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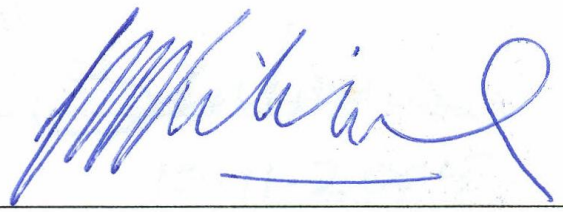
PREDICTORS OF WILLINGNESS FOR RURAL MEDICAL PRACTICE AMONG TANZANIAN FINAL YEAR MEDICAL STUDENTS

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A dissertation submitted in partial fulfillment of the requirements for the award of Master of Public Health (MPH) degree of the University of Dar es Salaam, September 2005.

CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by the University of Dar es salaam a dissertation entitled: "Maldistribution of the Medical Workforce in Tanzania: Predictors of Willingness for Rural Medical Practice among Tanzanian Final Year Medical Students" in partial fulfillment of degree of Master of Public Health (MPH).



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DECLARATION

AND

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I, Beatus Kiraiya Leon, do solemnly declare that the work presented in this dissertation is my own original work, and that it has never been submitted for any degree in a any other university

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DEDICATION

To Landy and Spera,

with Love.

ABSTRACT

Human resources for health in Tanzania are in short supply and urban–biased. Preference for urban practice prevails among newly graduating medical doctors. This study sought to determine the factors influencing willingness for rural practice among Tanzanian final year medical students. A cross sectional survey was conducted among 130 medical students at MUCHS and HKMU in Dar es Salaam and KCMC in Moshi. Structured questionnaire was used to collect data on demographic characteristics, rural experience, perception of rural facilities, employment prospects, willingness to accept rural posts, and perceived advantages and disadvantages of rural career.

About 35% of students would specifically consider a rural post in their job search, while 59.4% would accept to be posted to rural areas by their employers although they would not initially apply for it. Students from a rural background were twice more likely to be willing for rural practice compared to their urban counterparts ($p=0.004$). The influence of gender, age and source of sponsorship on willingness for rural practice was not statistically significant. Willingness for rural practice was also influenced by type of rural experience, perceived state of rural health facilities, intended fields of specialization, and perceived merits and demerits of a rural career.

The Government and other employers should recruit doctors centrally through their headquarters and deploy them equitably in the peripheral underserved districts. An affirmative action is needed to increase representation of rural background students in medical schools. Medical school curricula and internship programs should incorporate Rural Medical Practice as an essential component. Remuneration and incentive packages for doctors in Tanzania need to be improved.

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ACCRONYMS

AMO: Assistant Medical Officer

CME: Continuing Medical Education

CSD: Civil Service Department

ELCT: Evangelical Lutheran Church of Tanzania

FBO: Faith Based Organization

GP: General practitioner

HKMU: Hubert Kairuki Memorial University

ILO: International Labour Organization

IMED: International Medical Education Directory

IMTU: International Medical and Technological University

KCMC: Kilimanjaro Christian Medical Center

MMHEN: Mission Mikocheni Health and Educational Network

MBChB: Bachelor of Medicine and Bachelor of Surgery (Chirurgery)

MD: Doctor of Medicine

MoH: Ministry of Health

MSTHE: Ministry of Science Technology and Higher Education

MPL: Multipurpose Laboratory

MPH: Master of Public Health.

MUCHS: Muhimbili University College of Health Sciences

NGO: Non-Government Organizations

RMO: Regional Medical Officer

SADC: Southern Africa Development Community

UDSM: University of Dar-es-Salaam

UNIDO: United Nations Industrial Development Organization

UNDP: United Nations Development Programme

USAID: United States Agency for International Development

WHO: World Health Organization

OPERATIONAL DEFINITIONS:

District: Administrative division of a region as maintained pursuant to the currently existing district boundaries in the United Republic of Tanzania

Rural Area: An area not falling under any of the classifications of an urban area, according to the National Statistics Office. For the purpose of this study, any area in a district classified as "rural" was regarded as a rural area.

Rural District: Any district apart from the headquarters of a region was classified in this study as a rural district.

