



MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

**Tanzania Development Vision 2025 and the Health
Care Sector: Training and Deployment of Graduate
Level Human Resource for Health**

M.Sc. Health Systems Thesis

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DARES SALAAM

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DECLARATION AND COPYRIGHT

I, **Nathanael Sirili**, declare that this thesis is my own original work and that it has not been submitted for a similar degree or any other award in any University.

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DEDICATION

I dedicate this thesis to my loving Wife, Jacqueline Wenceslaus, my beloved son, Jan-Tristan and to my loving parents, Sirili Thadei Mbughu and Agnes Nathanael Mbuji.

ABSTRACT

Introduction

In the year 2000 Tanzania launched its development vision 2025. This is a re-assertion of a desirable future for Tanzanians by 2025. One of the principal goals of this vision is a quality livelihood for all. This vision has in it specific health sector goals that have to be attained by the year 2025. The health sector goals realization among other things requires a well trained Human Resource for Health (HRH). The overall aim of this study was to explore, explain and analyze the factors influencing the training and deployment of the graduate level HRH towards realization of the health sector goals of the vision 2025.

Methods

A case study using mixed methods was used. Qualitative data collection methods included: key informant interviews with informants from five training institutions and relevant officials from the Ministry of Health and Social Welfare (MoHSW); observation during lectures and skills training sessions in lecture theatres, patients' wards, out-patient clinics and skill laboratories; and documents review. Quantitative data collection involved: Secondary data analysis to document number of graduates that were trained and deployed in the past recent years and self-administered questionnaires to postgraduate Students at MUHAS who have first degree in among the cadres under study and went through graduation-internship-first appointment cycle. Qualitative data were analyzed by conventional content analysis while the quantitative data were analyzed with the aid of Epi-info computer statistical software.

Main Findings

All training institutions are under conspicuous resource scarcity. These include; shortage of academic and support staff, limited infrastructure for both teaching and residence and limited financial capacities. The deployment of the graduate level HRH is influenced by; lack of co-ordination among the trainers and employers, limited budget allocated for recruitment to MoHSW among other things. Limited budget resulted into failure to absorb a total of 482 (38%) of MDs that graduated and appeared for internship from 2006 to 2010.

Conclusion

Strengthening of graduate level HRH management system is necessary in addressing the challenges facing training and deployment of the graduate level HRH. Coordination among stakeholders dealing with training and deployment of the graduate level HRH is inevitably important for the attainment of the quality livelihood to all Tanzanians by 2025.

LIST OF PAPERS

This thesis is based on the following papers

- I. Nathanael Sirili, Angwara Kiwara and Daud Simba. Challenges towards realization of health care sector goals of Tanzania development vision 2025: Training and deployment of graduate human resource for health. *East African Journal of Public health (EAJPH) 2013; 9 (2): 476-486*
- II. Nathanael Sirili, Angwara Kiwara, Obadia Nyongole, Gasto Frumence, Avemaria Semakafu and Anna-Karin Hurtig. Addressing the human resource for health crisis in Tanzania: The lost in transition (LOTTA) syndrome (*Submitted*)

ABBREVIATIONS

APHFTA	Association of Private Health Facilities in Tanzania
BAKWATA	Baraza Kuu la Waislamu Tanzania
B.Pharms	Bachelor of Pharmacy
CSSC	Christian Social Services Commission
CUHAS	Catholic University of Health and Allied Sciences
DDS	Doctor of Dental Surgery
EU	European Union
GIA	Graduation-Internship-First appointment
HKMU	Hubert Kairuki Memorial University
HRH	Human Resource for Health
HSRs	Health Sector Reforms
IMTU	International Medical Technology University
KCMU	Kilimanjaro Christian Medical University College
MAT	Medical Association of Tanzania
MCT	Medical Council of Tanganyika
MDGs	Millennium Development Goals
MDs	Medical Doctors
MoEVT	Ministry of Education and Vocational Training
MoF	Ministry of Finance
MoH	Ministry of Health
MoHSW	Ministry of Health and Social Welfare
MUHAS	Muhimbili University of Health and Allied Sciences
NBS	National Bureau of Statistics
NGOs	Non-governmental Organizations
NSGRP	National Strategy for Growth and Reduction of Poverty
PHSDP	Primary Health Services Development Plan
PMORALG	Prime Ministers' Office Regional Administration and Local Government
POPSM	President Office Public Service Management
Sida	Swedish International Development Agency
UNESCO	United Nations Educational Scientific and Cultural Organization
URT	United Republic of Tanzania
WHO	World Health Organization

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Introduction

In the year 2000 Tanzania launched its development vision 2025. It is a re-assertion of the development goals that the country wants to attain by the year 2025. The main goal of the vision is the attainment of quality livelihood for all. Quality livelihood is a multi-factorial product and among others it requires a well functioning health system. In recognition of this, vision 2025 contains goals that are specific to the health sector. These goals are; “access to quality primary health care for all, access to quality reproductive health services for all individuals of appropriate ages, reduction in infant and maternal mortality rates by three-quarters of the level that was documented in 2000 and life expectancy comparable to the level attained by typical middle income countries” ((URT, 2000). A well functioning health system is the one in which the building blocks work harmoniously in promoting good health of the population, responsiveness to the changing healthcare demands and has fair financing mechanisms (WHO, 2009).

This is the third vision since the attainment of independence of this country in 1961. The first vision was soon post Tanganyika’s independence which was carrying a slogan “*Uhuru na Kazi*” (meaning; Independence and Work). Its major aim was to impart to the people the spirit of hard working to develop their country after being free from the colonialists. However, after the union of Tanganyika and Zanzibar in 1964 to form Tanzania, realizing that major means of production were owned by few leaving the majority poor and the naming of three enemies of the nation: poverty, ignorance and diseases a new vision was needed. Hence “*Uhuru na Kazi*” lasted to 1967 when it was replaced by the Arusha Declaration which carried a slogan “*Ujamaa na Kujitegemea*” (Socialism and Self reliance) (URT, 2000). This vision aimed at bringing equality to all people and ensuring raising quality of life by encouraging people to live and work together in small communities called “*Ujamaa Villages*”. This aimed to ensure that the government can easily provide social services to its people by building schools, health facilities and provide tools for agriculture in those Ujamaa Villages. However this vision failed to eradicate the three enemies of poverty, ignorance and diseases and hence the need for another vision, the development vision 2025 (URT, 2000).

Well functioning health system and hence realization of the health sector goals of the vision 2025 among other things requires availability of enough and well trained Human resource for Health (HRH). HRH or the health workforce (HW) or Health Human Resource (HHR) is defined as all people engaged in actions whose primary intent is to enhance health. These human resources include clinical staff such as physicians, nurses, pharmacists and dentists, as well as management and support staff – those who do not deliver services directly but are essential to the performance of health systems, such as managers, ambulance drivers and accountants (WHO, 2007: (MoHSW, 2008). Training and deployment of Human resource for Health (HRH) therefore becomes an important

component towards the attainment of the health sector goals of the vision 2025 (MoHSW, 2007). In realization of this important role the National Health policy (MoH, 2003) clearly recognize the importance of well trained and motivated HRH for realization of vision 2025 quality livelihood. In 2007 MoHSW launched the Primary Health Services Development Plan (PHSDP) 2007-2017. PHSDP aims at having a dispensary in every village, a health centre in every ward and a district hospital in every district. PHSDP requires the establishment and staffing of an additional 3,108 dispensaries, 2074 health centers and 19 district hospitals which will require additional 88,829 professional staffs (Table 1). To strategize this in 2008 MoHSW came up with HRH strategic plan 2008-2013 (MoHSW, 2008). In this plan MoHSW emphasize the importance of well trained, deployed and motivated HRH for attainment of quality livelihood.

In Tanzania, the HRH component is composed of different cadres ranging from those who are holders of certificates (lower level cadres), diploma and advanced diploma holders (mid-level cadres) and first degrees holders, Masters and above (highly trained cadres) (MoHSW 2008). For attainment of the quality livelihood target as stated in vision 2025 a clear understanding on the training and deployment of the graduate level HRH deserves a necessary attention. A graduate is defined as a holder of a diploma, advanced diploma or a degree (Oxford, 2010).

The training of the graduate level HRH in Tanzania dates back to early 1960s post Tanganyika's independence. For many years the country was having only one training institution that trained very few graduates in Medicine, Pharmacy and dentistry.

Table 1: *Human Resource Status and Projections by Facility Levels in Public Health Facilities by 2017*

Facility level	No	Health Professionals (2006)			% shortage	PHSDP requirements (2007-2017)	Required staff to fill the existing gaps including PHSDP (2007 -2017)
		Required	Available	Shortage			
Referral/ Specialized Hospitals	8	8,546	4,477	4,069	48%		4,069
Regional hospital	21	7,266	2,481	4,785	66%		4,785
District Hospitals	95	22,458	7,364	15,094	67%	3,743	18,837
Health centers	331	11,916	4,908	7,008	59%	49,776	56,784
Dispensaries	3,038	30,380	9,384	20,996	69%	31,080	52,076
Training Institutions	72	1,711	449	1,262	74%		1,262
Total	3,565	82,277	29,063	53,214	65%	84,599	137,813
Attrition rate 0.5% per year						4,230	6,891
TOTAL NEW STAFF REQUIRED (2007 - 2017)						88,829	144,704

Source: MoHSW 2006

It was in 1963 when the Dar es Salaam school of Medicine (the current Muhimbili University) under Ministry of Health (MoH) was established, this offered only advanced diploma in clinical Medicine to produce a cadre called Assistant Medical Officers (AMOs). In 1968 the Dar es Salaam school of medicine was turned into a faculty of Medicine of the Dar es Salaam University College, a prospective college of University of East Africa and the advanced diploma in clinical Medicine was upgraded to start a five years programme of Doctor of medicine in 1969. In 1970 the faculty of medicine became the faculty of Medicine of the University of Dar es Salaam and 1974 a three years training programme leading to bachelor degrees in Pharmacy was started. In 1976 the faculty of Medicine and the Muhimbili hospital merged to form the Muhimbili Medical Centre (MMC). In 1979 a five years training programme leading to bachelor degree in Dentistry was started under MMC. In all these years admission of students into these programmes was very small and the government was the sponsor of all these Students. The MMC lasted to 1991 when it was disestablished to form Muhimbili National Hospital (MNH) and Muhimbili University College of Health Sciences (MUCHS) a prospective college of the University of Dar es Salaam. To increase the number of graduate level HRH, the country had to send students overseas for the training (Mkony, 2012). However, the number graduated for the country overseas was still small (MoHSW, 2010).

In early 1990s following the Health Sector Reforms (HSRs) major policy changes were introduced. These changes, among others, included decentralization of the health services which made the district to be a focal point for planning and implementation of all health care programmes at that point and commercialization of the health services. Commercialization of health services followed amendment of the Private Hospital Regulation Act of 1977 that banned private practice in health services (URT, 1977 and 1992; MoH, 2003). These policy changes resulted into increased demand of the graduate level HRH in both the public and private sectors on one hand. On the other hand, the amendment of the Private Hospital Regulation Act of 1977, opened room to establishment of private training institutions which increased the number of graduate level HRH produced. By 2010, five training institutions that were training these graduates and had already produced at least one batch of at least one of the cadres under study existed. The deployment of graduate level HRH has also gone through many changes as for the visions. Post independence in 1961 up to 1977, both the government and the private sector employed. In 1977, the enactment of the Private Hospital Regulation Act banned the private practice in health sector and all the private institutions were taken by the government. This made the government to remain the sole employer where it operated a centralized employment system. Post HSRs re-introduction of commercialization of the health services brought back the private sector as a potential employer. Immediate post HSRs employment by the government became decentralized to the districts. However,

after launching of development vision 2025 it was realized that decentralization was not effective as it was expected as it benefited some districts compared to others. The decentralization witnessed maldistribution of the graduate HRH favoring urban districts with deprived rural districts. Available information revealed critical shortage of Medical Doctors (MDs), Doctor of Dental Surgery (DDS) and Pharmacists (B.Pharms) which were not uniformly distributed in the country. By 2010 the documented Doctor to population ratio stood at 1: 64,000 ranging from 1:22,000 in Arusha to 1: 308,000 in Kigoma (URT 2011). These ratios are far below the lower recommended ratio of 1:10,000 for the developing countries (WHO, 2006). The Ministry of Health (MoHSW, 2009) documented that the total number of Pharmacists in the country between 2007 and 2009 was only 703 with country having 5241 pharmacies and drug shops. In 2006 partial centralization in the deployment of graduate level HRH was introduced. In this new system the districts identified the vacancies and MoHSW in collaboration with Ministry of Finance (MoF) and Presidents' Office Public Service Management (POPSM) filled in the vacancies. (URT, 1977; 1992 and 2006; MoH, 2003; Hongoro, 2004; Maestad, 2006; MoHSW, 2008; Munga, 2009 and 2012).

