, our interviewees suggested that losses due to these costs were considerable. These findings are of great importance to TB care since loss of income could actually influence health seeking behavior and adherence of TB treatment. Thus patients who are poor could opt to seek care from traditional healers who might be living closer to patients. Similarly, those who can afford to attend to modern treatment facilities for TB diagnosis might not be able to travel frequently to TB clinics to collect drugs, and they might not afford good and nutritious food which could help reduce drugs side effects leading to poor adherence of TB treatment. Thus, it essential that TB control programmes design strategies to mitigate loss of income during TB treatment in order to enhance care and consequently improve TB treatment outcomes.

Costs related to the treatment

Majority of patients are treated according to national guidelines/model of service provision. In the first two months of treatment the majority of patients (77%) were travelling to the health facility to pick up drugs once a week as stated in the National guidelines. In the last two months of treatment, 35% continued travelling to the facility once a week, while another 32 (34%) shifted to fortnightly visits to the facility. Almost half of the total number of patients travelled to the facility on the fortnightly basis in the continuation phase. Patients Costs between the first 2 months and the last 2 months was substantial (from $US23 to $US13). About 50% of patients had a guardian accompanying them to a health care facility in both the first and the last two months and the most frequent reason for the need of a guardian was "too sick to travel alone".

Health seeking behavior

The findings show that TB patients go late to TB clinics for diagnosis and care in Mwanza is similar to results from the study in Bali Indonesia. In this study, Watkins and Plant reported that in the Island of Bali, people believed that TB is caused by magic, spirits or heredity, so they didn't need to attend the health facilities for diagnosis and treatment [9], although we did not enquire our patients' beliefs on causative agents, the fact that they delayed in seeking modern health care suggest that they may have believed that the causal agents are not biological. Similarly, our findings are similar to other studies in rural settings in Tanzania [10], but not in urban settings where most people seem to be aware of TB and seek TB care promptly from hospitals [11]. Furthermore, this study suggests that people with TB are stigmatized for fear of transmitting the diseases to others and for the fear that they might be HIV infected, this may delay seeking of care

and also lead to poor adherence of TB treatment [12]. Thus, TB education campaigns among dwellers of this region are needed to increase the uptake of TB services.

Limitations

In practice, the team of interviewers had only a limited opportunity to travel to the selected sites and in order to obtain the required number of respondents some substitutions of the pre-selected patients for those who were more readily available took place. The attempt was made to match the substituted patients by gender and place of residence, and in some instances that was achieved at the expense of the other selection criteria, such as duration of time since the beginning of treatment so the interviewees would be at least in the 4th month of treatment but no more than 2 months after completion of treatment.

Although the total number of interviewees exceeded the target sample size of 100 to 113 , the sample size for the analysis was slightly less than 100 (94 in 113) due to the substituted patients who were interviewed on the site during the teams' scheduled visit not necessarily meeting the selection criteria. It was not possible to estimate the time of returning to work after full or partial recovery from TB symptoms, as the productivity loss was estimated by comparing earnings/production before TB illness with the level of productivity at the time of interview.

Conclusion

In conclusion, TB treatment is physically, emotionally, and financially difficult for many patients. In addition treatment Cost is much higher in Intensive phase rather than in Continuation phase. Studies on patients and health care costs incurred during TB care are needed to set the stage for National TB programme to design strategies to mitigate these and help improve TB care and outcomes.

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Promotion of local areas used by passengers for natural call (kuchimba dawa) along the highways to reliable hygienic services: Lugono experience in Mvomero District, Morogoro Region

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Introduction

In the developed countries centers used for natural call (kuchimba dawa) along the highways are known as rest areas. The standard of rest areas and up keep facilities vary from one place to another, some are commercial and other are free of charge as its managed by individuals or responsible authorities like municipalities. *In accordance with Federal law no 257 dated November 8 2007, highways service facilities are building structure installation or other object designed to provide services for road users along the highways transport root. The service includes shops, toilets, showers laundry, car wash, technical services and first AID services for travelers.*

In the United state rest areas are non commercial providing the minimal packing, some may have kiosks vending machines and toilets for long safari travels. In UK it is called motor way services and in Finland the rest areas are constructed and maintained by local municipality.
The local Map and sanitary services (rest area) designed mostly for voyages, the recommended distance from one rest area to another is 20 km (*Rest implementation network kAlbatransportation 2004-03-16) AFRICAN REGION*

Tanzania doesn't have adequate public latrines for passengers along the highways. Travelers depend on facilities at private hotels and guest-houses which are costly and inadequate to serve local residents, customers and hundreds of passenger's on transit. Public Health Act no 2009 section 174state that ,person shall not have natural call in area other than toilets built for that purposes. Lack or inadequate public latrines cause serious inconveniences to passengers that lead them to relieve themselves in the open/bushes.

Lack of latrines not only cause inconveniences to passengers passing by but also to communities around as they are exposed to the remaining stench and germs. When it rains there is a high possibility of contaminating all water sources. Passengers passing through these stations may get infections such as diarrhea diseases due to lack of water for hand washing and other unhygienic practices. Social cultural aspect is not left behind, privacy lacks as such male and women or women and children share the same places. Apart from poor sanitation practices there is a possibility of passengers been bitten by a snakes and it may take too long before they access medication

Despite the efforts taken by Regional and Mvomero District council health management to stop unhygienic practices at Lugano center, there is an increase number of buses and lorries ranging from 10 to15 in a day that stop at the center. An average of 15 to 20 passengers from each vehicle goes for natural call in the bush. The center doesn't' have important basic services such as toilets and water supply, It was noted that in 2010 the area had cholera outbreak which called for Government through MOHSW to intervene the emergency.
The sanitation of Lugono was so poor that the Government attempted to close the place twice but failed due to complains from the community that their poverty and therefore the activities at centre excelled for their living. Despite Measures and progress made to improve water and sanitation in Mvomero District council the council still facing challenges of lack of toilets along high ways. This indicates that people are living in a fiscally-contaminated environment. The state of many latrines in rural. Other factors influencing increases of epidemics and diarrhea diseases include inadequate water supplies drinking unsafe water and poor personal hygiene. Water sauces are contaminated by

community themselves and some by sewage system. Apart form the fact that ministry of water are disinfecting water but most of these services are provided in the urban setting. One of the duties of public health officers is water sampling and testing, this services has not be given adequate attention as a results only few councils test water. The exercise of testing water is conducted when there is epidemic only. However, law enforcement is of paramount importance but it has not been given adequate attention. Although the government has put in place various enforcements in national and sectors such regulation policies and by laws are not adequately practiced. It is for this reason that there is a need to establish a programme for strengthening the implementation of sanitation in urban, sub-urban and rural areas.

The main objective of this study was to assess and promote Lugono local center in Morogoro used for Natural call (Kuchimba dawa)by highways travel ours in providing sustainable Quality and hygienic basic social services. Specifically, the study aimed (i) to assess the status of hygienic health practices at Lugono Center; (ii) to facilitate community members to identify gaps, develop strategies to improve and implement strategies for improving sanitation at Lugono; (iii) to enhance community to participate in improving/ promoting the center to provide safe and quality hygienic basic social services to the vendors, surrounding community and on transit passengers; and (iv) to conduct meet inspection prior supply so as to prevent transmission of diseases

This study is significant on the strength of the following observations. Efforts have been made by Mvomero District Council to stop behavior of passengers from attending natural call in the bush, without success, Cholera epidemic have been reported in the year 2010 ,a total of 11 cholera case ware reported and controlled . There have been an increase stops over of buses and number of passengers who go for Natural call in the bush .The center doesn't have basic need for hygiene services such as toilet, water and measure for safety food. The responsible council have been tried to close the center but many conflict occurred as the community claim to use the centre as source of their income. The study is significant in that it will reveal challenges opportunity and strength available to the community and set strategies for improvement The findings also will help to advise the government particularly Mvomero Council to contribute their effort in term of material and human resources to those areas which could not done by community . The study will be part of implementation of a vision of health policy that is to improve the health and well being of communities. Finally the success of intervention can be replicated to other areas with similar problems.

METHODOLOGY

Experience from implementation of Quality improvement principles from University Research Co (URC) in Improving HIV/AIDS Care and Treatment in Morogoro were replicated to improve sanitation and hygiene.

What is quality Improvement? Quality Improvement can be defined as systematic process of assessing performance of health system and its services, identifying gaps and causes, and introducing measures to improve quality and monitor the implementation process PDSA (Plan, Do, Study and Act) strategy that is to define the improvement Objective, conduct Analysis of the problem to identify the gape of services , meeting the client need and expectation give feed back to the targeted community.

Plan: Health care teams plan for a change.

Their plan addresses the following issues:

- what change do they want to test in this cycle;
- what questions need to be answered about the change;
- who will be involved;

- where will the plan be implemented;
- on what time scale;
- What data need to be collected?

Do: Health care teams test the change on a small scale.
- They document problems and unexpected observations,
- Begin analysis of data collected.

Study: Health care teams observe the results,
- Complete an analysis of the data,
- compare results with initial goals and
- Summarize what they have learnt.

Act: Health care teams make decisions which may be either of the following:
- Abandoning the change due to undesirable results
- Refining the change by going back to the planning stage
- Implementing the change and institutionalize

Engaging in appropriate methodologies to close the gap between current and expected level of quality

Baseline survey: Regional and District council Health officers conducted base line survey to gather information on ongoing practices for hygiene at the center the, base line information's focused in knowing average total number of buses stop at Lugono in a day and average number of passengers goes in the bush for natural call.

Data Collection Methods

In-depth interview and observations: In order to capture in formations from the Lugono center a 5 days observations of ongoing service was conducted. The site was visited once a week to observe number of buses stops and also those who go for Natural call in the bush, see annex one.

Community and leaders Involvement and participation: All targeted community at Lugono were involved in identifying the risks, analysis of their problems to understand the gaps, available opportunity for improvement weakness and possible solutions Council, ward and village leaders were sensitized about the problems identification and the importance of bringing change at Lugono centre. District Council Management Team ware involved to strengthen the political commitment.

Situation Before the Intervention

Initial assessment done in February 2012 shows that, the situation in term of sanitation and availability of basic need such as toilets, from water supply and food management were in pathetic condition. Identification of problems and gaps at the beginning was important part in the process of Quality improvement. The following are the information's and pictures showing the preliminary situation. The identified key gapes include;

- Unhygienic environment, utensils and dirty food vendors
- Lack of latrines
- Lack of water for hand washing and drinking
- Eating unsafe meat slaughtered in the bush the same place where people go for natural calls, also uninspected
- Lack of privacy (ladies and children going the same place)
- Food vendors with uncovered food running to cars looking for customers which may lead to accidents
- Following are the pictures showing the situation before improvement

Waste disposal and pest control should be handled and disposed in a manner to avoid contamination of food, water and environment. In particular, access to food waste by pests (insects and rodents) and animals (dogs and cats) should be avoided by keeping surroundings clean all the time.

Observations also showed that food was placed haphazardly on the floor/ground during preparation and even when they were serving their customers. There were a few stressors in use but most of the utensils used were put on the floor. It is known that the floor of any house, however clean it may be, it bears some micro-organisms that are harmful to health.

- Community indentified opportunities and developed plan for improving the quality of their services, however, orientation training for organized groups ware conducted to show all the steps required toward the r improvement.
- Technical resource officers were appointed by Council Authority to participate and continue supporting the improvement process (veterinary doctor, land officer, health officers and Planning officer).
- Conduct meet inspection
  Inspection, both ant mortem and carcass were implemented by vet nary Doctor every day prior selling of the meet at Lugono

Inspection of Goat Meet After the Intervention

Inspection of goat meat started from 04/9/2012 to 30/10/2012 The main purpose of this inspection was to ensure that the meat which is used by various business people and passengers is safe compared with the previous services provided Total goats inspected per day is about 12 to 16 .A total of 660 goat slaughtered from September to October

Monitoring and supervision: Two health officers were nominated and assigned to work at the center daily and submit weekly performance report to the council and regional management.

Results

From February to September 2012, latrine with 8 stalls was constructed and now used by passengers. The second latrine with 10 stalls is under construction by youth organization known as TWIKALEWOSE. Two slaughter slabs and sheds were constructed and efforts made to inspect all the meat (goat, sheep) before selling, a total of 12 chambers with basic need for food handling and sanitation are in place. There is a provision of water supply tank with capacity of 5000 liters, the practice of going for natural call has stopped and passengers are using toilets at the cost of T. Shs 200/-. It was noted that the toilets were not enough for the number of passengers using the service therefore, an extension of latrine with 14 stalls have already started. Also there is a commitment of District council to construct permanent water supply and support youth organization in the accomplishment of 1 latrine toilet and 12 kiosks. The intervention of meat inspection shows that 15% of 660 goat carcass was infected by Hydatid cyst.

The availability of adequate safe water for food preparation, washing hand after toilets is of great importance. In order succeed the intervention of preventing diarrhea diseases and worms infestation provision of safe water is inevitable, the above picture shows water and facility for hand washing this is great achievement compared with previous.

Hydatid disease is a parasitic infestation by a tapeworm of the genus *Echinococcus*. It is not endemic in the United States, but the change of immigration patterns and the improvement of transcontinental transportation over the past 4 decades have caused a rise in the profile of this

previously unusual disease throughout North America. This has led to the necessity for physicians to be more aware of its clinical features, diagnosis, and management.

Echinococcosis, which is often referred to as hydatid disease or echinococcal disease, is a parasitic disease that affects both humans and other mammals, such as sheep, dogs, rodents and horses.[1] There are three different forms of echinococcosis found in humans, each of which is caused by the larvalstages of different species of the tapeworm of genus Echinococcus. The first of the three and also the most common form found in humans is cystic echinococcosis (also known as unilocular echinococcosis), which is caused by Echinococcus granulosus. The second is alveolar echinococcosis (also known as alveolar colloid of the liver, alveolar hydatid disease, alveolococcosis, multilocular echinococcosis, "small fox tapeworm"), which is caused by Echinococcus multilocularis and the third is polycystic echinococcosis (also known as human polycystic hydatid disease, neotropical echinococcosis), which is caused by Echinococcus vogeli and very rarely, Echinococcus oligarthus. Alveolar and polycystic echinococcosis are rarely diagnosed in humans and are not as widespread as cystic echinococcosis, but polycystic echinococcosis is relatively new on the medical scene and is often left out of conversations dealing with echinococcosis, and alveolar echinococcosis is a serious disease that not only has a significantly high fatality rate but also has the potential to become an emerging disease in many countries

Lugono is the center where passengers and trucks from DSM to Iringa ,Mbeya, Tunduma Malawi Congo and Zambia and viseversar are making stop over and goes for natural call in the Bush,majority of travelers used to purchase nyama choma at this center for more than past five years ago. Before this intervention it seem that the center has been a TRANSMISION chain of diseases as for long time there were no intervention for meat inspection, Although there is no evidence data for this chain but for a short time ,the inspected carcase of sheep and goat shows that 15% of the inspected carcass were affected by Hydrated syst. It is from this reason some of passengers who eat an inspected meet could be infected by hydrated cyst.

Challenges

Community is motivated, young people build latrine but failed to complete it due to poor economical status; Inadequate resources for constructing permanent buildings; Increase in number of buses stopping for service resulting to inadequacy of latrines; Distance to the source of water and availability.

Conclusion

Community involvement and participation in quality improvement services can bring big change from unhygienic conditions to better situation. The application of quality improvement in improving hygiene and sanitation can be possible at little cost. Most infectious/contact diseases have been prevented likewise the cholera outbreak. The outcome of this practice can be replicated to other high way centers with similar problems.

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A Retrospective study on the unseen epidemic of road traffic injuries and deaths due to accidents in Mwanza city – Tanzania

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Abstract: Sixty percent of the global deaths and injuries occur in the developing world and mostly are due to Road traffic accidents (RTAs.looking at the etiological related factors which include, carelessness of the driver, condition of the vehicle or motorcycle, poor condition of roads, risky behavior of the driver,most of these factors can be prevented to some extent. This study therefore, determined the pattern of cases and deaths due to traffic road accidents in Mwanza City Tanzania. In this retrospective study, *r*ecords, registers and case notes In the surgical ward and causality, medical records and central police station from 2008 to 2011 were used. The study focused on the two referral hospitals (Sekouture regional hospital and Bugando Medical Center). There were 3450 cases due to accidents reported at both centers (Sekouture regional hospital and BugandoMedical Center of which 3224(93.4%) had complete information for analysis.2225 (69%) were male and 999 (31%) were female, and the most affected group were male.Among the RTAs2809 cases (87%) were due to motor cycle accidents which were the leading cause ofRTAs with case fatality rate of5% while motor vehicle has case fatality rate of 24% which is 5 times that of motor cycle. Among all RTAs the leading cause of injuries is Motor cycle traffic accidents followed by motor vehicle. RTAs are on increase particularly the motor cycle traffic accidents and has claimed a good number of innocent people'slives however most of them are preventable, therefore driving course to be introduced to motor cycle drivers with emphasize on the road posters signal, rules and regular checkup of their motor cycles especially commercial motor cycle.

Keywords: Motor cycle accidents, RTAs morbidity and mortality rate in Mwanza City.

Introduction

Road traffic accidents (RTAs) are one of the major causes of injuries, deaths and disabilities in fact it has a great impact on the disability-adjusted life years (DALYS) as a result it is now a public health problem particularly in developing countries, 60% of the global deaths and injuries occur in the developing world, consuming substantial health sector resources. In the USA injuries account for more potential years of life lost before 65 years of age than cancer and heart disease combined.
The situation is worse in Africa while in developed countries the trend of RTAs is declining. Tanzania is one among developing countries which is highly affected: hence the magnitude of RTAs suggests the unseen epidemic.

Previously accidents were regarded as inevitable events which results into injuries and deaths, but looking at the etiological related factors which include, carelessness of the driver, condition of the vehicle or motor bike, poor condition of roads, risky behavior of the driver, misuse of roads by pedestrians, driving under the effluence of alcohol or drugs abuse, most of these factors can be prevented to some extent.

In Mwanza City the number of motor vehicle and motor cycle has increased tremendously while the roads condition and number are still the same. On addition to that preventive gears are not used by many passengers and drivers eg., use of sit belts by passengers andwear of helmets by motor cycle drivers.

In Tanzania, the few hospital based studies revealed injuries to be the second cause of deaths with the commonest or leading cause being RTAs. Usually hospital based data is like a piece of floating ice berg, there are more injuries and deaths in the community than what we see at the reported health facilities.

Globally there are more than 1 million road accident fatalities and 10 million people are injured yearly, WHO reported that vehicle collision are the 6th most common cause of death in developed countries with an average of 20.8 per 100,000 population [25, Some] of the countries with highnumber of road traffic accidents in the world are Egypt and Saudi Arabia, Thus Saudi Arabia is three times higher than that of Egypt. In general South East Asia has the highest proportion of global road fatalities[9, 15.]

Developing countries are now in rapid urbanization, with high growth rate in traffic leading to congestion of traffic which cause increase in RTAs.[18.]Seventy percent (70%)of RTAs occur in developing countries,while there is a degree of decline of RTAs in developed countries. In Africa RTAs are on increase especially in large cities eg Nigeria, Kenya, Malawi, Ethiopia, Zambia, Uganda and Tanzania, In these countries including South Africa there is also a booming of motorcycle accidents which have raised the death rate, eg Kenya has a death rate of 9.2 per 100,000 , Uganda 8.1 deaths per 100,000 and Tanzania 5.1 per 100,000.[19], In Africa the mortality rate is 28 per 100,000 populations while in Europe it is 11 per 100,000 people and when comparing death Vs number of vehicle, in Africa it is 50 per 100,000 while in developed countries it is 1.7 deaths per 100,000.[4]

In 1990 Africa had lost59,000 people in RTAs and this figure is expected to rise to 144,000 by the year 2020, if the situation is left to continue while in developed countries the trend has been declining since 1960s.Due to this alarming escalating situation WHO in April 2001 conveyed a meeting on a 5 years strategy for road traffic injury prevention, and in the year 2003, the United Nations Secretary described global public health challenge put forward by road traffic injuries and encouraged the number states to address the problems.[25]

The number of vehicles per population Africa is still low in developing countries but still it has high RTAs.[10]It has been observed that with development the road traffic mortality will decline especially when both road conditions and health facilities to handle causalities will improve.[9.]Since in Sub-Saharan Africa the stage of development is still far to be reached therefore there is a need to intervene the problem. Victims of RTAs are: Pedestrian, passengers especially of publictransport anddrivers. There isalimited number of RTAs research done in developing countries, though the number of RTAs a companied by high number of injuries cases and deaths are on increase. It has been estimated that by the year 2020 road traffic injuries will rank the 3rd in cause of disability adjusted life years lost (DALYS) .The vulnerable groups most affected arepedestrian, elderly, children and cyclists.

This can also be expressed in deaths per motor vehicle, thus Uganda has 121.9 deaths per 10,000,while Tanzania has 111.4 deaths per 10,000 and Kenya has 64.3 per 10,000[3]. Tanzania death rate has significantly increased due to motor cycle accidents in Tanzania motor cycle account 8.2% of road accidents. However studies have not been done in Mwanza City on the epidemiology of deaths and injuries due to road traffic accidents.
Incriminated common causes of RTAs include: Overloading, Lack of road signs and posters, Poor road conditions, Poor vehicle conditions, Poor status of the driver which include: low age , alcohol influence, drug abuse influence [20], Failure to adhere to law and regulations of using seat belt, hamlet and exceeding number of passengers

Corruption: Even undesirable vehicle which are out of order are left to carry passengers and this becomes owner's risk such as a bus with worn out tires on addition to thatexcess number of passengers is a common problem especially to public transport, Currently some of the motor cycles are carrying more than one passenger known as *Mishikaki*, because of corruption they are left to continue with such risky malpractice,2. However many accidents which has claimed a good number

of peoples life have been observed practicing such malpractice and yet road traffic authority keeps quiet.

Emergency Care /Outcome: Most of RTAs deaths occur at health facilities hence mortality can be reduced by effective management of causalities at the health facilities, health facilities with well trained staff on trauma and emergency care, with adequate number of related supplies and equipment's has always low mortality rate,[11,5]Many health facilities particularly in Tanzania don't have emergency units to take care of injuries and they lack expertise in that field.[22]In order to alleviate the situation there is a need to train more people / staff on emergency care and trauma.
Therefore the objective of this study was to determine the trend and cause of road traffic injuries later try to re-examine whether these are preventable or not.

Methods:

BugandoMedical Centre is a referral and teaching hospital, itis one of the consultant hospitals in Tanzania located in the Lake zone where it serves a population of eleven thousand million people from six regions, around the lake zone**.** While Sekouture hospital is a regional hospital for Mwanza City which serves a population of three million people from eight districts

The setting of this study is limited to Mwanza City, thus the target study population is from Mwanza City.It includes allthose in the report who had accidents for the year 2008 to 2011, The nature of the study was descriptive analysis of secondary data,data were obtained from causality registers, patient files and case notes in the surgical, medical, pediatricclinics all these information sources were collected from medical records where all records are kept after that all the files were reviewed.Extraction form was used for data collection. Thendescriptive analysis was performed using SPSS program,both dependent and independent variables.

Results

Table 1: Trend of cases and deaths due to RTA from 2008 To 2011

YEARS	Motor vehicle cases and deaths		Motorcycle cases and deaths		Bicycle cases and deaths		Total Cases and deaths	
	CASES n=378	DEATHS n=89	CASES n=2809	DEATHS n=140	CASES n=37	DEATHS n=0	CASES n=3224	DEATHS n=229
2008	98	24	467	35	10	0	575	59
2009	113	19	547	36	12	0	672	55
2010	105	28	849	36	9	0	963	64
2011	62	18	946	33	6	0	1014	51

**The data above are from January 2008 to December 2011 (48 months)*

Motorcycle accident is the leading cause of injury cases among RTAs (87%) in Mwanza City followed by Motor vehicle, the accident due to motor cycle have been escalating steadily however motor vehicle is declining when compared to the year 2010. Motor cycle accidents caused death to 140 out of 2809 (5%) motor cycle accidents (injuries). And it is the leading cause of deaths due to RTAs in Mwanza City claiming 61% of all deaths due to RTAs, while 39% is due to motor vehicle accidents.

Table 2: The distribution of the study population by sex

Age group (Years)	MALE (n=2225)	69%	FEMALE (n=999)	31%	TOTAL (n=3224)	100%
0-4	129	4	97	3	226	7
5 - 14	322	10	193	6	516	16
15 - 39	1451	45	484	15	1935	60
40 - 59	258	8	193	6	451	14
60+	64	2	32	1	96	3

Among the study population 31% are female while 69% are male, and 60% of the study population was in the age group of 15 to 39 years of age.

NB: Each injury was considered separate though some had more than one type of **injury.**Case** *fatality rate = proportion of deaths from specific injury cases*
A good number of cases with head injury had high fatality rate of 43.4% followed by tear and rupture of organs which had fatality rate of 39.5%.

Table 3 : Shows the Case Fatality Rate per type of injury

Type of injury	*Cases (n=3224)*	*100 %*	*Death (n=229)*	*100%*	*Case fatalityRate (%)*
Fractures	525	16.3	37	16.2	7.0
Tear/Rupture or organs /visceral	86	2.7	34	14.8	39.5
Cut wounds	111	3.4	26	11.4	23.4
Bruises	1104	34.2	0	0	0
Sprains /strains	742	23	0	0	0
Dislocations	202	6	0	0	0
Head injury	182	5.6	79	34.5	43.4
Other injuries	272	8.4	53	23	19.5

Table 4: Shows the outcome of cases by year

Years	Cases N=3224	Discharge N=2995	Discharge with disability N=38	Death N=229	Death rate per year due to TRAs 7%
2008	575	516	9	59	10
2009	672	617	5	55	8
2010	963	899	13	64	6.6
2011	1014	963	11	51	5

Table 5: Shows the common list of the people involved in accidents vs deaths

Table 5 shows that the rates of road injury patients have been increasing every year and approximately 5 deaths per month, while the recovery rate is 92,8% and out of all who were discharged 2% were discharged with deformity.

Table 6 shows that out of 3224 injuries 60% were passengers, 21% pedestrian, 18% drivers and 1% were due to bicycle accidents, and among the deaths caused by RTAs 57% were passengers, 25% pedestrians,18% drivers and no death occurred among cyclists.

STATUS OF PEOPLE	INJURIES N= 2809	%	DEATHS N=140 (CFR 5%)
Passengers	1795	64	79(56%)
Drivers	568	20	61(44%)
Pedestrian	446	16	0

Table 6: The distribution of injuries and outcome of motorcycle accidents

STATUS OF PEOPLE	INJURIES N=3224	%	DEATHS N=229
Passengers	1924	60	131 (57%)
Drivers	596	18	41 (18%)
Pedestrian	667	21	57 (25%)
Bicycle	37	1	0

The table above **s**hows that majority of the people involved in motorcycle accidents are passengers(64%) followed by motorcycle drivers 20%.

Discussion

Generally there are 18 cases of injuries due to RTAs per week and 3 cases per day reported at the health facility and majority of casualties 2809 (87%) were caused by motorcycle accidents while 378 (12%) were due to motor vehicle and 37 cases (1%) were due to bicycle accidents. Thus at least there is 1 case of motor vehicle injury for every 7 cases of motorcycle injuries this means that when you identify 1 case of motor vehicle in the ward, there is high chance of identifying 7 more cases of motorcycle accidents., and men are highly affected than female in the ratio of 1:2, this could be due to mobility, thus men are more mobile than women and the victims of the accidents are drivers (20%), passengers (64%), and pedestrians (16%).

Case fatality rate due to motorcycle compared to motor vehicle was almost the same ranging from 8.9% to 9.4%, fatality rate can be reduced by taking preventive measures eg using helmets both drivers and passengers, because majority of the deaths are due to brain damage (34.5%), another factor is malpractice of carrying more than one passengers especially for commercial motor cycle, some carry to an extend of four passengers (called *mishikaki* a Swahili word for skewer-grilled marinated meat), this expose them to high risk of accident, the malpractice has been facilitated by the fact that the more passengers are carried by one motorcycle the lower the fare the passengers pay so because of financial constraint many people opt the cheaper transport.The age group highly affected is between 15 to 39 years(60%), this is the productive age group for both sex. therefore the impact of causalities to the nation is high because much of the national work is done by this age group.

There has been mushrooming of commercial motorcycle transport inMwanza City which is comparatively cheaper than hiring a taxi, another advantage of motorcycle it can pass even in narrow path ways where a taxi can't pass as a result many people opt to motorcycle transport.The victims of RTAs most affected are passengers64%(n=1795) followed by pedestrians16% (n=446), then drivers 20% (n=568). The reason for more passengers to be affected could be due to failure to use helmets, and some time they are carried more than one at one motor cycle which is risky,

Why booming of motor cycle transport? because for the past few years there has been an increase of importation of cheap Chinese motorcycle as a result many people have started income generating activities of purchasing many motorcycle and using them for transport business, and the young males are employed as drivers. Why high case fatality rate? This could be due to poor management of cases at the health facilities,since many of health facilities don't have intensive care units and majority of the victims die of head injuries and multiple injuries at the health facilities, so this can be reduced by intensive training of health staff onproper management of injury cases also provision of adequate hospital related supplies and equipment's.

Conclusion and recommendation

RTAs is one of the major cause of injuries in Mwanza especially motorcycle accidents, since the time of legalization of motorcycle transport RTAs have increased tremendously, and it is now becoming a major cause of morbidity and mortality among RTAstherefore becoming a public health problem.
Majority of the cases die in the hospital and health facilities, hence there is a need to improve the emergency or causality departments in our set up particularly Mwanza City in terms provision of adequate trained staff on emergency handling and provision of basic equipment's for emergency.

Police traffic should pay more attention to rules and regulations and serve appropriate penalties for noncompliance drivers, especially the motor cycle drivers, but pedestrians also deserve special educational campaign on road traffic regulations, the campaign should not be limited to be done by traffic police but also NGOs should be encouraged to participate.

It is also advisable to introduce class on road traffic rulesto primary schools so that people can get the knowledge from the grass route level.City planners should think of establishing more roads, because the population of people, number of motor vehicle and motor cycle in the city has increased but the roads are still the same.

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Road Traffic Injury Prevention around Schools in Dar es Salaam 26th–28th November 2012

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Abstract: There is a pressing need for road safety action in Dar es Salaam—the second fastest growing city in sub-Saharan Africa. Concurrent with a construction boom, the city is plagued with problems of traffic flow, inadequate public transport and dysfunctional road networks. While commendable efforts have been made to expand and improve roads, less attention has been paid to the interests of non-motorised road users; particularly those who are most vulnerable: children. Statistics indicate that more than 90 percent of children who are injured on Dar es Salaam's roads are injured as pedestrians. This sad reality results from a combination of factors: negligence by motorised road users, errant parking, informal business blocking footpaths, poorly designed roads that fail to consider pedestrian mobility, and lack of knowledge of safe road use by children.Amend is a non-governmental organisation seeking to create a sustainable, measurable reduction in the incidence of childhood road traffic injury in Africa via the development, implementation, evaluation and scaling of data-backed public health initiatives. Through our School Area Road Safety Assessments and Improvements (SARSAI) programme, we identify road hazards in areas surrounding schools and respective road safety solutions. We do this through scientific research and partnerships with road experts, to implementation of a variety of engineering, compliance and educational based measures. Our engineering measures include the construction of speed bumps, road signs and bollards. Our compliance measures include school crossing patrols and no parking zones. Our education measures include tailored road safety education so children gain the knowledge needed to keep themselves safe on the road. In this paper we will present results of our implementation of the SARSAI programme in the Magomeni and Ndugumbi wards of Kinondoni District, Dar es Salaam. This report contributes new knowledge about potential solutions to road hazards in areas surrounding schools in urban Tanzania.