Rural Post: A job opportunity or vacancy for a medical doctor existing in a rural area

Medical Practice: In the context of this study, medical practice is meant to include all duties expected of a medical doctor in his/her level of training in both the curative and preventive fields

Medical Doctor: An individual who has been trained and attained the status of "Doctor of Medicine" or equivalent in an approved university

Medical Students: Those students who, at the time of this study, were pursuing studies leading to the Doctor of Medicine (MD) degree in the respective universities

Rural Background Students: Those students who reported to have grown up in a rural area, meaning that they were raised and spent most of their lifetime in a rural area before joining the university

CHAPTER 1

1.0 INTRODUCTION

1.1 BACKGROUND

Severe shortage of medical workforce and unfavorable doctor: population ratios are common characteristics of many poor countries including Tanzania. According to the World Health Organisation (WHO), 31 countries in Africa do not meet the 'Health for All' standard of a minimum of one doctor per 5000 people (Huddart et al, 2003). In the 1980s, for example, the doctor: population ratio was 1:10 800 in sub-Saharan Africa, compared to 1:1400 in all developing countries and 1:300 in industrialised countries. Worse still, since the 1980s, the situation has deteriorated. In the 1990s the doctor: population ratio in Malawi, Mozambique and Tanzania was 1:30 000 or more and in Angola, Lesotho, Zambia and the Democratic Republic of Congo this ratio stood at 1:20 000 (Huddart et al, 2003). At her independence in 1961, Tanzania had a doctor: population ratio of 1:800,000 with only 23 natives formally trained as doctors (Mtabaji, 2002). In the year 2001, the ratio had improved to 1:23,000 (ILO, 2002).

Tanzania's improvement in the doctor: population ratio has however done little to address the imbalance between rural and urban areas in terms of the distribution of the medical workforce. Whereas in 1961 the percentage of Tanzanians living in rural areas was over 80%, the figure for the year 2000 seems to have changed a little, with different authorities placing it in the range of 66% to 80% (SADC, 2001; World bank/WDI 2002). The distribution of medical doctors in different areas of Tanzania is

largely influenced by the poverty level at the area in question. The average number of doctors in typical urban areas in Tanzania is twice that found in rural areas (Khan et al, 2003). An almost similar trend of distribution is found for the other health cadres particularly medical assistants, public health nurses and trained midwives (Khan et al, 2003). Logically deduced, this means that two thirds of the country's medical workforce is available to only about one fifth of the entire population, leaving the majority (80%) of the population with the remaining one third.

The impact of this maldistribution to equity and access to quality health care is enormous. The city of Dar-es-Salaam alone for instance, has nearly 30 times as many medical officers and medical specialists as other rural districts (Wyss, 2004; Nullis-Kapp, 2005). According to the staffing levels proposed by the Ministry of Health and The Civil Service Department, each district is supposed to have at least three medical doctors in the district hospital (MoH 1996, MoH/CSD 1999). However, several districts have been reported not to have a single doctor by the end of last year (2004).

In response to the low doctor-population ratios, the Tanzanian Government has attempted several measures. The medical student enrolment rate at the MUCHS has increased gradually from 50 students per year in 1972 to 233 students in the academic year 2003/04. The number of graduating medical doctors has also been increasing proportionately (MUCHS, 2005). In the year 2004, the government also stated its

intention to provide financial sponsorship to students who would undertake medical training in the private universities including KCMC, HKMU, IMTU and Bugando.

Despite the stated effort in increasing the number of medical doctors in Tanzania, shortages of doctors in the rural areas still persist. The expansion of medical student intake in public universities and provision of government sponsorship to students in private universities is expected to produce more doctors to address the shortage. Little is known of students' motivation to join the medical field. Their expectations at graduation are diverse and with far-reaching effects. In the era of liberalized economy, the labour market for doctors and other health professionals is also influenced by the market forces of demand and supply, of which consumers' purchasing power forms an important component. Given the socio-economic disparities between rural and urban communities, the new graduate's choice of rural or urban practice entails trade-offs between perceived advantages and disadvantages of either choice (Lisse et al, 2004). Willingness of a doctor to apply for and accept a rural post might be influenced by individual factors such as motivation for work and one's family needs; organizational or infrastructural issues, remuneration and potential for self development (Azer et al, 2001).

The essence of advocating for a fairer and equity-oriented distribution of doctors is further supported by research findings worldwide. The association between health worker density and mortality has been clearly established where an increase in the

number of health workers per unit cluster of population was associated with a decline in mortality in that population (Hanvoravongchai, 2004).

An examination of the factors that may influence a new doctor's acceptance of a rural post will provide a framework for designing means of preparing medical students to meet the challenges of career choice, and help in developing training programs that will produce doctors who might be more willing to practice in rural areas than it is the case at this moment. An understanding of the factors that influence medical students' choice of a rural career will also have an impact on human resources policy, particularly on the role of the state and training institutions in the modeling of medical professionals.

This study therefore aims at finding out the proportion of Tanzanian final year medical students who express willingness to work as doctors in rural areas and the factors influencing their willingness to accept a rural post. It also attempts to unveil the advantages and disadvantages of working in a rural area from the students' perspective, and ultimately finds out some of the main factors that may influence the potential doctor's choice or acceptance of a rural career.