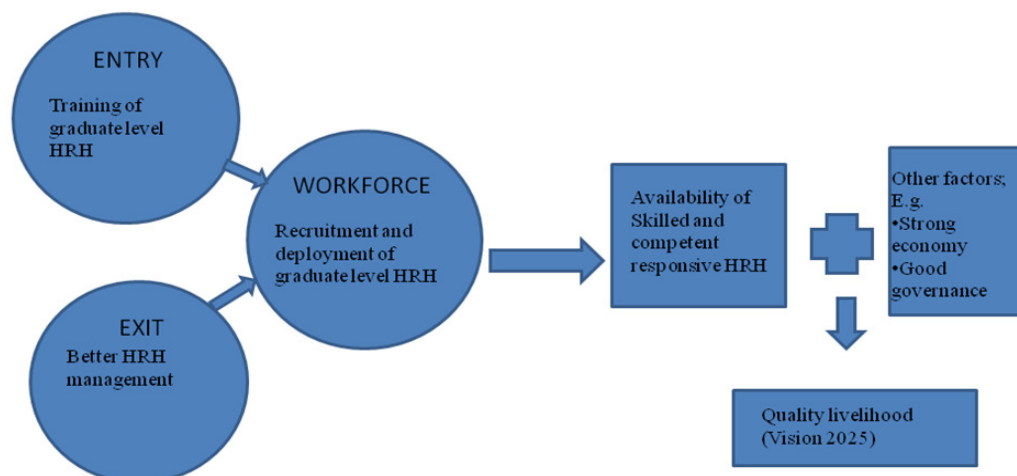
Problem Statement and Rationale

Post launching of the vision 2025 notable changes have occurred with regard to the training and deployment of the graduate level HRH in Tanzania. These include; the increase in number of training institutions that produce these graduates and the change in the deployment system from decentralized system to partial centralized system (Munga, 2009; Mkony, 2012). However, the situation at the districts with regards to the number of these graduates has not increased to reflect these changes (MoHSW, 2009; URT, 2011). With regard to factors that influence the training and deployment of these graduates post launching of the vision to commencement of this study in 2012 little has been documented. Studies done in the area of HRH in general in the country showed that the HRH component was faced by many challenges to include; shortage of HRH of all cadres and maldistribution of the available HRH with worse situation in training institutions and in rural settings (Maestad, 2006: (MoHSW, 2006: WHO, 2006: Manzi, 2012). In all these previous studies no single study that has combined the training, deployment and the existing shortage of graduate level HRH or with the realization of quality livelihood as stated in vision 2025.

This study set in to seek to understand the factors influencing the training and deployment of the graduate level HRH towards realization of the health sector goals of the vision 2025 and how they can be addressed by using three selected cadres; the MDs, DDS and B.Pharms. The choice of these graduates was based on the fact that they are the key healthcare Workers that are involved directly in both the prevention and curative services

delivery and their shortage and maldistribution is more pronounced compared to the others (URT, 2011).

Conceptual Framework



Source: Modified conceptual framework; stages of health workforce development (WHO, 2006)

Narration of the Conceptual Framework

This conceptual framework is a modified conceptual framework of a HRH framework developed by the WHO on stages of health workforce development (WHO, 2006).

Training of graduate level HRH for health (training institutions) together with better HRH management (MoHSW) is necessary in ensuring availability (deployment) of the graduate level HRH. This is important in ensuring availability of skilled and competent workforce for which is necessary for a responsive health system. Availability of skilled and competent HRH that make health system responsive to the health care demands forms a cornerstone in realization of the health care sector goals of the vision 2025. Hence availability of graduate level HRH together with other inputs like; strong economy, good governance, peace and stability are necessary for the attainment of the quality livelihood for all as stated in vision 2025.

Overall Aim

The overall aim of this study was to explore, explain and analyze the factors influencing the training and deployment of the graduate level HRH towards realization of the health sector goals of the vision 2025.

Specific Aims

The specific aims of this study were:

1. To explore, explain and analyze the factors influencing the training institutions in training of the graduate level HRH
2. To explore, explain and analyze the factors influencing MoHSW in deployment of the graduate HRH
3. To identify, explain and analyze strategies for addressing the challenges facing training and deployment of the graduate level HRH

Research Questions

1. What are the factors influencing training of the graduate level HRH in Tanzania?
2. What are the factors influencing the deployment process of the graduate level HRH in Tanzania?
3. What are the strategies to ensure that enough graduate level HRH is in place to fulfill Tanzania development vision 2025?

Methodology

Study Setting

This study was conducted in mainland Tanzania. It included the Ministry of Health and Social Welfare (MoHSW) and all five training institutions that train Medical doctors, Dental Surgeons and Pharmacists in the country. All these training institutions had produced at least one batch of the HRH cadres under study by the year 2010. The training institutions included one public University (MUHAS), two for profit private Universities (HKMU and IMTU) and two faith based Universities (CUHAS and KCMU-college). Three of these training institutions (MUHAS, HKMU and IMTU) are based in Dar es Salaam while CUHAS is found in Lake Zone, Mwanza city and KCMU is found in northern Tanzania, Kilimanjaro region. Among the training institutions only MUHAS trained all the three cadres while the rest trained only MDs during the study.

Study Design

The overall study design was a case study in which the graduate level HRH was studied as a case. The graduate level HRH in this case used three selected graduate level HRH cadres, namely the MDs, DDS and B.Pharms. A case study was used here by the fact that training and deployment of the graduate level HRH is not a linear process rather a complex phenomenon involving many factors (Ying, 2013).

Data Collection Methods

This study applied mixed methods approach whereby both qualitative and quantitative methods were used. The use of mixed methods is encouraged in system researches in order to compliment for each other's weaknesses (WHO, 2012). Mixed methods also enabled understanding of the working structure, roles and links of the partners in dealing with training and deployment of graduate level HRH.

The qualitative methods were used to explore the factors influencing the training and deployment of the graduate level HRH, awareness and understanding of the vision 2025 and the health sector goals of the vision 2025 from both the training institutions and MoHSW. A flexible research strategy was adopted in which the first interviews helped in identifying the next key informants and other important information to be asked in the subsequent interviews. The qualitative sub-study involved triangulation of data collection methods. These methods included; key informant interviews, observations and documentary reviews.

Quantitative methods were used to deepen the understanding of what happens to the graduates under study from the graduation period through the internship to the first appointment with respect to their numbers and the challenges faced. The quantitative sub-study involved analysis of secondary data from the training institutions and MoHSW to explain what happens to the number of MDs, DDS and B.Pharms from the graduation, internship to the first appointment period. The quantitative sub-study used also self-administered questionnaires.

Study Population and Sample Size

Qualitative Sub-study

A total of 16 key informants (13 from training institutions and 3 from MoHSW) were purposefully selected and interviewed from the training institutions and from MoHSW. These represented the Officers that were dealing directly with the day to day activities that involve the training of the cadres under study from the training institutions in one arm and their deployment from MoHSW on the other arm. The first informants helped to identify the next informant and possible information to be obtained. Observations involved observing the number of Students per Facilitator/Lecturer, number of Patients available and those who were willing to co-operate with the Students in clinics and wards and availability of the basic infrastructure necessary for teaching.

Quantitative Sub-study

Secondary data: These involved; graduation books from all the five training institutions under this study, recruitment permits from POPSM, register of provisionally registered

MDs, DDS and B.Pharms from the office of Registrar of the Medical Council of Tanganyika (MCT) and Pharmacy Council respectively. The records from Medical and Pharmacy council involved also the number of all MDs, DDS and B.Pharms that graduated abroad from 2001-2010 and surrendered themselves to their respective councils.

Convenient sampling: This was used to obtain postgraduate Students from different programmes at MUHAS who went through the graduation-internship-first appointment cycle and who had a background in Medicine, Pharmacy and Dentistry. These postgraduate students came from different regions, districts and NGOs across the country. A convenient sample of 91 postgraduate Students was involved in this study.

Data Collection Tools

Qualitative Sub-study

Semi-structured interview guide: This was used for conducting the key informant interviews in collecting information regarding the factors influencing training and deployment of the graduate level HRH of the cadres under study towards realization of the health sector goals of the vision 2025. The guide was used also to collect information regarding awareness and knowledge of the vision 2025 in general and the health sector goals of the vision among the informants. All the interviews were conducted in offices of the informants; that was in training institutions' premises and MoHSW headquarters. The length of each interview was from one and a half an hour to two hours. All the interviews were audio recorded, transcribed verbatim and translated into English before the analysis.

Observation checklist: This was used to document the number of Students per Teacher/Facilitator in the ward rounds and outpatient clinics for the clinical training session as well as in lecture theatre and skill laboratory. It was used also to document availability of Students accommodation and transport facilities for institutions that have low capacity teaching hospitals.

Documents review: These were used to explain the emerged categories and to find consistency or inconsistency of the information obtained from interviews and observations.

Quantitative Sub-study

Secondary data: These were collected from the training institutions, MoHSW and from the internet. The type of document to be collected was guided by a checklist that was formulated basing on the objectives of this study.

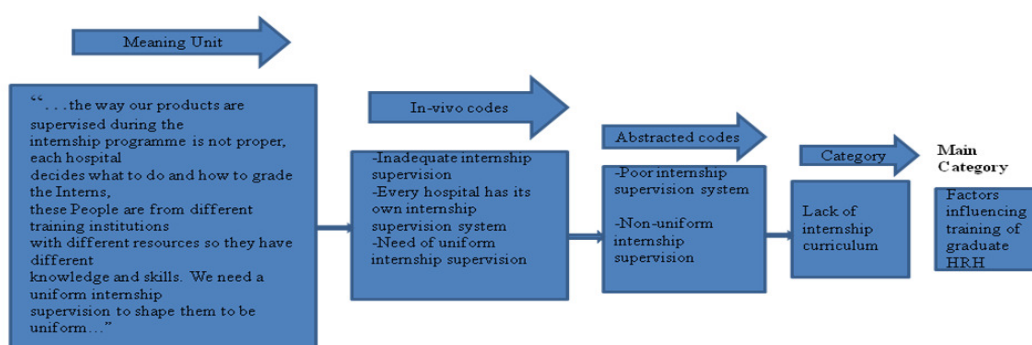
Self-administered questionnaire: This was used to collect data from the postgraduate Students at MUHAS so as to get the insight of the challenges facing the graduates under study during the Graduation-internship-appointment (GIA) period.

Data Analysis

Qualitative Sub-study

After transcribing all the interviews and translating them to English language qualitative content analysis approach was used. The unit of analysis was chosen to be a whole interview so as to be kept in mind as a context for meaningful unit during the analysis process (Granheim and Lundman 2004). The texts were read and re-read through several times to familiarize with the interview materials. Codes were identified in the texts (in-Vivo codes) and then written at the margins. These were abstracted to form codes. These codes were collected and transferred to a coding sheet. Through code comparison for similarities and dissimilarities the codes were grouped into categories. The categories were further abstracted to form the main categories basing on the objectives of this study. Field notes and review of documents related to vision 2025 and training and deployment of graduate level HRH of the cadres under study were used to clarify the emerging categories during the abstraction process.

Conventional Content Analysis



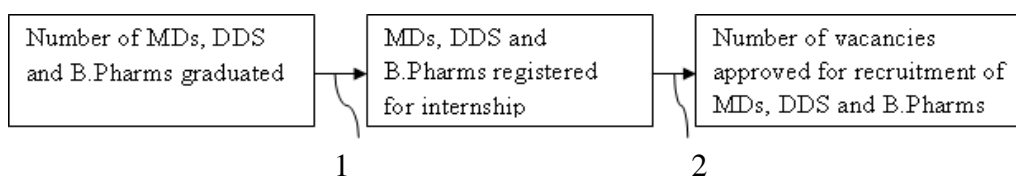
Source: *Researcher's Construction*

Quantitative sub-study

For the quantitative sub-study the number of MDs, DDS and B.Pharms; graduated from 2001-2010, those who were provisionally registered for internship from 2005-2010 and the number allowed for recruitment from the recruitment permits were tabulated

consecutively. Comparison was done for the number of those graduated in a particular year to those registered for internship and to the vacancies which were approved for recruitment of these graduates. The comparison was done for four different years from 2006 to 2010 to be able to detect as of any loss during the transition from graduation to internship (1) and from the internship to first appointment (2) (fig.2).

The Lost in Transition



Source: *Researcher's Construction*

For the self administered questionnaires, the questionnaires were coded and the responses were filled into a computer and analysis was aided by the use of Epi-info statistical Software 2000. Frequencies of similar responses were tabulated.