Introduction

Every year almost 1.3 million people die worldwide as a result of road traffic crashes. 90% of road deaths occur in the developing world, despite having less than half of the world's motor vehicles.[1] The burden falls most heavily on the young. Road traffic crashes are the leading cause of death for persons aged between 5 and 29.[2] Africa has the world's highest road traffic injury mortality rate, standing at 32.2 per 100,000 persons.[3]

Despite these alarming statistics, government, private sector and development actors have largely ignored this growing epidemic that now kills more young people than malaria, HIV Aids or tuberculosis.[4] Only 15% of countries have comprehensive laws relating to five key risk factors: speeding, drinking and driving, and the use of motorcycle helmets, seat-belts and child restraints.[5] Tanzania is one of the 85% of countries that do not have comprehensive laws.

[1] UN Decade of Action for Road Safety 2011-2020, Global Plan for the Decade of Action for Road Safety 2011-2020 (2010).

[2] Make Roads Safe, Bad Trips: International tourism and road deaths in the developing world (Make Roads Safe, 2010).

[3] WHO, Global Status Report on Road Safety (WHO, 2009).

[4] Make Roads Safe, The No. 1 Killer Of Young People (Make Roads Safe, 2008).

[5] WHO, Road traffic injuries: Fact sheet (WHO, 2011).

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.[6] Since 2007, the number of road deaths has increased by an average of 10% per year, and injuries by an average of 7% per year. 67% of caught offenders in 2011 went on to offend an additional three times within the same year.[7]

A high proportion of road crash victims are young males in the most productive years of their lives. Road crashes, therefore, affect Tanzania's social and economic fabric in multiple ways. Families fall into poverty through losing their home's bread winner and by incurring medical costs. Tanzania's economy suffers through the loss of productive workers' labour. Society's return on its educational investment is diminished when victims become unable to give back to their country. Road traffic crashes are enormously damaging to the nation's economy. It is estimated that over 3.4% of Tanzania's GDP is lost due to traffic crashes each year.[8]

In 2009, Amend made a presentation to the TPHA Conference in Dodoma, calling for Tanzania to sign up to the United Nations Decade of Action for Road Safety (DoA). In November of that year, the then Minister of Home Affairs, Lawrence Masha, travelled to Moscow, where alongside representatives of countries from all around the world, he signed the declaration ratifying the DoA. The DoA was launched in Tanzania in May, 2011, by Amend in partnership with the European Union Delegation to Tanzania in Zanzibar.

Road traffic deaths and injuries are a major public health issue. The TEST Handbook on Transport and Environment in sub-Saharan Africa lists and promotes a number of areas where public health experts and institutions should seek to broaden their involvement in road safety issues including:

- Assessment of road crashes, injuries and casualties and monitoring of success for road safety efforts
- Categorising road users involved in crashes
- Identifying driving and behaviour patterns that lead to crashes
- Identifying under what conditions road crashes occur
- Highly coordinated efforts between public health and government to reduce road fatalities
- Increasing access to transport and health care facilities[9]

Despite a year-on-year increase in the number of road traffic deaths and injuries, this public health crisis—sometimes described as a 'neglected epidemic'—has received inadequate attention from the development and public health communities over the past several decades.[10] One reason for the historical neglect of 'injury' in public health is the traditional view of accidents and injuries as random events that happen to others. Such events are looked upon as an inevitable outcome of road transport.

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In the case of road deaths and injuries, the term 'accident' wrongly implies that these sad and horrifying realities are spontaneous, non-predictable and uncontrollable events. The word 'accident' fails to attribute any personal responsibility to the person who caused it. According to a study commissioned by SUMATRA to the Bureau of Industrial Cooperation at the University of Dar es Salaam, for example, over three-quarters of road collisions in Tanzania were caused by human factors, most notably speeding, overtaking and reckless driving.[11] Therefore, through changing human behaviour, it will be possible to save thousands of lives.

The School Zone

In sprawling urban centres such as Dar es Salaam, schools are often located within hazardous road environments. The local community is composed of visitors, shopkeepers, labourers, persons in transit and local inhabitants, who may hold little understanding and relation to (or compassion for) the schools' children and the respective road-related risks that they face.

One validated strategy for dealing with such urban problems can be found in the concept of the urban 'school zone', a popular design for school environments in Europe and North America. School zones are designed to: calm traffic with light infrastructure elements such as speed bumps and bollards; alert drivers of the heightened risks through road paints and signage; and encourage compliance with laws and responsible and safe road use—by, for example, banning parking in certain areas and allowing school crossing patrollers to direct traffic.

- The WHO lists signage, bollards and speed bumps as effective traffic calming measures that reduce road traffic injuries.[12]
- The Zenani Mandela campaign by Make Roads Safe calls for investment in safe footpaths, cycle-ways and crossing points, on streets with lower speed limits, particularly around schools and transport and planning policies that put people first.[13]
- The African Action Plan, developed and organised under the five pillars of the Decade of Action for Road Safety 2011-2020, calls for road safety education to be provided to every primary school on the African continent.[14]

Through Amend's SARSAI programme we are creating 'School Zones', encompassing the simple yet effective engineering, compliance and educational strategies to ensure drivers travel consciously through areas surrounding schools. In school zones, parents can feel reassured about their child's safety on their walk to school, and pupils can navigate the school environment and surrounding roads safely.

Methodology: School Area Road Safety Assessments

Amend conducted its SARSAI programme in a small area of Magomeni in Dar es Salaam, Tanzania. After conducting a baseline data collection with community members, school staff and local leaders in the area, we discovered that five primary schools, all bordering a recently constructed municipal road: Kondoa Street, had accounted for over fifteen child road traffic injuries between 2011 and

[11] UDSM Bureau of Industrial Cooperation, Study on Road Accidents in Tanzania Mainland (SUMATRA, 2007).

[12] WHO Road Safety Training Manual (WHO, 2006).

[13] Make Roads Safe, The Zenani Mandela Campaign (Make Roads Safe, 2012).

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African Action Plan (Economic Commission for Africa, 2011).

2012. In response to the identification of this high risk school area, Amend conducted a school area road safety assessment over three weeks in May 2012. The assessment looked at a diverse range of road transport issues on eight roads surrounding Turiani, Magomeni, Ali Hassan Mwinyi, Ndugumbi and Mwalimu Nyerere Primary Schools. Our school area road safety assessment included:

- Surveying five percent of school students about their travel patterns and experiences to and from school.
- Surveying thirty percent of school staff about efforts they make to promote road safety at the school and the road hazards they perceive in the school area
- Understanding vehicle behaviour on eight surrounding roads, including vehicle speeds, vehicle counts, footpath encroachment, errant/illegal parking and overtaking
- Understanding pedestrian behaviour on eight surrounding roads including running and playing in the road, and crossing at blind corners or next to obstructions
- Identifying infrastructural hazards on eight surrounding roads, including obstruction of footpaths by businesses and infrastructure, storm drain safety, street lighting, marking and signage, and speed bumps

The assessments generated a wealth of knowledge on transport issues in the areas surrounding the schools including:

- Over 62% of pupils arrive at school as early as 06:00 or remain as late as 17:30
- Up to one-third of traffic using roads directly bordering the primary school compounds were used by heavy vehicles, including dala dalas
- Vehicles speeds were recorded at a maximum of 40kph on roads directly bordering the primary schools
- Existing speed bumps built on surrounding roads were inadequate in offering safe road conditions, with vehicles passing over bumps as fast at 30kph
- Surrounding roads lack adequate footpaths and crossing facilities
- Over 90% of pupils walk to school alone and presented a clear lack of knowledge of how to use the road safety, playing in the road and walking on the wrong side of the road.
- An average of seven vehicles per hour encroached on the footpaths directly bordering the primary schools
- Errant/illegal parking and informal businesses on all eight roads obstructed pedestrian mobility on footpaths, forcing pupils to walk on the main road

Methodology: School Area Road Safety Improvements

After assessing the areas surrounding schools for behavioural and infrastructural road safety hazards, Amend designed an improvements programme tailored to address the specific risk identified. We formed partnerships with the Kinondoni Municipal Council, the University of Dar es Salaam, engineers and road works contractors to begin implementing a variety of engineering, compliance and education interventions within areas surrounding the schools. These interventions included:

- Conducting tailored road safety education for over 5,500 pupils and school staff at five primary schools
- Distributing highly durable reflector enhanced school bags to pupils and staff at primary schools to increase visibility when pupils are walking to and from school in the early morning and late at night
- Leading efforts with local government and school staff to remove vehicles and businesses from illegally parking on and blocking footpaths
- Setting up school crossing patrols at two primary schools led by community members, school staff and pupils

- Constructing seven steel reinforced bollards to prevent illegal parking and encroachment at the main bus stop near the school zone
- Constructing ten road signs to alert drivers and the local community of the school zone, speed bumps and pedestrian crossing area
- Constructing seven speed bumps to slow traffic within the school zone
- Painting two murals on school buildings facing the road to alert drivers of the school zone and pedestrian crossing areas
- Painting a zebra crossing and speed bumps along a road bordering the schools to alert drivers of our traffic calming measures and the school crossing patrol
- Constructing pedestrian bridges on storm drains so pupils are able to cross between the road and footpath safely and conveniently

Amend is currently designing a follow-up data collection programme to take place in early 2013 in order to monitor the impact of the School Zone. This will include measuring differences in vehicle and pedestrian behaviour, as well as infrastructure improvements, since our baseline data collection and implementation.

Conclusion

In May 2013, the Second UN Global Road Safety Week will focus on the theme of 'pedestrian safety.' Pedestrians, especially child pedestrians, are the most vulnerable group of road users. The Week has the following objectives:

- To focus attention on the importance of pedestrian safety;
- To generate action on measures that work to increase pedestrian safety; and
- To promote the goal of the Decade of Action for Road Safety 2011-2020 to save 5 million lives.

Amend calls upon the Government of Tanzania, civil society organisations such as TPHA, the private sector and academia to plan and host national and local events during the Second UN Global Road Safety Week to support these aims.

Without immediate action, the development of infrastructure and urban centres will continue to be burdened by the loss in productivity from road traffic deaths and injuries. The Decade of Action for Road Safety is now. Public health and development experts need to unite and act to combat this preventable tragedy.

Effective information communication channels for public education on tobacco related health hazards in Tanzania: a case of Rombo and Moshi urban districts

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Abstract: Studies are showing that many people in developing countries, Tanzania inclusive are still unaware of tobacco health hazards. Hypothetical explanation for low level of awareness on tobacco related health hazards are the use of inappropriate of information communication channels to reach the public and low level of public health advocacy. To ascertain or reject the hypothetical explanations in Tanzania, this cross-sectional study was designed. The linked specific objectives of this study were to: find out if people in Rombo and Moshi districts are aware of tobacco related health hazards, identify sources of tobacco hazards information consulted by people in Rombo and Moshi districts, identify channels used for disseminating information related to tobacco hazards among the people in Rombo and Moshi districts, and identify challenges encountered by people in Rombo and Moshi districts when accessing information related to tobacco hazards. The study employed quantitative and qualitative research approach. The key data collection methods were questionnaire survey and in depth interviews with key informants in Rombo and Moshi districts. Stratified sampling was used to select the 120 respondents of different socio-economic status, equally from two different Rombo and Moshi districts. Respondents were randomly selected at lowest strata. The study results revealed that Majority of respondents (67.5%) were aware that tobacco use can cause health problems. The reported major sources information on tobacco related health hazards were radio (56.7%), television (46.2.0%), cigarette banners and packets (39.2%), news paper (35.8%), Internet (30.8%), and health workers (25.8%), library, classroom and reading books have similar percentage(20.8%). There was significant relationship between information sources and the level of awareness on health related problems associated with tobacco use ($p< 0.05$). The key challenges for assessing information on tobacco were ignorance, contradictory information and limited information infrastructures. Since the level of awareness was found to be high in Rombo and Moshi districts, the study did not refute or confirm the hypothetical explanations on the low level of awareness in developing countries and possibly other parts of Tanzania. It is concluded that mass media channels are used intensively are effective means of reaching the public for promotion of public health.

Introduction

Tobacco use is slowly but surely increasing the global disease burden (Warren *et al.*, 2006). Tobacco use in developing countries is predicted to increase by 6 million in the year 2030 (WHO, 2009). American Centers for Disease Control and Prevention (CDC) (2008) reported that tobacco use causes more deaths each year than by all deaths from human immunodeficiency virus (HIV), illegal drug use, alcohol use, motor vehicle injuries, suicides, and murders combined. While in Tanzania the situation is not alarming as in United States of America, studies are showing continuous rise of prevalent for tobacco use. Mbatia *et al.* (2009) provided scientific evidence for rising of tobacco use among the youth and mainly young female in Tanzania. In advance Machang'u and Nyinondi (2008) argued that prevalence rates of tobacco use among various Tanzania's social groups are rising as many people are still unaware of tobacco hazards. The former called for intensification of efforts to combat tobacco use as a causative of significant public health threat and stop tobacco industry from recruiting new tobacco users. The suggested efforts were making millions of creative posters to promote Framework Convention on Tobacco Control (FCTC), saturate every local community and school with tobacco control posters and brochures, organize discussions about health problems associated with tobacco use and localize FCTC to suit Tanzania environments.

Tobacco control advocate groups and organizations building on their previous achievements such as holding of a national symposium "Tobacco or Health", staging a youth essay and cartoon drawing contests on tobacco and related hazards, running a series of Radio, TV and print press awareness

campaigns from year 2004 to 2008, and distribution of tobacco control advocacy materials to the general public, particularly during a week of commemorating the World No Tobacco Day (WNTD). Tobacco control activists in April, 2009 formed a national Committee, led by the

Ministry of Health and Social Welfare to jointly carried out tobacco control campaigns and provide public education on tobacco related health hazards. Participating institutions included, The Tanzania Public Health Association (TPHA), The Tanzania Tobacco Control Forum (TTCF), The Ocean Road Cancer Institute and the media. The committee coordinated national wide campaigns on tobacco control on the third week of May 2009. More important, the campaigns were intensified in Kilimanjaro regions. The region was nominated and accepted to host the National event for commemoration of WNTD, consequently attracting attention from ant-tobacco individuals and groups.

The WNTD event was successfully hosted by Kilimanjaro Region, in the township of Holili, Rombo District. The main events that colored the week of WNTD a region included: a public address, procession, speeches from local, national and international delegates, lyrics, poetry and theatrical presentations from school groups and traditional dances by a group of senior citizens. A limited list of main series of activities included: Primary and Secondary School students, Nursing college students, Scouts and Health Workers marching at Holili town, Radio and TV campaigns coverage such as ITV, TBC1 and Radio Tumaini, Maria and Radio One and local FM radio, Press conference at Information Services "Maelezo", and articles in the daily newspapers. Other activities were dissemination of advocacy materials i.e. posters, leaflets and street banners, in different strategic locations in town.

In this context, Rombo district and its sound connected Moshi Urban district represent an important setting for studying impacts of locally and national coordinated efforts to educate the public on tobacco related health hazards, and find out if the channels used for disseminating information on tobacco related health are appropriate to local settings.

The objective of this paper was to describe the results of an assessment effectiveness of information communication channels used by tobacco control activists for provision of public education on tobacco related health hazards in Tanzania. This assessment specific objectives were to: find out if people in Rombo and Moshi districts are aware of tobacco related health hazards, identify sources of tobacco hazards information consulted by people in Rombo and Moshi districts, identify channels used for disseminating information related to tobacco hazards among the people in Rombo and Moshi districts, and identify challenges encountered by people in Rombo and Moshi districts when accessing information related to tobacco hazards.

Methods

Sites

This study is a cross-sectional research conducted across two sites. In February and March 2012 a population-based survey was conducted in Rombo and Moshi Urban districts. The rationale for selecting the two districts is because of high prevalent rate of tobacco use (Mokiti 2003a, b, c), and intensifies tobacco control campaigns that focused in the region.

Population of the study and Sample size

The population from which the sample for this study was drawn involved people aged 15 and above years. The sampling unit comprised of individuals selected at household level. A total of 150 individuals were involved in a study; 120 participated in questionnaire survey while 30 were key informants participated in in-depth interview. Based on district, 60 respondents were drawn from Mbuyuni and KCM in Moshi urban district and 60 responds from Holili Township in Rombo district.

The sample size mentioned above was able to suffice the representation of all social groups in the study area. Stratified sampling technique was used to select respondents. The stratification criteria were sex and age. Key informants where selected based on community and researcher judgment that individual has enough knowledge and experiences of tobacco health hazards.

Data collection instruments and methods

Triangulation is a way of ensuring that quality data is collected. According to Baker (1999) the use of more than one method of collecting data enhances the quality of the data. In this study, a combination of three research instruments was used to collect data. Interview and observation guides and questionnaire were the main instruments for data collection.

Both primary and secondary data were collection. Secondary data were gathered from various sources including publications such as books, journals and CD-ROMS and relevant unpublished reports. Primary data were collected through questionnaire survey and non-structured in-depth interview and participant's observations. Participant's observations technique was used to substantiate some of the answers provided by interviewees.

Data collection

Demographic characteristics and socio-economic factor were documented. Demographic information collected included sex, age, marital status, and household size. Socio-economic factors included occupation and education status. Main data collected awareness of tobacco related health hazards, sources of information for respondents who were aware, preferred channel to get information related to tobacco hazards and the current challenges encountered on accessing information related to tobacco hazards. Questionnaire and interviews guide were designed in way requires information were collected.

Data Analysis

Data were analyzed using SPSS software for Windows Version 16.2. Chi squared (χ^2) tests examined level of awareness on health related problems associated with tobacco use and information sources. Frequencies and cross-tabulations for demographic characteristics and preferred channels for information access where established. Data from the two study districts was combined, while computation to determine significant associations for all tested hypotheses were done with 95% confidence intervals (CI).

Ethics Approval

Approval was granted by the Sokoine University of Agriculture on-behalf of Tanzania Commission for Science and Technology and National Medical Research Institute, under the mandate given to The Vice Chancellor (Act *No.6 of 1984 Article 8*).

Results and Discussion

Response Rates

Households were approached to agree to participate in the study, immediately after the consent, the researcher would issue a questionnaire to be filled by selected member of households. The questionnaire took an average of 25 minutes to be completed, while researchers collected the questionnaire on time. This approach enabled 100% responses rate.

Demographic characteristics of the respondents

The background characteristics of the respondents are presented in Table 1. The parameters include: sex, age, house hold size, occupation, home environment and education.

There is a large variation in sex composition of respondents interviewed during the survey. The

higher proportion of respondents was males (58.3%) than female respondents (41.7%). These proportions were results of individuals who were present at household level during survey, instead of the actual demographic composition in the study areas where women are majority. Analytical results revealed that the majority of the respondents were 15 to 25 years age group (40%), followed those with age between 26 and 35 (27.5%) and the smallest group of aged people (3.7%). The minimum age is 15 years and maximum age 69 years (Table 1).

During the study, respondents were requested to indicate the size of their households which comprised all family members. Table 1 show that majority of the respondents lived in a group of 5-7 people (38.7%). A considerable number reported to live in a family of 4 persons or less, (23.8 %) and who lived in a family of 8-10 people (22.5%). The household size distribution is more or less similar to the national patens. The information obtained from the respondents revealed that the majority of the respondents live as married couples (35%) followed with those who lived with both parents (26. 7%). A considerable number, (10%), reported to live with either their mothers only, or single, and then followed by those who lived with guardians (7.5%). Students living in hostels were also regarded as living single. The rest, (<15%) reported to live either with their fathers only, or cohabiting.

Table 1. Demographic characteristic of the respondents

Characteristics	Frequency n=120	Percent n=120 (%)
Sex		
Male	70	58.33
Female	50	41.67
Age (year)		
15-25	48	40
26-35	33	27.5
36-45	18	15
46-55	17	14.17
56 and above	4	3.33
Household size		
1-4 people	29	24.17
5-7 people	46	38.63
8-10 people	27	22.5
10 and above (people)	18	15
Occupation		
Employed	26	21.67
Students/Pupils	18	15
Farmers/business (self-employed)	68	56.67
Jobless	8	6.66
Home environment		
Living with:		
- Both parents	32	26.67
- Guardian	9	7.5
- Mother only	12	10
- Single / in hostel	12	10

- Spouse	42	35
- Father only	5	4.17
- Spouse, but not married (Cohabit)	8	6.66
Education		
Informal	5	4.17
Primary	61	50.83
Secondary	41	34.17
Post secondary	13	10.83

Regarding the respondents education level, results show that on average 50.83% of respondents had primary education, 34.17% had secondary education either completed ordinary or advanced level, 10.83% had post secondary education. A noticeable number had informal education.

Awareness on Tobacco associated health hazards

Awareness of health problems related to tobacco use was high among people the respondents. Majority of respondents (67.5%) were aware that tobacco use causes health problems. Cross checking questions required respondents who were aware of health risks associated with tobacco use, to mentioned health problems. Finding show that frequently mentioned health problems are heart diseases (44.4%), emphysema (48.1%), cancer (53.1%), hearing loss (3.7%), tooth decay (45.8%), osteoporosis (2.5%), stomach ulcers (25.9%), cervical cancer and miscarriage (19.2%), deformed sperm (22.2%), burgers' disease (3.9%), cataracts (7.4%), wrinkling (8.6%) and discolored. Table 2 shows that the common tobacco-related health problems known to the people in study area include cancer (53.1), emphysema (48.1%), tooth decay (45.8%) and heart disease (44.4%). Awareness of the harmful health effects of smoking was more common among male (56.7%) than female but was more similar in both residential areas.

Table 2. Awareness of the health problems related tobacco use

Tobacco related Health Problems	**Frequency n= 81**	**Percentage n= 81 (%)**
Heart disease	36	44.4
Emphysema	39	48.1
Cancer	43	53.1
Hearing loss	3	3.7
Tooth decay	37	45.8
Osteoporosis	2	2.5
Stomach ulcers	21	25.9
Cervical cancer	16	19.2
Deformed sperm	18	22.2
Psoriasis	3	3.7
Cataracts	6	7.4
Wrinkling	7	8.6
Discolored fingers	21	25.9

The level of awareness of health problems related to tobacco use is considered to be higher in Tanzania, compared 10% reported by Nyinondi and Machang'u (2008) in most rural areas of Tanzania. A study on smokeless tobacco use in Morogoro Municipal shows that most of the youth, 46.7% had high knowledge of its hazards and 35.7% had low knowledge (Chubwa *et al*, 2009). The immediate explanation to the majority of youth been aware of tobacco hazards was accessibility to

information, education level and increased aggressiveness of tobacco control campaigns in the municipality and in schools.

Access and sources of information on tobacco in Rombo and Moshi districts

Most of respondents (80%) reported that within the past year they had received information on tobacco. Slightly, over half of respondents indicated having got such information from one source, while the rest mentioned two or more sources. Higher percentages of respondents from Moshi Urban reported to had received information from more than one source compared to their counter parties in Rombo districts.

There are many sources of information that can be consulted when someone needs information to meet his/her needs. Wathen and Harris (2006) identified such sources to include watching television, listening to the radio, reading newspapers, consulting health experts, seminars, workshops, health training, oral information, the Internet, traditional healers, women's groups, friends, relatives or neighbors. In this study, the main sources of information reported by respondents were radio were radio (56.7%), television (46.2.0%), cigarette banners and packets (39.2%), news paper (35.8%), Internet (30.8%), and health workers (25.8%), library, classroom and reading books have similar percentage (20.8%) Table 3. There was significant relationship between information sources and the level of awareness on health related problems associated with tobacco use ($p< 0.05$).

Information sources reported in this study is comparable to the ones reported in Dar es Salaam by Kiangi *et al.* (1995). Basically, Kiangi *et al*. (1995) examined the access to information on alcohol and tobacco among adolescents in Tanzania. On their study, the results indicated limited access to information on alcohol and tobacco, in particular among the girls and the younger pupils. For those who had received information, their main sources were parents, health workers, religious leaders, schoolteachers and the media. These sources differed by age, gender, religion and residential area of the adolescents. The messages usually obtained are on health and social problems of drinking and smoking.

Table 3: Sources of information on tobacco in Rombo and Moshi districts

Source of information	Frequency n= 120	Percentage n= 120 (%)
Library	25	20.83
Radio	68	56.67
Internet	37	30.83
Church and mosque	25	20.83
Teachers	25	20.83
Classroom	25	20.83
Health workers	31	25.83
Books	18	15
Television	59	46.17
News papers	43	35.83
Cigarette banners and packets	47	39.17

It was of particular, interest to find out the nature/content of information on tobacco received by the respondents on tobacco. The finding shows that (26.04%) received information on how to produce tobacco, (62.5%) had received information on health effects of tobacco use, (36.5%) its undesirable social effects and (5.2%) received pleasure of using tobacco. Additionally, (32.3%) of the

respondents had received information about the economic benefits of tobacco and (21.9%) had received information on the environmental problems of tobacco (Table 4). This was of interest because 67.5% of respondents initially indicated to be aware on the health problems associated with tobacco use but on this case 62.5% received a message on health problems of tobacco use over the past one year.

Table 4: The content of tobacco information accessed in Rombo and Moshi districts

The content of information	Frequency n=96	Percent n=96 (%)
Tobacco production	25	26.04
Economic benefit of tobacco	31	32.29
Health hazards of tobacco	60	62.5
Social problems of tobacco	35	36.46
Pleasure of using tobacco	5	5.21
Ways of using tobacco	4	4.17
Environmental hazards due to tobacco	21	21.88

Preferred sources tobacco control information in Rombo and Moshi districts

Information sources can be people or different kinds of documents (books, journals etc.) that can help you to satisfy your information need. Information channels like TV, Internet, library or databases offer you a way to get an access to the information sources.

The effectiveness of information communication channels for public education is vital for combating tobacco hazards in Tanzania. The common used channels for communicating educative message on tobacco associated health problems and discourage the use of tobacco products are health workers, radio, television, newspapers, posters, leaflets/brochures, meeting/seminars and public marching and address.

This study investigated the channels preferred by communities to receive tobacco control information and cross-checked against the channels used for information dissemination. Respondents were asked to mention the preferred information sources from provided list and rank them in on a scale of one to four i.e. 1= do not prefer, 2 = least preferred, 3= preferred, 4= most preferred. The results showed that information sources such as health workers (96%), radio (93%), television (82%) and colleagues/friends (80%), leaflets/brochures (78%), meetings (70%) and newspapers (64%) are preferred and most preferred (Figure 1).

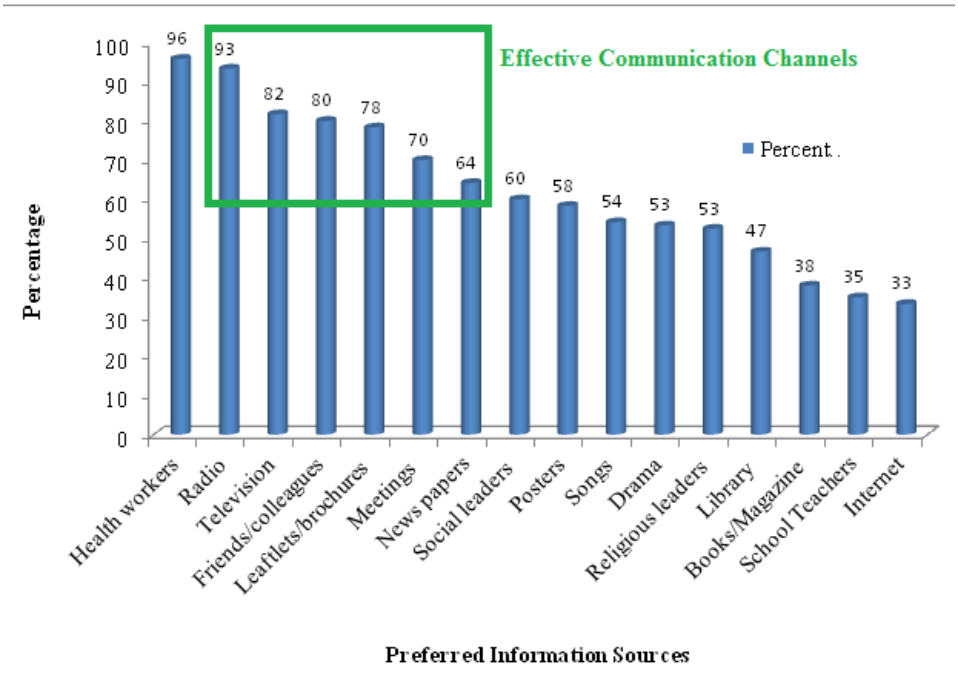

Figure 1: Ranking of tobacco control information preferred by respondents

Table 5. Preferred sources tobacco control information in Rombo and Moshi districts

Information Sources		Not Preferred		Least Preferred		Preferred		Most Preferred	
		Freq. n= 120	Percent n= 120	Freq. n= 120	Percent n= 120	Freq. n= 120	Percent n= 120	Freq. n= 120	Percent n= 120
Library	40		33.33	24	20.00	40	33.33	16	13.33
Internet	48		40.00	32	26.67	26	21.67	14	11.67
Health workers	1		0.83	4	3.33	34	28.33	81	67.50
Religious leaders	1		0.83	56	46.67	44	36.67	19	15.83
School Teachers	26		21.67	52	43.33	30	25.00	12	10.00
Friends/colleagues	6		5.00	18	15.00	55	45.83	41	34.17
Social leaders	20		16.67	28	23.33	38	31.67	34	28.33
Drama	30		25.00	26	21.67	58	48.33	6	5.00
Songs	33		27.50	22	18.33	60	50.00	5	4.17
Meetings	14		11.67	22	18.33	44	36.67	40	33.33
Radio	1		0.83	7	5.83	52	43.33	60	50.00
Television	2		1.67	20	16.67	54	45.00	44	36.67
News papers	12		10.00	31	25.83	60	50.00	17	14.17
Posters	22		18.33	28	23.33	51	42.50	19	15.83
Leaflets/brochure	8		6.67	18	15.00	68	56.67	26	21.67
Books/Magazine	30		25.00	44	36.67	37	30.83	9	7.50

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Provider-initiated HIV testing and counseling in Mbeya City, south-western Tanzania: knowledge and practice of health care providers

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Abstract: Provider-initiated testing and counseling (PITC) is a routine HIV counseling and testing offered to adult clients attending at health care facilities. In Tanzania PITC started in 2007, with the aim of increasing early HIV diagnosis and timely access to care, treatment and support services. The objective of this study was to assess the level of knowledge and practice of health care providers on PITC. This cross sectional study was conducted in April-May 2010 among nurses and clinicians working in the government health care facilities in Mbeya City, south-western Tanzania. Self-administered questionnaire was used to obtain relevant information from the study participants. A total of 402 (95% response rate) care providers were interviewed. Their mean (± SD) age was 41 ± 9.5 years. The majority 304 (76%) were nurses. Their duration of practice ranged from 4 months to 39 years. All the care providers reported to be aware of PITC services. However, 35% of them had inadequate knowledge of PITC and 269 (67%) reported to have ever offered PITC services. Median number of clients attended per week was 3 (IQR, 1-6 clients). Participants who had attended special training on PITC were 6-fold more likely to offer PITC services [OR = 6.2, 95% CI = 3.7-10.2; *P*<0.001] than those who had not attended. In conclusion more than one-third of health providers do not routinely offer PITC in Mbeya City, leading to missed opportunity for early HIV diagnosis. On job and in-service training to improve PITC knowledge and supportive supervision for those trained is required.