Ethical Consideration

Ethical clearance to conduct this study was obtained from Muhimbili University of Health and Allied sciences. Written permissions to conduct this study were obtained from heads of the respective training institutions and from MoHSW. Written informed consent was obtained from all the key-informants before the interviews after explaining the meaning and aims of the study and reading from the informed consent form. Verbal informed consent was obtained from all the respondents that filled in the questionnaires after explaining to them the meaning and objectives of this study. To ensure confidentiality all interviews were conducted by the first author and the digital audio recorder was locked by the first author. No names, title or identity of the interviewee was mentioned during the interview except that the interviews were numbered for identification during analysis. All the questionnaires were coded and no names appeared on the questionnaires and all were kept secured by the first author.

Results

Awareness and Knowledge on Development Vision 2025

In this study it was revealed that awareness on development vision 2025 existed among some members of the training institutions, however, they had limited knowledge of what it contained. Majority of the informants were not aware of the existence of the vision

2025 document and they confused it with other documents like National Strategy for Poverty Reduction and Economic Growth (NSGRP) and Millennium development goals (MDGs). However, majority were of the feelings that a lot has to be done for this vision to be realized.

Those who were aware of the vision 2025 were either involved in some phases of setting the vision or heard and read it from the media. For those who were aware of the vision their knowledge was limited to the general objective of quality livelihood for all. Very few were knowledgeable on the specific health sector goals.

“...I have just heard you now talking about vision 2025, but from the challenges we are facing as a country if we do not change our plans it will not be realized...” (KI-training institution)

Factors Influencing Training of the Graduate Level HRH

Shortage of Academic Staff

Academic Staff shortage was found across all training institutions. The shortage was more severe in the Basic Sciences disciplines. Some of the departments were run by Retired Staff on contracts while other departments had very few Senior Academic Staff who were about to retire and very few juniors. One training institution that was considered to be relatively better staffed was found to have a ratio of Academic Staff to Students ranging from 1:33 to 1:40. For the clinical training more than 15 students surrounded one facilitator and one patient during the ward round sessions. It is recommended that for the lecture sessions the Teacher to Students ratio of 1:10 is adhered (UNESCO) and for the skills, a ratio of 1:05 is recommended by the World Health Organization.

The shortage is severe to the extent that some of the institutions were planning for duo engagement by using Physician to teach physiology and Surgeons to teach anatomy. However, although they were sure that this will work, they were not sure as to what extent it will work. The reasons stated for the shortage included: Lack of preparation of Academic Staff before opening up of private training institutions and hence scrambling for the academic Staff that were originally meant for one training institution that existed; existence of only one training institution responsible for training of both undergraduates and postgraduates and the retrenchment policy that accompanied with employment freeze in the public sector that lasted from 1993 to 2001.

“..We are having shortage of Academic and Technical Staffs in all departments, the worse situation is in our basic Sciences, currently for instance we have only one senior Academic staff in anatomy and two

junior Staffs, the same is true for Physiology and Biochemistry, Much worse is that all the seniors in basic Sciences are either retired on contract or soon they are about to retire...” (KI- training institution)

Low Capacity Teaching Hospitals

Some of the training institutions have low capacity teaching hospitals with respect to infrastructure and availability of enough patients that are ready for clinical demonstrations to the Students. This has resulted in these institutions making arrangements with municipal and other specialized hospitals for clinical session of their students. This pushes these training institutions into extra costs for transporting their students and staff. This was more common in the private training institutions where the patients pay for everything regarding their treatment and hence sometimes they were reluctant to co-operate for demonstrations to the students.

Limited Infrastructure for Teaching and Residence

The increased national demand of health care professionals has forced the training institutions to increase student enrollment. The increase in student enrollment has not gone hand in hand with expansion of lecture theatres, skill laboratories, hospital wards and hostels for residence which were originally meant for small number of students. This has resulted into overcrowding of students in the lecture theatres, wards and skill laboratory. In dealing with lack of residential hostels some of the students either have set their own accommodation arrangements off campus or are staying with their relatives. The limited infrastructure has also limited the training institutions from admitting all qualifying students. This has left out a large number of qualified students from being admitted to the training institutions.

“ ..Less than half of our students have rooms in the hall of residence here at the campus, majority stay in the community under their own arrangements. This discourages the young pioneer when they see their brothers and sisters suffering in the street while studying these noble professions...” (KI-training institution)

Lack of Enough Funds for Running of the Institutions

All training institutions studied have inadequate financial resources. They all rely much on the collection of tuition fees for running their day to day activities. Students who are sponsored by the government, their fees are delayed to reach the training institutions most of the time, sometimes close to the end of academic year. Another important source of funds for these institutions has been the donor funded projects. These have been on

short term basis and once the projects are over the situation worsen than before. Institutions that receive funds from the government (public institution) have been receiving so little compared to their demands that are stated in their budgets. Sometimes they receive less to an extent that it is not enough even for paying the electricity bill.

“...You might not believe this but what we receive is very little compared to our actual needs, this year for instance what we have received so far is not enough even for paying the electricity bills...” (KI-training institution)

Inability of Students to Afford Paying the Tuition Fees and Other Costs

Some of the training institutions had vacancies for admitting more private students; however eligible students for admission were not capable of affording to pay for their studies. This was more common in the private training institutions which have relatively higher tuition fees and they receive support from the government for a limited number of students.

Lack of Internship Curriculum

The supervision and evaluation of internship is haphazardly conducted with each hospital setting its evaluation objectives and supervision system. Having resource constrained institutions there is a risk of skills deficiency among the graduates. For these graduates to acquire enough skills and to be uniform it is necessary for an internship curriculum to be developed and later a uniform evaluation of all the interns be done at the end of the internship.

“..The way our products are supervised during internship programme is not proper, each hospital decides what to do and how to grade the Interns, these People are from different training institutions with different resources so they have different knowledge and skills. We need a uniform internship supervision to shape them to be uniform...” (KI-training institution)

Factors Influencing Deployment of Graduate Level HRH

Lack of co-ordination among trainers and employers of the graduate level HRH

From this study, it was found that there was no formal co-ordination among trainers and employers of the graduate level HRH so as to enhance the deployment process. Rather, it was the graduates who had to act as the intermediates by taking letters from the institutions they graduated to MoHSW and apply for provisional registration and internship. This contributes to some of them not to appear for the internship as it also

requires some amount of money for the registration process to be completed. In a period of four years alone (from 2006 to 2010) a total of 66 MDs (5.21%) did not appear for internship. Lack of co-ordination was also reflected during issuing of recruitment permits where for the DDS and B.Pharms sometimes the recruitment permits issued large number of approved vacancies than the number of DDS and B.Pharms that were produced in subsequent years and at the same time approving fewer vacancies for the MDs that were produced. Lack of co-ordination was further reflected in poor arrangement of accommodation and allowances and salaries delay for internship and first appointment respectively. Less than 30% and less than 35% had the accommodation arranged for them on arrival for the Internship and first appointment respectively, while the rest had to stay either in hotels/ guest house or with their relatives or friends. Only 34% of those appeared for first appointment received their salaries within first three months and 32% received after six months.

Failure to Absorb all Produced Graduate Level HRH

The increase in number of training institutions and increased enrollment in others has resulted into increase in number of graduate level HRH produced annually. However, the capacity of the public sector has remained far low to accommodate the entire produced graduate HRH. In four years (table 2) a total of 416 MDs (34.67%) of all who appeared for internship were not allocated for employment by the government through the recruitment permits. Hence, in combination with those that did not appear for internship a total of 482 MDs (38.07%) were not allocated for recruitment in the public sector. The major reasons for failure to absorb all produced graduate level HRH included: Limited budget for recruitments allocated for MoHSW, decisions with regards to number to be recruited be made by other organs rather than MoHSW and handling the health sector in equal weight as other sectors rather than be treated as a special sector. Giving equal weight to health sector as other sectors was further stressed as falling interest of health from being a national priority stipulated soon after independence in 1961 to a normal good.

“...We submit budget according to our needs but we get very little with explanations that other ministries have even higher demand than what we have...” (KI-MoHSW)

“... I think we have gone wrong somewhere and forgot the three enemies we listed soon post independence; poverty, diseases and ignorance. We need to sit and reflect on how we can come back to the line and see health as our top priority as a Nation...” (KI-training institution)

Table 2: *Number of Graduates Compared to Number of Approved Vacancies for Recruitment in a Period of Four Years as Obtained from the Recruitment Permits*

<i>Year</i>	<i>Cadre</i>	<i>Number Graduated</i>	<i>Number permitted for recruitment (one year post graduation)</i>	<i>Number lost n (%)</i>
2006	MD	218	80(2007/2008)	138(63.30)
	DDS	27	07	20 (74.07)
	B.PHARM	27	30	-3 (-11.11)
2008	MD	310	265(2009/2010)	45 (14.52)
	DDS	34	42	-12 (-35.29)
	B.PHARM	47	44	03 (6.38)
2009	MD	330	190(2010/2011)	140 (42.42)
	DDS	29	28	01 (3.45)
	B.PHARM	34	51	-17(-33.33)
2010	MD	408	249(2011/2012)	159(38.97)
	DDS	22	33	-11(-50.00)
	B.PHARM	32	70	-38 (-118.75)

Source: *Recruitment Permits (Secondary data from MoHSW)*

Improving Training and Deployment of Graduate Level HRH

Recruitment of Academic Staff

It is necessary to ensure that all the training institutions have the minimum required teacher to student ratio of 1:05 for skills and 1:10 for lecture sessions as recommended by WHO and UNESCO, respectively. This needs massive investment in recruitment of new staff and retention of the available staff. Another way that was proposed from the findings of this study although there was no scientific argument given is the extension of retirement age for the academic staffs from the normal 60 years to 70 years. Extension of the retirement age not only ensures availability of academic staffs but also helps retaining highly experienced staffs and prevents them from brain drain.

Solicitation of Funds to Support the Training Institutions

Financial constraints cut across all the institutions. Internal sources of funds need to be devised. The donor dependence syndrome if not dealt with early the training institutions will be at the worst situation in the future than how they are now. On the one hand the government should increase its support to the training institutions under it and also to any private institution that shows high commitment in training of the graduate level HRH. It should also ensure that it pays the tuition fees and other payments to training institutions that it is supposed to on time. The training institutions on the other hand should devise alternative sources of incomes and one of them is to strengthen their consultancy capacities. The funds obtained should be used to improve the institution's infrastructure including the teaching hospital, lecture theatres, skill laboratories and residential for both students and teachers.

Synchronization of Graduation with Registration Process

From the findings of this study, it was revealed that synchronization of the graduation and registration process will help to reduce the number of those that by-pass the internship programme. This can be done by prior arrangements between the training institutions, MoHSW, professional councils and the receiving stations. Before the expected graduates complete their academic year, they can be asked to list three different places at different zones where they wish to undertake their internship. This is channeled to the professional councils and MoHSW for registration and internship arrangement respectively. However the final decision of where to go should be reserved to MoHSW depending on the necessities of internship programme. The registration fees can be deducted from their first allowances. This will help timely arrangements for the graduates, MoHSW and the receiving stations in terms of allowances and accommodation.

Absorption of all Produced Graduate level HRH should be Given High Priority

Increased training without deployment will not yield any significant results. In Tanzania the main employer of the graduates in the health sector is still the public sector. The government should treat health as a special good and hence the budget for recruitment of graduate level HRH be increased to absorb all produced annually. The internship period should be used well in arrangements of first appointments to ensure that before its completion one already knows his/her first appointment station. This will reduce the escape of graduates to other sectors with well paying jobs.

Co-ordination among Stakeholders is Vital

From the study findings, different stakeholders dealing with training and deployment of graduate level HRH were found to move independently from one another with everyone in his/her own direction. This has caused lack of adequate knowledge of the vision 2025 among key players, loss of graduate level HRH at different points and lack of joint implementation efforts. It is necessary that all stakeholders in health sector work together for realization of the vision 2025 health sector goals. This can be done through regular meetings of the different stakeholders dealing with health. This will create a sense of ownership in every new programme among the stakeholders as they will be part of the process rather than consumers. This in turn will yield good results as it will enhance joint implementation movement.

“...In my opinions I think stakeholders from different sectors need to discuss this problem of Human Resources for Health, We need people from; training institutions, District hospitals, Ministry of Finance, Ministry of Health and Social welfare, UTUMISHI, Treasury and from private sector...” (KI-training institution)

Discussion

This study aimed at exploring, explaining and analyzing the factors influencing the training and deployment of the graduate level HRH towards realization of the health sector goals of the vision 2025.

Factors Influencing the Training of Graduate Level HRH

This study revealed training of the graduate level HRH in the training institutions is influenced by many factors that limit their functioning in line with the realization of the health sector goals of the vision 2025. These included: Limited knowledge of the vision 2025, shortage of academic staff, low capacity teaching hospitals, limited infrastructure for teaching and residence, lack of enough funds for running of the institutions, inability of students to afford paying the tuition fees and other costs and lack of internship curriculum.

MoHSW (2008) documented that the training institutions which are the corner stone for the training of HRH were suffering a shortage of staff by 74% and was mentioned to be the most affected area in terms of HRH shortage. This study revealed also that the private training institutions were much more affected compared to the public training institution. As pointed out in this study among other causes of the shortage of academic staff has been the retrenchment policy that was accompanied with employment freeze in the public sector which lasted from 1993 to 1999 (Maestad, 2006). The shortage of academic staff not only limits the number of students in the ward rounds, clinics and laboratory training sessions but also pose a threat in reduction of the number of sessions to avoid excessive fatigability to the teacher/facilitator. The shortage of academic staff is mentioned as a global problem but being more pronounced in African Universities. It is pointed out that the shortage has been severe to such an extent that some universities listed bachelor degrees' holders as academic staff (Tettey, 2010). This in general may affect the quality of the produced graduates (Sein, 2012). UNESCO and WHO recommend a teacher to student ratio of 1:10 and 1:05 respectively for the knowledge and skills training in that order. The recommended ratio however varies from regions, in European Union the recommended ratio is 1:15 (AWG, 2009).

Lack of enough funds to run the institutions is consistent with findings by Maestad (2006) who pointed out that chronic underfunding was among key challenges facing the health sector in Tanzania. The fact that the training institutions rely much on collection of tuition fees for running their day to day activities has resulted into limited capacity for growth of the training institutions. This is in the form of expansion of the teaching infrastructure, staff employment (in Private institutions) and enrollment of students. The population of Tanzania is estimated to be 44 million people with an annual growth rate of 2.8 (URT, 2013). With less than 500 graduating HRH annually in three cadres from five

training institutions combined, pose a question on the realization of the health sector goals of the vision 2025. Relying on donor funded projects contradicts one of the goals of vision 2025 which is to reduce donor dependency (URT 2000).

The internship programme to the produced graduate HRH is another important component of the training for acquisition and solidification of the skills that were introduced during their training from their training institutions. Lack of internship curriculum makes it difficult to have objective evaluation of the internship programme to ensure that it has fulfilled the intended objectives. This also may result in non-uniformity among the graduates post intern bearing in mind the conspicuous resource scarcity in the training institutions. This is consistent with what Nkabinde (2013) pointed out when evaluating the internship programme in South Africa. However, in this evaluation a well developed curriculum is missing in Tanzania making it difficult to assess the level of competency required post internship programme. The findings of this study suggested that training institutions together with MoHSW should develop the curriculum for internship. In Tanzania the internship programme is under MoHSW. In other countries the management of internship is under professional councils (Sein, 2012). In Tanzania, different stakeholders can play the role in developing the curriculum and during the internship supervision. This can involve the training institutions, MoHSW and the professional councils.

Factors Influencing the Deployment of the Graduate Level HRH

Lack of co-ordination among the trainers and employers of the graduate level HRH was evident from this study. This is consistent with findings by Sanyiwa (2008), who documented that training institutions, the policy makers and employers were moving independent of one another and each one in his/her own direction. Lack of co-ordination among other things forces; some graduates to by-pass the internship, some to join the internship after year/s and make it difficult to have accurate records of the available workforce in the health sector. It may also worsen the HRH crisis in the country and negatively affect resource allocation to the health sector as a result of lack of accurate records.

Failure to absorb all the produced graduate level HRH is another challenge that faces the realization of health sector goal of the vision 2025. The treatment of health as a normal good contributed to the limited budget allocation for recruitment. Drummond (2005) points out that health need to be treated as a special good. These findings are consistent with what was pointed out by Pemba (2012); Maestad (2006) and those documented by Mejia (1978). Sikika (2013) pointed out that in 2246 surveyed MDs only 60.4% were practicing clinical medicine and about 16% were either practicing non-health jobs or were under MoHSW units. More than one third (38.8%) of the tracked medical graduates did not have a workstation at the time of the study. For the quality

livelihood to be realized absorption of all produced graduate level HRH and increased production of graduate level HRH are vital. Putting much effort on training of the lower cadres and failure to absorb all produced graduates is discouraged. This is contrary to a study by Dovlo (2004) who pointed out that the quality of services provided by the graduate doctors were similar to those offered by other lower cadres. This study points out that the comparison of quality of services among graduates and lower cadres might have been biased by underequipped facilities which were used in such comparison. The findings by Dovlo might have a negative impact by continuing producing lower cadres for fear of brain-drain. This might bias the government from equipping the facilities and improving welfare of the graduates. The failure to absorb these graduates may fuel brain drain internally to other sectors or externally to other countries within or outside the health sector.

Strategies for Improving Training and Deployment of Graduate Level HRH

From this study several strategies were identified. They included: Raising awareness among the stakeholders on vision 2025, recruitment of academic staff, solicitation of funds to support the training institutions, synchronization of graduation with internship registration, absorption of all produced graduate level HRH and co-ordination among stakeholders.

Awareness and knowledge on the vision 2025 need to be raised among the stakeholders. The training institutions which are corner stone for producing the HRH who form the backbone for realization of the health sector goals of this vision have very limited awareness and knowledge of this vision. This will help common focus and hence achieve joint implementation of the vision. Choi (2008) stated that there is a relationship between knowing and doing, and hence it is important for stakeholders to know well the vision 2025.

Recruitment of the academic staff need to be given a high priority, this will help to adhere to the recommended standards of students to teachers' ratio. Adhering to the standards then will ensure adherence to the quality of the produced graduate HRH which in turn will reflect the principal aim of the vision 2025 of quality livelihood for all. The recruitment of academic staff can be done through employing new junior staff and train them to ascend the ladder and by retaining the experienced workforce through extension of retirement age in the training institution. The retirement age in Tanzania is 60 years (URT, 2003). The retirement age for the University teaching staff in other countries varies from 60 to 70 years and in countries like USA and New Zealand the retirement age for Professors is not fixed (Larson, 2012). In Nigeria the retirement age for the Professors was raised from 60 years to 70 years in an attempt to deal with the academic staff shortage in the Universities (NBF, 2010). This study proposes that retirement age

for teaching staff at the University be extended up to at least 70 years. As pointed out by Larson (2012), the teaching staff should not retire just because of their age but their capacity to continue working productively. This will not only help to deal with the shortage but also to retain the experienced staff to mentor the juniors.

The funding challenges facing the training and deployment need to be addressed by solicitation of alternative funding options within the country to reduce the donor dependency syndrome. Training institutions can strengthen their consultancy capacities to attract many consultancies to raise their financial capability. This will help them to be able to resolve some of the challenges themselves and hence use the support from the government for their expansion. The limited budget for recruitment to MoHSW needs to be revised on annual basis taking into consideration the number of the produced graduate HRH. Realization of the health sector goals of the vision 2025 will not be realized without enough HRH. The failure to recruit more than 400 MDs in four years is not in favor of the realization of the health sector goals of the vision 2025. The recommendation given by the Abuja Declaration of setting 15% of the government budget to the health sector can be a good starting point (HLF, 2004).

The lost in transition of the graduates from graduation to the first appointment period may have negative consequences to the realization of the health sector goals of the vision 2025. This may fuel brain drain. Mills (2011) pointed out that African countries put much resource in training of doctors but less benefiting from them. In that study, Mills pointed out that many Doctors were running away from Africa for green pastures in Europe and America. Dealing with the loss in transition can be done through strengthening of the HRH management system. This study discourages the system of internship registration that is in place. In this system the graduates appear themselves for registration after receiving letters from their training institutions on completion of studies. The proposed system is prior arrangements between MoHSW, professional councils, receiving stations and the training institutions with the expected graduates. The expected graduates may be allowed to propose three different places in different zones where they wish to undertake their internship with reservation of flexibility to be allocated by MoHSW. This will allow MoHSW and receiving stations to prepare the allowances and accommodation arrangements respectively on time. By doing this will have also enforced the mandatory registration ((URT, 2002). For the first appointment arrangements can be done to ensure that before ending of the internship these interns complete the arrangements for their first appointment.

This study encourages co-ordination among the stakeholders dealing with graduate HRH and training and employers. This includes co-ordination among the training institutions, Ministry of education and vocational training (MoEVT), MoHSW, MoF, Prime Minister's Office of Regional Administration and Local Government (PMORALG),

President's Office-Public Services Management (POPSM), APHFTA, BAKWATA, CSSC and the receiving stations for internship and first appointment. This co-ordination will help to establish the number to be produced and to be employed. Training of the graduate level HRH is costly and hence training without absorbing these graduates is a waste of the scarce resources available in the country. Doing this will be in line with what the minister for MoHSW in 2008 said in his speech during launching of Medical Association of Tanzania (MAT) Strategic Plan 2010-2015, "*Tanzanians pay for the training of Medical Doctors, it is unfair to abandon them*" (MAT, 2008). The minister further added that the motto for MoHSW was to "*Train, retain and retain*" (MAT, 2008).

The HRH strategic plan 2008-2013 (MoHSW, 2008) clearly states the importance of recruitment of a well trained health workforce for realization of Millennium Development Goals (MDGs) 2015, Primary Health Services Development Plan (PHSDP) 2017 (MoHSW, 2007) and the Development vision 2025. However with constrained budget to MoHSW the recruitment of all graduated HRH has not been possible. The country has been setting less than 11% of its total budget to the health care for the past many years, this is contrary to what was recommended in the Abuja Declaration in 2001 (HLF, 2004) that the member countries set 15% of their budgets to the health sector (MoHSW, 2007). Deliberate efforts are needed by the government to recruit all the produced graduates if the realization of the set goals by the country in health and other global goals are to be realized.

Conclusion

The findings from this study add up to the body of knowledge about the Tanzania HRH crisis and the challenges facing the graduate level HRH component in relation to the realization of the development vision 2025. All the training institutions are under conspicuous resource scarcity both human and non-human. Lack of co-ordination among key stakeholders in training and deployment of the graduate level HRH fuel their shortage in Tanzania. The factors revealed in this study together with other factors make realization of the quality livelihood for the Tanzanians as stated in vision 2025 uncertain.

Establishment of co-ordination forum among the trainers, employers and policy makers is necessary in addressing the challenges facing the graduate level HRH in Tanzania. This study recommends the establishment of an internship curriculum that will ensure uniform supervision of all the graduates. Strengthening of the graduate level HRH management system and consideration of the health sector as a special sector deserve an immediate attention for realization of the health sector goals of the vision 2025. It is necessary that the health care sector budget be given high priority to include training and deployment not only of the graduates but also the academic staff.

Synchronization of the graduation and internship registration can help in minimization the lost in transition from graduation to the first appointment. Completion of preparation for first appointment while at the internship period can help in minimizing the lost in transition from internship to first appointment by shortening the waiting time post internship. This preparation will also help in overcoming the challenges of salary delay and accommodation as there will be enough time for processing of the particulars of the new employees. Further studies are needed to be able to answer: as to why there is lack of co-ordination among the key stakeholders in the health sector, and also to be able to unveil the actual loss in transition; and the challenges accompanied the transition period from graduation-internship to first appointment.

Methodological Consideration

Strengths

The main strength of this study is the combination of the qualitative and quantitative methods for data collection and analysis. In the qualitative study the triangulation of different data collection methods using key informant interviews, observations and review of documents enhanced credibility and dependability of the findings of this study (Creswell, 2003). The fact that all the interviews and observations were conducted in the informants' premises adds more credibility and dependability to the findings of this study. Analysis of the secondary gives a strong message beyond shortage of number but shortage of proper HRH management system that has resulted to a loss of large number of graduates.

The originality of this study adds value to the findings of this study. This is the first study in Tanzania to be conducted that combines the study of training of graduate level HRH, their deployment by MoHSW and the health care sector goals of the vision 2025.

Study Limitation

The use of secondary data from the recruitment permits to establish the number recruited might have underestimated the number lost during the transition from graduation to first appointment as it has not taken care of those who applied for those posts and those who did not report to their first appointment stations. The use of public sector to estimate the lost in transition also limit conclusion of the number lost, however public sector is well established compared to the private sector in Tanzania and hence making findings of this study relevant.

The use of a selective group for the self-administered questionnaires in the quantitative sub-study limits the information obtained from this sub-group from being generalized to present the challenges facing the graduate HRH post graduation through internship to first appointment period.

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Appendices

CHALLENGES TOWARDS REALIZATION OF HEALTH CARE SECTOR GOALS OF TANZANIA DEVELOPMENT VISION 2025: TRAINING AND DEPLOYMENT OF GRADUATE HUMAN RESOURCE FOR HEALTH

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Abstract

Background: Human resource for health (HRH) is an essential building block for effective and efficient health care system. In Tanzania this component is faced by many challenges which in synergy with others make the health care system inefficient. In vision 2025 the country recognizes the importance of the health care sector in attaining quality livelihood for its citizens. The vision is in its 13th year since its launch. Given the central role of HRH in attainment of this vision, how the HRH is trained and deployed deserves a deeper understanding.