Keywords: Knowledge, practice, provider-initiated testing and counseling, Tanzania

Introduction

Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS) is a global health threat and continue to pose great public health challenges. It is estimated that, worldwide about 33.4 million people are living with HIV (UNAIDS, 2009). In 2008, approximately 2.7 million people were infected with HIV and 2 million died from AIDS (UNAIDS, 2009). Sub-Saharan Africa has been hit hard by the pandemic and it is currently estimated to have 70% of people living with HIV/AIDS worldwide (UNAIDS, 2009). HIV is a public health problem in Tanzania as well, with a prevalence of 5.7% among adults aged 15–49 years. However, the prevalence varies substantially between regions and districts throughout the country (THMIS, 2008).

Previous studies have reported that only 10-12% of people in sub-Saharan Africa know their HIV status (UNAIDS, 2009). Although there are some efforts to promote and support HIV counseling and testing services in Tanzania, the majority (85%) of the populations are unaware of their HIV status (THMIS, 2008). Since 2007, UNAIDS and WHO have recommended that countries with generalized HIV epidemics should adopt a policy of Provider Initiated Testing and Counseling (PITC) in clinical settings. The policy guidelines suggest that HIV testing and counseling should be offered by the health care provider as part of the routine care to all patients or clients attending at health facilities, regardless of whether or not the patient shows signs and symptoms of underlying HIV infection (UNAIDS/WHO, 2007).

PITC is an active case finding strategy, and relies on health care providers working at clinical settings, to routinely offer HIV counseling, diagnostic HIV testing, and HIV screening. It is also emphasized that PITC should be voluntary and that the "Three C's" – informed consent, counseling and confidentiality must be observed. The PITC policy complements the existing HIV voluntary counseling and testing (VCT) programmes which rely on individuals to self refer for testing (THMIS, 2008). With these two strategies PITC and VCT, it is hoped that the number of people knowing their

HIV-status will increase, and people will be detected earlier, in order to access care and treatment in timely manner (Kiene *et al.*, 2010).

In Mbeya Region, the implementation of the PITC programme started in 2007. This was preceded by training of health care providers in PITC which was facilitated by the Ministry of Health and Social Welfare in collaboration with non-governmental organizations. There is however limited information on health care providers' knowledge, practice as well as barriers to PITC provision since the scale up in 2007. This study therefore, aimed to assess PITC knowledge and practice of health care providers working in the government health facilities in Mbeya City in south-western Tanzania.

Materials and Methods

Study area and sampling procedures

A cross-sectional study was conducted from April to May 2010 among nurses and clinicians working in government health facilities of Mbeya City, south-western, Tanzania. The City has a population of 233,441 lives (National Bureau of Statistics, 2009) and HIV prevalence of 12.5% (THMIS, 2008). There were 12 government health facilities in the city at the time of the study. These included one referral hospital, one regional hospital and ten primary health care (PHC) facilities which include dispensaries and health centre. Study participants were clinicians (medical doctors, assistant medical doctors and clinical officers) and nurses working in the health facilities. A list of all clinicians and nurses was obtained from the Regional Medical Officer's office. A stratified random sampling method with a probability proportional to size of the population was used to select the participants. The proportion of providers selected from each level was calculated based on their number. At the time of the study, 53% of all clinicians and nurses working in Mbeya Referral Hospital, 35% in PHCs and 12% in Mbeya Regional Hospital. At each facility, the list of providers was stratified according to cadre (i.e. nurses or clinicians). This was necessary because the clinician: nurse ratio was 1:3. Simple random sampling was then used to select the participants from a sampling frame which had the names of providers at each level. A total of 54 clinicians and 160 nurses were selected in Mbeya Referral Hospital, 31 clinicians and 109 nurses were selected from PHC, and 13 clinicians and 35 nurses respectively were selected from Mbeya Regional Hospital.

Data collection

A standardized questionnaire was used to collect information on demographic characteristics, cadre, previous training on HIV counseling and testing, training on PITC, number of years at service and on knowledge and practice regarding PITC. Information regarding knowledge and practice were assessed using dichotomous type of questions. A total of 16 questions were used to assess the PITC knowledge. Of the 16, two questions which focused on basic principles of PITC were given a score of 3 points for a correct response and the rest were given a score of one point for each correct answer, making a total score of 20 points. In order for a participant to have adequate knowledge, one had to get correct responses from two questions focused on the basic principles of PITC and at least nine points from other questions. The participants scoring 15 or more points were categorized to have adequate PITC knowledge. The cut off points was based on previous research (USAID-Tanzania, 2007).

Practice of PITC was measured by first asking the participants if they had ever offered PITC. Those who had "ever offered PITC" were further categorized into "active" and "inactive" PITC providers based on their performance in the past one month of practice. Health care providers who had not offered PITC service to any patient or client during the past month of their practice were classified as "inactive" while those who offered it to at least one patient or clients were classified as "active". Providers who have ever offered PITC were further asked 12 questions to assess if they adhered to the three PITC principles of confidentiality, counseling and informed consent. Counselling domain consisted of 3 questions, confidentiality 5 questions and informed consent 4 questions. The

cut-off was set at 10 points; those who scored 10 or more points were regarded as offering good PITC service whereas those who scored less than 10 points were considered to be offering poor PITC service.

Data analysis

Data were entered and analyzed using Statistical Package for Social Science (SPSS) programme version 17.0 (SPSS Inc., Chicago, IL, USA). Bivariate analysis was carried out to assess the association of PITC knowledge and practice with predictor values. Multiple logistic regression analysis was carried out to control for confounders and get independent predictors of PITC practice and knowledge. Only variables shown statistical significance in the bivariate analysis at ($p \leq 0.05$) were entered in the regression model.

Ethical considerations

Ethical approval was obtained from KCM-College Research Ethics Committee prior the commencement of the study. Permission to conduct the study was sought from the local administrative authority. The informed consent was obtained from all participants after being explained of the aim of the study. For confidentiality and privacy, identification numbers were used instead of names.

Results

A total of 402 (95% response rate) participants were involved in the study. The majority were aged ≤35 years (mean age= 41± 9.5) years. About two thirds (64.7%) of the participants were females and 78.9% were ever married. Those with lower qualifications (298) accounted for the majority of the health care providers. Their years of practice ranged from 4 months to 39 years with median of 9 years [(IQR), 4-20 years] where, majority (75.6%) practiced for less than 10 years.

All the 402 health care providers reported to have heard about PITC. The common reported sources of information on PITC were professional colleagues (66.4%), training on PITC (53.5%) and conferences (23.9%). Sixty five percent (260) of the participants had adequate knowledge on PITC. Fifty-three percent (215) had attended special training on PITC, but there was a variation in the duration of training with majority (70.7%) reported to have had a one-week training, 25.1% two-week and 4.2% three-weeks or more of training. Knowledge of health care providers on PITC was significantly associated with PITC training ($P \leq 0.001$). Participants who attended training on PITC irrespective of their duration of training demonstrated an increase of their PITC knowledge (75%) compared to others (22%). In addition, participants who were ever married had three-folds adequate knowledge on PITC [OR=2.6, 95% CI = 1.6 - 4.3] compared to their counterpart who never married. About 67% (*n* = 269) of participants reported to have ever offered PITC services. Majority (78.1%) of the participants were actively involved in provision of PITC service. The self-reported number of patients attended by each participant in the past one month prior to the interview varied from 0 to 55 with a median number of 3 clients (IQR, 1-6 clients). Old age, long duration of practice, attendance of PITC training and adequate knowledge on PITC were all significantly associated with ever offering PITC service ($P = <0.001$). Older health care providers were three folds more likely to offer PITC services [OR = 2.9, 95% CI = 1.7 – 5.3], compared to their young counterpart. Additionally, health care providers who had practiced for more than ten years were two times more likely to have had offered PITC than those who practiced less than 10 years. [OR = 2.4, 95% CI = 1.5–3.7]. Having attended PITC training [OR = 7.1, 95% CI = 4.4–11.5], and having adequate knowledge of PITC [OR = 1.9, 95% CI = 1.2–2.9] were both significantly associated with offering PITC services. Logistic regression analysis revealed that only two variables were independent predictors of offering PITC services. Special training on PITC [OR = 6.2, 95% CI = 3.7-10.2], as well as working at regional/referral hospital [OR = 1.9, 95% CI = 1.1-3.0] were significantly associated with offering PITC services

($P \leq 0.001$). Most of the socio-demographic variables were not associated with offering good PITC services after adjustment.

Of the 269 health care providers who reported to have ever offered PITC service, (70.6%; N=190) were offering good PITC services and other offered poor practice. On the other hand, those who had practiced for short duration (≤10 years) were found to be offering good PITC services than those who have been in practice for more than 10 years ($P = 0.012$). In addition, participants who attended special PITC training (75%) were two fold more likely to offer good PITC services compared to their counterparts (61%) have not had PITC training [OR = 1.9, 95% CI = 1.1-3.4]. Health care providers with adequate PITC knowledge were three times more likely to offer good PITC services compared to their counterpart [OR = 3.3, 95% CI = 1.2-5.8].

Discussion

The health care workers are the cornerstone for implementation of PITC strategy as required by the Tanzania Ministry of Health and Social welfare and the World Health Organization. In this study, all the participants were aware of PITC services. However, about one-third of health care providers was found to have inadequate knowledge on PITC. This figure is lower compared to that which was reported in a New York City study, in which two-thirds of the primary health care providers had no knowledge of the existence guidelines and approaches to PITC (Jain *et al.,* 2009). The higher HIV prevalence in Mbeya Region compared to that of New York City might have contributed to the higher awareness and knowledge in Mbeya. Adequate PITC knowledge was associated with PITC provision in this study, and this highlights the importance of making sure that all the health care providers receive PITC training in this high HIV prevalence setting.

Marital status was associated with PITC knowledge. The health care providers who ever married were significantly found to have better knowledge on PITC compared to those who have never married. It is possible that, the ever married candidates might be those who have practiced for many years and therefore had adequate knowledge.

Special training on PITC was significantly associated with the PITC knowledge. In this study, the majority of health care providers who attended special training had adequate knowledge compared to those without training. Both knowledge and training were independently associated with provision of good PITC services. Similar findings have been reported in the USA and in Uganda (Burr *et al.*, 2006; Wanyenze *et al.*, 2006). The study in Uganda indicated that a significant proportion of health providers improve PITC practice after training. However, in our study about a quarter of those who attended special PITC training had inadequate knowledge. We observed a tendency of health care providers to forget what they were previously taught and problem might be with quality and duration in their previous training on PITC. The majority of health providers in this study received a one week training contrary to the 3 weeks of training on PITC as recommended by the World Health Organization (WHO, 2004). The short duration of study is likely to be due to financial constraints (MoHSW, 2007).

In this study, two-thirds of health care providers were reported to have ever offered PITC service and the over three quarters were actively providing the service. This proportion is higher than that reported in USA (20.3%) and Canada (55%) (Guenter *et al.*, 2003; Cohan *et al.*, 2009). Since the effective provision of PITC call for motivated health care providers who have desire to meet the client needs, it is likely that, health workers in the present study had higher motivation compared to their counterpart in the USA and Canada. Moreover, this study noted that significant proportions of health care providers were not actively involved in the provision of PITC. Our findings indicate that only about half of the providers are routinely offering PITC in this setting at any given time. This is a

worrying trend as it highlights a missed opportunity for provision of PITC and thus early detection of HIV infections. Health managers in the area will need to investigate the reason for this pattern and come with solutions to improve PITC service provision (THMIS, 2008; MoHSW, 2007).

Health care providers working at regional and referral hospitals were two-fold more likely to offer PITC compared to those in primary health care facilities. This might be due to the fact that those who are working at the primary health care levels are overwhelmed with a lot of patients. The increased number of patients at the primary health care is most probably because it is the first gateway to the access of health care services in the health care system ladder compared to the higher facilities where they mainly receive referred patients. It is important therefore that human resource for capacity is strengthened to cope with the increasing need for HIV care and treatment services close to the community.

Training on PITC was significantly associated with offering good quality PITC services. This is supported by the previous study by Weaver *et al.,* 2008. It is likely that the current training of PITC emphasized more on the relationship between patients and health care provider. This has beneficial effect on the patient satisfaction and hence increases in PITC uptake.

Despite of the importance of the information generated by this study, there some limitations which hinders the generalization of our findings to other settings. The study was cross-sectional in nature and relied on self-reported practices, both of which limits ability to draw conclusions about causal-effect relationships between health care providers' characteristics and PITC practice. In conclusion, most health providers had adequate knowledge on PITC and two thirds had ever provided PITC service. Level of knowledge and previous training in PITC had an influence in provision of PITC. However, although PITC is an effective strategy for early identification of unrecognized HIV infections, there is still missed opportunity to offer the PITC service that occurs at health facilities, as nearly a third of health care providers had never offered PITC and one fifth are not actively offering the service. Good quality training on PITC and take into account the recommended duration should be provided to all health care providers in this setting. The role of good quality training on PITC to all health care providers should not be undermined. The information in this study is potentially important for those who wish to scale-up the PITC, since it has shown various parameters associated with PITC practice.

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Anthrax Outbreak Investigation, Moshi District, Kilimanjaro Region Tanzania, March 2012

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Introduction

Anthrax is an acute illness caused by Bacillus anthracis, a gram positive, encapsulated, spore forming and none motile bacteria. The disease commonly affects wild and domestic herbivores, human and carnivores are incidental hosts. Three occurrence forms of the disease in human include cutaneous, inhalational and gastrointestinal anthrax. The transmission of the disease can be through intestine (ingestion), Respiratory (inhalation) and Skin (cutaneous) from infected animal tissues and from infected person. The worldwide estimate of the disease burden is not well known, however occasional epidemics do occur (WHO 2005).

A suspected outbreak of anthrax in Kitandu Village, Moshi District was reported to the Ministry of Health and Social Welfare (MOHSW) by Kilimanjaro Regional Medical Officer on 29th February 2012. The index case may have got ill on 20th February 2012 however cases started appearing in the health facility on 26th February 2012. As of 1st March 2012 a total of 10 cases and 1 death were reported.

The suspected Anthrax outbreak is said to have occurred after the consumption of meat from a sick cow which had died on 18th February 2012. Therefore, there was need to carry out an investigation to ascertain what was happening in the affected district.

Methodology

Study design
This was a cross-sectional study. This study design involved the enrolment of patients presenting with signs and symptoms for anthrax who were either admitted or at home. Active case search in the community was done to identify cases. Clinical samples was collected and transported to reference laboratories for confirmation.

Study area
The suspected anthrax outbreak occurred in Kibosho Division (Kitandu and Mango villages) in Moshi rural district of Kilimanjaro region in Tanzania. The area is about 15kms from Moshi municipality. The outbreak investigation was carried out from the 01st March 2012 to10thMarch 2012

Case definition used:
Suspect Case: A resident of Kitandu and Mango villages presenting with a Clinical illness, in a person who is epidemiologically linked to a confirmed or suspected animal case or contaminated animal product from 18th February 2012.
Probable case: A resident of Kitandu and Mango villages presenting with cutaneous ulcer developing within two weeks of coming into contact with a sick or dead animal, confirmed to have anthrax or dying of unknown disease since 18th February 2012.
Confirmed Anthrax case: A probable case in whom laboratory testing confirms *Bacillus anthracis* by Gram staining or culture or PCR

Places visited

We identified the homes of the cases that sought treatment from Mawenzi Regional hospital, through assistance of the Kilimanjaro Region IDSR focal person, District Health Officer of Moshi rural, veterinary officers from Veterinary Infectious Centre (VIC), Arusha, and Moshi rural and a team of community leaders. These led to cascading of cases from one village to another. We visited two most affected villages i.e. Kitandu and Mango villages:

Data collection methods:

Semi structured questionnaire were used to get information from patients and their families. Where the patient is not available a knowledgeable proxy was used

The data in the questionnaire included demographic information, clinical characteristics of the cases. Risk factors like involvement in slaughtering animals, knowledge about the anthrax disease, eating meat from an animal slaughtered due to sickness, health seeking behaviour in case of a sickness and many more were captured in the questionnaire.

Results

A total of 67 subject linked to the dead cow were interviewed, among them 12 subjects who met standard case definition and 1 death (CFR=8.3%) were reported as of 11th March 2012. The median age for cases was 30 years with the youngest being 2 years old and oldest was 54 years old. Age group 40-49 years constituted 34% of the cases. Other social demographic characteristics for the subjects and cases are as shown in Table 1 and 2 below.

Table 1: General characteristics of the study subject of anthrax outbreak at Moshi rural, February 2012.

Variable	Number	Percentage	95% CI
Gender			
Male	29	43.3	31.2, 56.0
Female	38	56.7	44.0, 68.8
Occupation			
Peasant	41	61.2	48.5, 72.9
Formal employment	5	7.5	2.5, 16.6
Un employed	4	6	1.7, 14.6
Student	9	13.4	6.3, 24.0
Others*	8	11.9	5.3, 22.2
Education level			
Non educated	18	26.9	16.8, 39.1
Primary education	45	67.2	54.6, 78.2
Secondary education	3	4.5	0.9, 12.5
Tertiary education	1	1.5	0.0, 8.0
Age group			
0 - 9 Years	7	10.4	4.3, 20.3
10 - 19 Years	7	10.4	4.3, 20.3
20 - 29 Years	6	9	3.4, 18.5
30 - 39 Years	11	16.4	8.5, 27.5
40 - 49 Years	12	17.9	9.6, 29.2
50 - 59 Years	10	14.9	7.4, 25.7
60 and above	14	20.9	11.9, 32.6

Place of residence				
	Kitandu	40	59.7	47.0, 71.5
	Mango	26	38.8	27.1, 51.5
	Others**	1	1.5	0.0, 8.0

*Others included under – five children, business people, and elderly subjects who are incapable of working. **Others included villages of Kibosho division, Moshi rural district apart from Mango and Kitandu who were linked to the dead cow.

Table 2: Social demographic distribution of cases for anthrax in Moshi rural, February – March 2012

Variable	**ILL**	**Percentage ill (%)**	**95% CI**
Gender			
Male	8	66.7	34.9, 90.1
Female	4	33.3	9.9, 65.1
Occupation			
Peasant	9	75	42.8, 94.5
Student	2	16.7	2.1, 48.4
Others	1	8.3	0.2, 38.5
Education level			
Non educated	2	16.7	2.1, 48.4
Primary school	10	83.3	51.6, 97.9
Age group			
0 - 9 Years	2	16.7	2.1, 48.4
10 - 19 Years	1	8.3	0.2, 38.5
20 - 29 Years	3	25	5.5, 57.2
30 - 39 Years	1	8.3	0.2, 38.5
40 - 49 Years	4	33.3	9.9, 65.1
50 - 59 Years	1	8.3	0.2, 38.5
Place of residence			
Kitandu	4	33.3	9.9, 65.1
Mango	8	66.7	34.9, 90.1

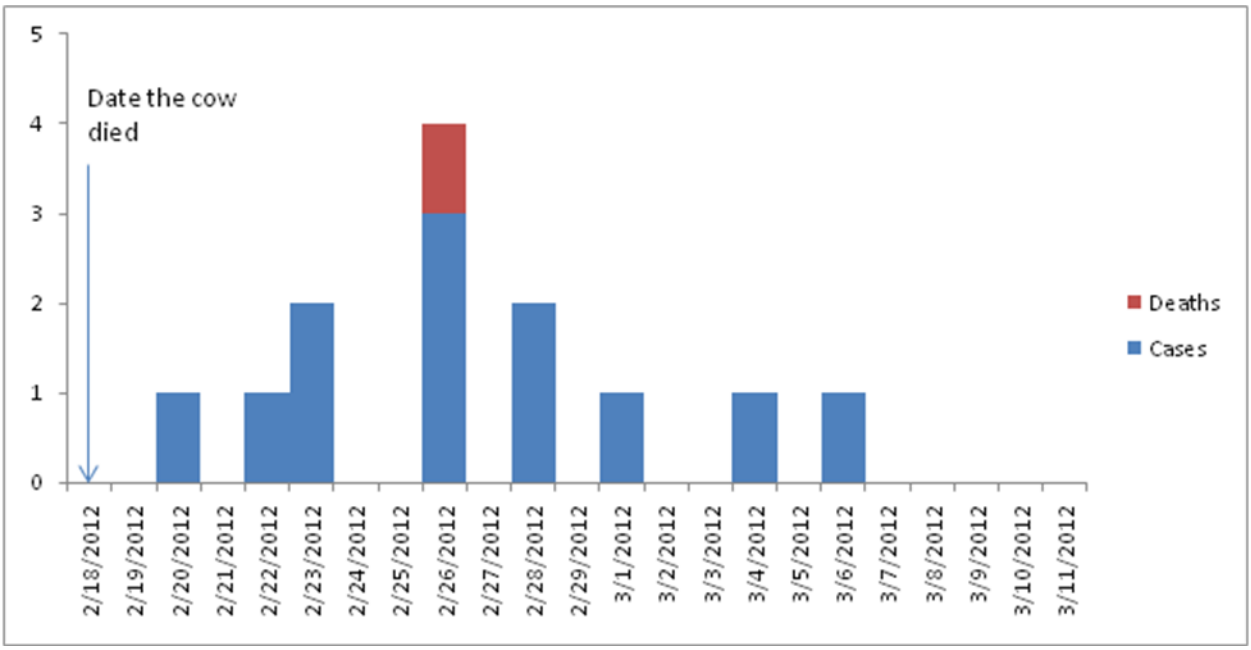

Figure 1: Epidemic curve, anthrax outbreak, Moshi district February – March 2012

Table 3: Potential risk exposure for acquiring Anthrax disease at Moshi rural district, February 2012

Exposure Risk	Prevalence Odds Ratio	95% CI	P value
1. Involved in slaughtering the cow	8.7	1.6, 46.1	0.02
2. Involved in handling the meat	4.9	1.3, 18.5	0.02
3. Living in Mango village	4.11	1.1, 15.5	0.03
4. Being a male gender	3.2	0.9, 12.1	0.07
5. Contact with other animal product	2	0.4, 8.8	0.3
6. Eating the meat	1.6	0.2, 14.4	0.6

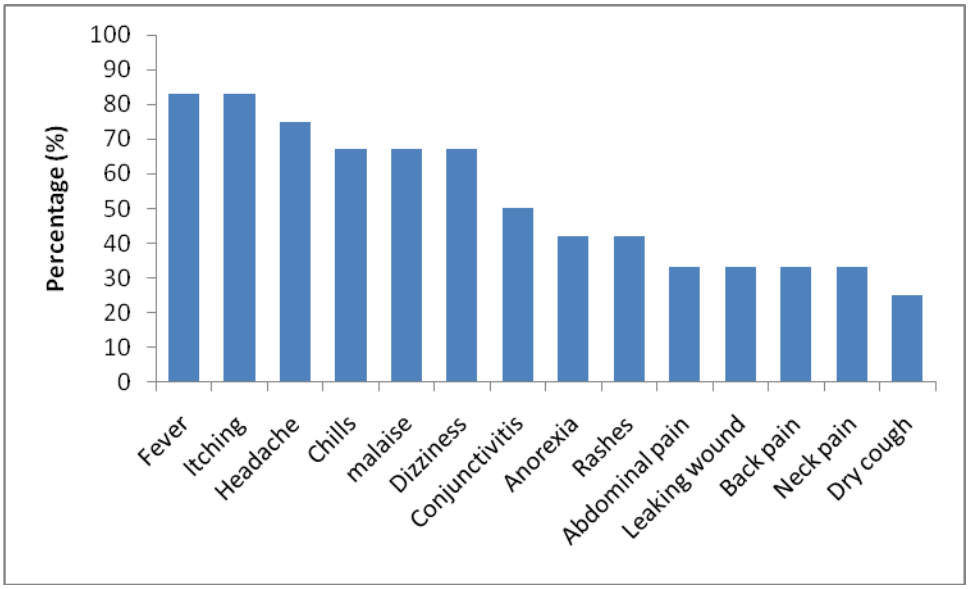

Figure 2: Presenting symptoms in patients of anthrax at Moshi rural, February – March 2012

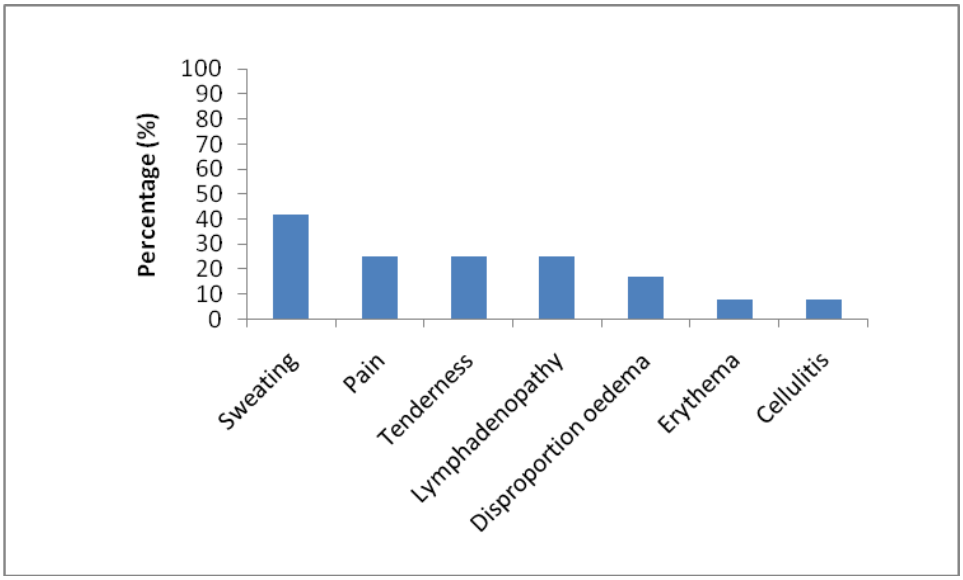

Figure 3: Presenting clinical symptoms in patients of anthrax at Moshi Rural February – March 2012.

Among others potential exposures indicated in the table 3 below slaughtering, meat handling and living in Mango village were significantly associated with an increased risk of acquiring the disease. The period from the exposure of the dead cow to the onset of symptoms ranged from 2 to 17 days with a mean of 8.6 days. Among the 12 patient of anthrax, 5 (42%) were hospitalized and the rest treated as outpatient. Case fatality rate was 1/12 (8%) and infectivity rate was 12/67 (18%).

Discussion

The line list provided at the launching of this investigation had 10 cases; however among them two did not fit for our case definition as anthrax cases. During the active search, 4 more cases were identified making the final line listing of 12 cases. The incubation period for Anthrax is 1 to 7 days, in this outbreak it was observed to range from 2 to 17 days. This delay to onset of symptoms might be due to massive antibiotics prophylaxis that was provided at the course of outbreak to that community by the district rapid response team. However the prophylaxis given was a single dose of Doxycycline which was not enough to prevent those who were still incubating from developing into a clinical disease.

Those who were involved in slaughtering and handling of the meat from this dead cow were shown to be on high risk when compared to those who ate alone. The case that died and those who were admitted were those who were prolonged exposed especially during slaughtering process and in selling the meat.

Despite that the cow died and then slaughtered in Kitandu area on 18th February 2012, most cases were from Mango area where the meat was sold the next day on 19th February 2012. The possible explanations may be an increased infectious dose of the anthrax pathogens that were continuing multiplying on that meat.

This area has no previous history of anthrax and the cows are not vaccinated against anthrax. The cow that died was kept under zero grazing and there was no history of recent change in grazing sources making it difficult to establish the source of infection. However two weeks before the occasion the son of the cow owner arrived from a different place with a disease that presented with generalized body swelling which is similar to some of this cases of anthrax and he has being treated as a case of anthrax. The possibility that the cow was infected by this person while taking care of, it was hard to establish as we faced some difficulties to find this person for laboratory confirmation.

In conclusion, the outbreak of anthrax in Moshi rural district at Kibosho division in Kitandu and Mango area was established although laboratory confirmation was not achieved, despite that one blood sample was collected and sent to the laboratory for testing however there was no testing reagents available at that time. All cases were linked to the dead cow making it a cause for the outbreak. Slaughtering and handling of meat to this dead cow was the major risk factors for acquiring the disease in human. The outbreak was declared ended on 22nd march 2012.

Contextually oriented strategies in controlling the spread of HIV infection among the fishing communities of Lukuba Island, in Lake Victoria, Tanzania

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Abstract: This study was conducted in Lukuba Island, Mara, Tanzania, it aimed at examining contextually oriented strategies in preventing HIV/AIDS spread in the study area. Both simple random and purposive sampling for respondents' selection were employed in which, health personnel and fishing community members were involved. Social survey collected primary information while documentary reviews collected secondary information. This study was mainly qualitative. However, simple statistics were run to complement the findings. In so doing, statistical package for social sciences were employed, ran frequency and percentages. The study found that HIV prevalence stood at 20%, the percentage of people knowledge and awareness on HIV/AIDS were 93.5%, this has been a result of Information Education and Communication IECs used for HIV/ AIDS awareness creation on the Island. Stigmatization on people living with HIV was low among the community members. However, sexual risk behaviors such as non condom use, exchange sex for money, excessive alcoholism and rape, are still persisting. Challenges realized included; messages for behavior changes on banners, posters and even cinema were not exhaustive to cover all risk behaviors on the Island, besides; unqualified and insufficient number of workers/service provider; lack of HIV/AIDS counselors, shortage of ARVs and medical equipments needed for VCT services were still big challenges in a fight against HIV/AIDS on the Island. As a consequence, it was recommended that themes and messages' for HIV control on the Island need to match the existing sexual risk behavior; also HIV/AIDS counselors, necessary drugs and equipments need be made available.

Background

The first cases of AIDS in Tanzania were reported from the fishing community of Kanyigo in Kagera region in 1983 (Tibaijuka, 1997) and by 1987 every region in the country had reported AIDS cases. In 1985 the government set up the NACP (National AIDS Control Programme) to coordinate the response and established AIDS coordinators in each district in the country (TACAIDS, 2009).

Around 1.2 million people aged 15 and over, or just over 5 percent of the adult population, are living with HIV in Tanzania. (UNAIDS,2010).Although this number has recently fallen slightly, the epidemic's severity differs widely from region to region, with some regions reporting an HIV prevalence of less than 2 percent (Arusha) and others as high as 16 percent (Iringa), (TACAIDS, 2008). An estimated 100,000 Tanzanians were newly infected with HIV in 2009, which are around 275 new infections every day. In the same year, 86,000 Tanzanians died from AIDS (UNAIDS, 2010).The AIDS epidemic on Tanzania mainland is described as generalized, meaning it affects all sectors of the population. Heterosexual sex accounts for the majority of infections (80 percent) on Tanzania mainland. On the semi-autonomous Island of Zanzibar the
HIV prevalence is far lower among the general population (0.6 percent) and the epidemic is more concentrated, primarily affecting female sex workers, men who have sex with men and injecting drug users (IDUs) (TACAIDS,2010).

Fishing communities in developing countries have been identified in the past decade as a sub-population at significant risk of contracting HIV. Especially in countries with high overall rates of HIV prevalence such as South-East Asian and Sub-Saharan African countries, fishing communities are considered extremely vulnerable to HIV (The Pan African Newspaper,2006) argue that HIV prevalence is higher in fishing communities as compared to other sub-populations known of HIV/AIDS risk, such as Injection Drug Users (IDUs), truck drivers, military men and miners. Although

reports and scholarly articles have attested to the growing incidence of HIV among fisher folk, policies to address HIV have not been mentioned in fisheries' documents, and targeted interventions focused on fisher folk have been absent until recent years where policy briefs by the Food and Agriculture Organization (FAO) and the World Fish Center serve to draw policy attention to the issue by highlighting the vulnerability of fishing communities to HIV/AIDS (FAO, 2012). The Government of Tanzania is committed into strengthening HIV prevention in order to drastically reduce the rate and numbers of new HIV infections. This commitment is reflected in the second National Multi-Sectoral HIV and AIDS Framework 2008-2013 (NMSF II), which is closely aligned to the Health Sector Strategic Plan (URT, 2008).