Objective: To analyze the factors affecting training and deployment process of graduate level HRH of three core cadres; Medical Doctors, Doctor of Dental Surgery and Bachelor of Pharmacy towards realization of development vision 2025.

Methods: Explorative study design in five training institutions for health and Ministry of Health and Social Welfare (MoHSW) headquarters utilizing in-depth interviews, observations and review of available documents methodology.

Results: The training Institutions which are cornerstone for HRH training are understaffed, underfunded (donor dependent), have low admitting capacities and lack co-ordination with other key stakeholders dealing with health. The deployment of graduate level HRH is affected by; limited budget, decision on deployment handled by another ministry rather than MoHSW, competition between health care sector and other sectors and lack of co-ordination between employer, trainers and other key health care sector stakeholders. Awareness on vision 2025 is low in the training institutions.

Conclusions: For the vision 2025 health care sector goals to be realized well devised strategies on raising its awareness in the training institutions is recommended. Quality livelihood as stated in vision 2025 will be a forgotten dream if the challenges facing the training and deployment of graduate level HRH will not be addressed timely. It is the authors' view that reduction of donor dependency syndrome, extension of retirement age for academic Staffs in the training institutions for health and synergizing the training and deployment of the graduate level HRH can be among the initial strategies towards addressing these challenges.

Key word; Graduate HRH- Doctor of Medicine, Bachelor in Pharmacy and Doctor of Dental surgery holders

Background

In the year 2000 Tanzania launched its development vision 2025. This is the third vision of this country since attainment of its independence in 1961. Vision 2025 have three main principal objectives which are; quality livelihood for all, good governance and rule of law and strong and competitive economy. In this vision the government emphasizes the importance of well-trained Human resource in all sectors of production in the country. The major obstacle pointed in this vision to hinder its economic development for many years is the donor dependency syndrome in all its sectors.

Vision 2025 recognize the central role of the health care sector for its realization and hence it contains in it specific goals for the health care sector. Goals specific to health care sector in vision 2025 are; access to quality primary health care for all, access to quality reproductive health services for all individuals of appropriate ages, reduction in infant and maternal mortality rates by three-quarters of current levels (in 2000) and life expectancy comparable to the level attained by typical middle income countries.

Human Resource for Health (HRH) play a central role in realization of the health care sector goals as it is a crosscutting core input in all building blocks of the Health System. Given this centrality any adversity that affect it will inevitably affect negatively the health care system and implicitly vision 2025. Attainment of quality livelihood as stated in vision 2025 among other things requires adequately trained, well deployed and retained HRH.

Tanzania is among the 57 countries in the world having a serious HRH crisis (World Bank

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2008). Majority of the countries referred to in the so mentioned study are based in sub-Saharan Africa. By 2006 Tanzania health care sector was facing a shortage of HRH of all cadres of 65% (Ministry of Health and Social Welfare (MoHSW), 2006). This shortage was not uniform but varied from place to place and institutions. The shortage was more severe in rural areas compared to urban, was more in private facilities (87.5%) than in Public (65%) and in the Training institutions the shortage was at a rate of 74%. The major reason for this shortage was the retrenchment policy implemented from 1993 to 1999 which was associated with employment freeze. It is estimated that during that period (1993-1999) a total of 23,474 Health Workers of all cadres graduated from training institutions but only 16% were employed (MoHSW, 2006).

Ottar Maestad (2006) among other things points out that Weak HRH management systems, low output from training institutions and failure to absorb all trained HRH contribute to the HRH crisis in Tanzania. Chronic underfunding of the health care sector also affects the budget allocated for training, recruitment, incentives and retention (MoHSW, 2008). The Abuja declaration recommends allocation of 15% of national budget to health sector, whereas in Tanzania the health sector has been receiving as follows; in 2001/02 it was 11%, in 2003/04 the share dropped to 9.7% and in 2004/05 there was an increase up to 10.1% while in 2005/06 it was 11.6% and in 2006/07 it dropped to 10.6% of national budget (MoHSW, 2008).

In recognition of the centrality of HRH in the health care sector and vision 2025 Ministry of Health and Social Welfare (MoHSW) through the National health policy (MoHSW 2003) in its objective 2.4.4 clearly states the importance of HRH by giving emphasis on the role of training and making available competent and adequate number of health staffs to manage health services with gender perspective at all levels. In the year 2007 MoHSW put in place the HRH strategic plan 2008-2013, which emphasizes the importance of HRH training, deployment and retention.

From the period of 1963-1991 the country was having only one health training institution at the graduate level (first degree) and postgraduate level. After the health sector reform in 1992 establishment of private universities opened room for other institutions to produce graduate level HRH. By the year 2010 a total of eight (08) health training institutions producing graduate level HRH existed. This has made the production of graduate level HRH to increase from less than 100 in 2000 to more than 400 in 2010 annually (Kiwara et al, 2012-unpublished report). However this increase in number of graduates is not reflected in the district

level yet. This sends a message beyond production from the training institutions to the deployment and retention process.

The situation in the training institutions that produce graduate level HRH has not been smooth either, available information indicates that they are experiencing several challenges including; understaffed, donor dependency in running their day to day activities because of lack of adequate financial resources and low admitting capacities. This put a question into production of adequate HRH in both quantity and quality.

For the health care sector goals of the vision 2025 and the quality livelihood to be realized the situation of HRH in Tanzania underlines the need for deeper understanding of the training and the deployment process of the HRH. This forms the basis of this study.

Methodology

Study setting

The study was conducted in five graduate level health training institutions in the country and in the Ministry of Health and Social Welfare headquarters. The training institutions involved in this study are; Catholic University of Health and Allied Sciences (CUHAS), Hubert Kairuki Memorial University (HKMU), International Medical and Technology University (IMTU), Tumaini University-KCMC College and Muhimbili University of Health and Allied Sciences, MUHAS.

Among these training institutions, MUHAS is the only public institution, with CUHAS and Tumaini-KCMC College being faith based institutions. IMTU and HKMU are private for profit institutions. However during the training of the graduate level cadre HRH all the institutions partly get supported by the government. This is through grants or loans to those Students that attain the criteria set by the government. All the five training institutions produce graduates in Medicine. Bachelor in Pharmacy and Doctor of Dental surgery are offered at MUHAS only. Bachelor of Pharmacy is at infancy in CUHAS.

Study population

The study involved Senior Officers dealing with day to day academic activities at the training institutions, senior officers dealing with management of Human resource in the training institutions and in the ministry for the selected graduate cadres. The study also involved development partners collaborating with Ministry of Health and Social Welfare in strengthening Human Resource for Health (HRH) and Human Resource for Health Information System (HRHIS).

The key informants were purposeful selected based on prior information based on gray literature which helped identification of information rich subjects.

The Study population also involved the Students for the selected graduate cadres in their seminar rooms, lecture theatres and in clinics/wards during clinical trainings.

Study design

This is a qualitative study which employed exploratory study design in gathering information mainly from individual in-depth interviews, review of gray literatures and observation of the study participants in their natural settings.

Data collection techniques

Different qualitative methods were used to collect data for this study. These included; In-depth interviews; these were conducted with the senior officers dealing with day to day academic activities of the courses that yield graduates in the cadres under study, Senior Officers dealing with HRH management and administration in Training Institutions and MoHSW. The in-depth interviews were also conducted with Officers from development Partners that collaborate with MoHSW in strengthening the HRH and HRHIS.

Observation: After the in-depth interviews observations of the undergraduate students leading to doctor of Medicine, bachelor in pharmacy and dental surgery graduates in their seminar rooms, lecture theatres, clinics and Patients wards was done. This aimed at enriching and validating the information gathered from the in-depth interviews.

Documentary reviews; Gray literature and published literature from MoHSW, Training Institutions and President Office –Public service Management (POPSM) were reviewed to enrich and validate the information obtained from the interviews and observations made. It also aimed at understanding the working structure, roles and links of the partners in dealing with training and deployment of HRH.

Data analysis

Audio recorded interviews were firstly transcribed by the first author and translated from Swahili to English and back translated. The transcripts, field notes, observation reports and the reviewed literatures were then analyzed manually by reading and re-reading to get familiarization with the data. Qualitative content analysis was used to analyze all the data materials following Graneheim

and Lundman (2004). Texts from the in-depth interview transcripts were analyzed for identification of the patterns related to factors affecting training and deployment of the graduate level HRH in Medicine, Pharmacy and dentistry in relation to the realization of the health care sector goals of the Tanzania Development Vision 2025. Identified patterns were highlighted as meaningful units and contained statements that relate to themes under the study. From the meaningful units codes were extracted. Similar codes were sorted out to form categories reflecting the manifest content of the text. Similar categories were organized into themes reflecting the latent context of the text. Cross relationship between codes was identified and interpreted.

Data from field notes, participant observation and gray literature were used as supportive information in clarifying concepts emerging during the content analysis process.

Trustworthiness

Trustworthy of the study is achieved when the findings are worth believing (Dahlgren, 2007). To achieve this, the first author was fully engaged in field activities and data collection where he conducted all the interviews and observations.

Triangulation of methods was employed for data obtained from in-depth interviews, observations and grey literature during the analysis process to strengthen the validity of the findings and making them trustworthy.

Ethical consideration

Ethical clearance letter was obtained from the Senate Research and Publication Committee of the Muhimbili University of Health and Allied Sciences. Permission to conduct the study was obtained from heads of the respective Institutions and from the Permanent Secretary from MoHSW. Informed consent was obtained from each Participant after reading and understanding the informed consent form, where he/she signed it. The audio recorder and the transcripts were managed and kept secured by the first author.

Results

This section summaries the findings of this study which explored the factors affecting training of the graduate level cadre HRH for three selected cadres (Doctor of Medicine, Pharmacists and Doctor of Dental Surgery) and their deployment process towards realization of the health care sector goals of the Tanzania Development vision 2025. A total of sixteen (16) in-depth interviews were conducted.

Table 1: Categories and themes emerged from the study

Stakeholders experience and feelings on	Categories describing content	Themes describing latent content
Factors affecting training of graduate level HRH	Understaffed training institutions Low admitting capacity Lack of internship curriculum	Challenges of producing the adequate HRH at scarce resources' institutions
The deployment process	Budget constraints decide deployment Health care sector budget competes with budget from other sectors Number to be deployed is not decided by MoHSW	Increased training in number is challenged by limited Deployment
Realization of vision 2025 health care sector goals	Health should be a top priority to the Nation All key stakeholders should be involved in dealing with challenges in health care sector Awareness on the vision 2025 is still a challenge	Multi-sectors involvement is necessary for the realization of health care sector goals

Challenges of producing adequate HRH at scarce resources' Institutions

Many stakeholders from the training institutions were of the views that the training institutions that train the graduate level HRH are facing many challenges related to the scarcity of resources. This not only affects training of the adequate in number but also pose a threat to the quality of the future graduates. These challenges included the following;

Lack of enough Academic staffs

This study revealed that the graduate level health training institutions in the country have a critical shortage of HRH of the different Academic Staffs rankings. The shortage was more in some academic disciplines compared to other. The most affected disciplines in these training institutions were those that fall under the basic sciences group. Academic disciplines falling under basic sciences are; Anatomy, Physiology, Biochemistry, Clinical Pharmacology, Pathology, Parasitology, Behavioral Sciences, Epidemiology, Research Methodology and Microbiology. This can be supported by the following statements from four Senior Officers from different four training institutions;

"..We are having shortage of Academic and Technical Staffs in all departments, the worse situation is in our basic Sciences, currently for instance we have only one senior Academic staff in anatomy and two junior Staffs, the same is true for Physiology and Biochemistry, Much worse is that all the seniors in basic Sciences are either retired on contract or soon they are about to retire...." (Senior Academic Officer in administrative position from one training institution)

"..As for other Institutions we are more affected at the area of basic Sciences up to an extent we are planning to have duo engagement, where Physician can teach Physiology and Surgeon can teach Anatomy. We are sure it will work but we are not sure it will work to what extent..." (Senior Academic Staff in administrative position in one of the training Institution)

Another senior Academic officer in administrative position from training Institution said with great empathy, *"We look healthy when we walk around but in real sense we are not, we are overstretched. We have a critical shortage of Staffs in all departments and hence taking a lot of responsibilities to one Person, You can imagine now our Students to Teacher's ratio stand at 1:33-40 varying from one department to another, the recommended ratio by UNESCO are 1:10 and that by WHO is 1:05. Now think at yourself during skill training what difficulty we face, in long run this will affect the quality of our product"*.

Another Senior Academic Staff from another training Institution not only declared the critical shortage but also pointed to what she thought to be the cause of shortage in all the training Institutions, she said, *"..The critical shortage of teaching staffs we are having is attributed by the fact that for many years this country had only one higher learning training institution for health care profession at the undergraduate and postgraduate level. When private higher learning training institution for health emerged there was no enough preparation as to where they will obtain their academic Staffs instead we are scrambling among those who were originally for one training Institution. As you can see we are almost all*

originating from the same training institution where we were also Academicians..."

Why the area of basic sciences is more affected in all the training institutions? This study found that many junior graduates do not opt for the basic Sciences courses for their postgraduate degrees. Why shouldn't they opt for basic sciences specializations?

"...Many youth do not opt basic sciences for their postgraduate degrees as they are of the feelings that basic sciences have no many extracurricular activities to supplement their income compared to clinical and public health disciplines.." said one of the senior academic Officers in one training institution.

Low admitting capacities of the Training Institutions

The study revealed that all the training institutions had low admitting capacities compared to the pool of qualified Students to join the courses they offer. The lower admitting capacities were found to be contributed by many factors among those including;

Inability of Students to afford paying for the courses; Apart from those students who get grants or loans from the government to carter for their studies majority fail to join the higher learning training institutions for health as the cost for studying Medicine, Pharmacy or Dental surgery is very high. This is much common in the private training Institutions. One Academic Officer who is also in senior administrative position from one of the institution said,

"...We still have space for enrolling Students but our admitting capacity is limited to the financial resources we have for teaching Materials. Our fees being not so much high compared to other Institutions but still most of the time we have to leave qualified Students as they fail to afford the costs as we receive grants from the government for a limited number of Students..."

Limited infrastructures for teaching and residence; Majority of the training institutions were designed to accommodate small number of students during their time of constructions. With the increased demands of the health care professionals they had to expand their infrastructures in term of lecture halls, hostels and skill laboratories. However the expansion has not matched the increase in number of students and the public demand of the health care professions in many of the training institutions. This has resulted to limited admission capacities of the training institutions. One Senior Academic Officer from one of the training Institutions said, *".. Our infrastructures were meant for very few Students when we started, the increased*

national demand for health care professionals forced us to increase enrollment, however the infrastructures did not expand at the same pace with the number of students, now we are at the climax point, we cannot add even a single student though still many apply and have the qualifications.."

Another senior officer from another training institution pointed that they had very limited halls of residence for their students and majority of the students were staying outside the campus under their own arrangements. Furthermore he added that this makes life to the students more difficult and sometimes discouraging those in high school to join the Medical school having noticed this nature of life. He said, *"..Less than half of our students have rooms in the hall of residence here at the campus, majority stay in the community under their own arrangements. This discourages the young pioneer when they see their brothers and sisters suffering in the street while studying these noble professions..."*

Low capacity teaching hospitals: Some of the training Institutions have low capacity teaching hospitals and hence they have made arrangements with the Municipal hospitals and some specialized hospitals for clinical trainings of their students. This causes additional costs for transporting the students and their teachers to those hospitals.

"...Running this institution is very expensive as you have seen our hospital there is too small and we have few patients so we have arrangements with municipal hospitals and some specialized hospitals for clinical trainings for our Students. This cost us much in term of transport as we have to transport the Students and the teachers..." said one Senior Academic Officer from one training institution.

In other training institution the readiness of the patient to be used for clinical demonstration to the students was a challenge encountered in their teaching hospitals.

"..Majority of our Patients pays for everything concerning their treatments and hence most of them are not ready to be exposed for demonstration to Students..." said one Officer from one of the training institutions.

Modernizations of many hospitals which are also used as teaching hospitals have reduced their capacities for admission of patients in the wards. This has reduced the availability of patients for clinical skills training and hence many students have to share one Patient. This has made skills training to the students difficult.

"...Modernization of the hospital wards to make them standard has reduced the number of hospitalized Patients, this force us to reduce the number of Students for clinical training in the future as for now many students and their teacher have to surround one patient..." said one senior academic

Staff who is also a member of the senate to the University.

It was observed that during the skills training groups of 15 to 26 students and one teacher surrounded one patient. This was common in most of the hospitals used for skills training to the Medical Students. On contrary it was observed also in few hospitals many patients exceeding the bed capacities and laid on the floor that it was difficult for demonstration to students because of lack of space for standing and uncomfortable environment.

Lack of enough funds to run the institutions

Most of the training institutions have low funding capacities to cater for their day to day running. Many institutions rely on collections of tuition fees from the students and funds from donors for their existence. For those Students who are sponsored by the government their tuition fees and field allowances are paid for by the government. In most of the time these money reach the university very late and sometimes close to end of the academic year.

The institutions that receive funds from the government and donors indicated that what they receive was very little that it was not sufficient to cater for even minimal institutional requirements.

"..You might not believe this but what we receive is very little compared to our actual needs, this year for instance what we have received so far is not enough even for paying the electricity bills.." said one of the senior officers in administrative position in one of the training institutions.

With this critical situation the challenge to this institution was how to purchase chemicals for laboratory training or what to be skipped so that at the end the university could still perform as expected.

Lack of internship curriculum

The increase in enrollment of Students in the past ten years has increased the number of

graduates in health related disciplines. This has necessitated the increase in number of hospitals for internship programme. What this study found was that even though the training institutions have different curricular and resources for training still there was no curriculum for the internship programme. This was found to be a threat as internship supervision plays a great role to prepare these graduates for their future responsibilities.

"..The way our products are supervised during internship programme is not proper, each hospital decides what to do and how to grade the Interns, these People are from different training institutions with different resources so they have different knowledge and skills. We need a uniform internship supervision to shape them to be uniform..." said one senior Officer from one of the training institutions.

From the situation of limited resources supervision of all students is difficult and hence this automatically affects the skills component. Hence it is expected that uniform internship supervision is necessary to minimize this deficiency.

Increased training in number is challenged by limited deployment

Increasing number of enrolled students by expanding the old institutions and establishment of new training institutions in the country has resulted into increased in number of graduates in Doctor of Medicine, Bachelor in Pharmacy and Doctor of Dental Surgery. To avert the shortage of these cadres in the health care sector the production should go in hand with the deployment of these graduates. It was found out that for the past five years absorption of these graduates has never being full. The country is still suffering shortage of these cadres in its health care sector but at the same time having a good portion of these graduates not absorbed. The absorption was much lower for the Doctors which is the most crucial group for the care of patients.

Table 2: Number of graduates Vs number allowed for recruitment in the recent past four years as obtained from the recruitment Permits

Year	Cadre	Number graduated	Number permitted for recruitment(one year post graduation)	Number lost	Percentage lost
2006	MD	218	80(2007/2008)	138	63.30%
	DDS	27	07	20	74.07%
	B.PHARM	27	30	-3	-11.11%
2008	MD	310	265(2009/2010)	45	14.52%
	DDS	34	42	-12	-35.29%
	B.PHARM	47	44	03	6.38%
2009	MD	330	190(2010/2011)	140	42.42%
	DDS	29	28	01	3.45%
	B.PHARM	34	51	-17	-33.33%
2010	MD	408	249(2011/2012)	159	38.97%
	DDS	22	33	-11	-50.00%
	B.PHARM	32	70	-38	-118.75%

Source: Recruitment permits (Secondary data from MoHSW)

Budget constraints decided deployment

The study established that even though need assessment was done by respective districts using the standard staffing norms the number to be recruited relied mainly on the allocated budget.

This is evidenced by one senior official from MoHSW, who said,

"...We know the exact need from the districts but the recruitment permits issued by POPSM for us gives us limited number for recruitment, major reason being limited budget allocated for us. Because of this we fail to comply with the actual need of each district..."

This partly explains why the absorption is less compared to the produced (table 2)

Health care sector budget competes with budget from other sectors

This study found out that the budget for health care sector competes with other budget regardless the value attached to health. The demand for good health is acknowledged to be special one however the need for HRH is weighed similar to human resource (HR) need for other sector.

"...We submit budget according to our needs but we get very little with explanations that other ministries have even higher demand than what we have..." (Said one senior official from MoHSW)

Number to be recruited is determined by POPSM and not by MoHSW

The study also established that the role of MoHSW is to assess the HRH need in the country and raise their recruitment need to the President's Office-Public Service Management (POPSM) which issue recruitment permit according to the budget allocated for MoHSW. The demand for HRH is obtained through the standard staffing norms from all the districts and other government institutions.

"...Our role is to prepare the demanded HRH by compiling the number sent to us from districts, regions, municipals and other government institutions and submit it to 'UTUMISHI' where they decide how many to be recruited and issue the recruitment permits to us, then we advertise for those who qualify and are interested to apply..." (Said one officer from MoHSW)

Regarding the reason as to why they advertise while the number produced is still very little compared to the demand one official from MoHSW said,

"...We advertise to allow fair competition as the law requires us to do and also as per budget set to us there is no way we can recruit all produced, may be in the future. It is wise to absorb all produced but currently is not possible..."

Multi-sector involvement is necessary for the realization of health care sector goals

Health should be a top priority of the Nation

Many Informants were of the views that health is not valued as a top priority of the Nation anymore as it is used to be soon after independence.

"... I think we have gone wrong somewhere and forgot the three enemies we listed soon post independence; poverty, diseases and ignorance. We need to sit and reflect on how we can come back to the line and see health as our top priority as a Nation..." (Said one senior academic Officer from one of the training institutions)

All Key stakeholders should be involved in dealing with challenges of the health care sector

The Health care sector is facing many challenges which cut across other sectors. It was established from this study that there is a need that key stakeholders need to be involved in dealing with the challenges facing HRH in this sector.

"...In my opinions I think stakeholders from different sectors need to discuss this problem of HRH, We need people from; training institutions, District hospitals, Ministry of Finance, Ministry of Health and Social welfare, UTUMISHI, Treasury and from private sector..." (Said one Senior Officer from one of the training institutions)

Awareness on vision 2025 is still a challenge

This study revealed that though training institutions were one of the key stakeholders for the realization of the health care sector goals of vision 2025 their awareness on the vision is still very low. Some have not seen this document at all, few saw it recently.

"...I once heard about it but I don't real know what it contains..." (Said one Senior Officer from one of the training institution who is also in Administrative position)

Another senior Official from another Institution said,

"...I have just heard you now talking about vision 2025, but from the challenges we are facing as a country if we do not change our plans it will not be realized..."

Regarding realization of the health care sector goals and the principle target of quality livelihood for all, many informants were of the view that massive training of HRH at the graduate level coupled with deployment is the definitive solution for quality instead of focusing much on numbers for the lower cadres.

"... I am sure we lost our direction by focusing more on producing lower cadres instead of producing graduates which could keep our health care quality high. To be very honest we need to step-down

production of lower cadres until we do not produce them anymore and produce only graduate HRH and specialized HRH if we need quality livelihood to be realized..." (Said one Senior Academic Officer from one of the training institutions)

Another senior Academic staff on emphasis to quality livelihood said, *"...I know the curriculum for Clinical Officers, Assistant Medical Officers and Medical doctors not only through my involvement in preparing them and teaching these cadres but I was also trained through all these cadres. What I can say is that it is a mile apart between a Medical Doctor and An assistant Medical Officer and it is worse for a clinical Officer. For quality of our health we need more Medical Doctors and not these lower cadres..."*

Discussion

Challenges of producing adequate HRH at constrained resources

This study revealed that production of adequate graduate level HRH among other factors is affected by limited resources; these included lack of enough academic Staffs, inadequate infrastructures, chronic underfunding of the training institutions (hence donor dependency), low admitting capacities and lack of curriculum for internship supervision.

These findings are consistent with some findings of previous studies by other authors. In a study by MUHAS (2009) it was documented that the shortage of HRH in the training Institutions which are the cornerstone for training HRH was 74% and they were the most affected areas compared to other institutions. The findings were also consistent with findings by Ottar Maestad (2006) who pointed out that the employment freeze in Tanzania between 1994/95 to 2001/02 caused critical shortage of HRH in the health care sector in general.

In order to deal with this shortage deliberate efforts on recruitment of Academic Staffs in the training institutions is a necessary measure. The Teacher to Student ratio revealed in this study of 1:33-40 is very poor compared to the recommended standards of 1:05 (WHO) or that of 1:10 by UNESCO. For sessions which are conducted through lectures alone the ratios found can still work however when it comes to skills in laboratory and bed side teaching (patient management skills) the ratios are not acceptable and they are impractical. This will result into production of incompetent graduates at the end.

Inadequate infrastructures in all the training institutions was found to be among the other major causes for low admitting capacities of these training institutions. This was explained in terms of lack of adequate space for teaching (lecture halls, seminar rooms, laboratory for skills and low capacity teaching hospitals) and lack of space for

accommodation. The outcome is the production of small number of graduates in HRH annually. This affected more the private institutions to such an extent that the total number of the three cadres under study produced annually by the four private institutions involved in this study is less than fifty percent (50%) of the graduates HRH produced in the country, in other words the number was less than that produced by the only one public institution involved in this study. This is consistent with documented findings by WHO (2010). The output of training institutions is insufficient to respond to the growing demand for a more and better trained work force. The output of medical schools (public and private) is on the rise but remains far from matching the country needs. Factors affecting the quality of training include insufficient numbers of qualified trainers; inadequate infrastructures (classrooms, laboratories), scarce and inadequate teaching aids, research materials and equipment as well as inadequate and poorly supervised practical training sites.