While all of these steps are encouraging strategies in controlling the spread of HIV/AIDS, health promotion materials such HIV control messages including information, education and communication materials[IECs] are prepared and meant to work for all communities in all situations regardless of the living or working contexts compelling the spread of HIV/AIDS. Since the contexts exacerbating HIV/AIDS susceptibility vary from place to place this research intended to assess the contextual HIV/AIDS controlling mechanism employed in Lake Victoria,
Methodology

Study Area
The study was conducted on Lukuba Island in Musoma rural District in Mara region, Tanzania. Mara is in the northern part of Tanzania. The region is bordering the Republic of Kenya in the North,Kagera region to the West, Mwanza and Shinyanga regions to the East. Lukuba Island is 12 kilometer away from Musoma town. The Island is small in size with a population of 1107(Village records) who are permanent residents. The indigenous dwellers in the area are Bakwaya. However, other ethnic groups are on the Island include Kurya,Jita, Luo and other tribes from different areas of Tanzania. The island was selected purposively because of being reported incubate of HIV cases and not being regularly intervened by HIV controlling programs (Mgabo, 2009)

There are two types of data sources that were collected which are primary data and secondary data. Primary data was obtained direct from the field, through making a conversation between fishermen, clinical officer, community leaders and researchers by using different methods like questionnaire, interview, and focus group discussion. Secondary data were obtained from published and un-published material such as reports, office report, books and magazine. The study used a cross sectional design which involved gathering data from the study area once at a given point of time. This approach was been proposed because of the following merits; it gives time to observe what a researcher wants to see, it is cost and time effective. The study involved a list of fishing crews, boat owners, fishmongers, women, youths, village elders, businessmen and community members. These were targeted because they are expected to provide rich information on the strategies used to prevent the spread of HIV. Also the coordinator of District HIV/AIDS Programme, health care services providers in the area,VEO and private health providers for technical information and influence they have.

In this study the sampling unit was the households on the Island. It involved a list of fishing crews, boat owners, fishmongers, women, youths, village elders, businessmen and community members. Also the coordinator of District HIV/AIDS Programme, health care services providers in the area, VEO and private health providers for technical information and influence they have.

A sample size of respondents in this study was selected from the selected study population. The sample was selected by using the formula presented below
$n=N/ (1+N (e)^2)$ (Yamane,1967)
Whereby:

N=total population
n=sample size
e=is error which equals to 10%
Significance level (90% confidence interval)
Therefore,
$n=1107/ (1+1107(0.1)^2)$
=91.7 which is equal to 92
Both probability and non-probability were used as a technique for sample selection .The research utilized both simple random sampling and purposive sampling, Purposive sampling was used to select respondents who can give out relevant technical information especially at health issues, administrators of relevant offices dealing with HIV/AIDs. Simple random sampling method was used to select small scale fishermen in the study area.

The data collected was processed and verified before analysis. Data were edited to detect errors and omissions, classified before coded into numeral to make them easy for analysis, and then entered into the computer using the computer statistical packages for Social Scientists (SPSS) programme. Quantitative data collected were analyzed through SPSS including frequencies, mean and figures. Qualitative data collected through discussion with key informants was analyzed by using content analysis. This is to give summary of each topic discussed and identify the content of discussion.

Study design

This study was carried out between July to August, 2012. The study involved across-sectional survey in three purposively selected fishing camps on the Island. The fishing camps involved included in the study, Seng'enge, Makali, Kinyonjoi. Fishing crews, boat owners, fishmongers, women, youths, village elders, businessmen and community members were involved in this study. These were targeted because they were expected to provide rich information on the strategies used to prevent the spread of HIV. Information from these category of people were supplemented by the District HIV/AIDS Programme coordinator, health care services providers in the area; both public and private owned health care providers and he village executive office (VEO). In total 92 respondents both males and females aged above 15 years were reached. Both probability and non-probability sampling techniques were used to select the respondents. Purposive sampling was used to select respondents who could give out relevant technical information whereas simple random sampling method was used to select the residents in the study area. Questionnaire and checklists for Key informants and focus group discussion were employed as instruments for collecting primary data while secondary data were obtained from implementation reports, published and unpublished reports. A sample size of respondents in this study was selected from the selected study population using the formula presented below
$n=N/ (1+N (e)^2)$ (Yamane,1967)
Whereby:
N=total population
n=sample size
e=Maximum error equals to 10%
Significance level (90% confidence interval)
Therefore,
$n=1107/ (1+1107(0.1)^2)$
: n=91.7 which is equal to 92

Data for this study was collected using a pre-tested semi-structured questionnaire. Pre-testing of questionnaire was done in villages not involved in this study. During data collection, informed verbal consent was asked from the respondent before interview all respondents.

Conceptual framework

In this study it was conceptualized that demographic, social environment and behavioral variables indirectly influence a strategy to be used in discouraging risk sexual behavior subjecting people to HIV infections (Onuoha, 1992; Palamuleni, 1997; Fitaw et al., 2003). These demographic variables included age, education level, and religion affiliation. Social environment variables included living arrangement (whom mostly been living with), type of marriage by parents, family type, ethnicity (cultural environment) and peer pressure. Behavioral variables included alcohol consumption and if ever received/given money or material gift in exchange for sex, having multiple sexual partners, unprotected behavior (LVFO Secretariat, 2006). All of these are thought to influence risky sexual behaviors in these regards, strategies designed to control the spread of HIV infection in the study area are expected to consider all of the above aspects influencing risky sexual behaviors.

Results and Discussion

This section represents the findings and discussion of the research gathered from the study area. These findings concentrate on population profile, major drives for spread of HIV infections in the study area, the strategies designed and employed to prevent the spread of HIV among fishing communities and their effectiveness in preventing the spread of HIV.

This study involved 95 respondents where, 92 were representing the dwellers on the Island and 3 were key informants, of which 56.5 per cent were males and 43.5% were females. The study involved people aged between 15-54 years; majority being aging between 25-34 years This was about 57.6% of all respondents, followed by those with 15-24 years of age amounting to 20.7%,those between 35-44 were 14.1% and those who were above 45 years of age were only 7.6%. It was also observed that 43.5% were married, 41.3 were single, 7.6 were widow/widower, 3.3% divorced, 4.3% separated and couples saying together on the Island 30.4%. In terms of the level of education attained, 20.7% had informal education, 69.6% had primary school education, 8.7% had reached secondary level and 1.1% had attended high learning education levels. With regards to occupation, the Island is dominated by Traders of various categories. These include businessmen and women (non food and beverages) 25%, food vendors 15.2%, bar maids 14.1% and house wives 4.7% as indicated in table1 below.

Table 1: General characteristics of Respondents

Sex	**Frequency**	**Percentage**
Male	52	56.5
Female	40	43.5
Marital status		
Married	40	43.5
Single	38	41.3
widow/widower	7	7.6
Divorced	3	3.3
Separated	4	4.3
Married and staying together on the Island	28	30.4
Age		
15-24	19	20.7
25-34	53	57.6
35-44	13	14.1
45-54	7	7.6

Education level		
Informal	19	20.7
Primary	64	69.6
Secondary	8	8.7
Higher learning/university	1	1.1
Occupation		
Fishing	38	41.3
Bar maid	13	14.1
Food vendors	14	15.2
Business man/woman	16	25
House wife	4	4.3

Majority 93.5% of respondents had knowledge on HIV/AIDS. They explained that HIV/AIDS is transmitted to a large extent through having sex with the person who is already infected with the Human Immune Virus (HIV). They also mentioned other ways such as being transmitted with unsafe blood, sharing tools with sharp points like razorblades and needles and mother to child transmission. This implies that community members on the Islands are aware of ways through which HIV/AIDS.

Table 2: Knowledge and awareness of respondents on HIV/AIDS

Causes for HIV/AIDS	Frequency	Percent
People with knowledge on HIV/AIDS	86	93.5
People with no knowledge on HIV/AIDS	6	6.5
Total	**92**	**100.0**

Various practices and behaviors have being practiced by people in Lukuba Island which contribute to high spread of new HIV/AIDS infections on the Island. These include; unprotected sex, Alcoholism, Rape, commercial sex-works, lack of privacy during bathing and uncontrolled use of guest house. Unprotected sex was seen to be the leading behavior in spreading HIV/AIDS; Majority 48% reported to have condoms but when it comes to the sexual intercourse these condoms are ignored either purposely or because of being drunk. This is more done among reckless men. Mgabo (2009) encountered a similar observation.

Unsafe sex was reported to be the leading behavior that leads to the spread of HIV/AIDS on the Island with 52.2% of those who were interviewed. This was reflected on the top five diseases record on the Island, whereby Sexually Transmitted Infections (STIs) were ranked third after malaria and dysentery (Lukuba Dispensary Records, August, 2012). STI being ranked a third disease, this signifies that the use of condoms on the Island is minimal. The second factor was multiple partners which accounted for 18.5% of total respondents, alcoholism and raping was the third factor mentioned to contribute to the spread of HIV by 15.2% excessive alcoholism was blamed to fail people making right decision regarding to safe sex when are drunk. Alcoholism was also link with rapping though not all rape cases were directly emanating from drunkenness.

Commercial sex was reported to exist on the Island though it is done openly. Since residences for fisher are very small about 3 -4 squire meters and congested meaning that on partitions and more than three people live in, timber walled guest house is mentioned as place where commercial sex is taking place.

Lack of privacy during bathing was also mentioned to account for contributing to risky sexual behavior. 10.8% of the respondents commented on this. Both men and women tend to bath during daytimes; they walk necked on the lake shores while fishermen are just closer continuing with fishing activities. As narrated below:

Women taking bath on the shores during day time is very common here, almost 90% of both men and women take bath on Lakeshores. Sometime a distance from where they bath is less than 70; it is easy to see each and every thing. This makes men to be sexually stimulated and attracted by women as a result, compelled to seduce each other" said a [mlokole] new born again man form Chinyonjoi Hamlet

Table 3: Practices leading to spread of HIV

Category	Frequency	Percent
Alcoholism	14	15.2
Having multiple partners	17	18.5
Involving in unsafe sex	48	52.2
Shore bathing in afternoon and commercial sex work	9	10.8
Timber walled guest house	4	4.3
Total	**92**	**100**

Strategies Used to Prevent HIV/AIDS

Three organizations are involved in the campaign against fighting the spread of HIV/AIDS. These organizations include, TACAIDS, ELCT and UWASAMU. These organizations are working as collaborative stakeholders in fighting against HIV/AIDS on the Island through Lukuba Dispensary. The following interventions Voluntary Testing and Counseling (VCT), Providers initiated Testing and Counseling, Prevention Mother to Child Transmission (PMTCT); Outreach to People Living with HIV (PLHIVs), Gender and rights based approach mainstreaming, Capacity Building to Socio - Economic Disadvantaged Group (Women, Widows, Girls and Youth), Condom provision, Information Education and Communication Materials information (IECs) e.g. sign boards and cinema as have been employed by the above agencies in preventing HIV/AIDS on the Island as detailed here below

HIV Testing and counseling

According to the data gathered from TACAIDS, UWASAMU and ELCT, this is one of the strategies used on the Island in the prevention of the HIV/AIDS. It is done through the following;

Voluntary Counseling and Testing (VCT)

This is when the customer willingly has visited the Dispensary for the purpose of knowing his/her status on HIV. 67.4% of those who were consulted seemed to prefer VCT. This service is provided using the Mobile VCT which rotates on all fishing camps on the Island. This mobile VCT seemed to work well and being accepted by the majority since they get service at their residence.

Provider Initiated Testing and Counseling (PITC)

This is when the customer visits the health center for other problems but due to the advice given by the health personnel client become convinced and willing to check his/her HIV status**.** The challenges facing HIV testing and counseling is the shortage of equipment's needed to enable service provision. Sometimes Lukuba Dispensary do face this shortage leading to lack of HIV testing kits on the Island till when these equipment's will be received from the Government other agencies dealing with HIV fighting on the Island

There is the integration of HIV care and treatment to women. It aimed at preventing the transmission of HIV from HIV positive mothers to their infants during pregnancy, delivery or breastfeeding. Pregnant women who have not yet met treatment for their own HIV infections are given short course of drugs to help protect their unborn babies. This service is being provided by Lukuba Dispensary in collaboration with Butiama District Hospital.

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Lukuba dispensary has been assessed for upgrading to continue providing ARVs services, village Multisectoral AIDS Committee VMAC has been established and 15 VMAC members have been oriented on their Roles on HIV Prevention. Four home based care (HBC) providers have been engaged from Butiama District Hospital for PLHIV Clients tracking for community ART/ARVs up take. Five HBCs have been engaged in Community Home Based Care provision in PLHIV Client Tracking.

However, The ARV provision has not started working; these providers have been prepared for the work once the service starts

There are 30 Peer Educators have been recruited and mentored on HIV prevention, whereby 27 were male, and 3 female. These peer educators are ambassadors of spreading the HIV/AIDS knowledge in their community. Their target is all community members in their community.

Capacity gaps on entrepreneurship skills have been identified that include, but not limited to entrepreneurship skills, shortage of capital, limited skills on resources mapping. 41community members in Lukuba Island have been trained on Entrepreneurship and marketing skills out of them 30 have been supported with startup capital. The GRBA has been mentored to 38 community members in Lukuba Island

"The village leaders are discriminating other people once these seminars and trainings are conducted they only choose their relatives to attend. Sometimes you may find their relatives do not meet the criteria being set to attend the seminar or trainings. They just sent to get per diems! No feedback is provided to the community "said one of the ladies in women FGD

Five (5) condom disposal areas have been established in five hamlets on the Island namely Isalilo, Isalu, Seng'enge, Kinyonjoi and Mionyo. These condoms are being distributed in guest houses, fishing camp leaders and hamlet leaders. 809 Community Members received condoms. However, About61.0% of male reported to have ever used condom while 52.8 of females reported to have ever sex with men who used condom, 19.0% of male reported to have ever had sex with female who used condom while 13.9% of female reported to have ever used female condom. While 44.8% of male reported to have used condom in their last sex while 31.8% of female had used condom in their last sex. This marks that condom use is still low. This confirm what was revealed by Mgabo (2009), Karukuza and Bob (2005) and Thaxton (2005).

"Condoms are being distributed but some of women do face some genital rashes caused by the oils of the condoms. This discourage them from using condoms during sexual intercourse, others said that these condoms were brought with HIV viruses being put inside so as to kill people hence they have chosen not to use them".

According to UWASAMU education on HIV/AIDS is being provided on the Island through Seminars, cinema and Sign Board which have HIV/AIDS message. Seminars provided covered various themes related to prevention from HIV. This included proper use of condoms, how to positively live with people who are HIV positive. A total of 3,456 people were reached by this education whereby Male were 1,867 and Female - 1,589(UWASAMU, 2012)

Cinemas carrying HIV/AIDS messages have been shown during nights. This approach was positively received by the community members and majority of them attended the cinema show.
The challenges facing the Cinema show was little participation of men due to fishing activities which are in most cases done during nights. Following this challenge, the solution was to show the Cinemas during the period when the fishing activities have suspended especially during the moonshine. During time fishing especially sardines fishing is seized (okkutegeruka).

> *The cinema shows are mentioned as a catalyst for the spread of HIV/AIDS. This is because they are being showed during night hours giving a chance to sexually risky behavior to take place. These include alcoholism leading to unsafe sex; also people use the cinema shows places as the meeting point.*

In attaining this, several initiatives have been done. This included developing sign boards. 4 sign boards have been developed with a message reads “Kubadili tabia inawezekana, Pima Afya yako, “Nunua samaki, Usinunue VVU, Uza samaki Usiuze VVU, sambaza Dagaa, usisambaze VVU". Literary meaning “Behavioral Change is Possible, Do clinical Test, Buy Fish not HIV, Sale Fish not HIV, Scatter sardines[dagaa] not VVU’ as see hereunder. These sign boards have designed by ELCT TACAIDS and LVFO.

Comparing the message on the sign board and the targeted audience, fishermen and women are targeted by the message. Fishermen and women who are directly or indirectly involved in fishing sector are the ones blamed to fuel the spread of HIV/AIDS among fishing communities (Gordon, 2005; Karukuza and Bob,2005; Mgabo, 2009) Fishermen have money and they can even by sex from women who deal with fish processing especially for Nile perches [Sangara] and those who scatter sardine to dry on sun and most of them also involve in commercial sex sometimes they exchange fish with sex. Similar experience was found in Kenya (HIV / AIDS News, 2005). The message on sign board-Buy Fish not HIV, Sale Fish not HIV, Scatter sardines [dagaa] not VVU’ is trying to urge them from unhealthy behavior and practices with can lead to encountering HIV infections

However, the researcher observed that other drives for the spread of HIV/AIDS have been given less or no attention at all. These drives include, Alcoholism, raping, non condom use and multiple sexual partners,

Conclusions and Recommendations

Much efforts have been done into curbing the spread of HIV/AIDS on the Island;. Both government and civil society organizations have been involved People on the Island are currently knowledgeable on HIV/AIDS and its impacts. This has been the outcome of sensitization and awareness creation that have been done. For example big sign boards found on the Island have message that reflects warnings onto factors fueling the spread of HIV on the Island This has lead to insignificant behavioral changes This can be seen especially on significant minimized stigmatization on negative perceptions to PLWA. This has made many people to freely disclose their HIV status. However, the researcher observed that other drives for risky sexual behavior which in turn lead to the spread of HIV/AIDS have been given less or no attention at all. These drives include alcoholism, raping, non condom use and multiple sexual partners. This was revealed by secondary data from the government dispensary on the Island. Much efforts id still needed to control the observed risky sexual behaviors

In developing a health promotion strategy, a through participatory appraisal on the existing challenges. These challenges should consider contextually challenges hindering the desired changes to happen Strategies set should include what need to be changed. These should be well extracted from findings revealed in the situation analysis study. Evaluation on set strategies should be reviewed regularly so as improvement can be done on the strategies that have been implemented

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Malaria prevalence in under five children utilizing insecticide treated nets through voucher scheme programme in Mtwara municipality

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Abstract: Malaria is caused by *Plasmodium vivax*, *P. malaria, P. ovale* and *P. falciparum,* transmitted by the bite of a female Anopheles mosquito at night. It kills an African child every 30 seconds, making a mortality of 3,000 children each day totaling to more than one million per year. Tanzania has the third largest population at risk of stable malaria in Africa after Nigeria and the Democratic Republic of Congo. Since 2004, malaria control strategy using ITNs has been implemented in Mtwara which has the overall malaria prevalence of 33.6%. The broad objective of the study was to determine the Malaria Prevalence in under five children utilizing Insecticide Treated Nets through Voucher scheme program, Mtwara Municipality November 2011. The study was conducted in Mtwara Municipality, coast southern part of Tanzania main land with area of 163 sq kms. A descriptive cross -sectional quantitative study was employed and sample size of 357 under five children were randomly selected, the data collected by use of **Q**uestionnaires. Malaria rapid diagnostic test and a microscope were used to check blood for malaria and a computer program using SPSS 15 version was used for data analysis. Among 398, 18(4.5%) and 20(5.0%) tested positive by RDT and microscope respectively. Of all 385 who always use Insecticide Treated Nets (ITNs) only 16 of them equivalent to 4.2% had Malaria, compared to among 13 who Rarely/never used nets 4 of them (30.8%) have positive test for Malaria. There is a high relationship between the prevalence of malaria and uses of the treated nets k2 P value 0.002.Of all 398, only 97(24.4%) had received HATI PUNGUZO from the healthy facility, so advocacy of provision of HATI PUNGUZO at RCHC should be re-embarked to prevent relapse of malaria infection and other strategies have to be combined, for instance IRS.

Introduction

Malaria is a life-threatening parasitic disease transmitted by the bite of a female Anopheles mosquito mostly during the night. There are four species of human malaria parasites namely; Plasmodium vivax, P. malaria, P. ovule and P. falciparum, and malaria has started to spread to the new areas where cases were not previously reported and there is a report of reappearance to the places where it had been eliminated[1]. The transmission of the disease is highly determined by environmental factors which favor the breeding of the mosquitoes and poor socio-economic status[2]. It causes more than 300 million acute illnesses and one million deaths annually worldwide, and ninety per cent of mortalities are in sub-Saharan Africa and it kills an African child every 30 seconds, **making** a mortality of 3,000 children each day totaling to more than one million per year[3]. Clinically, severe malaria in children below five years in Africa is characterized by severe anaemia and cerebral malaria and other symptoms such as fever, cough, vomiting and diarrhea have been observed[4]. The survivors of an episode of severe malaria may suffer from mental impairment, chronic renal failure and enlarged spleen.

The United Republic of Tanzania has a population of 41.1 million, in which the life expectance at birth 2010 is 51 years and 54 years for male and females respectively. Under five mortality rates are 91 per 1000 live births, approximately I in 10 children die before their fifth birth day[5].

The population at risk of malaria varies, in which mainland alone is 93% and Zanzibar 100%, however the prevalence of malaria in Zanzibar has declined[6].

The (Geographic Information System) GIS-based analysis shows that 75% of the population is subjected to stable perennial or stable seasonal malaria transmission; 8% to unstable highly seasonal transmission; and 17% to no malaria transmission in the average year, but still at risk of epidemic malaria. Tanzania has the third largest population at risk of stable malaria in Africa after Nigeria and the Democratic Republic of Congo[7]. Since 2004 a serious malaria control strategy using ITNs has been implemented in Mtwara.

Malaria is the major cause of out-patient and in –patient heath burden for all ages and the leading cause deaths in all regions of Tanzania[8]. It is approximated that 14 million to 18 million clinical malaria cases are reported annually by public health services. More than 40 percent of all outpatient attendances are attributed to malaria[8]. There is a high prevalence of malaria in children of 6 months up to 59 months, in along the Lake Victoria and coastal regions of Tanzania main land. The recent malaria prevalence data from some of the regions are Kagera 41.1%, Lindi 35.5 %, Mtwara 33.6%, Mwanza 31.4% and Mara 30.3%.[9]

Estimated malaria deaths annually in Tanzania are 60,000, with 80 percent of these deaths among children under the age of five years[8]. The government of Tanzania, up on looking to the impacts of malaria from the grass roots, launched the voucher scheme program in year 2004, to provide the subsidized ITNs among the pregnant women and later on expanded to under five children in Tanzania mainland. The president malaria initiative support, subsidized to the cost of ITNs since 2006 to ensure availability and hence malaria control. The table below indicates the number ITNs distributed since year 2006 up to the end of 2009 [8]. So it is now an ideal time to find out the impacts of voucher scheme program in terms of malaria prevalence among under five children in Mtwara municipality in the year 2010.

PMI-Supported Activities	2006	2007	2008	2009	Cumulative
ITNs: Procured	130,000	-	143,560	1,468,966	1,742,526
ITNs: Distributed	130,000	-	113,560	1,498,966	1,742,526
ITNs: Procured by other donors and distributed with PMI support	-	-	350,000	117,400	467,400

Mtwara is the coast and hot region in Tanzania mainland with favorable climate for female anopheles mosquitoes to breed. The abundance of mosquitoes favors the high rates of malaria transmission in vulnerable groups. For the past three years, malaria cases reported as outpatients in under five children in Mtwara Municipal were 16,875 (47% of all top ten diseases in OPD) in 2008/2009 and 14,247 in 2010. The coverage of ITNs distribution is estimated to be higher in under five children and pregnant women in which a total of 15,649 nets are presumed to be used at the family level by the year 2010 alone. To date, no study have been conducted in the municipal to determine the impacts of voucher scheme program/ITNs in terms of malaria morbidity, so it is worthwhile to conduct this study which will come up with the real situation.
The objective of this study was to determine the Malaria Prevalence in under five children utilizing voucher scheme program, in five streets, Mtwara Municipality November 2011. Specifically, the study aimed: (i) To check blood for malaria infection including the type of malaria parasites (plasmodium) in five streets Mtwara Municipality, November 2011; (ii) To determine the number of children whose blood has malaria parasites in five streets Mtwara Municipality; (iii) To determine relationship between age, sex ,socio-economic status,religion and the prevalence of malaria in five streets Mtwara Municipality; (iv) To determine the relationship between the use of Insectside Treated Nets and prevalence of malaria in five streets Mtwara Municipality; (v) To determine the proportional of children with Splenomegally in five villages Mtwara Municipality; and (vi) To find out the relationship between prevalence of malaria, use of Insecticide Treated Nets and Splenomegally in under five years children, in five streets Mtwara Municipality.

Methodology:
Study Area

The study was conducted in Mtwara Municipality, one of the five districts in the Mtwara region southern part of Tanzania Mainland along the coast zone of Indian Ocean. In the south, the Municipality is neighboring with Mozambique and to the north by Mtwara Rural District. The total area of the district is 163 sq kms divided into two divisions and thirteen wards with 22,992 (2002 census) hamlets. According to the population census of 2002, the Municipality has the total population of 102,376 people of whom 4,095 are infants, 20,475 are under-five children and 20,475 women of reproductive age. In 2011, the total population is estimated to be about 126,924 in which under five children alone are 16,855 and women of reproductive age are 35,542.

The major endogenous tribes of the town are Makonde, Makuha, Wamwera and other mixed migrants tribes from far places within and outside the country. The residencies mainly depend on agricultural activities, small scale businesses and fish ring. Within the town (i.e. urban and peri-urban) there are fourteen health facilities both government and private, out of that twelve are dispensaries; one healthy centre and one regional hospital. Electrical network is stable since discovery and use natural gas from Mnazi Bay, Msimbati area to generate power. Water supply, sewerage systems and road networks in the town are reasonably good.

Study design

Descriptive cross -sectional quantitative study was employed.The study subjects were all under five children in randomly selected streets. Inclusion criteria were all under five children whose parents consent for examination and not seriously ill and exclusion criteria were all seriously ill children and all who refuse consent.

Sample size

A total of 357 under five children were included in the study. The figure derived from the prevalence formula illustrated below (Corlien M. Varkevsser)

$$n = \frac{P\,(100-P)}{E^2}$$

n = Sample size

P = prevalence of malaria in an area

According to the literature search viewed in this study, the malaria prevalence rate in Mtwara region is 33.6%. Hence the proportional of event under the study is 33.6% (DHS).
E = Standard error (The error that can be tolerated = 2.5%)

Therefore,

$$n = \frac{P\,(100-P)}{E^2}$$

Where n-sample size
P- prevalence of malaria in an area -33.6 %
E-standard error -2.5

Therefore n = 356.9664,app 357.
The minimum sample size for the study were 357

Sampling technique and data collection

A simple random sampling technique was used to get five streets from which a sample of ten cell leader was identified to give 357 children. Questionnaires were used and filled by the principal investigator or researcher assistant. The filled questionnaires were re-checked thoroughly by the principal investigator as well as researcher assistant to ensure the correctness of the information.

The structured guided questionnaires in Swahili were used in the study to collect information. Pre-testing of questionnaire will conducted in one of the health facility in Mtwara region to establish whether the tool can work to fulfill desired goal.

Rapid diagnostic tests (RDT) and Haemoglobin machine were used to check for malaria and haemoglobin level respectively in the field . Digital scale were used to measure body weights of children as well as blood smear for malaria parasites were taken at the field in order to chek for the presense and type ofplasmodium in the blood. In order to ensure good quality of data, Rapid diagnostic test (RDT) and Blood smear for malaria and haemoglobinometre were used for diagnosis. Questionnaires were checked thorough for accuracy before commencement of the study and pilot check up was done in the village that were not included in the study.

Ethical consideration

The process for the permission commenced by obtaining the letter from the ethical clearance committee of the International Medical and Technological University. Thereafter, the consent thought from the Municipal Medical Officer, Ward executive officers and street leaders.

Data analysis

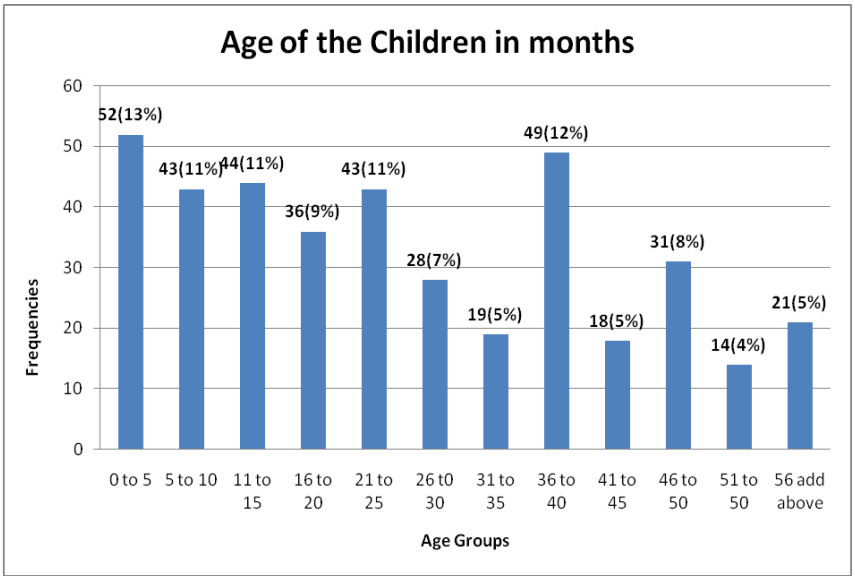
Quantitative data entry, data management and analysis were processed by using SPSS 15 version. Manual analysis was carried on through sorting out all the questionnaires collected from the field by the researchers.

Results

Demographic data of the respondents

0f all 398, 225(57%) were males and the rest 173(43%) were females with the age of many 52(13%) being less than 5months and all are the turget to use ITNs through HATI PUNGUZO. Most 194 (48.74%) of under five children involved in the study weighed between 7 and 11 kilograms and the minority 24 (6.03%) were 17 and 21kilograms and 306 (76.9%) were in the green zone reflecting normal growth, 26 (6.5%) grey, and 3(0.8%) red zones were stunted grown.

Young parents 42.2% found to be responsible rather than elderly 1.3% and more than half 236(59.3%) were married , 67(16.8%) coharbiting this shows the stabilty of the family and fully participation of child care. Many of the parents 269(72.7%) were house wives not engaging int any activity ti earn money and this can reflect the limited income of the family.



Malaria

Many 301 (75.6%) of the respondents did not receive HP from the RCHC during their visists to buy ITNs. However the results can be contributed partly by the study being covering even those children below 9 months who are not eligible to receive the HP. The use of ITNs found to be higher 398, 385(96.7%) among underfive and probably the mother recived HP during pregnancy and other nets received during community distribution.

The study found fever 188(47.2%) and cough /difficulty in breathing being the cardinal symptoms reported,1(0.3%) reported to have dysentery and none of them found to have spleen palpable implicating absence of persistence of malaria in a community and of course other diseases that may cause splenomegally.

P. falciparum malaria cases were 18(4.5%) of all 398 tested by MRDT and 380(95.5%) tested being negative for malaria. By microscope check, malaria positive were 20(5%) of all 398 respondents and 378(95.0%) negative. Among 385 who always use treated nets only 16 of them equivalent to 4.2% have positive test for Malaria, compared to among 13 who Rarely/never used nets 4 of them (30.8%) have positive test for Malaria. The relationship between the prevalence of malaria and uses of the treated nets is significant at k^2 P value 0.002(Fishers exact Test). Plasmodium parasitaemia is statistical significantly associated with the use of ITNs k^2 at p value (Pearson Chi-Square) 0 .000 .Only two species found to infect the children, and majority 80%were infected by *P.falciparum* species and the rest 20% by *P.vivax*.

The relationship between the prevalence of malaria and uses of the treated nets is statistical

Table 1: Indicating results for blood smear checked for malaria parasites by use of microscope

Results	Frequency	Percent	Valid Percent	Cumulative Percent
Positive	20	5.0	5.0	5.0
Negative	378	95.0	95.0	100.0
Total	398	100.0	100.0	

significant associated k^2 at P value 0.002(Fishers exact Test).

Table 2: Relationship between blood smear for malaria parasites and use of ITNs

Blood smear and results		Q31_Recoded	
		Always use Treated Net	Rarely/Never used net
Blood smear for malaria parasites	Positive	16 4.2%	4 30.8%
	Negative	369 95.8%	9 69.2%
Total		385 100.0%	13 100.0%

Of all 398, 320(80.4%) had HB level below normal range, thus a public health problem among under five years children. Challenge: Among 378 who tested negative for Malaria by blood smear 87.1% have Hb level less than 12g/dl. However there is a slight statistcal significant relationship between malaria and haemoglobin level k^2 (Pearson Chi-Square) p value 0.004.

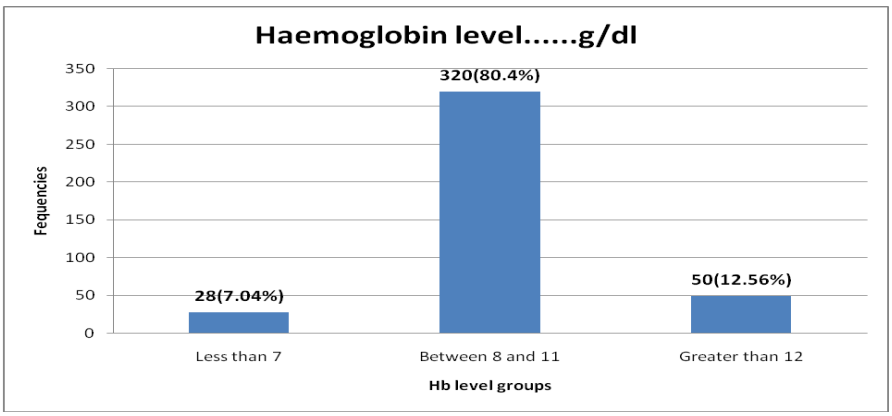


Figure 1: Haemoglobin level(g/dl) in under fives

Discussion

Malaria infection among under five children 398 (100%) who were randomly selected in five streets tested by both Rapid Diagnostic Test (RDT) and by blood smear by microscope. Malaria infection is still a prevailing disease, of all 398, 18(4.5%) and 20(5.0%) tested positive by RDT and microscope respectively. There were minor differences between checking done by RDT and a microscope because RDTs used to determine only the antigen for Plasmodium falciparum.

The study indicates 2% less than that reported by DHS in which only 7% of children in urban areas have malaria compared to 20% in rural areas and specifically a decline of the malaria prevalence from 33.6% in Mtwara region to just 5%. (By demographic Healthy Survey, March 2009). Also being the coast region like Dar es salaam that had malaria prevalence of 24 percent in 2004 and four years later after ITNs utilization felt to just 4 percent[8], this can explain that in Mtwara the prevalence of malaria among under five years children was high and now declined up to 5 percent six years after the use of ITNS.

Also the results differ from the study conducted in rural pastoralist communities and rural riverine communities Somalia 2008 that the prevalence of P. falciparum in under five children utilizing ITNs was 19.6%. The variation can be explained in terms of geographical areas in which the life style in

terms of malaria prevention differs between rural and urban[13]. Only two species are found to infect the children in which 16(80%) of 20 tested positive by microscope had plasmodium falciparum species and the rest plasmodium vivax.

Of all 385 who always use Insecticide Treated Nets (ITNs) only 16 of them equivalent to 4.2% have positive test for Malaria, compared to among 13 who Rarely/never used nets 4 of them (30.8%) have positive test for Malaria. It means that ITNs can transform the community into a malaria free environment or can step down malaria morbidity into very low prevalence. There is a high relationship between the prevalence of malaria and uses of the treated nets (k^2 P value 0.002-Fishers exact Test). This means that, none net users among under five children are likely to be infected by malaria by 30.8% and net users are likely to be infected by4.2% reflecting protective efficacy of ITNs. Plasmodium Parasitaemia is statistical significantly depending on the use of ITNs K^2 p value (Pearson Chi-Square) 0 .000.

The study indicated more or less similar results found in Luangwa District, Zambia, in 2008 and 2010 in which a total of 1,595 households sampled in 2008 and 2010, 1,190 children had blood tested for malaria parasites. The overall parasite prevalence infection was 9.7% among under five children utilizing ITNs with severe anaemia prevalence of 5.8% the variation of results may be thought in terms of season the studies conducted which determines the peak of malaria prevalence[12].

The prevalence of malaria among net users (4.2%) is similar also to that found in Somalia rural areas in 2008 in which the overall infection prevalence was significantly lower 6.9% among net users and higher17.0% in non-net users. Age wise, under five years old malaria prevalence among net users in Somalia was10.0 % and non net users was 20.9%.

Anaemia was a terribly important finding among 378 who tested negative for Malaria parasites by blood smear. Of all tested negative, 81% had Haemoglobin level between 8 and 11g/dl, 13.0% haemoglobin level above 12.0g/dl and 6.1% had haemoglobin less than 7g/dl and k^2 P Value 0.004 indicated very slightly significance relationship with malaria test positive/negative and Haemoglobin level. However, this calls for another study or blind interventions to control anaemia among under five years old and this problem is unlikely to be caused by malaria only**.**

Malaria infection were more in females 14 (8.1%) compared to 6(2.7%) males who were positive. However gender has no significance relationship with malaria infection in under five years children (Fisher's Exact Test) k^2 p value 0.019.

The prevalence of Splenomegaly was nil among the children, this indicated absence chronic illnesses including malaria, that may cause spleen enlargement.however the study conducted by Salim Abdulla el tal 2001, a higher splenomegally protective efficacy of 71% (39%) to 87%) for children with untreated nets and 76% (52% to 88%) for those with treated nets. [10].

Conclusion

Malaria infection has been prevented to some extent by ITNs in under five years children as the prevalence of malaria is only **4.2**% among net users compared to 30.8% non net users. The ITNs are useful since the overall 5 percent prevalence of malaria is less than expected in comparison to Mtwara region prevalence of 33.6 percent in 2007 and less to the overall national prevalence of 7 percent in under fives in urban areas in 2009 and results are almost similar to that reported in Dar es salaam in 2008, four years after the use of ITNs. Plasmodium falciparum species is still a notorious

cause of the disease among under fives compared to other types, thus the preventive measures should scientifically target this species at large.

This minor prevalence may be explained in terms of improper use of nets on the beds, size of the nets/beds and so on. So the proper use of ITNs and continuum offering of nets in triad of sources should be advocated. However, it is difficult to extrapolate the exact time when malaria was contacted among positive children, that is if they were infected indoor or outdoor.

There were no indicators for the persistence of malaria infections among children like slenomegaly, thus the infection is periodical or seasonal and timely intervention is mandatory.
ITNs are essential tools to combat the severity of malaria infection in under fives and thus increasing welfare of the community.

Of all 398, 97(24.4%) had received HATI PUNGUZO from the healthy facility, indicating absence surveillance phase and that the weapons to fight the war are laid down.
I therefore recommend that, for optimal use of ITNs;

- Healthy workers should be sensitized and motivated to provide HATI PUNGUZO
- Community healthy workers have to be involved to distribute HATI PUNGUZO at community level rather than waiting those coming to the RCHC
- Ten cell leaders have to involved and motivated on supervising the process
- Continuum Healthy education is the hallmark of use of ITN
- Combined strategy is mandatory to control malaria eg IRS

Special intervention like mass iron supplementation to under five children is urgently needed for correction of probably iron deficiency anaemia. Father study is needed to look for the cause of anemia in under fives in Mtwara municipal. A similar study is urgently needed to see the state of malaria infection national wide.

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The burden of mental illness and preventive measures in Tanga City, Tanzania

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Abstract: By the dawn of the third millennium, non communicable diseases are sweeping the entire globe, with an increasing trend in developing countries where, the transition imposes more constraints to deal with the double burden of infective and non infective diseases in a poor environment characterized by poor health systems. By 2020, it is predicted that these diseases will be causing 7 out of every 10 deaths in developing countries. Among non communicable disease, special attention is devoted to mental illness. In Tanga city, it has been observed that serious mental illness depression, schizophrenia, drugs and alcohol abuse cause considerable burden to patient and community as a whole with a growing trend in developing countries. Data collected from Heath facilities are analyzed, the focus is made on the growing of burden of mental illness in a community revealed that about 25% of patient who attended the health facilities suffer from recognizable mental illness, interview conducted to patient reporting to psychiatry clinic reveal behavior risk factor like smoking, alcohol intake and drug abuse are main cause of mental illness. Report from security authority reveal Tanga is leading for transporting drugs mainly Heroin, Cocaine, Mirungi, cannabis this calls for serious measures to tackle the problem. However Tanga city health facilities provide mental health service to patient but a number of health workers with knowledge and skill in mental health care remain below the requirement. This calls initiatives to reverse the situation which will include government to intervene in drug business in Tanga city, train psychiatric specialist, establish community rehabilitation centers, conduct nation campaign to stop drug use as have done in Cancer, HIV/AIDS and Diabetes. Since underling (risk) factor for mental illness are common, identifying and modifying these risk factors have been recommended as strategy for their prevention and control of mental illness.

Introduction

The potential and possibilities for prevention burden of mental illness have increased substantially in recent years. This paper provides a brief review of the burden, prevention control and management of mental illness. Every one of us would like to avoid mental illness; we want happiness, peace of mind, enjoyment, satisfaction and feeling of self worth. The presence of all these attributes reflects absence of mental illness. However being mentally healthy is much broader than these few attributes. It refers to the possesion, development and interaction of a number of characteristics and qualities, which focus mainly on psychological well being. Psychological well being means being comfortable with one self, being able to meet the demands of daily life and express feelings constructively in interpersonal relationships. It even encompasses the extent one feels well about ones relationships with others.

Concept of mental illness include subjective wellbeing, perceived self efficacy, autonomy, competence, intergenerational dependence and recognition of the ability to utilize ones intellectual and emotional potential. It has also been defined as a state of wellbeing whereby individual recognize their abilities, are able to copy with the normal stress of life, work productively, fruitfully and make a contribution to their communalities (WHO report 2010 Geneva)

Mental illness imposes an enormous burden, both on individuals and on the wider community. Mental health problems have very high rates of prevalence: they are often on long duration, even lifelong in some cases and they have adverse effects on many aspect of people's lives, including educational performance, employment income, personal relationships and social participation. In addition these adverse consequences are often compounded by the stigma, discrimination and exclusion which continue to be experienced by many people who continue to be experienced by many people with mental illness. It has been observed about 25% of patient who report at Tanga city health facilities suffer from recognized mental illness, common depression, drug use and schizophrenia thus rise a need for general health worker to involve in recognition and treatment of mental illness.

Mental illness makes a substantial contribution of offending behavior and very high proportional of people in prison (including those in remand) have one or more mental illness (singleton 1998) so prevention is likely to result in considerable savings. Poor mental health is an important risk factor for offending and also contributes to other risk factors include substance use, depression, improvements in mental health should there fore help to reduce crime, dependence, road accident and re offending rates which are growing rapidly in Tanga city.

The main objective was to determine the burden and preventive measure of mental illness in Tanga communities

Methodology

This was a case study involving records of patient attending health facilities in Tanga City. The study period was between 2009 and 2011. Tanga Region is situated in the North Eastern Part of Tanzania; Tanga Region has a total of 9 districts which are Kilindi, Muheza, Pangani, Lushoto, Korogwe, Handeni, Mkinga and Tanga District.Tanga district is the Headquarter of the Government Regional. Administrative Authorities Tanga City is within it Tanga District is bounded by Indian Ocean and Mkinga District in the north and in the east to the west is Muheza and to the south is Pangani District. Data analysis and management were done using computer programmed Microsoft office excel 2010.

Results

Interviews conducted with various families in Tanga city with mental illness patients indicate that most of the families do not have knowledge about treatment of mental illness in the hospital and believe mental illness is caused by witchcraft. Also main cause of mental illness in Tanga city is drug use in which most of the patients who report to the psychiatric clinic are affected by drug use. Interviews revealed that they use these harmful drugs because of its easy availability, family members were using it or he or she was selling it. Tanga City is often mentioned as one of the famous import routes for such drugs as cocaine, heroine and cannabis.

Table 1: Common Mental illness In Tanga City from 2009 to 2011

Mental Illness	**2009**	**2010**	**2011**
Drug Abuse	698 (42%)	649 (34%)	739 (35%)
Depression	198 (12%)	211 (11%)	260 (12%)
Schizophrenia	303 (18%)	318 (17%)	357 (17%)
Others	461(28%)	713 (38%)	739 (35%)
Total	1,660 (100%)	1,891 (100%)	2,095 (100%)

Discussion

For the period of 2009 up to 2012 reported and non reported mental illness patients show rapid growth in Tanga city, justification for government to invest more in the improvement of mental health service due to existing burden of mental illness can be made from a number of perspectives:

Economic losses: Mental disorders are associated with high rates of unemployment and also under-performance while at work, which both exert a brake on labour participation and output (a critical component of economic growth); at least two-thirds of the considerable economic burden of mental disorders is typically attributed to these productivity losses.

Unequal rights and opportunities: Individuals with mental health problems (together with their families) are subjected to stigma, discrimination and victimization, and regularly encounter restrictions in the exercise of their political and civil rights, and in their ability to participate in public affairs. Also from an ethical perspective, the severity and vulnerability associated with certain mental illness marks them out for particular concern and attention;

Disease burden: Mental disorders are major contributors to morbidity and premature mortality. 13% of the global burden of disease, measured in terms of foregone years of healthy life, can be attributed to these disorders; for example, 150 million people worldwide meet diagnostic criteria for major depression, and another 125 million meet criteria for alcohol dependence or harmful use. Almost three quarters of this burden is in low- and middle-income countries; In short, the extent of the disease burden is large (and on current trends, set only to grow).

Research conducted world wide revealed some fact about mental illness which are as follow: According to the World Health Organization, the vast majority of countries allocate less than 2% of their health budgets to mental health, leading to a treatment gap of more than 75% in many low- and middle-income countries.

When incomes decline, there can be health consequences as well as economic ones. South Korea had an economic crisis in the late 1990s, and a recent study found a deteriorating trend in national mental health in the years following the crisis. Statistics for 1998 to 2007 suggest that the lowest income groups had the highest risk for depression, drug abuse and suicide attempts.

Due to increase of mental illness patients in Tanga City in the year 2012 Tanga city council launched a pilot study at the detoxification centre at Pongwe health centre coordinated by City mental health coordinator. It admitted 15 drugs users, treated them for seven days and showed great improvement were trained about Recovery oriented system of care (ROSC) which is a network of formal and informal services developed and mobilized to sustain long term recovery for individual and families impacted by severe substance use disorders. The rehabilitated patients started meeting at Ngamiani Health centre three times a week. Ten patients out of fifteen their family members managed to secure small businesses for them and monitored them and are now are clean and counseling other drugs users to stop using this harmful drugs which lead to unemployment and mental illness (depression) but remaining five patient returned to using drugs and showed sign of depression and paranoia because they failed to secure any activities and lack of support from family members during the period of recovery.

The study had a number of limitations. Members of the public have no knowledge to allow them to recognize, prevent and seek early help for mental illness also does not have skill to support other people in their communities who develop mental illness. Negative attitudes towards people with mental illness viewing them as having weak character and discriminate them. These beliefs and attitudes are potential barrier to seek optimal professional help and supportive of others.

Conclusion

Prevention of mental illness is a public health priority. In view of the high and increasing burden of mental illness and the recognized limitations in their treatment, the only sustainable method for reducing their burden is prevention. Social and biological sciences have provided substantial insight into the role of risk and protective factors in the developmental pathways to mental illness and poor mental health. In addition, investments in capacity building at the National level should be promoted, providing training and creating a workforce of informed professionals. Much of this investment will need to come from governments, as they have the ultimate responsibility for the health of its population.

It is recommended that mental health professionals need to take the challenge of further research on prevention of mental illness and burden of mental illness in the communities. The central government and city council should have a long term plan by setting aside funds in the development budgets for the establishment of a rehabilitation centre as the pilot study for detoxification centre at Pongwe health centre have prove successfully. Governments need to develop national and local infrastructures for prevention and promotion to work in collaboration within other public health and public policy platforms. Prevention of mental illness and mental health promotion need to be an integral part of public health and health promotion policies at local and national levels.

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Abstract

Participatory organizational reviews: lessons from five public sector institutions in Tanzania

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The CDC-funded Institutional Capacity Building Project (ICB) strengthens central level Ministry of Health and Social Welfare institutions receiving foreign assistance, including: National Institute for Medical Research, National AIDS Control Program, Diagnostic Service Section of the Ministry, Zanzibar AIDS Control Program and National Blood Transfusion Service. The project strengthens institutional capacity, leadership and management particularly focusing on project management and execution, organizational systems and structures, grants management and reporting in order to increase institutional capacity to provide a sustainable response to health sector challenges.

ICB conducted participatory organizational reviews to assess management practices, identify needed improvements, and develop action plans for making those improvements. Reviews were conducted using Management Sciences for Health's (MSH) Management and Organizational Sustainability Tool (MOST). Staff ranked 19 management components on a scale of 1 (least developed) to 4 (most developed). Individual assessments were followed by group assessments to reach consensus. Next, groups prioritized challenges and determined root causes, which informed development of action plans.

Scores in each category did not vary widely across organizations. On average, presence of a strategy that linked to the mission, values, and clients needs was ranked highest (2.7), while the existence and application of values was ranked lowest (1.8). Based on the assessments, ICB has supported two organizations to draft strategic plans that address gaps and two more to conduct mid-term reviews to assess progress. Currently, ICB is working with three institutions to strengthen their financial management systems, and has delivered training on Human Resource Management, Coaching and Mentoring, Resource Mobilization, and Leadership and Management.

Organizational assessments mobilize staff support for making necessary changes and are a form of training for improving organizational structures and systems. With customization, the MOST is a valuable tool for conducting participatory assessments and identifying priority areas for investment of limited resources to strengthen the capacity of leading government institutions to effectively contribute to improved health outcomes.

Introduction

The U.S. President's Emergency Plan for AIDS Relief (PEPFAR) is among the most significant donors offering financial and technical support in combating HIV/AIDS in the United Republic of Tanzania (URT). The US and Tanzanian Governments signed a five year partnership framework in 2009 that guides PEPFAR's investments. The partnership framework notes remarkable achievements made by Tanzania since the beginning of the epidemic, but also notes, "if these advancements are to be sustained and expanded, there is still much to be done to solidify key interventions and systems so that they will have a sustainable impact, as well as to ensure they remain effective and of high quality." In view of the partnership framework, CDC entered into a cooperative agreement with MSH to create the TZ-ICB project to implement Institutional Capacity Building Assistance to support Local Partners in Developing their Leadership, Organizational, and Financial Management Capacity to Provide a Sustainable Response to the HIV Epidemic and other health services in the United Republic of Tanzania (URT).

The focus of TZ-ICB is at the central level, specifically on institutions of the Ministry of Health and Social welfare (MOHSW) in Tanzania mainland and Ministry of Health (MOH) in Zanzibar. TZ-ICB is working with five central level institutions including the National Institute for Medical Research (NIMR), National AIDS Control Program (NACP), National Blood Transfusion Services (NBTS), Zanzibar AIDS Control Program (ZACP) and Diagnostic Services Section (DSS) of MOHSW. The project works to strengthen institutional capacity in areas of; project management and execution, organizational systems and structures, strengthening leadership and management; grants management and reporting. To achieve the project's goal, TZ-ICB capacity building for each organization is envisaged to be achieved in 4 steps over the life of the project: an initial dialogue with the leadership to secure support; organizational review to identify and prioritize weaknesses and create a work plan for strengthening; training, coaching and mentoring to strengthen priority areas; and long term follow up to ensure lasting improvements. This paper presents lessons from participatory organizational reviews and institutional capacity building interventions with five public sector Institutions in Tanzania.

Methodology

Participatory organizational assessments were conducted for each of five organizations (NACP, ZACP, NIMR, NBTS and DSS) using MSH's Management and Organizational Sustainability Tool (MOST). MOST is a structured, organizational assessment tool that allows organizations to openly assess their own management performance and develop concrete action plans for organization-wide improvements. The tool classifies management components from level 1 to 4, with 1 being the least developed and 4 being most developed. The tool uses a grid based structure where scores for each management component are based on qualitative descriptions of systems, processes, and results at the time of the assessment. The management components are classified under five areas; mission, values, strategy, structure and systems, which are further sub-classified in 19 components. MSH developed MOST after years of experience in helping public and private-sector organizations providing health services under complex and changing conditions. MOST builds on a consistent finding that there are unbreakable linkages between good management, high-quality services, and organizational sustainability. It builds a collective perspective and action plan out of individual staff experiences.

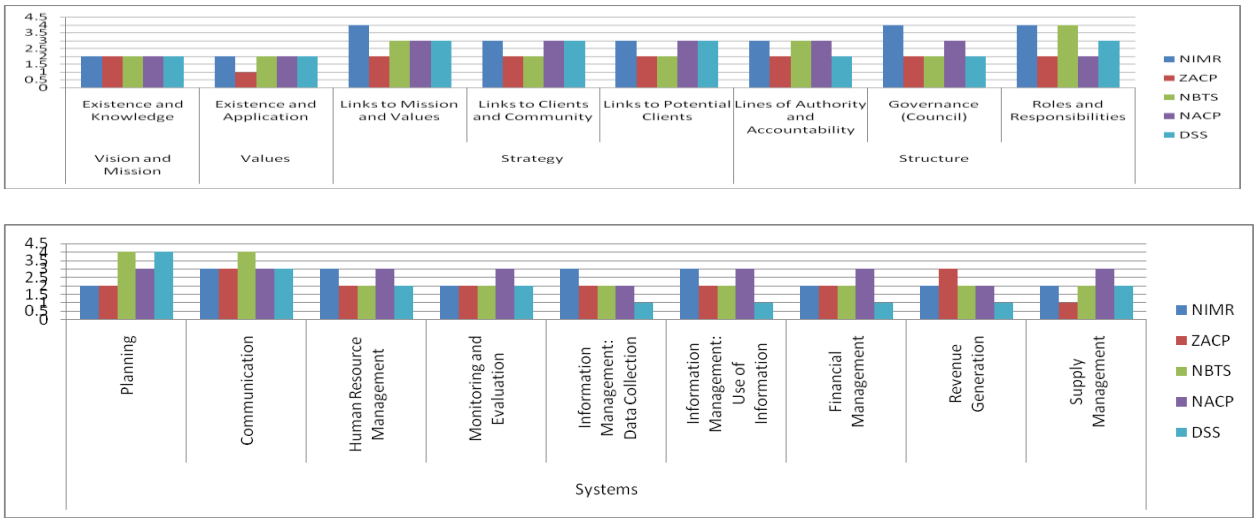
In these reviews, the MOST process began with an engagement phase to introduce the concept to organizational leaders and gain their support and customize MOST according to the nature of the respective organization. The second phase was a four day workshop, where the output was an institutional strengthening action plan which was generated by participants from the respective organizations based on the results of the assessment. Assessments were done at two levels during MOST workshop; individual and group. A total of 79 staff from respective institutions participated in the reviews (48 males and 31 females). Participants scored each management component on a scale of 1-4 and presented evidence for their scores. Individual scores were discussed in small sub-groups of 5-6 people. Finally, sub-group scores and evidences were shared in a plenary session of an average of 15 people aimed at building consensus on final scores. On the last day of the workshop priority areas and action plans for strengthening were completed for implementation after the assessment.

Results

Scores in each management category (mission, values, strategy, structure and systems) did not vary widely across organizations, suggesting that organizations faced similar challenges. Presence of an organizational strategy that linked to the mission, values and clients; and presence of a structure with lines of authority and accountability, governance, roles and responsibilities were ranked highest

(average score 2.7). On the other hand, the existence and application of values was ranked lowest (average score 1.8). Table 1 below shows each organization's score for each of the 19 management components.

Table 1: Organizational scores by management component



Capacity Building Interventions

Partner organizations designed capacity building interventions based on the action plans developed in the MOST workshops. Four institutions, (ZACP, NBTS, NIMR and NACP) prioritized strategic plan development/review and ICB has consequently supported them either to draft new strategic plans or to conduct mid-term reviews of current strategic plans in a participatory manner. Currently, ICB is supporting the fifth institution to conduct an end term review of their current strategic plan and development of a new one.

Another area of prioritized during the MOST assessments was financial, procurement and inventory management system strengthening following which ICB has supported detailed reviews of these systems for ZACP and NIMR. The reviews identified performance bottlenecks and strengthening action plans were developed. As a result we have conducted coaching and mentoring to ZACP management and finance staff, at the same time supported updating of NBTS's and ZACP's financial management and procurement manuals. Furthermore, TZ-ICB is providing financial and technical support to NIMR to procure and implement an integrated financial management information system (software and hardware).

Human Resource Management (HRM) was another area of weakness identified and prioritized by all five institutions. The project has supported NBTS to conduct an HRM assessment which identified the need for review of the organogram, draft or update job descriptions for all staff and conduct job evaluation for all posts. The first intervention is completed while the rest are ongoing. The project has also conducted HRM training to all institutions. Following the training, we have provided technical support and facilitated two technical workshops with NBTS HR managers to develop an HR manual that is a valuable tool for consistent and standardized HR management practices throughout the organization. With NIMR, we have supported the development of a staff training and development policy. The project has worked with ZACP to develop and implement a performance management system.

We have also delivered trainings in resource mobilization, leadership and management to impart relevant skills in response to needs prioritized during the MOST assessments. Following resource mobilization training, NBTS with ICB support, has developed three concept notes to guide their resource mobilization efforts. The project will work with NIMR and DSS to develop business plans this financial year.

Furthermore we employ coaching and mentoring in leadership and management to provide hands on support to managers and staff as they utilize new skills to address existing challenges.

Among the challenges experienced during the implementation of these interventions is the lack of a national policy/guideline on leadership and management capacity building in the health sector, therefore making it necessary to learn "on the go" at all stages. Also as we work with public sector organization, strengthening in specific areas such as financial management, procurement, and inventory management, has to happen within the confines of respective government policies and guidelines such as the Public Procurement Act of 2004. Another challenge is the fact that leadership and management capacity building is relatively a new intervention and results are not immediate; making it difficult for partners to prioritize institutional capacity building activities in the midst of other urgent competing priorities.

Conclusion

Through these participatory organizational assessments, TZ-ICB and respective institutions have mobilized staff support to implement necessary changes. The MOST workshops provide an opportunity for staff to familiarize with basic aspects of organizational anatomy (structures and systems) and therefore result in actual capacity building of staff on the dynamics, structures and systems of complex institutions. Additionally, the MOST process facilitates a "systems" approach to problem solving. The consensus building process for scoring ensures that information is gathered from key internal sources to inform strengthening action plans. Furthermore, it facilitates communication across various groups of staff to build ownership and understanding of results, challenges, and overall linkages among management systems. With customization, the MOST is valuable for conducting participatory organizational assessments. Using MOST organizations can identify priority areas for investment of limited resources, to effectively contribute to improved health outcomes.

INCREASING ROAD TRAFFIC ACCIDENTS VS DECREASING HANDLING CAPACITY AT HEALTH FACILITIES: A CASE OF TUMBI DESIGNATED REGIONAL REFERRAL HOSPITAL

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BACKGROUND

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. Motorcycles operating as commercial public transport are making the situation of RTAs in this region worse as daily RTAs attended at Tumbi Hospital has risen from 2.1(2003/2004) to 4.9(2010/2011). These casualties are full exempted/waived with no increased hospital budget. In view of this situation the victims of accident consume a lot of medicine and supplies which was budgeted for ordinary hospital use. This situation creates frequent shortages of medicine and supplies.

On the other hand the promotion of this hospital to a regional referral hospital had not been in terms of finance increases as well as human resources, medical equipmentand infrastructure since the budget of the hospital had remained unchanged as well as the manpower had not been reviewed to suit the Regional Referral Hospital Services.

The objectives were: (i) To find the total number of road traffic accidents in Coast Region; (ii) To describe the hospital costs, morbidity and mortality caused by RTAs for victims served at TDRRH; and (iii) To describe causes of reduced capacity of TDRRH to serve RTA victims

Methodology

This is a descriptive retrospective study of records of victims of motor traffic accidents by reviewing TDRRH records and data from Coast regional traffic police database, National Bureau of Statistics for a period of 2002-2011.

Results

Table 1.RTAs by Type, Tanzania Mainland, 2006-2009(National Bureau of Statistics)

Type of Accident	2006	2007	2008	2009
Total Number of Traffic Accidents	18,187	25,151	17,451	22,019
Fatal Accidents	3,028	3,065	2,460	2,872
Killed Persons	2,657	3,071	2,840	3,851
Injured Persons	16,456	16,119	16,982	20,717

Source: Tanzania Police Force

This graph shows increase in number of injured and death between 2006-2009 in Tanzania Mainland.

Table 2.Number of accidents, casualties and deaths in Coast region 2002-2011

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total
Accidents	618	796	767	841	885	1053	987	1254	1275	1224	9700
Casualties	177	246	200	264	236	244	226	247	255	302	2397
Deaths	139	183	174	164	176	197	182	206	213	225	1859
Case fatality(%)	78.5	74.4	87	62	74.6	80.7	85.5	83	83.5	74.5	77.5

Table 2 above and figure 1 below of RTAs in Coast Region shows a trend of increasing number of accidents, casualties and deaths despite all Road Safety measures being implemented.

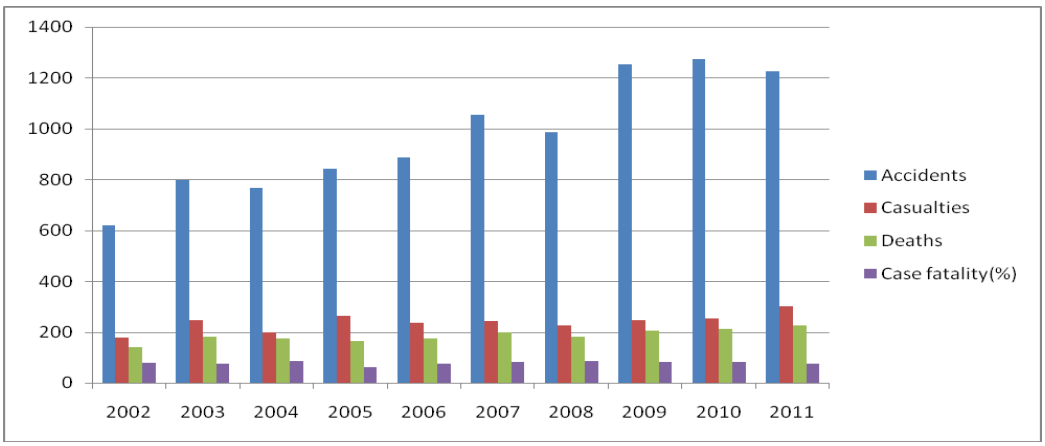

Figure 1: Number of accidents, casualties and deaths in Coast region 2002-2011

Table 3: Three years motor traffic injuries reported (June 2009-June 2012) at Tumbi Hosptial

Year	**2009**		**2010**		**2011**		**2012**		**TOTAL**
No. of Accidents	561		1,136		949		481		3,127
Gender	M	F	M	F	M	F	M	F	
Casualties	895	316	1905	610	978	300	541	185	5730
Admitted	56	15	52	28	43	17	29	11	251
Referrals	99	20	119	25	94	24	47	47	475
Death at Tumbi	27	10	35	7	14	4	12	5	114
Death at Site	8	3	45	10	42	13	11	6	138
Death at Muhimbili	No data	No data	No data	No data	No data	No data	No data	No data	-

Number of casualties in this graph is very high as a good number of them are from Kinondoni district, Dar es Salaam.