Chronic underfunding of the training institutions was another revealed factor affecting training of the graduate level HRH at all the training institutions. This is consistent with study done by Ottar Maestad (2006), in this study he documented that the health care sector in Tanzania was chronically underfunded. The private training institutions which depend much on the collections from the Students are at the critical conditions. This contradicts with the efforts stated in vision 2025 on alleviating the donor dependency syndrome. According to these finding the share to training institutions from the government has been dropping annually and hence increasing the donor dependency. This has made the institution to be run under the so called donor funded projects from the overhead administrative costs. It is not known what is going to happen if the trend will continue and the donors withdraw.

Lack of curriculum for internship supervision was found to affect the quality of the graduates produced. Having revealed that the training institutions have a conspicuous resource scarcity and hence posing threat to the quality of the graduates, it was expected that this deficiency would be taken care of during the internship programme. However this study revealed that the internship supervision was not uniform as there is no curriculum for their supervision. There is a need for an internship curriculum to be developed and better uniform evaluation be made at the end.

Increased training in number is challenged by limited Deployment

Despite the documented critical shortage of HRH in the country, this study found that a good portion of graduates were not recruited. This

situation was found to be contributed by among other factors; limited budget allocated to MoHSW for recruitment, decision for recruitment made by another ministry instead of MoHSW, lack of co-ordination between trainers and MoHSW and lack of co-ordination among stakeholders dealing with health.

It was found out that for the past recent four years a total of 482 (38.07%) Medical Doctors among 1,266 graduated in the same period were not recruited. For the Dental Surgeons and Pharmacists whose production is less than 50 annually for each cadre, the recruitment permits sometimes allowed recruitment of larger number than those graduated (table 2). This translates into lack of co-ordination between the trainers and the employer. The National health policy (2003), the vision 2025 (2000) and the HRH strategic plan 2008-2013 clearly state the importance of deployment of highly trained HRH. Now these findings contradict to these documents. Failure to recruit all the produced HRH in the country compound the shortage and create room for brain drain of the well trained HRH towards other countries or towards other non-health care jobs within the country (WHO, 2006). Decisions as on how many to be recruited should not be left to the budget constraints alone and instead the reflection of the real situation of the country should be given a high consideration.

Mejia and Fulop (1978) pointed out that the imbalance between the supply of and demand for HRH is the result of a lack of coordination between the providers of health services and the trainers of health staff. Each group tends to proceed independently from the other, and the health system as a whole suffers as a result.

Multi-sector involvement is necessary for the realization of health care sector goals

The study found out that many of the stakeholders were moving independently from each other with each one in its own direction. This caused the country to move in fragmented patterns towards dealing with health care issues. This is partly explained by; lack of awareness on vision 2025 among key stakeholders dealing with health and leaving out health as a top priority of the nation.

The findings are consistent with those by Kolehmainen-Aitken (1992) who argued that in some countries, the fragmentation of the health system between a large numbers of different types of providers, e.g. government, social security institutes, armed forces, mission agencies, etc., is another hindrance to formulation of a coordinated national policy on human resources.

However this study points out that existence of large number of health care providers and large number of HRH trainers is not a problem itself as it increase coverage to the Population by making more HRH available and hence increasing chance for access to good health services for all. This study further encourages that co-ordination among the trainers, service providers and policy makers will be a definite solution to this challenge.

The findings of this study are also consistent with the findings documented in a report of the Africa Working Group of the Joint Learning Initiative on Human Resources for Health and Development challenges and prospects (2006). This report pointed out that Africa will require major multi-sectoral, multilevel and multi-dimensional approaches, which though originating from national strategies and policies will also requires major international involvement and support. This report also pointed out that strong political will is needed in reforming the health system and in taking care of the intense resources needed and tensions among stakeholders.

The recruitment through the advertising process will not solve the HRH crisis in the country as it provides room for voluntary decision by graduate HRH to join the health sector. The authors are of feelings that the best way is to allocate all produced graduate HRH before they have completed their internship so as to avoid unnecessary long waiting time and hence creating room for brain drain. For proper co-ordination even the private sector dealing with health should submit their HRH demands to MoHSW before the allocation process and should submit their HRH staffing norms after recruitment annually.

The emphasis towards health as one of the top priorities of the nation needs to be re-instituted and hence deliberate measures to be undertaken. This needs to include changing the general looking at the health as a normal good and treat it as a special good (Drummond F et al, 2005).

Quality livelihood will be attained with the assistance of highly qualified HRH, the emphasis of training much lower and mid cadre HRH is discouraged in this study. This is in contrast to a desk review study by Dovlo (2004) who documented that the services provided by graduates Doctors and those by other lower cadres were almost similar. The findings of Dovlo's study are reflected in Tanzania which has put much effort on production of the lower cadres having the feelings that are less prone to brain drain as they are country specific cadres and they are less costly compared to the higher cadres. This study discourages production of more lower cadres than graduates by the fact that

production of lower cadres make relative availability of HRH and hence still having relative shortage by the fact that many of these lower cadres lack adequate skills to respond to the changing diseases pattern in the era of technological advancement. This also biases the government in the decision on equipping the district hospitals and health centers with necessary advanced facilities because of lack of expertise. This study points out that there is a need of thorough research on the health facilities where these two groups were compared as under-equipped facilities might have biased the findings of Dovlo's study.

Realization of health care sector goals of the vision 2025 needs collaboration of all the key stakeholders involved in health. It is necessary that awareness campaigns be launched and implemented for the vision to be understood to all the stakeholders. The training institutions which are the cornerstone for production of the HRH should be made aware of this vision and what it entails and their primary roles towards its realization.

Conclusion

The training institutions which are the cornerstone for production of graduate level HRH are seriously challenged in attempt to fulfill their key role. They are critically understaffed, underfunded; have low admitting capacities and lack co-ordination with other key stakeholders dealing with health.

The deployment process is not smooth it is affected by; limited budget for recruitment, inadequate co-ordination among key stakeholders dealing with health, decision on number to be recruited is handled by another organ rather than MoHSW and competition between the health care sector needs with other ministries.

Realization of development vision 2025 health care sector goals is challenged by; lack of adequate HRH in general health care sector and in Training institutions, low absorption of graduated HRH, donor dependency syndrome, less awareness on the vision among key stakeholders and falling interest on healthcare as a top priority in this Nation.

Recommendation

From the findings of this study it is recommended that; Recruitment of Academic and supporting Staffs in the academic institutions should be given a maximum attention. It is also advised that the retirement age be extended up to 70 years for the academic Staffs as this will not only increase their number but will also retain the highly trained and experienced Staffs from brain drain.

Absorption of all graduate HRH produced is necessary for forward step to be made. It is

necessary that a common curriculum for internship supervision is made and finally a uniform evaluation be made for the graduate HRH.

Strengthening of the National health policy or devising new policy that will ensure co-ordination and collaboration among key stakeholders in the health care sector is important for the HRH crisis to be alleviated and for the health care sector goals of the vision 2025 to be realized. Awareness on vision 2025 need to be raised among the key stakeholders and much more in Training institutions for the vision to be clear for joint implementation.

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**ADDRESSING THE HUMAN RESOURCE FOR HEALTH
CRISIS IN TANZANIA:
THE LOST IN TRANSITION (LOTTA) SYNDROME**

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Abstract: Tanzania is experiencing a serious human resource for health (HRH) crisis. The objective of this study was to determine what happens to the number of the Medical Doctors (MDs) and Dental Surgeons (DDS) from the period they graduate until the period of first appointment and how it escalates the HRH crisis. Secondary data on the number of MD and DDS graduate from 2001-2010, the number registered for internship from 2005-2010 and the number allowed for recruitment from 2006-2010 was analysed. Self administered questionnaires were provided to 91 MDs and DDS pursuing postgraduate studies at Muhimbili University of Health and Allied Sciences in Dar es Salaam, Tanzania. We found that from 2001 to 2010 a total of 2248 MDs and 198 DDSs graduated both from within the country and abroad. From 2005 to 2010, 1741 MDs and 147 DDSs graduated both locally and abroad. From 2005 to 2010 a total of 1691 (97%) and 186 (126.5%) of all graduated MDs and DDSs registered for internship, respectively. The 2007/2008 government recruitment permit allowed only 80 (37.7%) out of 218 MDs and 7 (25.0%) out of 27 DDS graduated in 2006. The 2009/2010 recruitment permit allowed 265 MDs (85.48%) out of 310 graduates in 2008. In 2010/2011 the recruitment permission for MDs was 190 (57.58%) out of 330 graduates in 2009 and in 2011/2012 permission for MDs was for 249(61.03%) out of 408 graduates in 2010. From this analysis the recruitment permits in 2007/2008, 2009/2010, 2010/2011 and 2011/2012 could not offer permission for employment of 482 (38.10%) of all MDs graduated in the subsequent years. The major challenges associated with the graduation-internship-appointment period included place of accommodation, delays in payment of allowance for internship or salary for first appointment, difficulty working environment, limited career opportunities and concern for job security. In conclusion, the failure to enforce mandatory registration for internship and to absorb all MD and DDS graduates results to loss of a substantial number of medical personnel during the graduation-internship-appointment period. This loss contributes significantly to the HRH crisis in Tanzania.

Keywords: human resource for health, internship, appointment, lost in transition, Tanzania
Introduction

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Health of any nation depends on the comprehensiveness of its health system. The health system is well established if there is harmonious interconnection among its building blocks; governance/stewardship, human resources, information technology, medicine and pharmaceutical technology, health care financing and service delivery (WHO, 2007). Of the six health system building blocks, human resource for health (HRH) is key and a cross-cutting block to all other building blocks. HRH or the health workforce is defined as all people engaged in actions whose primary intent is to enhance health (WHO, 2007). These human resources include clinical staff such as physicians, nurses, pharmacists and dentists, as well as management and support staff (those who do not deliver services directly but are essential to the performance of health systems), such as managers, ambulance drivers and accountants (WHO 2007).

The population in Tanzania has grown tremendously from about 10 million people in 1961 to more about 44.5 million in 2012 (NBS, 2013). The country has been growing in all sectors including the health care sector though not in a uniform pattern. The health care sector among other challenges is faced by a serious HRH crisis. There is a global crisis in the health workforce, expressed as acute shortages and mal-distribution of health workers, geographically and professionally (Stephen N. Kinoti and Nigel Livesley, 2004). This massive global shortage is estimated at more than 4 million workers (Bangdiwala SI, 2010). Although Africa bears one-third of the global burden of diseases, it contains only 3% of the global health workforce. In sub-Saharan Africa where the shortage is most acute, an addition of 820,000 doctors, nurses and midwives are needed (Conway, 2007). In most developing countries, the health workforce is concentrated in major towns and cities, while rural areas, on average, contain only 23% of the country's doctors and 38% of its nurses (Bangdiwala, 2010).

Tanzania is among the 57 (36 are in Sub-Saharan Africa) countries in the world with serious HRH crisis (Bangdiwala, 2010). The shortage is not uniform in the country; rural areas are more affected compared to urban areas. By 2006 the country was experiencing a shortage of HRH of 65% at all levels of the health care sector (MoHSW, 2008). The doctors (Medical Doctors and Specialist Doctors) to Population ratio stands at 1:64,000. However, this is not uniform in the country as it varies from 1:22,000 in Arusha to 1:308,000 in Kigoma (NBS, 2011). All these ratios are far low from the World Health Organization recommendations of doctor: population ratio of 1:10,000.

In Tanzania soon after graduation all the medical doctors and dental surgeons are required by law to undertake a one year internship programme at a hospital accredited by the government. Under the internship programme, the graduates under supervision of senior experienced health care professionals and upon successfully completion they are issued with an internship certificate required for registration by the Medical Council of Tanganyika. However this process though mandated by the law has not been enforced by the fact that one may opt not to go on with clinical practices and hence opt for other well paying jobs that do not mandate internship certificate or registration. It is the role of the Ministry of Health to accommodate all graduates Medical Doctors and Dental Surgeons who appear for internship and recruitment for the public sector depending on

the government permits. The objective of this study was to analyze fate of medical doctors and dental surgeons from the period of graduation to internship and finally appointment (GIA) and its impact of the HRH crisis in Tanzania.

Materials and Methods

Study setting and data collection

The study involved analysis of secondary data from Universities in Tanzania, Ministry of Health and Social Welfare, Medical Council of Tanganyika and President's Office Public Services Management. The Universities were Catholic University of Health and Allied Sciences (CUHAS), Hubert Kairuki Memorial University (HKMU), International Medical and Technology University (IMTU), KCMC University College and Muhimbili University of Health and Allied Sciences. MUHAS was the only public university in this study.