Discussion

Table 4: Top 20 Causes of Death Tanzania(WHO, April 2011)

1. HIV/AIDS
2. Influenza & Pneumonia
3. Stroke
4. Coronary Heart Disease
5. Diarrhoeal diseases
6. Diabetes Mellitus
7. Malaria
8. Lung Disease
9. Violence
10. Road Traffic Accidents
11. Hypertension
12. Kidney Disease
13. Cervical Cancer
14. Low Birth Weight
15. Birth Trauma
16. Other Injuries
17. Tuberculosis
18. Endocrine Disorders
19. Asthma
20. Inflammatory/Heart

According to the latest WHO data published in April 2011 Road Traffic Accidents Deaths in Tanzania reached 9,029 or 2.05% of total deaths. The age adjusted Death Rate is 29.58 per 100,000 of population ranks Tanzania #34 in the world and that at least 3.3 per cent of the population is involved in road accidents in the country compared to the growth of the population, which is estimated to increase at an average of 2.9 per cent annually.

Despite Road safety measures being implemented, number of accidents and respective number of casualties and deaths are on increase in Coast Region. At the beginning of this fiscal year (23 July 2012 – 12 August Tumbi had received more than 200 casualties mainly from mass casualty incidents at Chalinze and Wami. TDRRH spent drugs and consumables worth more thanTShs**7,500,000** for managing these casualties in less than 3 weeks and unfortunately with no refunds from them or from the Ministry of Health.The itemized cost of served 181 casualties for two weeks (23 July-10 August) is attached in appendix for orientation of expenditures involved.

Such frequent mass casualties incidents negatively affect implementation of Tumbi Hospital Plans with the insufficient allocated budget. Furthermore MTA casualties are always robbed of their belongings including money, documents and even mobile phones and therefore they can never pay for services rendered nor inform their relatives for help.

Casualty department at TDRRH is not equipped with life-support systems like Ventilators, ECG-machines, Defibrillators, Pulse Oxymeters, O_2 Access outlets etc. to handle casualties in order to minimize mortality rate. Presently, casualty department is just a hall with 6 examination tables, an oxygen cylinder and Blood pressure machines, and that is all. Such a set-up is not right to be called a casualty department.

Most of casualties will eventually need surgical intervention after hemodynamic stabilization, but unfortunately the surgical ward has a capacity of only 27 beds which are almost always occupied and this necessitates some of casualties to be referred to Muhimbili National Hospital for surgical Intervention. With limited bed capacity, fracture cases have to be treated by expensive open surgery with metal implants instead of the less expensive weight traction methods which keep patients in bed for more than 12 weeks. Again these casualties have no money to buy these implants for open reduction and internal fixation. For few who can afford, the condition of the operating theatre and post-operative care is unsatisfactory because of overload in the only single theatre available and overcrowding in the small surgical ward. All these factors make the prognosis poor and raise morbidity and mortality.

The casualties do not get any sort of first aid/stabilization before being transported from accident scene to TDRRH and there is no formal transport system for casualty transfer to TDRRH – usually any vehicle around the scene will take part including lorries, pick-ups, vans etc. and time elapsing before the victims reach TDRRH can be a lot. Bundling up these bleeding casualties together in a pick-up can expose some of them to HIV transmission. Lack of basic first aid knowledge among the villagers along the major road makes the situation worse as they cannot apply simple measures to stop bleeding and during evacuation of cervical-injured casualties the cervical injuries are worsened. Many casualties are transported to TDRRH without primary Triage which makes the situation overwhelming upon arrival at Casualty Department in TDRRH. Upon arrival, most victims of RTA have bleeding injuries with some severe ones (in shock) due to lack of first aid at the accident site. This category of patients usually needs instant blood loss replacement otherwise they lose life at casualty department.

Lack of Blood at TDRRH

TDRRH has chronically been experiencing shortage of blood units. When you send/dispatch a vehicle to bring blood from safe blood bank in Dar es Salaam, it comes back with few units of blood and sometimes none at all. At times 20 units are collected from donors at TDRRH and sent to Zonal Blood Transfusion Centres (ZBTC) in Dar es Salaam for screening. Depending on stock of screened blood units available at ZBTC, at times the vehicle comes back with only 3 units of screened blood and that is all. This is not even cost-effective considering the mileage. In case of mass casualty incidence (MCI) time is always against us. The condition of some of casualties is so serious that makes it impractical to refer them to Dar es Salaam for blood transfusion leave alone sending a vehicle to Dar es Salaam to bring blood. Traffic jams in the city are making things even worse. This creates a big gap in TDRRH's emergency preparedness. The only workable solution to prevailing situation at the moment is for TDRRH to establish a hospital based blood bank. A hospital-based blood bank may be the best solution on economic grounds too, although there are disadvantages: competing with other departments for resources; initial cost of establish such a unit(infrastructure, equipment, staff training), potential problems with the supply of consumables, such as HIV-test kits etc. Establishing a hospital based blood bank at TDRRH will serve not only the regional hospital but all other district hospitals in Pwani region, whose monthly total use amounts up to 882 units:

Need for First Responder Units at Mlandizi and Chalinze

Rationale: Tanzania has no formal emergency response system with an educated community, first responders and centers set up for trauma and other major emergencies. This leads to a large number of lives lost needlessly, inefficient use of services and unnecessary exposure to blood for both patients and health workers. Coast Region with its major roads from Dar towards Arusha, Dodoma and Iringa has a particularly large number of motor vehicle injuries and deaths. Coast Region also has a trauma team at Tumbi Hospital, the regional hospital, which is well positioned to lead a strong emergency response system for the region. The need for the responses system relates to both number of trained personnel but also transportation and distances. Distances from help can be great. Chalinze is 80 kilometers from Tumbi and from Chalinze to Morogoro is another 100 kilometers. From Chalinze to Korogwe is 200 kilometers. There are no emergency vehicles nor trained teams available to go to the scene of accidents. Together with this, Chalinze Hospital should be enabled to offer accident & emergency services for motor trafic accidents. This includes infrastructure, equipments and staffing.

Mortuary

Mortuary capacity has not increased with increasing MTA mortality and therefore there is mortuary overload and frequent breakdown of cooling systems and evaporators making things even worse. Presently the mortuary urgently needs new cooling equipment while seeking possibilities for expanding its capacity.

Conclusion

These Mass casualty incidents are exhausting the resources at TDRRH as victims are not in a position to pay for services and therefore increase the burden of exemption. This may be considered when allocating the budget for this hospital. To come out of this vicious cycle, there is a need to

1. Expand the infrastructure with priority to operating theatres, ICU and casualty department with respective equipment in every unit, upgrade Chalinze to A&E Centre
2. Increase Human Resources and equipment
3. Increase the hospital budget to include accidents and Mass Casualties Incidents(MCI).
4. Introduce Mobile First Responder Units on Major Roads with base at Mlandizi and Chalinze
5. Restore Hospital-based Blood Banks at MCI nodal hospitals.
6. Vehicle Insuring Companies should contribute to costs for serving casualties in Mass Casualty Incidents

Knowledge, attitude and practice on infection control measures among health care workers at Kagera Regional Hospital, Tanzania

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INTRODUCTION

Kagera Regional Hospital(KRH) has a catchment population of 521,171 people (i.e 272,319 males and 248,852 females). It is serving as a referral hospital for all hospitals in the region.The hospital is also serves as a district hospital for Bukoba Municipality. Despite the fact that Bukoba rural district has its Designated District Hospital(DDH), the geography of the district necessitates 48% of its residents to get services at KRH.The hospital has a bed capacity of 250. Daily Out Patient Department (OPD) attendance is approximately 220 patients.Care and Treatment Clinic(CTC) offers Anti Retroviral Therapy(ART) to about 80-100 clients per day during clinic days. Fourty (40) patients are admitted and 10 deliveries are conducted daily.Bed occupancy rate is 83%; with the following wards leading i.e female wards (113.9%), Labour ward (99.4%) and Paediatric ward (81.6%) in that order.There are other services being provided to In and Out-patients i.e medical treatment to OPD patients,Laboratory and X-ray services and minor operations.Various clinics are being conducted i.e Reproductive and Child Health Clinic,Dental Clinic,Eye Clinic,Dermato venereology Clinic,TB and Leprosy Clinic,Diabetes and Hypertension Clinic,VCT,PMTCT,Pschiatry Clinic and Physiotherapy.There is a Hospital Maintainance Unit which deals with emergence repairs of machines and medical equipments.The Hospital has an incinerator and a stand by generator.For In patients,medical services,paediatric care,labour and delivery services and major operations are done.Kagera regional Hospital has a total of 294 staff (including support staff).Their distribution according to cadres is as follows: Specialists (2), Medical Officers (2), Assistant Medical Officers (10), Nursing Officers (49), Enrolled Nurses (80), Laboratory technologists (3), Laboratory assistants (3), Dental Surgeon (1), Assistant Dental Officer (1), Dental Technicians (2), Pharmacist (1), Pharmaceutical technicians (4), Pharmaceutical Assistants (2), Administration (26), Medical Attendants (50), and Others such as cleaners, gardners, etc (58). However this number of staff falls short of what is required to provide efficient services in a Regional Referral Hospital.

According to the KRH Report for 2008, the 10 top diseases for OPD attendance for patients aged 5 years and above were as follows: Dental caries, Malaria,Non-infectious eye diseases, epilepsy,clinical AIDS,eye infections, Acute Respiratory Infections, minor surgical conditions, Hypertension and Psychosis. Ten top diseases for hospital admission for patients aged 5 years and above were Malaria, complications of pregnancy, clinical AIDS, Hypertension, other non-infectious gastro intestinal diseases, non-bacterial diarrhoea, Pelvic Inflammatory Diseases, Acute Respiratory Infections, Pneumonia and Anaemia.

It is important that in order to maintain proper hygine in the hospital, ALL staff, hygine for equipments and rooms i.e rooms for care, patient rooms, instruments, dishes and laundry must be maintained. Although the hospital started operating as a dispensary in 1923 and later a hospital,the extent of nasocomial infections has never been studied and therefore the extent of the problem is not known. Kagera Regional Hospital with a big number of patients being attended as outpatients and inpatients, minor and major operations being done, several deliveries being conducted daily, various clinics held and a big number of Health Care Workers of different cadres, there is a potential risk of hospital aquired infections making the issue of Hospital Hygine and adherence to universal precautions of paramount importance in controlling them.

Since knowledge, attitude and practise on infection control measures among hospital workers at our hospital has never been determined, it is anticipated that the results of this study will highlight the

real situation among hospital staff and the hospital in general, therefore help them to enhance hospital infection control measures so as to protect themselves and the patients they are serving. Results from this study will enhance infection control measures among staff at KRH, it will also assist KRH management to plan more appropriately on infection control measures at the facility and form a basis for more researches to see the trend in other Healthcare facilities in the region and beyond. The findings will also assist KRH management to plan and address the issue of hospital infections control more appropriately.

The objective was to determine knowledge, attitude and practice (KAP) on infection control measures among Health Care Workers at Kagera Regional Hospital (KRH). Specifically, the study aimed to: (i) assess to which extent KRH workers are conversant with various hospital infection control strategies.; (ii) assess if the current methods in use are adequate in controlling hospital infections; (iii) audit resources available in order to achieve infection control at KRH; (iv) determine the existing gaps in maintaining hospital hygine and controlling hospital infections

Methods

Study area

The study area was Kagera Regional Hospital situated in Bukoba Municipality. The Hospital has a total number of 294 staff including doctors, nurses, clinical officers, laboratory technologists, pharmacists, medical attendants and others.

Study design and sample size

This was a descriptive cross sectional study and used both quantitative and qualitative data gathering methods. Quantitative methods using standard questionnaires with both open and closed ended questions obained information regarding knowledge and attitude on infection measures at KRH. Whereas qualitative methods via observations assessed various factors related to practice of infection control measures at KRH.

Ninety five HCW in KRH were enrolled into the study and responded to the questionnaire. Study participants were obtained by simple random sampling.

Data collection

Two researchers, one doctor and one laboratory scientist were involved in the study. The tool was translated into Kiswahili language for those who were not conversant with English. Factors assessed included various issues pertaining to knowledge, attitude and practice on infection control measures among health care workers at Kagera Regional Hospital. The study was conducted from December 2009 to February 2010. Quality control was done by calling back every 10th study participant and re-interviewing him or her to see if same answers could be obtained. Observation by following an observation schedule was also done.

Pre-testing of data collecting tools was done using 20 participants in one of the health facility in Bukoba Municipality. This was to access the acceptability, answerability, applicability, accuracy and analyzability of the questions. Also ambigious questions were identify and rephrased.

Ethical consideration.

Ethical clearance was obtained from the National Institute for Medical Research through Tanzania Field Epidemiology and Laboratory Training Programme. Permission to conduct the study was obtained from Kagera Regional Hospital Management. Full discussion with participants were done to ensure they understood the study and were willing to participate. Written informed consent was

obtained from each respondent. Participants were reassured that participation was voluntary and all information provided would be treated strictly confidential.

Data analysis

Data entry, management and analysis was done by a computer using EPI-INFO software.Observation results are also presented.

Results

Although 95 health care workers were enlisted for the study, only 70 were finally reached because of time constrains and other commitments. There were more female respondents (60%) than males (40%). Their ages ranged from 27 to 60 years with a mean age of 46.6 years.The biggest number of respondents came from the age group 50 to 60 years i.e 44.3%.
(Table 1)

Table 1: Age distribution of respondents from Kagera Hospital

Age group	Frequency	%	Cum Percent
>20 – 30	5	7.10	7.10
>30 – 40	11	15.70	22.90
>40 – 50	23	32.90	55.70
>50 – 60	31	44.30	100.00
Total	70	100.00	100.00

The majority of the respondents had completed secondary school education (61.4%), while 31.4% had only completed primary school education.
Those who completed tertiary education were 7.2%.

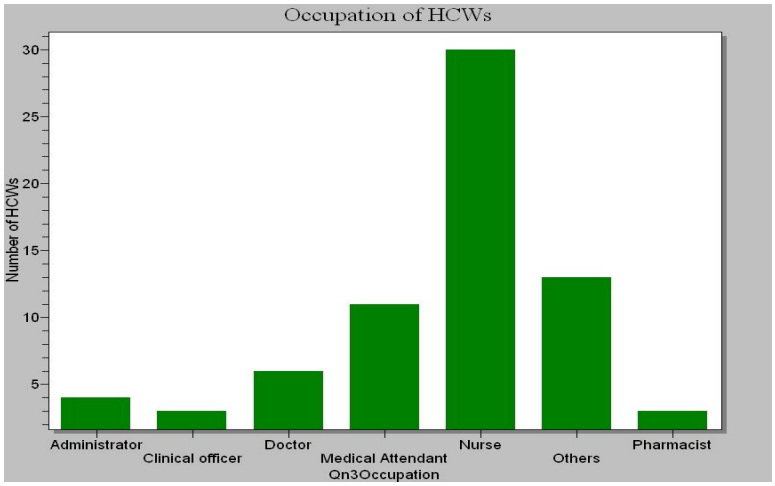

Figure 1: Occupation of respondent HCW from KRH 2010

Nurses accounted for the majority of the respondents (i.e.42.9%), this is follwoed by medical attendants (15.7%). AII 70 respondents (100%) thought that Health Care Workers are at risk of aquiring infection during service delivery. They mentioned various ways through which they can be infected i.e.needle prick injuries, contamination with body fluids, droplet infection and use of low quality protective gear.

As regards to trainings received,74% had recieved training on Infection control, 63% on Universal precautions, and 53% on Post Exposure Prophlaxis. Seventeen percent (17%) did not receive any training at all.

O n which area respondents would like to receive more training, 35.7% indicated that they would like to receive more trainings on all 3 areas, followed by 31.4% who wanted training on Post Exposure Prophylaxis. Infection Control was indicated by 18.6% and Universal precaution by 14.3%.
A good number of respondents (i.e 77.1%) knew something about universal precaution.Those who knew something mentioned the following: Handwashing , use of protective gear, soap and antiseptic use and proper disinfection and sterilization (%). Regarding the availability of of a policy or guideline for Universal precaution at KRH, 82.9% said there isn't. A similar percentage (82.9%) agreed that there is no policy/guideline on post exposure prophylaxis for HIV infection in the facility As regards respondents feelings when they were caring for patients with infectious disease, 64.3% feared that they can be infected, 14.3% felt well helping their fellow human being and others in this group felt confortable because they were well protected.Those who were not directly involed with patients care accounted for 14.3%. More than ninety five percent of the respondents (95.75%) agreed that infection can be spread from patient to patient.

Table 2: Possible sources of hospital acquired infection in KRH 2010

Variable	Yes (%)	No (%)
Infection can spread from HCW to patients	82.9	17.1
Blood splash can spread inefection	90	10
Infection can spread though body fluids on intact skin	47.7	52.3
Infection spread through respiratory route	87.1	12.9
Infection spread from patient to health worker	98.6	1.4
Cleaners can spread infection to patients	78.6	21.4
HCW can spread infection to visitors	62.9	37.1

Almost three quarters (72.9%) of the respondents were personaly taking care of patients with infections. Patients who were taken care of in the last one week ranged from 1 to 80. Care given ranged from medication, bed making, giving injections, wound dressing, general cleanliness of the wards, surgery, surgical toilet, bed bath, setting iv drips and specimen collection. Protective gear used included gloves, apron, masks, clinical coat and boots. 65.7% of the respondents felt that the precautions they took were not adequate to protect them from infections. They gave the following reasons: Protective gear were inadequate and some were larking,some protective gear were of low quality ie.were easily torn (gloves and aprons).The supply of the protective gear was also irregular,some service areas larked washing facilities and some had poor ventilation.

There were mixed responces regarding on how often participants used gloves when performing various procedures.When doing surgery, 71.4% always used gloves. The rest were not involved with patients care.Gloves were used by 74.2% when doing woung dressings while25.8% were not involved in patients care. While transporting patients,31.4% put on gloves sometimes, 22.8% always used gloves,5.7% never used gloves,the remaining either used gloves rarely or never used them.When handling soaked linen,68.5% always used gloves,5.7% used them sometimes while it was not applicable to the remaining.

When gloves were not available and there is work to be done, 94.3% said they could not abandon the work while 5.7% they could.O n buying gloves to do the work,22.9% were in favour of buying them, but 77.1% said no. 71.4% were in favour of improvising with other materials such as plastic/nylon bags,clean linen and clean bare hands.

Regarding the availability of sharp container in their areas, 77.1% had them while 22.9% did not have them. Those who did not have them were discarding used needles in buckets or were using minor theatre were there is a sharp container.51.4% of respondents were not washing hands before wearing gloves. Nearly all respondents i.e.98.6% were washing hands after removing gloves as shown below.

Observation results

Transportation of patients to various units was done by nurses/medical attendants. Most of them put on gloves while handling the patients. Refuse collection was done regularly by one refuse collector in the whole hospital. Ventilation in some of the service rooms was poor i.e. OPD rooms. Sterilization of equipments in theatre was very good and even the general hygine too. The cleanliness of linen from laundry was not very satisfactory as some of the linen brought from there were found to be still dirty. Transportation of specimens to the laboratory was done by nurses/medical attendants.Some put on gloves while others do not.

Reception of specimens in the laboratory was satisfactory. Staff were always keen to put on gloves while performing various procedures. However some were seen doing wound dressings with bare hands. Most rooms are kept clean and cleaning is done daily. The hospital environment was kept clean. A private company has been contracted to carry on the excercise of maintaining its cleanliness on daily basis. Some of the protective gear used i.e.gloves and aprons were observed to be easily torn.

Discussion

This study has shown that there were more female respondents (60%) than males (40%).This might be due to the fact that there are more females in the medical profession than males. Nurses accounted for the majority of the respondents (i.e.42.9%).The nursing profession is dominated by females.This might also explain why there were more females. It is encouraging to note that all respondents (100%) thought that Health Care Workers are at risk of acquiring infection during service delivery. A good number of participants received training on infection control (74%), 63% on universal precautions and 53% on Post Exposure Prophlaxis for HIV infection. Those who did not receive any were 17%. However the percentage of those who did not receive one of the trainings and those who did not receive any, is significant. If the situation remains unchecked,control of spread of infection in the hospital will be difficult. More trainings are required in all three aspects as indicated by 35.7% and it should be a regular event. The subject on universal precautions should be insisted to all Health Care Workers.

Policies /guidelines on Universal precautions and Post Exposure Prophylaxis for HIV infection were not available as indicated by 82.9% for universal precautions and post exposure prophylaxis. Efforts should be made to get these policies/guidelines and make them easily accessible to every Health Care Worker. Hospitals have sanitation protocal regarding uniforms,equipment sterilization,washing and other preventative measures.Thorough hand washing and/or use of alcohol rubs by all medical personel before and after each patient contact is one of the most effective ways to combat nosocomial infections(McBride et al, 2004).

Health Care Workers were afraid of being infected when taking care of a patient with an infectious disease as indicated by 64.3%. It should be insisted to every Health Care worker that every patient should be regarded as potentially infectious so they should abide to Universal precautions to avoid beind infected or themseves infecting the patients.

The knowledge on infection spread in the hospital setting is high. Efforts should be made to sustain and even enhance the knowledge through seminars /workshops. It is significant to note that 47.7% of the respondents said it is possible to spread infection through body fluid on intact skin.While it is known that this is not possible, such perceptions by some HCW should be corrected.
In controlling hospital infection it may be difficult to institute an effective control programme because of many visits by relatives of patients. However,the microbiologist may be contracted to conduct periodic, random studies to establish which organisms are present and advise on their elimination (Adjei,1995).

Care to patients with infections was provided by 72.9% of the respondents. Number of patients handled ranged from 1 to 80.Unless universal precautions and Infection control measures are emphasized to all health care workers,there is a risk of spreading infection in the hospital. The majority of respondents (65.7%) felt that the precautions they were taking while handling patients with infections were not enough to protect them. Some of the reasons given were irregular/inadequate supply of low quality gears (PPE). These issues should be adressed. Through observation, some gloves and aprons were seen to fagile and thus easily torn and some service area had poor ventilation with only one window.

The most effective technique of controlling nosocomial infection is to stategically implement Quality Assurance/Quality Control measures to health care sectors. Evidence based management can be another feasible approach. Controlling and monitoring hospital indoor air quality needs to be an agenda in management so as to control hospital acquired pneumonia (Leung et al, 2006).

Infections can occur as a result of inappropriate handling of specimens, accidental injury and contact with infected materials, lack of protective wear, lack of skills for proper use of protective wear (MoH Uganda,2003). The practice of using gloves is fairly good. Efforts should be made to make sure that health care workers use gloves at all times during service delivery to patients. Those who use bare hands (as evidenced through observations) should be discourage from doing so.

It is quite encouraging to note that all respondents (94.3%) said they were not going to abandon their work because there were no gloves. Some were ready to buy gloves to do the work, but 71.4% were in favour of improvising by using nylon/plastic bags,clean linen or bare hands.This habit of improvising should be discouraged and efforts made to make sure gloves are always available and easily accessible at the place of work.

It is a good practice that 77.1% of the respongents had sharp containers (safe boxes).Those who did not have them amounted to 22.9% ,they were discarding used needles in buckets or walking to find a sharp container. This habit should be discouraged, every service area should be provided with a sharp container. Respondents who were not washing hands before wearing gloves were 51.4%.This is a significant finding. Regarding washing hands after removing gloves,nearly all respondents (98.6%) were doing so. All HCW should be educated that it is very important and mandatory to wash hands before putting on gloves and after removing them. Handwashing freqently is called the single most important measure to reduce the risk of transmitting skin microorganisms from one person to another or from one site to another on the same patient. Washing hands as promptly and thoroughly as possible between patient contact with blood, body fluids, secretions, excretions, and equipment or articles contaminated by them is an important component of infection control and isolation precautions.Healthcare settings must continuously remind practitioners on proper procedure in washing their hands.Simple programs such as Henry the Hand can assist heathcare facillities in the prevention of nosocomial infections(http://henrythehand.com).

Wearing of gloves does not replace the need for handwashing,because gloves as they may have small, non-apparent defects or may be torn during use,and hands can become contaminated during removal of gloves. Failure to change gloves between patient contacts is an infection control hazard. Universal precautions stipulate that gloves should be worn for touching blood and body fluids, mucous membranes, or non-intact skin of all patients, for handling items or surfaces soiled with blood or body fluids, and for performing venepuncture and other vascular access procedures. They should be changed after contact with each patient. Masks and protective eye wear or face shields should be worn during procedures that are likely to generate droplets of blood or other body fluids to prevent exposure of mucous membranes of the mouth,nose and eyes.Gowns or aprons should be worn during procedures that are likely to generate splashes of blood or other body fluids.

Hands and other skin surfaces should be washed immediately and thoroughly if contaminated with blood or other body fluids.Hands should be washed immediately after gloves are removed (CDC). (www.cdc.gov.pugwash.lib.ac.warwick.ac.uk). In order to control nosocomial rotavirus infection,a hand hygine protocol has to be enforced(Chan et al,2007; Traub et al, 2006; Katz, 2004).

Conclusion

Respondents were conversant with various methods of hospital infection control . Seventy four percent (74%) were trained on infection control, 67% on universal precautions and 53% on post exposure prophylaxis on HIV infection. Seventy seven percent (77.1%) knew something on Universal precautions. Many were using gloves when performing various procedures. Sharp containers were used by 77.1% of the respondents.

The current methods used are not adequate to control infection as indicated by 65.7%. Resources to achieve hospital infection control are inadequate due to irregular supply and low quality of some of pretective gear. Gaps exist in controlling hospital infection and these include: some of the respondents had not received any training 17%, misconception on hospital infection control, inadequate efforts in refuse collection, poor laundry services, low quality protective gear, irregular supply of protective gear and poor ventilation in some service rooms

Recommendations

1. Workshops/seminars on Infection control, Universal precautions and Post exposure prophylaxis on HIV infection should be planned, budgeted and conducted regularly.
2. Personal Protective gears should be purchased fom a supplier with good quality products and a regular supply should be ensured.
3. Hospital Infection Control policy should be developed and implemented and availed to all staff.
4. Improve ventilation in all service areas.
5. Provide washing facilities in all service areas.
6. Laundry services should be closely monitored.
7. Refuse collection activities in the hospital should be enhanced.
8. A broader study using analytical methods should be conducted to further elaborate on these findings.

The effects of hospital reforms on management of public hospitals in Tanzania: Challenges and Lessons Learnt

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Abstract: Although hospital reforms are being advocated internationally as part of a solution to hospital management problems in developing countries, studies have raised problems with such reforms. The study used in-depth interviews, focus group discussion and document review to examine hospital reforms. This paper reports the findings of this study that examined the effects of reforms on management of level II public hospitals in Tanzania and documented challenges and lessons learnt. The paper indicates that hospital reforms have mixed effects in least resource intensive hospitals and is faced with too many challenges to be effectively implemented. Hospital reforms action have instead extended the rope from one central bureaucratic level (MOHSW) and tied hospitals to another central bureaucratic level (RAS) leaving many hospital management problems unturned. In order to effectively scale-up and achieve the objectives of reforms (of public hospitals with more authority, clear lines of responsibility, accountable to actions and ability to mobilize resources), it is important that the hospital reform policy be reviewed and attention be focused on lessons learnt, challenges and ways to overcome those challenges during implementation.

Keywords: Hospital reforms, effects of reforms, challenges, and lessons learnt, Tanzania

Introduction

Since the early 1990s there has been varying interest in reforming the management of public sector hospitals in Africa. Thousands of government hospitals were taking up a considerable portion of their countries' health budgets, but most were delivering poor and ineffective services. With this realization, a number of 'hospital reform' initiatives were launched, introducing changes in the way that hospitals were organized, managed and financed. Most of these reforms have been based on international ideas that management has improved as a result of hospital reforms (The World Bank, 2010), granting autonomy to public hospitals improved performance and managers were able to make decisions on behalf of their hospitals (Brinkerhoff, 2004); reforms provided greater local accountability with better informed and faster decisions (Grant, K and Walford, V 1998); and strengthened managerial functions and promoted clarity in management processes in hospitals (Mills, 1998; Collins and Green, 1999). Although hospital reforms are being advocated internationally as part of a solution to hospital management problems in developing countries, studies have raised problems with such reforms. Important issues are: government policies have had several unintended consequences (The World Bank, 2010), reform created more layers of administration (Shwekerela, B 2010), operational decision-making has become more centralized (Dwyer J and Eagar K 2008), and worries that it is difficult to identify the impact of these reforms (Grant, K and Walford, V 1998). However, in some countries these reforms have achieved significant success; in others the results have been more mixed (ICHSRI, 1999). This paper reports the findings of the study that examined the effects of reforms on management of level II public hospitals in Tanzania and documented successes, pitfalls, challenges and lesson learnt.

Through its health sector reform initiative, the Tanzanian government introduced hospital reforms in 1997 as a new element in the country's health sector reform strategy for reforming regional and district hospitals. The idea behind hospital reform was, "to promote accountability, efficiency and effective hospital management structures, to streamline the lines of responsibilities and to provide more authority to hospitals to mobilize and make decisions over resources" (URT, 2002;), things that were missing from public hospital management. Reforms were planned to be gradual on incremental bases and to be implemented in phases starting with piloting reforms in few hospitals. The government started implementing hospital reforms in tertiary and secondary level hospitals; of

interest to this study have been hospital reform pilots in secondary level hospitals. Regional hospitals were directly managed and controlled through central bureaucratic mechanisms and management structures and the accountability was at the Ministry of Health and Social Welfare. Managers responsible for delivering services had very limited management powers in decision-making, accountability and resource mobilization (staffing and raising revenue). The majority of clients who were attending level 2 hospitals were dissatisfied with service delivery (URT, 2005. It was expected that hospital reforms will show tangible results which will be used to scaling reforms to all hospitals in the country. However, very few studies have explored the effects of implementation of reforms on level 2 public hospitals piloting reforms. Most fragmented studies have explored and reported reforms results in tertiary hospitals which are resource intensive that do not necessarily reflect the true picture of reform results in level 2 hospitals at regional level. Little was known on when this implementation started, what they will produce in the current regional hospital setting with problems of inadequate hospital funding, poor infrastructure and under-management. This paper has three main objectives: first, to compare the old and new management structures to be able to understand what happened after these changes of management structures; second, to find out when management structures changed and reforms were implemented, where did authority resided and what changes were brought by reforms in accountability, lines of responsibilities, resource mobilization (staffing and raising revenue) and decision-making; and, thirdly, with those effects and changes, to identify challenges these reforms were facing during the implementation and what lessons to be learnt from the implementation reforms.

Methodology

Study setting

We conducted the study in Kagera and Bombo regional hospitals to learn their experience of starting reforms; and Kitete and Ligula regional hospitals to get their following experiences. The study setting is part of the public level 2 hospitals, where pilot for hospital management reforms were implemented for ten years (1999-2009). Then, we joined their experiences to get the full picture of effects of reforms. There are 18 public regional hospitals in Tanzania of which 5 were implementing hospital reforms. The study took 'a case study approach' of four (out of the five) regional hospitals that were pioneers of implementing reforms in Tanzania. Those were Kagera regional hospital (Kagera), Bombo regional hospital (Tanga), Ligula regional hospital (Mtwara) and Kitete regional hospital (Tabora). This case study approach of several hospitals was chosen because the Ministry of Health and Social Welfare started reforming the first two hospitals (Kagera and Bombo regional hospitals) and later added the three regional hospitals, i.e. Kitete, Ligula and Musoma. We took the first two hospitals to learn their experience of starting reforms and another two from those three hospitals which entered later in reforms to get their following experience. The case study approach was chosen to allow findings from these different phases of implementation of hospital reforms to converge into one descriptive study. As aptly put by Kamuzora and Gilson (2007) a case study approach is used "to enable a detailed and in-depth inquiry of the complex issues of focus"

Study design

The study design is mainly descriptive qualitative study**.** The choice that laid in the philosophy that "effects are quality values that are better described rather than quantified in terms of their pattern (Ross 2006); and uses a much smaller number of case and people to produce in-depth and detailed information to inform the study (Patton, M 1990).

Data collection

We drew on qualitative data collected using in-depth interviews, Focus Group Discussions and document review at four levels involved in hospital reforms namely national, regional and hospital level and implementing partner level (figure 1). Those interviewed at hospital level were five hospital Board members as overseers of regional hospitals, 17 Hospital management team members and 15

Heads of departments in the hospital as managers of regional hospitals on daily basis. They informed the researchers on what was the situation before and after especially on the roles and functions and lines of responsibilities, management of resources, authority and accountability. At Regional level, interviews were conducted with 20 Regional secretariat members. Those members were supposed to oversee and guide the reforms at regional level and provide support to management reforms. They highlighted on the degree of decision-making, authority and support that were given to reforming Regional hospitals and how they were supported by higher levels in the exercise. At the National level, two sub-levels were involved because regional hospitals fall under the PMORALG administratively and under MOH in technical matters. *At MOH*, seven MOH officials/directors were interviewed because they have been key people in making decisions at central level that affected the hospital reforms and *At PMORALG,* five officials/Directors were interviewed because they were responsible for national policies, politics and restructuring the government ministries (The Regional Administration and Local Government and the Ministry of Health). Then, we conducted Focus Group Discussions (FGDs) in order to confirm the information we got in reaching the consensus. The focus group discussion averaged 1- 2 hours and 5 to 8 people participated in each group. Ten FGDs were conducted with a total of 63 general hospital staff (groups of doctors, nurses and others – non nurses and non-doctors) and triangulation of the information gathered was done. Through FGDs, general staff informed us on the effects of hospital management reforms had on themselves, hospitals structure and patients. The sampling procedure focused on cases and categories selected purposefully. The logic and power of this purposeful sampling was based on "information-rich cases for the in-depth study" (Patton, 1990)**.** In addition, we conducted document review and gathered recorded data and information on authority, accountability, ownership, management structures, lines of responsibilities, staffing, raising revenue and documented effects on public hospitals, policies, directives, guidelines including law and acts. Data have been analysed qualitatively using QSR N6 Software[15] for qualitative data analysis; and figure 1 and 2 have been used in presenting effects of reforms on management of public hospitals in Tanzania and challenges to hospital reforms at different analysis levels (hospital-national level).

Results

Despite of the widespread belief that hospital reforms will bring the intended results – more authority to hospitals for mobilizing resources and make decisions over them, promote accountability for action and streamline lines of responsibilities in hospitals, study findings show mixed results in level 2 hospitals that were piloting hospital reforms. Those study results are presented here in three themes of effects of reforms: positive effects of reforms, negative effects and Pitfalls in hospital reforms. The discussion covers challenges and Lessons learnt; then conclusion and recommendation.

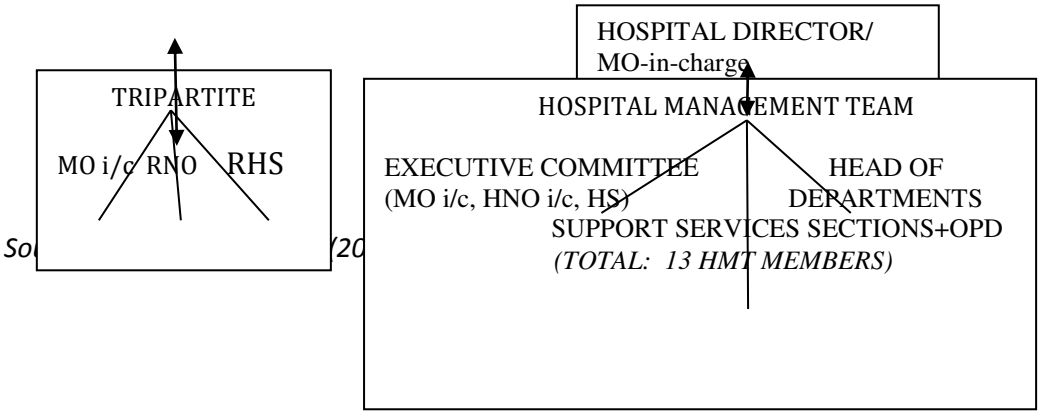
The effects of reforms: positive effects

Management systems change: the tripartite system became team management, e.g. the use of hospital therapeutic committees, hospital management teams and hospital Boards (figure 1).

Figure 1: Old and New Level 2 management structure (Tripartite Vs Team Management)

Old management (before reforms) New management (after reforms)

[15] QSR N ive Systems Research; N6 stands for NUD*IST Version 6; and NUD*IST stands for Non-numerical Unstructured Data *Indexing Searching and theorizing



Hospital management teams were found established in all four level 2 hospitals that were piloting reforms and were operating. Two hospitals were able to establish interim hospital boards to govern the hospitals. Responses from in-depth interviews indicated the increase in use of team management in decision-making. HMTs pointed out areas where they sat and decided on outsourcing support services on catering, cleaning and casual work as the case of Ligula, Kagera and Bombo regional hospitals. Further responses from hospital managers indicated that hospital managements gained some authority to decide on their hospital services, buying new equipment and conducting rehabilitation of hospital buildings including constructing new ones. In addition, responses from interviews with board members indicated that hospitals were able to raise and retain hospital revenue collected from user fees and used it locally and in a transparent way measured by the degree of hospital income and expenditure disclosure.

The effects of reform: negative effects

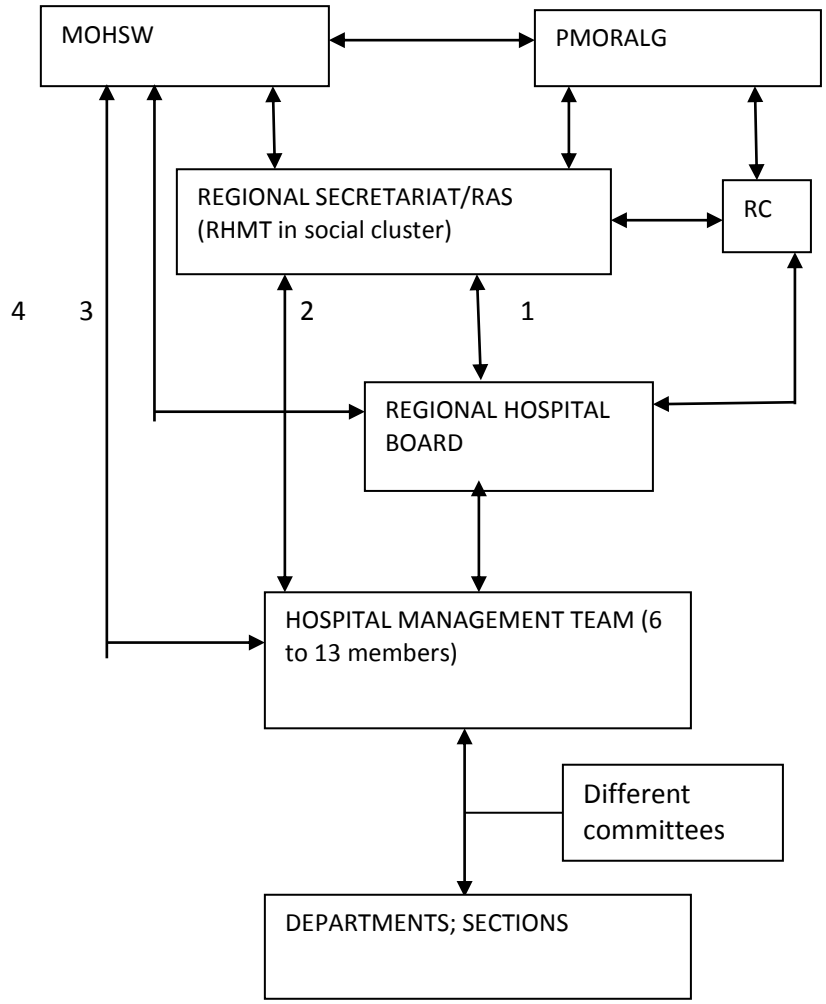
When the hospital management structure and system changed, hospitals moved from MOHSW bureaucracy at national level and were attached to those of RAS (another central level). The reviews of documents have shown that the Public Service Act 2002 and its Regulations 2003, strengthened regional authority control over regional hospital resources. Through the Act (Public Service Act, 2002) RAS has become the employer and disciplinary authority of hospital workers. Responses from interviews with hospital managers and Board indicated that this has affected hospital management in three ways: first, the managements have been deprived of authority to personnel management, they do not employ; second, have created a dependency behavior to look higher up for decision approval before taking actions; and third, reforms have let level 2 hospitals off MOHSW bureaucracy to be tied to those of RAS. Cementing on this, one respondent from the interviews with the Board said: *"The board is not an employer. At the board we can receive complaints, but cannot take disciplinary action. We, the Board, control by complaining to those who appointed us (RC/RAS) to take action"*

Majority of participants repeatedly pointed out that reforms have therefore extended the rope but the cow is still tied. That is reforms freed hospitals from MOHSW bureaucracy, but tied them to those of RAS, and level 2 Regional hospitals have become units under RAS health department.

Additionally, the overwhelming majority of respondents from interviews felt that reforms created dual accountability in level 2 hospitals piloting reforms. Respondents asserted that reforms have created 4 lines of accountability, different appointing and employment authorities that weakened the management accountability in hospitals. Along the process, it brought fragmented and parallel types of accountability in regional hospitals leading to authority relation problems. For instance, responses from interviews with hospital boards showed that there were three lines of board accountability (figure 2): one to RCs who appointed the boards; another line to RAS as the owner of

the regional hospital and the other line of accountability to MOHSW. The fourth line found from the review of MOHSW documents and guidelines is of HMT accountability directly to MOHSW on cost-sharing by-passing RAS, RC, and Boards.

Figure 2: Lines of management accountability in Practice after reforms



Source: data from the field (2008)

The responses with the Regional Secretariat also pointed out those problems in accountability as several respondents said: *"RAS could not hold hospital boards accountable for anything except RC. RC could hold the board accountable because in reality, any management structure is accountable to who appoints it. Line of accountability in regional hospitals (meaning level 2 hospitals) is more confusing than it was before".*

In hospitals piloting reforms were found to have Boards, HMTs and some members of HMTs having different appointing authorities to whom they are accountable to as a result of hospital reforms. Respondents cited that boards were appointed by RC; Medical Officer in-charge appointed by RAS while RMO appointing members of HMT. Responses from interviews with HMT and BOARD members indicated that accountability have been on mutual understanding and diversified by reforms.

The study has found other negative effects of reforms to include: Private to Government hospitals staff shift, overcrowding of regional hospitals and worsening of the existed shortage of health workers. Responses from interviews and focus group discussions with general hospital staff

indicated that hospital reforms accelerated movement of workers from private to government hospitals that enhanced shortages of staff in private hospitals with an increase of patients being attracted to level II hospitals. Furthermore, responses pointed out that in turn staff shift and patient attraction lead to overcrowding at regional hospitals through patients by-passing lower health facilities. The reasons behind were pointed out to be reforms which improved regional hospitals without improving health facilities at local levels which accelerated patients by-passing those health facilities for better services. The study picked out that hospital reforms worsened the existed shortages of health workers in regional hospitals through the introduction of 'Advertising-Applying-interview system in recruitment of health workers that was introduced in 2002 by the Public Service Act, 2002. Response from interviews with regional secretariat indicated that qualified health workers did not turn-up or prefer to be recruited through interview system for reasons that they have already been authorized to practice by their professional Boards.

Pitfalls in hospital reforms

The review of existing documents at all levels of reform implementation show reforms did not touch the lines of responsibilities for each health cadre which have remained vertical and parallel as before reforms. Majority of respondents indicated that some members of HMT had no authority over some cadres. Furthermore, response from interviews with MOHSW pointed out that reform processes have failed to enact new or get existing laws amended to reinforce the reforms. Respondents said, reforms were implemented on discretion and not as a mandate and that Regional Secretariat failed to get legal transfer of regional hospital. The review of decision-making in level 2 hospitals showed two management teams – HMT and RHMT – were not completely separated to end functional overlap and RHMT overriding HMTs.

Discussions

The implementation of hospital reforms had faced and still faces many challenges. First, reforms were not fully implemented. The MOHSW enacted hospital management reform policy approach of "hands-off, Eyes-on" but assumed that the policy will be implemented as planned but was not. On the ground, regions and regional hospital managers understood it differently and implementation was as they understood it and not as the aim was. Therefore, no full implementation of hospital reforms was effected (Ministry of Foreign Affairs of Denmark, 2007). Second, decentralization of authority has become centralization at RAS: once decentralization reached RAS, there has been no mechanism to ensure that RAS also decentralizes authority further downwards to regional hospitals' managers. Hence, inadequate devolution and partial authority granted to hospitals are a challenge to the reform process. Third, Reforms have been implemented without a law to reinforce reforms. This has been another major challenge to hospital reforms and reformers at all levels. Reforms have been implemented on discretion and not as mandated; most activities in hospital reforms have remained on paper, resources were not devolved and reforms were monopolized by the MOHSW. Fourth, the structure of accountability is blocked in regional hospitals. Public service act of 2002 has centralized employment and disciplinary authority to RAS and RMO instead of Boards and HMTs as reform documents show. Fifth, the speed of reforms has been slow, time frame not been defined and commitment to reform has been too minimal. This has resulted into resistance to reforms being developed at all levels, e.g. HMT and RHMT separation has been strongly resisted; enacting a law to reform and getting legal instruments to the hospital boards are also resisted.

This study had useful lessons for further reforming or those intending to reform hospitals. They have enlightened areas for MOHSW to focus its attention and make adjustment to reform policy. First, hospital reform is possible: hospitals, if given authority and opportunity can do more. With little authority given: HMTs have been able to make some decisions and visible changes in hospitals, e.g. Planning, raising revenue, contracting services, establishing financial controls, e.g. Kagera and

Bombo regional hospitals. Second, involvement of RAS right from the beginning of reform process is vital in accelerating hospital management reforms. It creates conducive environment for restructuring the management in the hospital (RAS plays a big role as employer and owner of regional hospital). It reduces contradictory decisions between RAS and hospital reform task force (RAS becomes party to decisions being made). Third, It is difficult to devolve full authority to regional hospitals and management structures that have no legal powers, e.g. of employing and disciplinary authorities. HMT and Hospital boards are lacking legal instruments. Successful reforms are backed up by a law. Fourth, in the current set-up, RAS and RMO influence is still on and prevalent in regional hospitals (overriding hospital boards and HMTs decisions). Such influence is minimized by regional hospitals having service agreements in place between the hospital, RAS and MOHSW as was the case of Kagera regional hospital (the agreement stipulates clearly the functions of each party). Fifth, Reform without resources is hard: it is difficult to achieve complete reform with RAS budget further compounded by severe shortage of people (hospital staff) who are supposed to implement reform. And, sixth, the pace of hospital reforms has been slow: hospital reforms cannot move fast without being pushed or pulled by power of the law to reform.

Conclusion

The study has documented several mixed effects of hospital management reform ranging from visible improvements to infrastructure and equipment, hospital Boards and HMT put in place, regional hospitals managements gained minimal authority and acquired a sense of having strategic management in place. As well, the study shows there has been failure to enact a law to reform; hospital reform has created several lines of accountability instead of a single one and hospitals implemented reforms differently. The study indicates that it is difficult to achieve devolved management authority and adequate delegated functions in the current regional hospital settings. Unless hospital reform policy is revised, scaling up of hospital reforms will be difficult.

Recommendation

In order to effectively scale-up and achieve the objectives of reforms (of public hospitals with more authority, clear lines of responsibility, accountable to actions and ability to mobilize resources), it is important that the hospital reform policy be reviewed to focus attention on lessons learnt, challenges and ways to overcome those challenges during its implementation. A law should be enacted or get the existing ones amended so that reforms are implemented as mandate and not on discretion; adequate funds should be allocated to reforms; MOHSW and RAS should put hospital boards in place and devolve more authority to them and Hospital Management Teams.

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Conflict of interest: no conflict of interest

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Combination antiretroviral strategies for the treatment of pregnant hiv infected women and prevention of perinatal HIV transmission in the urban and rural areas of DODOMA –TANZANIA AMANI STUDY

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Background

HIV infected mothers can transmit the virus to their babies transplacentally, at the time of delivery, or through breast milk. In the absence of any intervention, the risk of mother-to-child transmission (MTCT) of HIV is 15-30% in non-breastfeeding populations. The risk increases by approximately 5-20% through breastfeeding, amounting to a total risk of 20-45%. The higher the maternal viral loads during pregnancy and delivery, the higher the risk of mother-to-child transmission of HIV. The use of ARVs during pregnancy, labour and delivery and lactation has been shown to reduce the MTCT risk to less than 2%.
In 2010, the WHO recommended the use of antiretroviral prophylaxis starting as early as 14 weeks of gestation and during labour/delivery be included in the programs to prevent the MTCT of HIV. The recommended regimens include zidovudine (AZT) alone (Option A) or combination antiretroviral therapy (Option B).

Study aims:
The overall study aim was to investigate the possibility of reducing mother-to-child transmission of HIV also through breast-feeding by an expanded antiretroviral treatment to HIV-infected mothers.
The secondary aims were to assess the feasibility of ARV prophylaxis in a cohort of HIV positive pregnant women to prevent MTCT of HIV, to assess the CD4 immune recovery and clinical progression during the first year after the end of an antiretroviral regimen, to assess the clinical situation of newborns at delivery, to determine the HIV viral load in plasma and in breast milk, to determine the antiretroviral drug levels in plasma and in breast milk, and to determine the antiretroviral drug-resistance prevalence rate in HIV-infected pregnant women.

Methods:
Combination Antiretroviral strategies for the treatment of pregnant HIV infected women and prevention of perinatal HIV transmission in the urban and rural areas of Dodoma, Tanzania *alias* Antiretroviral Management of Antenatal and Natal HIV Infection (AMANI) study, is an interventional, longitudinal cohort study ongoing in Dodoma Municipality, study population is 250 HIV infected pregnant women. Combination triple antiretroviral therapy was provided to all HIV positive pregnant women as soon as they are eligible or from week 28 (as prophylaxis) and all over the breastfeeding period (which is exclusively for the first 6 months of life). Administration of HAART includes AZT 300mg, 3TC 150mg and NVP 200mg twice daily. Any modifications of the ARV regimen due to adverse events and/or clinical, immunological, virological failure were made according to National Guidelines for the management of HIV and AIDS.

Results:
During 27 months, 7519 pregnant women attended the ANC at Makole UHC, and 423(5.6%) of these were found to be affected by HIV infection. Among them, 232 (54.8%) were enrolled in the study. Of these 232 enrolled patients, Thirty-one (13.4%) HPWs were lost at follow-up, 18(7.8%) dropped-out, 11(4.7%) are on evaluation for ART eligibility and 172(74.1%) are on ART. Of the 172 patients on ART,

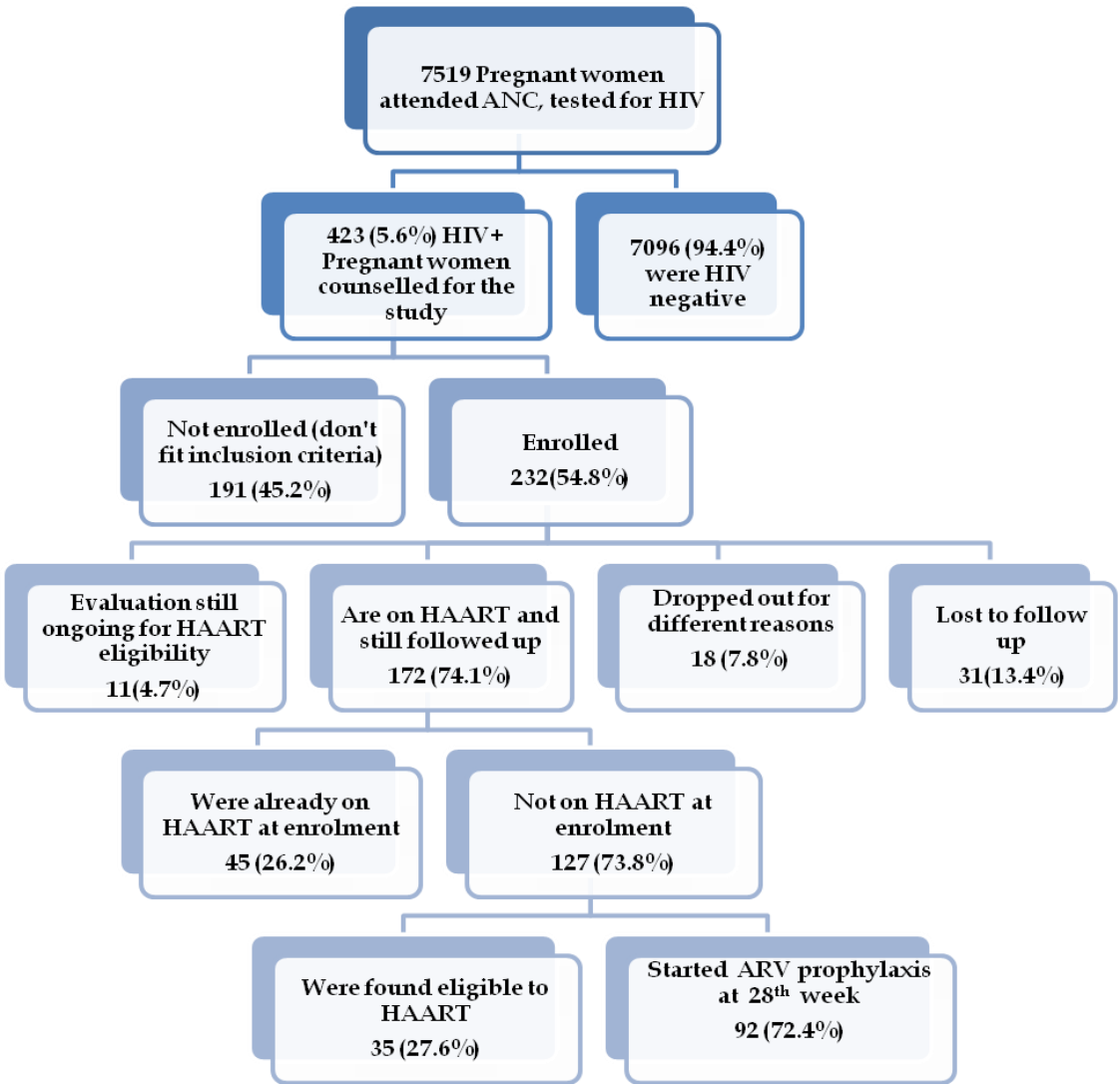
45(26.2%) were already on ART at the enrolment on ART. Among the 127 HPWs not on ART, 92(72.4%) HIV pregnant women started ARV prophylaxis and 35(27.6%) were eligible to treatment (*Appendix* 1). One hundred and sixty-nine HPWs had already delivered, 108 children had HIV DNA (PCR) done at 4-6 weeks, only one (0.9%) child was found to be positive. No serious adverse reactions were reported or observed.

Conclusions:

The procedures of the study were well accepted by the local health service providers and HPWs as only 0.7% refused to participate. Data shows promising results as only 0.9% of children were HIV positive by DNA PCR at 4 weeks of age. The benefits of the expanded treatment are well understood as to give the babies benefit of breast feeding with less risk of HIV transmission via breast milk.

Appendix 1

Fig. 1: Flow diagram representing all women counselled and enrolled in the AMANI study for 27 months since May 2010



Experiences of "jiamini" mass media family planning campaign in Tanzania: Implications for reproductive health policy

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Abstract: Among the aims of the Tanzania national health policy is reducing mortality, improving nutritional status and raising life expectancy. With the policy in place, population growth has been increasing; MMR and TFR are still high and contraceptive prevalence low. Barriers to usage of FP are still challenging. In April 2012 CCP-Tanzania launched a national mass media family planning (FP) campaign titled "JIAMINI" (be confident), as an effort to empower individuals in reproductive age to use modern family planning. A cross-sectional household based survey of 1998 randomly selected individuals aged 18 years and above was conducted in all regions three month after the campaign launch. Results depict that one-month exposure was as high as 64%, with no significant difference in gender. Geographically 62% rural and 70% urban residents were exposed. Radio (78%) and TV (55%) media sources had the highest exposure rates in both rural and urban. About one-fifth of studied population reported to have sought for information about FP during the past one month mostly from health facilities (80%). FP information seeking was related to higher dosage of campaign exposure, middle age groups (25-44 years), female gender and rural residency ($p<0.05$). About 40% reported current use of modern FP methods and was significantly related with campaign exposure and information seeking behavior ($p=0.001$). Male condom was the most common method reported (39%) followed by injections (35%) and pills (27%). With only three months on air, the "Jiamini" campaign is promising to be an effective in reaching a significant number of audiences about FP, and subsequently reproductive health with consequences for behavior change. The results imply adoption of intensive mass media campaign, may generate more usage of modern FP. Furthermore, future tailoring of media sources for deeper penetration per geographical area is seen as strategic to create maximum exposure.

Introduction

Family planning is documented to contribute to birth spacing, lower infant mortality rates and risk, and reduce the number of unintended and unsafe abortions. It has also been shown to significantly reduce maternal mortality and maternal morbidity associated with unintended pregnancy (Tsui, McDonald-Mosley & Burke, 2010). Increased access to family planning (FP) services is critical for economic development, as reductions in high fertility can improve economic wellbeing on both the national and familial levels. Population growth puts a strain on national resources allocated for infrastructure and social services (Bongaarts & Sinding, 2011). A rapid decline in fertility, on the other hand, temporarily increases the proportion of the population in the workforce, which can provide a boost for economic development (Bloom, Canning, & Sevilla, 2003). While some have suggested the high fertility rate often seen among the poorest families in developing countries may be an economic strategy, research indicates that many of these families lack access to family planning services and would be economically better off with fewer children (Cleland et al., 2006).

Among the aims of Tanzania national health policies are reducing maternal mortality, increasing life expectancy and increasing family planning use. Also one of the objectives of Tanzania National Population policy is to educate women on importance of breast-feeding, safe motherhood and family planning (Tanzania Ministry of Planning, Economic and Empowerment, 2006). There has been a slow progress in family planning use in the past 30 years. Further despite of the concerted efforts to increase the level of use of family planning methods (especially modern methods) the indicators have remains relatively unacceptable. Contraceptive prevalence remains low (28% any method and

23% modern method) and total fertility rate high at 5.4 children per woman (TDHS 2010). The level of unmet need for family planning remains at 19% (12% spacing and 7% limiting (TDHS, 2010). The ideal number of children perceived by Tanzanians also remains high at an average of 5 children for both men and women. There is a need for more concentrated and intensive efforts to reach the Tanzania target of 60% contraceptive prevalence by 2015.

Mass media campaigns are widely used to expose high proportions of large populations to messages through routine uses of existing media, such as television, radio, billboards, fliers and newspapers. Even though passive it has been documented that well designed mass media campaigns have high potentials to produce positive changes or prevent negative changes in health-related behaviors across large populations (Wakefield, Loken & Hornik, 2010). Also it has been stressed that socioeconomic development policies and family planning programs with a special emphasis on mass media, especially radio and television, may have a significant effect on contraceptive use (Islam & Hasan., 2000). These campaigns should take in consideration the different population segments including but not limited to less privileged, rural and illiterate people. An evaluation of a health communication radio campaigns in Tanzania and Nepal revealed that self-reported exposure to each radio program was exogenously related to family planning information seeking behavior and use (Hutchinson & Wheeler J, 2006).

In response to these needs Johns Hopkins University Centre for Communication Programs (CCP) in its Capacity and Communication Project (TCCP) created a better informed programming for Tanzanians by executing evidence-based and coordinated behavior change communication program. In April 2012 CCP-Tanzania launched a national FP multi mass media campaign titled "JIAMINI" (be confident) as an effort to empower individuals in reproductive age to seek information and use modern FP methods. The aims of the current study are to explore the exposure, use and source of exposure of the mass media campaign and relationship between exposure, use and information seeking behavior.

Methodology

A cross section household based omnibus survey of 1998 (26% urban and 74% rural) randomly selected individual representative of Tanzania population aged 18 years and above was conducted in all regions three months after the launch of the campaign. The margin of error of this sample size because of the sample design and other random effects was set at +/-2.2 at 95% level of confidence. Multistage random sampling methodology was employed using Probability Proportion to Size (PPS). One person from each randomly selected household was chosen using Kish Grid (Kish, 1965) and data collected using interviewer-administered questionnaire by a well-trained enumerator. Informed consent to participate was sought from each interviewee before being interviewed. Data were analyzed using Statistical Package for Social Sciences (SPSS version 21). Smaller categories of some variables were combined into larger categories to make meaningful statistical results. Descriptive statistics were calculated and later bivariate analysis was done to identify associations between categorical variables and chi-square calculated with the significance set at p-value <0.05.

Results

Almost two third of the studies population i.e. 64% (n=1284) reported to have either seen or heard a family planning campaign in the past one month in the mass media. Radio (78%) and TV (55%) were the media sources where most of the respondents reported to have heard/seen the message followed by poster (13% and newspaper (8%). When asked about the message recall from the mass media campaign respondents had different responses. These included choosing the FP methods that suit you (45%), be confident (17%), plan your family with your partner (17%) and visit nearby health

facility for consultation (6%). Others were Limiting/reducing the number of children (6% respectively); plan family before marriage (5%) send a text message for more information (2%) and talk to your children about FP (1%).

About one-fifth (21%, n= 426) of the studied sample reported to have sought information about FP in the last one month. Most of these respondents sought information from the health facility (80%) and friends (13%). Exposure to JIAMINI FP mass media campaign was associated with higher likelihood of information seeking compared to non-exposure. The higher dosage of exposure was found to be an independent predictor of seeking for information about FP (Figure 1) even after controlling for demographic variables (p=0.019). Further; 25-34 age group; female gender and rural setting were associated with higher level of information seeking behavior as shown in Table 1 below.