Data on the number of MDs and DDS graduates from 2001 to 2010 was extracted from graduation books. Data on the number of MDs and DDS who graduated from outside Tanzania was obtained from the Ministry of Health and Social Welfare. The Medical Council of Tanganyika register was used to extract the number of MDs and DDS that were provisionally registered for internship from 2005 to 2010. Recruitment permits for 2007/2008, 2009/2010, 2010/2011 and 2011/2012 were also analysed. A self-administered questionnaire was used to get the insight of the challenges facing the MDs and DDS during the GIA period from among postgraduate students at MUHAS.

Data analysis

The number of MD and DDS graduates, those who were provisionally registered for internship and the number allowed for recruitment from the recruitment permits was tabulated. The number graduates was compared to those registered for internship and to the number of recruitment permits to detect any loss during the transition from graduation to internship and from the internship to first appointment. For the self administered questionnaires, the questionnaires were coded and filled in the responses to a computer and analysis was done using Epi-info computer software 2000 and the results were tabulated to show percentages.

Ethical considerations

This study received an ethical approval from the Muhimbili University of Health and Allied Sciences. Permission to conduct the study was obtained from Ministry of Health and Social Welfare and the Managements of the respective Institutions. Verbal informed consents were obtained from the postgraduate students prior to administration of the questionnaire after being offered explanation and clearance letters regarding the subject.

Results

Medical doctors and dental surgeons graduates from 2001 to 2010

For the period of ten years from 2001 to 2010 a total of 2248 medical doctors and 198 dental surgeons graduated from five Universities in Tanzania and abroad. Of the locally trained medical doctors 63.55% and 100% dental surgeons were from the MUHAS. During the same period MUHAS trained a total of 188 dental surgeons (Table 1). This is the only training institution that trains dental surgeons in the country. From 2001 to 2010 a total of 226 medical doctors and 10 dental surgeons graduated from abroad. This translates into of 2248 medical doctors and 98 dental surgeons to have been trained by and for Tanzania in that particular period. During 2005 to 2010, a total of 1741 medical doctors and 147 dental surgeons graduated locally and abroad. From 2005 to 2010 a total of 1691 medical doctors and 186 dental surgeons were provisionally registered for the internship programme (Table 2).

Table 1: *Medical doctors graduated in Tanzania from 2001 to 2010*

<i>Institution</i>	<i>2001</i>	<i>2002</i>	<i>2003</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Total</i>
MUHAS	56	61	105	103	122	134	175	201	173	155	1,285
KCMC	-	15	11	11	11	27	24	24	39	71	233
IMTU	04	12	-	-	39	34	27	-	26	76	218
HKMU	-	-	04	12	20	08	26	42	50	70	232
BUCHS	-	-	-	-	-	-	-	09	24	21	54
Total	60	88	120	126	192	203	252	276	312	393	2,022

Source: Graduation Books (2001 - 2010)

Table 2: *Medical doctors and dental surgeons registered for internship from 2005 to 2010*

<i>Year</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>Total</i>
Medical Doctors	182	192	309	311	273	424	1691
Doctor of Dental Surgery	12	24	24	48	45	33	186
Total	194	216	333	359	318	457	1877

Source: Medical Council of Tanganyika (2010)

The recruitment process in public sector in Tanzania is centrally handled by the President's Office Public Service Management (PO-PSM). This department issues recruitment permits to other institutions. The issuing of permits follows need assessments done through the Ministry of Health and Social Welfare. For a period of four years the 784 and 90 recruitment permits were issued for employment of medical doctors and dental surgeons, respectively. For the period of four years a total of 416 (34.67%) Medical Doctors out of 1200 who appeared for internship were not recruited. During the same period 66 (5.21%) of the MD graduates did not appear for the internship programme (Table 3).

Table 3: Recruitment of medical doctors (MD) and dental surgeons (DDS), 2006-2010

Year of graduation	Cadre	No. graduates	No. Interns	Allocated slots for MDs and DDS in recruitment permits	No. lost
2006	MD	218	192	80 (2007/2008)	138 (63.30%)
	DDS	27	24	07	20 (74.07%)
2008	MD	310	311	265 (2009/2010)	45 (14.52%)
	DDS	34	48	42	-12 (-35.29%)
2009	MD	330	273	190 (2010/2011)	140 (42.42%)
	DDS	29	45	28	01 (3.45%)
2010	MD	408	424	249 (2011/2012)	159 (38.9%)
	DDS	22	33	33	-11 (-50.0%)
Total	MD	1266	1200	784	482 (38.07%)
	DDS	112	150	110	02 (1.79%)

Source: Recruitment permits (secondary data from MoHSW)

The number graduated and those of slots for recruitment are compared at a different of one year interval (table 3). The reason for this is the fact that after graduation the MDs and DDS appear for one year internship programme which is part of their training and not employment. This make them readily available for employment one year post their graduation. To estimate the magnitude of the number lost in transition comparison was made from the year of graduation to the first appointment. This was done by the fact that post graduation the MDs and DDS can do other jobs as doctors but limited not to practice clinical services until they are registered by their professional councils post internship. It is again post graduation where they no longer belong to the training institutions but to MoHSW who is again their main employer post internship. The graduates who could not appear for internship immediately resulted to increase in number of interns compared to the number of graduates in subsequent years. The number lost in some years carried negative values to indicate that the government was aware that not all graduates were absorbed in the immediate subsequent year and hence issued large number of slots for recruitment compared to the graduates in the immediate previous year.

The internship and first appointment periods were accompanied by many challenges, more so from the public sector. A total of 91 medical doctors and dental surgeons who were pursuing postgraduate studies at MUHAS who previously went through the graduation-internship and appointment period filled and returned the questionnaire. Majority (95%) of them were medical doctors; 92.31% were employed and 89.29% were government employees. Among all respondents, 57 (67.86%) worked in the public sector as their first appointment. Among these respondents majority of those whose first appointment was at the private sector later on joined the government sector compared to those who moved from government to private (57.14% vs. 3.51%). About 10.71% of the respondents were from the private sector.

Major challenges from the public sector included difficulty working environment in terms of infrastructure and equipment; accommodation and allowance or salary delays during their first months after reporting. From the private sector the major challenges reported were limited opportunities for carrier path and concerns for job security (Table 4).

Table 4: *Experience of accommodation and salary delays during internship and first appointment*

Challenge	Response	Frequency (%)	
		Internship (N=91)	First appointment in government (N=61)
Accommodation	Prepared house/ hostel	26 (28.57%)	20 (32.79%)
	Guest/Hotel	07 (7.69%)	28 (45.90%)
First allowance/salary	Relatives/Friends/Family	58 (63.74%)	13 (21.31%)
	End of first month	22 (24.18%)	15 (24.59%)
	Within 3 months	60 (65.93%)	21 (34.42%)
	Beyond 3months but within six months	02 (2.20%)	05 (8.20%)
	Beyond six months	07 (7.69%)	20 (32.79%)

Discussion

Training, absorbing and motivation is traditionally accepted as the major way of ensuring availability of HRH. Our findings point out that from 2006 to 2010 alone about 40% and 2% of MDs and DDS respectively graduated from the training institutions were not absorbed. We termed these as a loss in transition as this it covers the lost number from those that did not appear for internship and in the slots for recruitment post internship. The training institutions have increased their admission capacities and hence the production of Medical Doctors (MDs) and Dental Surgeons (DDS) has increased and is on ascending ladder. However this production is still far below compared to the actual need of these graduates in the country. World Health Organization (WHO) recommends a doctor: population ratio of 1: 10,000. In Tanzania the ratio is 1:64,000 (NBS, 2011) compared to 1:300 post independence (MAT, 2008). The ratio has been increasing by the fact that the increase in number of graduating doctors does not match with the rapid increase in population growth.

The graduates apply by themselves for provisional registration which is pre-requisite for internship. Provisional registration is mandated to MDs and DDS by the law for them to practice (URT, 2002). Leaving the registration process to be applied by the graduates contributes to the delay of joining internship by graduates and provides some room for others to bypass the internship. Those who by-pass the internship may opt other well paying jobs within the health sector or in other sectors and this might be within or outside the country. Some join the internship after several while some never return to the practice. This in the long run fuels the HRH crisis in the country. In 2013 about 8.2% of traced Doctors were found residing outside the country and more than 38.8% had no working stations (Sikika and MAT, 2013). The loss of 5.21% of MDs who did not appear for internship in just a period of four years necessitates enforcement of mandatory registration. This also suggests that there is lack of co-ordination among the training institutions and MoHSW. This is consistent with findings by Sirili (2013) and Sanyiwa (2008). In these referred studies it was revealed that the trainers, employers and policy makers were moving in independent directions (Sirili, 2013; Sanyiwa, 2008). It is our views that registration process be made mandatory and it should start immediately before graduation by synergizing the registration process with the graduation.

Having increased the number of graduates in the country is a good start towards dealing with the HRH crisis. This calls for absorption (employing) all the produced graduates and retain them in the respective working stations. In Tanzania the private sector in health care is not well established yet and hence it can only absorb a small number of Medical Doctors and Dental Surgeons. This translate to the major stake be left for the public sector. Failure to absorb all the produced graduates is consistent with findings by Maestad (2006) who pointed out that failure to absorb the produced graduates from the training institutions contributed to the HRH crisis in Tanzania. This loss is very large taking into account the HRH crisis in this country and the costs of producing these graduates. Our findings are also consistent with findings by Mills (2011) who pointed that African countries put much resources in training of Doctors but benefiting less from them. Mills (2011) added that the African countries have ended up losing \$2 billion as the expert clinicians who leave home to find work in more prosperous developed nations.

The HRH strategic plan 2008-2013 (MoHSW, 2008) clearly states the importance of recruitment of a well trained health workforce for realization of Millennium Development Goals, Primary Health Services Development Plan 2017 and the Development vision 2025 (MoH, 2003). However with constrained budget to MoHSW the recruitment of all graduated MDs has not being possible. The country has being setting less than 11% of its total budget to the health care for the past many years (MoHSW, 2008), this is contrary to what was recommended in the Abuja declaration in 2001 that the member countries set 15% of their budgets to the health sector (High level forum, 2004). It is also contrary to what was said by the minister for health in 2008, "...Tanzanians pay for the training of Medical Doctors, it is unfair to abandon them..." (MAT, 2008). The minister added that the motto for MoHSW was to, "Train, retain and retain" (MAT, 2008). Deliberate efforts are needed by the government to recruit all the produced graduates if the realization of the set goals by the country in health and other global goals are to be realized.

The Graduation-Internship-Appointment period (GIA) has never being smooth; the graduates who appeared for internship and appointment in the public sector faced a lot of challenges. Among others accommodation and delay of first allowance (Internship) and salary (1st appointment) were the most prominent challenges encountered. The accommodation and allowance/salary delay was experienced differently from the respondents at different areas. These and other challenges like lack of appropriate facilities, shortage of HRH available in the respective working stations produced hard time for smooth running of their duties to these graduates. This is in consistency with what Manzi (2012) documented, who among other things mentioned poor working environment to affect the availability of HRH in remote areas.

The findings from the secondary data provide a backbone of this study. They reveal that the increase in number of the MDs and DDS graduating from the training institutions is not enough to address the shortage of MDs and DDS in the country. These findings open room for other studies to explore how the losses in the transition period (GIA) and their causes can be addressed. Our findings are limited to conclude that the actual number of MDs lost in this period is 482 by the fact

that the number of slots provided for recruitment by the recruitment permits is not necessarily equals the number recruited. In other words we might have underestimated the loss by not considering the number applied for those posts and those who reported. Again we cannot draw conclusion on the challenges facing the MDs and DDS during the GIA period as we used a selective group which was already in continuing education, but although came from different places they might have come from the better group.

In conclusion, the failure to enforce mandatory registration for internship and failure to absorb all produced MDs and DDS results to loss of a substantial number of these graduates during the graduation-internship-appointment period (LOTTA). This loss contributes significantly to the HRH crisis in Tanzania. The solution to this is within reach. Massive investment by the government in training of Medical Doctors and Dental surgeons together with their deployment is inevitable in dealing with the loss of MDs and DDS in the country. All graduating Medical Doctors and Dental Surgeons should be channelled directly from training institutions to the MCT for registration and directly to places of internship and first appointment without applying at their own will. This will minimize LOTTA during the GIA period for Medical Doctors and Dental Surgeons. Accommodation arrangements, timely allowances/ salaries and difficult working environment should be dealt with by joint efforts by MoHSW, Ministry of Finance and the receiving stations for the Interns and new employees. Co-ordination among the trainers, employers and other health sector stakeholders is a good starting point in addressing the loss of Medical Doctors and Dental Surgeons during the GIA period.

We recommend further studies to explore and address the challenges faced by the MDs and DDS during the period from graduation-internship to first appointment. We feel that by addressing these challenges it will minimize losses as it will attract many of MDs and DDS to join/ continue with clinical practices.

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