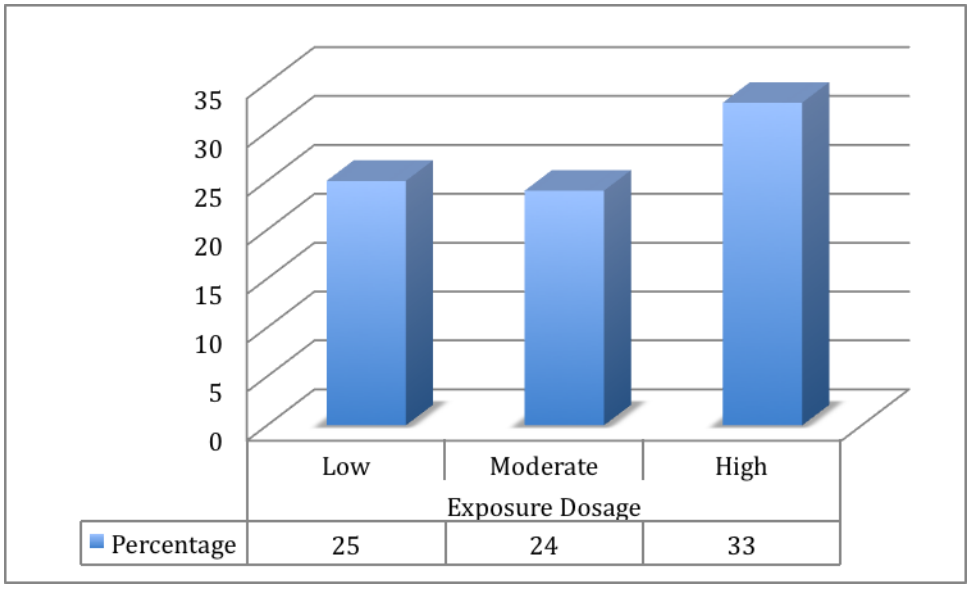

Figure 1: Dosage of exposure against information seeking behavior

Table 1: Predictors of information seeking behavior

Variable	Total (1998)	Sought information on FP (426)	% sought information	P-value
Exposed to FP message				
Yes	1284	348	27.1	<0.001*
No	714	78	10.8	
Level of Education				
None	151	24	15.9	0.124
Primary	1239	260	21.1	
Secondary	488	109	22.3	
Post Secondary	120	33	27.3	
Age groups				
18-24	381	50	13.1	<0.001*
25-34	692	170	24.6	
35-44	465	135	29.1	
45+	460	71	15.4	
Gender				
Male	1166	210	18.1	<0.001*
Female	832	216	26	

Setting				
Urban	534	96	18.1	0.028*
Rural	1464	33	22.5	
Exposure dosage				
Mild exposure	364	93	25.5	0.018*
Moderate exposure	395	95	24.1	
High exposure	420	136	32.4	

*Significant variable (p<0.05)

With regard to modern FP methods use, about 40% (n=801) of all respondents reported self and/or partner current use of modern FP. Table 3 shows contraceptive prevalence by socio-demographics and exposure of FP message through mass media.

Table 3: Predictors of Family Planning use

	Total (1998)	**Self/Partner FP use (801)**	**Percentage use of FP**	**P-value**
Exposed to FP message				
Yes	1274	601	42.7	<0.001*
No	699	200	28.6	
Level of Education				
None	149	53	35.6	0.335
Primary	1225	492	40.2	
Secondary	479	201	42	
Post Secondary	120	55	45.8	
Age groups				
18-24	368	136	37.0	<0.001*
25-34	686	335	48.8	
35-44	462	218	48.2	
45+	457	112	24.5	
Gender				
Male	1149	449	39.1	0.104
Female	824	352	42.7	
Setting				
Urban	522	205	39.3	0.472
Rural	1451	596	41.1	
Exposure dosage				
Mild	361	154	42.7	0.076
Moderate	393	192	48.9	
High	416	210	50.5	

*Significant variable (p<0.05)

Modern FP methods reported were male condom (39%), injections (35%), pills (27%) and implants (0%). Others were intra-uterine contraceptive devises (3%), female condoms (3%), female sterilization (2%) and Lactation amenorrhea (1%).

Discussion

These findings have established there is significant relationship between family planning services information seeking, intake, and campaign exposure. The campaign was able to reach mass both

rural and urban, with a significant percentage of the sampled population seeking family planning information in health facilities indicating that people are moving beyond the barriers of up taking modern family planning methods and beginning to desire to use them. This induced behaved was more possible because of the intensity of the campaign, meaning if the campaign stays for even longer time and people get more exposure, it is likely for more people to go seek family planning services hence may contribute to birth spacing, lower infant mortality rates and risk, and reduce the number of unintended and unsafe abortions.

Self-reporting of using family planning services was found to be significantly linked to exposure, level of education, gender, exposure dosage and age. Attributes like level of education and gender showed significant correlation to information seeking behavior prompting the need for campaign consideration of the demographic characteristics when producing messages. Nonetheless, the need for consideration of the different population segments including but not limited to less privileged, rural and illiterate people is also paramount.

Campaigns like JIAMINI have the potential to reduce maternal mortality and maternal morbidity associated with unintended pregnancy (Tsui, McDonald-Mosley & Burke, 2010). The campaign within one month of air has prompt access to family planning (FP) services, which is critical for economic development, as reductions in high fertility can improve economic wellbeing on both the national and familial levels. Also findings from the this campaign survey has confirmed that stressing adoption of socioeconomic development policies and family planning programs with a special emphasis on mass media, especially radio and television, may have a significant effect on contraceptive use (Islam & Hasan, 2000). The 40% who actually reported using family planning methods were a result of greater exposure to the campaign making it in place to conclude that the campaign is succeeding to produce change of behavior. Radio channel had the greatest exposure rate. This confirms the findings from another study that self-reported exposure to each radio program is exogenously related to family planning information seeking behavior and use (Hutchinson & Wheeler J, 2006). Radio has higher exposure rate in both rural and urban hence in this case the most potential effective media channel to use. And findings showed TV could be optimally used for better impact in urban areas. Hence, tailoring of media sources for deeper penetration per geographical area is essential as strategic to create maximum exposure.

Despite the above facts this study had some limitations. This study employed a cross sectional design, which does not ascertain temporal variations of family planning use and information seeking hence causality may not be well determined. The findings are self reported which may reduce their external validity. Despite these limitations we believe these findings can be used for planning FP use interventions.

Conclusion

These data indicate that the JIAMINI family planning multi-mass media campaign is reaching a large portion of the target population. Exposure to these mass media programs can help increase FP awareness, positive attitude and consequently use of modern FP methods. Furthermore, future policies aimed at tailoring of media sources interventions for deeper penetration per geographical area disseminating information on where to obtain FP services are seen as strategic to create maximum exposure needed to reduce barriers to Modern FP use.

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Integrating HIV/AIDS education in girls' traditional initiation trainings for preventing new hiv infections: potentials challenges and the way forward

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Abstract: One of the limiting factors for successful development interventions including those in the health sector is a whole sale adoption of foreign born intervention approaches. To date, new HIV infections remain a health problem despite the extensive work on prevention education. While this may be contributed by a number of factors, the untapped potentials of traditional approaches might be one. This paper explores the potency of integrating foreign born approaches of preventing HIV infection in traditional initiation trainings for purposes of reducing new HIV infection among teenage girls. Based on an ongoing intervention project it shows that, the methodology used to convince community members to agree that it is high time for HIV and AIDS education be part and parcel of community traditional culture. It presents success stories on the progress of the intervention, discusses the challenges encountered and suggest for effective utilization of untapped components and aspects of culture in complimenting adopted approaches preventing HIV infection. It argues that such integration is likely to develop a synergy that will make the war against HIV infection more meaningful.

Introduction

Sub-Saharan Africa accounts for 23.5 million of the 34 million people living with HIV globally (UNAIDS 2012). Further; out of 2.7 million new HIV infections, 1.9 million happened in Africa and out of 250,000 AIDS related deaths, 230,000 took place in Africa (WHO, 2011). This is a clear indication that African continent is the most affected by HIV and AIDS. In Tanzania, the rate and numbers of new infections as late as 2011 stood to over 200,000 annually which are just too high compared to the resources invested in the fighting against new HIV infection globally and nationally. The annual budget for multi-sectorial response to HIV and AIDS rose from 17 billion shillings to 381 billion shillings within a period of just five fiscal years of 2001/2002 to 2006/2007(URT, 2007). This scenario do suggest that despite the noted positive trends in achieving "zero" new HIV infection; the current prevention interventions are not having the desired impact. While this is linked to enormous challenges such as inadequate health services infrastructure, limited and untimely financial resources to deal with the problem, serious shortage of skilled human resources in the health sector and the entire work force in general and the prevailing stigma and discrimination against victims (URT, 2007) amongst many others; it is questionable if really Africa have ownership in HIV and AIDS response strategies.

The deliberate effort to fight new HIV infection in Tanzania is reflected in The National HIV/AIDS Policy (2001), National Strategy for Growth and Poverty Reduction (NSGPR – MKUKUTA I and II), National Health Policy (2007), Health Sector Strategic Plan (HSSP 2009-15) National Multi-Sectoral HIV and AIDS Framework (NMSF I and II) to mention but a few which all have resulted in high levels of awareness of HIV/AIDS, prevention, and availability of services and many interventions. It is however noted with concern that most interventions focus on enhancing knowledge levels. Studies (URT, 2007) indicates that while there is no statistical association between high knowledge levels and behavior change as data shows that educated, wealthy, and urban residents are more likely to be knowledgeable about HIV prevention, but have higher rates of risk-taking behaviour and HIV infection. In other words the underlying drivers of behavioural change such as diverse social and gender norms and culture in its totality is not well addressed in empowering people with knowledge and practical skills to dialogue about sexuality and adopt attitudes and practices that protect against HIV infection to reduce risk of infection.

Available data(UNDP,2009) show that, the majority (80%) of new HIV infection in Tanzania is a function of heterosexual intercourse and thus the most common strategy for one to prevent against

new HIV infection are abstinence, use of condom and abiding to one faithful partner. While acknowledging these scientific and technicalities, the methods of pressing them into action in order to serve the people are in most cases mechanical with little or no consideration of the geographical and cultural uniqueness of communities and thus despite having the knowledge pieces, new HIV infection is still a common phenomenon. It is upon this background that Wings Education and Environment Transformation Unity (WEETU) came up with an initiative of integrating HIV/AIDS education in traditional initiation trainings in a bid to prevent new HIV infection among the youth, girls in particular; an initiative that was well blessed and supported by the US President's Emergency Plan for Aids Relief (PEPFAR) through the US Agency for International Development (USAID) under the Family Health International- UJANA project. This paper is based on a four year experience (2009-2012) WEETU have gained in implementing a project titled "Integrating HIV/AIDS education in Girls' Initiation Trainings in Morogoro Region". Supporting data is specific for the year 2012.

Girls' traditional initiation (herein after referred to as unyago), in Morogoro usually takes place among younger girls aged 10 to 18. This exercise occurs within the context of social and cultural practices that reinforce gender inequality and put initiated girls at risk of early sexual debut and other undesirable or harmful reproductive health outcomes (Beidelman, 1997). To counteract this, the project addressed low level of comprehensive knowledge about HIV and AIDS among young girls, inadequate parent-to-child communication about RH, HIV and AIDS, low involvement of traditional initiators in RH promotion and inadequate participation of communities in developing appropriate strategies to prevent the local drivers of HIV in youth.

WEETU initiated this approach after realizing that most approaches of HIV prevention initiatives involve change agents who do not come from or live in the community where such education is offered. Behavioral alternatives are brought to people instead of studying peoples' culture and then finding out what can be built from within the community to achieve the intended goal. Consequently, most alternatives suggested as a way out of HIV risk are looked at as alien and naive as the people who advocate for them particularly in rural areas where traditional ways are still dominant and highly respected.

Unyago amongst the Luguru of Morogoro is a process with three major distinctive stages. First is the introduction that takes place on the day a girls experiences her first menstrual bleeding. Traditionally this marks the transition from childhood to adulthood. It is an event known and celebrated by few female members that form the nucleus of both the father and mother lineages of the *mwali*. At this level the *mwali* is just introduced to the sanitary implications that she has to adhere to with respect to monthly bleeding, followed by the actual training which traditionally involved seclusion of the *mwali* for a number of months depending on the circumstances of the family and clan. In this stage, a day is set for undertaking the training which involves songs, stories, scenario and other theatrical forms. The main content here is cleanliness, sex, sexuality, respect to elders and other community members and hard working. This stage ends by a graduation ceremony which reunions the mwali with other family and community members.

Second stage is pre-marriage trainings which were delivered to *mwali* when it is known that somebody will marry her and it was filled mainly with household cleanliness, personal hygiene, care of the husband and the introduction of reproductive health education.

Third stage is the continuation of reproductive health including description of three stages of pregnancy and care of the baby and hard working. Aspects of sexuality, sex, cleanliness respect and hardworking as content in traditional initiation for girls features in many other studies including Frazer (1922), Raum (1939), Swantz (1965), Muller (1972),Hashim (1989), Ahlberg (1994) and Prazak, (2000).. The focus of the project was on stage one and stage two of the Luguru female unyago

process excluding the graduation celebrations and emphasis was given to imparting messages to divorce elements form and content of the process with negative implications to HIV infection while blending best elements of the same with HIV prevention strategies and techniques.

The overall goal of the project was to reduce new HIV infections among younger girls; specifically the project intended to increase knowledge, skills and risk perception and utilization of services to prevent HIV infection among younger girls of ages 10 to 18 in Mvomero and Morogoro districts; improve attitude and skills to traditional initiators' for delivering HIV prevention messages to younger girls in Mvomero and Morogoro districts; and promote support for gender-equitable, HIV prevention strategies and services in traditional initiation ceremonies and through theatre performances among community members in Mvomero and Morogoro districts. Overall project expectations were increased youth's knowledge, attitudes, and skills in reducing HIV risk behaviour; increased influential adults' knowledge, attitudes and skills to help reduce youth HIV risk behaviour; and increased social and cultural norms that promote community support for youth HIV prevention.

The project intended to make use of cultural staff in imparting HIV prevention techniques and practical skills to the target audience or beneficiaries. Target audience or beneficiaries were the Luguru community from Morogoro (M), Morogoro (R) and Mvomero Districts both of Morogoro Region particularly girls of aged 10 to 18years.

Methodology

Baseline survey

The project unveiled in the year 2009 by conducting a quick baseline study to two wards in the project area to ascertain specific community based challenges with respect to sex, sexuality, HIV education, HIV infection and community culture. Data collected was analyzed, main issues were identified and recorded and then used as inputs in developing a participatory theater play. A group of 10 artists was selected to develop and rehearse the play using principles of developing participatory theatre. Open air participatory theater performances were conducted in each ward of the project area as an entry point for both sensitizing community members on prevention of new HIV infection but also let them see the potency and urgency of including HIV/AIDS education in traditional initiation trainings and thus seek for informed community consent to integrate the two and establish synergy to enhance efforts on HIV prevention.

During performances; audiences were invited for inter-performance and post-performance discussions to assess the realities of the raised issues which were reflections of the baseline findings and yet raise more new issues regarding sex, sexuality, culture, and prevention of new HIV infection. Further, discussions were used as avenues for reaching to a consensus on whether or not traditional initiation trainings should include HIV/AIDS education. Additionally, it was through post performance discussions that community members cum audience named traditional initiation trainers (here in after referred to as *makungwi*) from their area with known competence who upon been trained can effectively effect the integration of traditional initiations and HIV/AIDS education. These names were further scrutinized and verified with support by village elders and government leaders as proof of the envisaged competence and other ethical considerations as far as traditions and culture of the community is concerned and then 30 *makungwi* were chosen.

While performances continued, a team of experts including four WEETU members who all belong to teacher profession, one medical doctor and one educated elite but also a guru in traditional initiation trainings for the Luguru went for a week long seclusion to develop a training manual for undertaking *makungwi* trainings. The manual was reviewed by UJANA project team to ensure its adherence to USAID set standards for a training manual and then endorsed for field use.

Study site
Eight rural based Luguru predominated wards were purposely chosen on the basis of their vulnerability to new HIV infection. These were in Mvomero District; Doma and Melela wards along the high way leading to Zambia due high risk to on-transit drivers; Mzumbe ward due to its proximity to Mzumbe University, Mzumbe Secondary School and Mzinga Corporation which are institutions with a good number of single youth population; and Bunduki, Mlali and Tchenzema wards due to weekly based market days which brings in new people from outside the wards. In Morogoro District were Kisemu and Tawa wards, both rich in agricultural products which attract business people from across the country during their weekly based market days.

Study design
Quasi-experimental design was employed in the project. As aforementioned, quick base line studies were done in two wards. The first was Bunduki ward found in the leeward side of the Uluguru Mountain ranges to represent Mlali, Tchenzema, Melela, Mzumbe, and Doma wards in the same aspect of the said mountains and the second was Tawa to represent Kisemu on the Windward side of the mountain ranges. These two sets of wards beside been in different administrative districts, are separated by heavy Uluguru Moutain forest reserve which prevent frequent and regular interaction and thus, one set in leeward side which belongs to Mvomero District was used as experimental while the other two wards in Morogoro District were used as control. Project intervention began with Doma, Melela, Mlali, Tchenzema and Bunduki. The quick assessment involved 40 purposely selected respondents; 20 in each of the two sampled wards.

Data collection
Data was collected using guided interview questions. Answers were audio recorded and then transcribed for content analysis the result of which were used to form the core of a participatory theatre play that was performed by 10 artists, 5 males and 5 females. Advertisements were done well in advance before theatre performances to attract audience. At least two open air performances were done in each of the project ward in every year of the project on days of likeliness of getting many audiences such as market days and Saturdays and Sundays.

Selection of Traditional initiation trainers (makungwi)
Traditional initiation trainers (*makungwi*) were purposely selected basing on their respective lineages and their known expertise in delivery of traditional initiation trainings to young girls. 30 traditional initiation trainers were selected and trained in each ward. Participatory training approaches involving group works, presentation and discussions were used to train the traditional initiation trainers. Every ward had one volunteer selected from amongst the trained initiators charged with undertaking regular contact with community leaders and provide closer ongoing monitoring and coaching for 'makungwi' to promote the practice.

The selected *makungwi* were convened in their respective wards for five day training under the facilitation of the same educated elite but also a guru in Luguru traditional initiation with the assistance of a pundit of Luguru traditional dances and songs. During the five days, the *makungwi* were equipped with knowledge and skills to incorporate key messages about prevention of HIV infection along with other issues of sexuality in their collection of stories, songs, sayings, and scenarios which they use in training initiated girls (herein after *wali*) and to adopt or compose new material specifically addressing HIV prevention.

Further, they were introduced to methods of conducting health talks to initiated girls. Health talks were considered imperative in this project for cementing HIV prevention techniques amongst *wali* because traditionally, traditional initiation trainings for girls (herein after *unyago*) are one way

communication in the sense that on the event of training, the trainee (*mwali*), is not allowed to question or request elaboration to any of the teachings imparted to her even when she did not comprehend. Thus post initiation health talks were intentionally initiated to complement the traditional initiation trainings. These were essentially peer sessions which served as avenue for feedback among the initiated trainees *(wali)* to complement as already said the traditional one way *unyago* training and were carried out under the facilitation of only one *kungwi* in order to give enough space for girls' to share experiences with respect to what transpired on their respective training events as well as other life experiences with focus to sexuality, sex and HIV prevention.

Thus the project involved six stages namely baseline quick assessment; development and training of theatre play; conducting theatre performances and discussions; development of *makungwi* training manual and conducting training of traditional initiation trainers; training initiated girls and finally conducting health talks amongst initiated girls. Equally worth mentioning is the fact that in every year of the project there were three meetings which involved 25 key stakeholders from the project area. The first meeting served as an entry point while the subsequent once served as monitoring and evaluation avenues.

Health talks

Health talks were conducted using participatory techniques to provide forum for the girls to discuss and share contents of the training and issues pertaining to confidence and gender as far as sexual temptations and practices are concerned. The project worked very closely with the local government authorities at various levels and in particular the Mvomero and Morogoro Rural Council HIV/AIDS Coordinators and Ward Executive Officers and Ward based Community Development Officers to ensure linkages with other HIV and RH activities going on in their respective areas of jurisdiction.

Outputs and Outcomes

Outputs presented in this section are based on data and information collected in the fourth year of project implementation, 2012; however, findings are based on the project life time, 2009-2012. The outcomes were results of interviews randomly done during project monitoring trips; discussions during mid-year and annual project review meetings and participatory observations of female WEETU members during visits to traditional initiation training sessions.

Knowledge, skills and risk perception and utilization of services to prevent HIV infection

This was expected to be met through two major activities namely the actual initiation trainings where the *makungwi* deliver to the *wali* and through the health talks. The targets and achievements made for the year 2012 are presented in Table 1.

Table 1: The targets and achievements made for the year 2012

Activity	Output and Indicator	Target (by date)	Actual performance	Percent achieved
Conduct educational sessions integrating HIV prevention messages in traditional initiation trainings to 1,200 young girls	# of sessions conducted # of girls received the messages	800 sessions 1,200 by 31st July 2012	600 sessions 640 girls reached	75% 53%
Conduct 40 health talks sessions of 25 girls each to 1,000 girls	# of health talks conducted # of girls received reached	40 session 1,000 girls by 31st July 2012	25 sessions done 625 reached	64% 64%

As it can be noted in the table above, the set targets were not met by 100%. This was caused by two things, first and foremost is the fact that initiation trainings in the project area are in most cases after harvest and during school holidays activities so more trainings were envisaged to take place between August and December; secondly, the fact that the project phased out in July 31st 2012.

Outcomes

Interviews done during project monitoring and evaluation have revealed significant change of behaviour amongst girls and especially primary school and secondary school girls. During the end of project meeting, one participant had this to say:

We Melela people thank you so much because after this project we now experience a significant change on the way girls put on their clothes. Short and other styles of clothes intended to raise men's sexual temptations for sexual advances are now scarce.

Further, there is a noted drop of teenage marriage and pregnancies among primary and secondary school girls. Another participant who is one of the *kungwi* from the same ward, Melela narrated at the end of project meeting that:

"… there was a secondary school girl whose parents wanted to marry her to an old rich person. The girl was among those who passed through my hands in this project. She was bold enough to take the case to the village authorities who rescued her from teenage marriage and thus continues with studies to date…"

At Kisemu, the Ward Executive Officer reported that while before the project it was usual to register at least four case of teenage pregnancies among primary and secondary school girls; she had 'zero' case registration in the period January – June 2012

The facilitator of the *makungwi* trainings reported that in the past three years of the project she used to receive a number of calls from both the trained *makungwi* and the initiated girls requesting for specific and personal support with respect to venereal diseases but in the year 2012 she received few such calls.

Moreover, it is reported that at Bunduki, Melela, and Kisemu the wali who passed through this project are more active in attending and presenting messages on events of traditional initiations for new *wali*. At Mlali, interviews with boys revealed note difficulties in getting sex partners comparable to the period before the project.

While acknowledging the contribution of other actors in the war against new HIV infection, these narratives serve as proof of effectiveness of letting people hear the message in a form and content that is part and parcel of their own culture. It suggests a drop in girls' exposure and involvement in risky behaviour. They might have reduced doing sexual intercourse due to the knowledge and skills to dialogue with sex hunters or they now do it carefully taking into consideration the correct use of preventive measures such as correct use of condoms.

Attitudes and skills to traditional initiators' for delivering HIV prevention messages to younger girls

At the core of achieving the objective was the activity of training of *makungwi*. Training of volunteers was done to equip them with regular on site monitoring skills and data recording and keeping so as to report to WEETU office. A volunteer was one of the *kungwi* purposely selected by merit of executing the said roles. The table 2 illustrates activities planned to meet this objective.

Table 2: *Makungwi* Trainings 2012

Activity	Output and Indicator	Target (by date)	Actual performance	Percent achieved
Conduct one-day experience sharing meeting to project Stakeholders.	# of meetings conducted # of people who participated	1 meeting 25 participants, by 31st July, 2012	1 meeting conducted 25 people attended	100% 100%
Conduct 5 days training to 120 new makungwi	# of training conducted # of people who participated in the training	1 training conducted 120 new Makungwi 31st July, 2012	1 training done 100 makungwi attended	100% 83%
Conduct One day Refresher training to recruited Volunteers	# of meetings conducted # of people who participated	1 training conducted 8 volunteers attended, by 31st July 2012	1 meeting done 8 volunteers attended	100% 100%
Conduct one day end of project meeting	# of meetings conducted # of people who participated	1 meeting 25 participants, by 31 July 2012	1 meeting done 25 participants attended	100% 100%

Outcomes

Trained *makungwi* have already integrated HIV/AIDS education in traditional initiation trainings by making songs and developing training sceneries with HIV/AIDS messages. *Makungwi* who did not attend the trainings have adopted the methodology and contents through participating in *unyago* events lead by those who attended. Every ward have organization hierarchy among *makungwi* who attended the trainings which amongst others gives roles and responsibilities amongst themselves to ensure that at least three of them attend to every *unyago* event in the ward. Two *makungwi*, one from Mlali and another one from Melela were at different times invited by Luguru families to lead initiation trainings to girls in Kilosa town, Morogoro Municipal, Mahenge and Dar es Salaam city after the girls' parents having heard or witnessed their competence in integrating traditional initiation trainings with current issues including HIV/AIDS education. The village, ward and districts recognize the presence of trained *makungwi* and leaders encourages the community to invite them in training events for their girls. This scenario shows confidence and trust on trained makungwi as well as enhanced volunteerism spirit. Further, it denotes that the knowledge is there to stay as it will be brought down to generations.

Outcomes

Community members are freer to discuss HIV related matters and there is more demand for HIV testing facilities and pre-marriage HIV testing. Issues of access to testing facilities were raised during all 17 performances. During end of project meeting one representative from Tawa Ward narrated that:

"… at Tawa Village there was one departed couple. After a course of time the husband requested for reunion. The wife agreed reunion subject to HIV testing. The two agreed to go to the nearby Health Centre. The wife tested but the man ran away and they have not reunion to date…"

This might indicate that women who were the main actors and beneficiaries of this project are now more aware with HIV prevention.

Table 3: Community Involvement

Activity	Output and Indicator	Target (by date)	Actual performance	Percent achieved
Conduct 5 days refresher training to 10 WEETU theatre group members.	# of refresher training conducted # of people who participated in the training	1 training conducted 10 artists trained by March, 2012	1 training done 10 artists attended	100% 100%
Conduct 16 community open air participatory theatre events for 8,000 people (2 performances per each project ward)	#of events implemented # of community members reached	16 community events conducted 8,000 people reached by July, 2012	17 events done 8,135 people reached	106% 101.7%

It is also reported in the same meeting that people in Doma village feels more free to stand up and contribute in public meetings than the case before the project. This might be a result of the encouragement to talk that was insisted in all public interactive theatre performances.

At Melela, Mlali and Bunduki parents whose girls were initiated before the onset of this project requested the trained *makungwi* to give a remedial training to their girls so that they get acquainted with the HIV prevention component. At Melela village, the village government has offered a building for undertaking such post initiation trainings during weekends.

There is also an increased demand for sports gears and commitment to participate in sports as a way out of temptations for sexual activity. This was raised in 10 out of the 17 performances. Further in all performances audience requested for the project to include initiation trainings to boys. In addition to that, the theatre group continues performing the play as part of their shows when invited in other public events like in *Nanenane* and Uhuru Torch.

Potentials, challenges and way forward

The above traces of positive behavioural changes do suggest that there is untapped potential of the roots and piths of peoples' culture in the war against new HIV infection. Integrating HIV/AIDS education has a number of advantages against on-going popular movements in addressing and redressing the same. For example amongst the Luguru despite the fact that a traditional initiation session is one of the honoured place where sexuality and sex is taught by calling a spade a spade and a spoon a spoon, at the core of the training session the mother of the daughter undergoing the training is not allowed to attend unless otherwise there is a topical issue that those who delivers want to hear from her! Thus telling such people to be open to their children and sons on sex and sexuality for purposes of preventing new HIV infection is to fight two enemies at a go! In the first place they must agree to leave their own long practiced tradition, then understand the HIV prevention techniques and finally impart to the children. It is wonderful going all the long way while in the same community there is already a strong institution that can deliver the same message so

simply but long lasting! That is one but second if we believe as it was used to believe that culture is the soul and spirit of humanity then doing away with some of very constructive elements of culture means destroying humanity, so when the goal is achieved we have to ask ourselves: Is achieved for whom? Are we in the right track in building the future? These are pertinent question to ask whether there are any celebrations towards achieving an objective to a soulless community! The question is not on the epistemological issues which is all about scientific facts and knowledge on how new HIV infection can be prevented but on the approach in having people accept and apply the techniques which is all about culture!

The other potential in this approach is its sustainability. Once adopted, it becomes part and parcel of community culture. People shall own the process and therefore willingly invest on it! That is to say people from the grassroots will be initiating demands for conducive environment for HIV prevention as opposed to the current trend which is in most cases top down- political and educated elites imposing prevention strategies to the grassroots as if the grassroots are root less!

The challenge met in this approach is the failure to distinguish between traditional initiation trainings for girls and the one day graduation event. The graduation event normally start in the evening, goes down to morning and up to the evening the next day where the *mwali* is brought out for public appreciation of her beauty and skills. In this event both males and females participate and most HIV prevention practitioners have raised concern on the event during the monitoring meetings. While acknowledging the presence of some negative but manageable practices within the *unyago* process; we have three arguments here to advance, one; traditional initiation trainings for girls involves only females and can proceed without any worry of creating vulnerable environment; second celebrations falls squarely under government control as all permits to carry out such events are granted by government officers in their respective areas of jurisdiction thus if there are any well-grounded reasons it is possible to contain it by either restrict to day time or total ban. But third, we take it as a class issue devoid of any justification as there are many night celebrations in town than in rural areas where traditional initiation trainings for girls are intact.

Now what is our way forward? Are we suggesting that all communities should from now on adopt traditional initiation trainings for their girls in order to reduce new HIV infection? Definitely no! We are just wondering that while botanists through the budding technology have for long managed to let people harvest oranges from a lemon tree and currently they have made it possible for a two year old child to harvest a mangle fruit from a mangle tree and while genetic engineers are busy with all that you know about genetic engineers there is insignificant noted resonant achievements amongst who we can call "community or social engineers".

Less is invested in rigorous social and culture foundation studies before doing any social intervention and when done and foundations known the priority is in most cases demolition of the foundations rather than using it as a foundation for introducing an intervention to improve community wellbeing. The Executive Director of the UNAIDS says:
"*We must write the next – and final – chapter in the story of AIDS. This is what UNAIDS is calling the AIDS-Plus Agenda – shaping the future we want. What we want is a future in which innovation is prized, protected and promoted…. a future in which science is pressed into action to serve people (UNAIDS, 2012)".*

We believe that laboratory scientists have done and continue to do a lot with respect to HIV. It is the role of what we can call "community engineers" to come up with initiatives that will press science to action. If civil engineers are keen with undertaking feasibility study before doing any construction work we are of the opinion that it is high time to look for what we can call "community soil or land" so as to find the right place and depth to lay the foundation of our "social house" that will help us

fight new HIV infection. In other words if the premise that every community has a certain element of culture which is at the core of their life holds water then effort should be done to look for community based " stems and buds" to which the scientifically proved HIV prevention techniques can be anchored to grow and flourish using well established "cultural roots"; or looking for the most important "social gene" that can be implanted to scientifically proved HIV prevention techniques to let it utilize the strength of the "gene" in sustaining all the setbacks realised since the discovery of HIV. One education philosopher once said that "In order to turn disturbing forces to one's advantage it is necessary to develop the counter –intuitive of moving toward danger" (Fulani, 2000). We agree that fighting new HIV infection calls for change of behaviour, we also agree that some elements of culture contradict with known HIV prevention techniques and thus we need reculturing; we need to build a learning community. The best way to reculture we propose is to use the same otherwise inhibiting behaviour or culture to develop a desirable one so that HIV prevention techniques become part of community culture and community culture become part of HIV prevention.

These are the kind of initiatives that will lead us to "zero" new HIV infection. Popular throwing out of "abstinence, be careful or use condom" as if human beings are homogeneous without cultural manure and community watering might let the dream for "zero" new HIV infection to Tanzania and Africa at large just a dream like any other dreams!

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