1.2 STATEMENT OF THE PROBLEM

The number of medical practitioners has been growing since Tanzania's independence in 1961 and the doctor-population ratio has generally improved. However, this benefit though little, is not equitably shared by Tanzanians living in rural areas, who continue

to be deprived of the services of trained medical personnel. Hence an increase in the number of doctors has not been translated proportionately into an increase in the proportion of rural people who have access to quality medical care.

The government's response to the shortage of doctors and the ensuing maldistribution has mainly been demonstrated through an increase in the enrolment rate at the state university (MUCHS) and provision of sponsorship to students in private universities. This is an enormous investment in human resources development which can best be justified by the extent to which it will address equity in the provision of quality health services to the majority of Tanzanians.

The distribution of the medical workforce in Tanzania has taken different forms throughout the history of the health sector in Tanzania. In the early post-independent years, medical doctors were automatically posted upon graduation to different upcountry stations. Some of them were also employed by Missionary hospitals, most of which were based in remote rural areas. Currently, recruitment of medical doctors depends among other things, on the willingness of the individual doctor to apply for advertised vacancies in health institutions, district councils and private health facilities.

In line with the decentralization policy and devolution of power to local government authorities, there has been a move to promote recruitment of medical personnel at the municipal, town or district council level. An individual doctor's preference for a

particular location (urban versus rural) will certainly affect his/her willingness to apply for a job in that location. While decentralization is expected to encourage self-motivated doctors to apply for the advertised rural posts, the tendency has been for some of the rural districts to fail to get any applicants at all, or even if they do, usually they are very few. At times, some of the applicants may not even show up for an interview.

Factors associated with a new doctor's willingness to accept a rural post at first appointment have not been studied in Tanzania, and information on predictors of willingness for rural practice is generally lacking. The proportion of the incumbent medical students willing to serve the rural populations of Tanzania is not known. Similarly, their perception of the state of Tanzanian rural health services is not known either. There is no documentation of what Tanzanian medical students perceive as advantages and disadvantages of working as doctors in rural areas. Apart from the nationwide lamentation on poor remuneration packages which also affect most of the other public service sectors, little is known so far of factors particularly applicable to medical students, which may affect their willingness to practice as doctors in the rural areas of Tanzania.

1.3 RATIONALE

The core subject in this study is distribution of human resources for health, and it is in line with one of the strategies of the Tanzanian Health Sector Reforms agenda, which

addresses the challenges of human resources development to ensure well trained and motivated staff are deployed at the appropriate health service level (MoH, 1994). Equitable distribution of Human Resources for health in the wake of Health sector reforms warrants special attention, particularly to details on determinants of willingness to practice, which vary across individuals, and with rural-urban disparities. The findings of this study are expected to contribute towards enriching the human resources policy in Tanzania, particularly the issue of developing human resources for health. This study is expected among other things, to be able to recommend essential evidence based inputs in the training policy that will attempt to minimize the existing maldistribution of the medical workforce.

The knowledge generated from this study will also be useful in re-designing appropriate and equity oriented schemes of medical student enrolment, sponsorship and other forms of support essential in orienting them towards willingness to address the most pressing health care needs in Tanzania.

This study has also produced evidence which can form a basis for re-defining the roles of training institutions in preparing a medical workforce which will best fit in the reforming health sector. Training institutions can utilize some of the gathered information to re-design and re-direct their training programs towards addressing the existing inequalities in the distribution of doctors.

The whole process of grooming, recruiting, professional socialization, employing and retaining a medical doctor is multifaceted and multisectoral, involving a wide range of multiple determinants (Hongoro et al, 2005). This study underscores the importance of involvement of other sectors in the proper modeling, recruitment and sustaining of the services of trained medical personnel in the rural areas of Tanzania.

1.4 CONCEPTUAL FRAMEWORK

Following an increased investment in undergraduate medical training by the government of Tanzania, it is theoretically expected that the measure will address the shortage of doctors in the rural areas, and in the long run, solve the problem of maldistribution. Expansion of medical student enrolment in public universities and provision of sponsorship to students in private universities will definitely increase the overall doctor: population ratio in the country, but it remains questionable as to whether the newly trained doctors will be available to the majority rural poor.

New doctors find themselves confronted by a multitude of factors, which negatively influence their willingness to accept rural posts. As a result, they may resort to alternatives such as urban private practice or seek to migrate to other countries where the packages are thought to be better. Some doctors may opt for non-medical occupations. These options leave only a few doctors willing to work in rural areas, and so the shortage persists.

The conceptual framework for imbalance of human resources for health is summarized in the following diagram (adopted from Zurn et al, 2004):

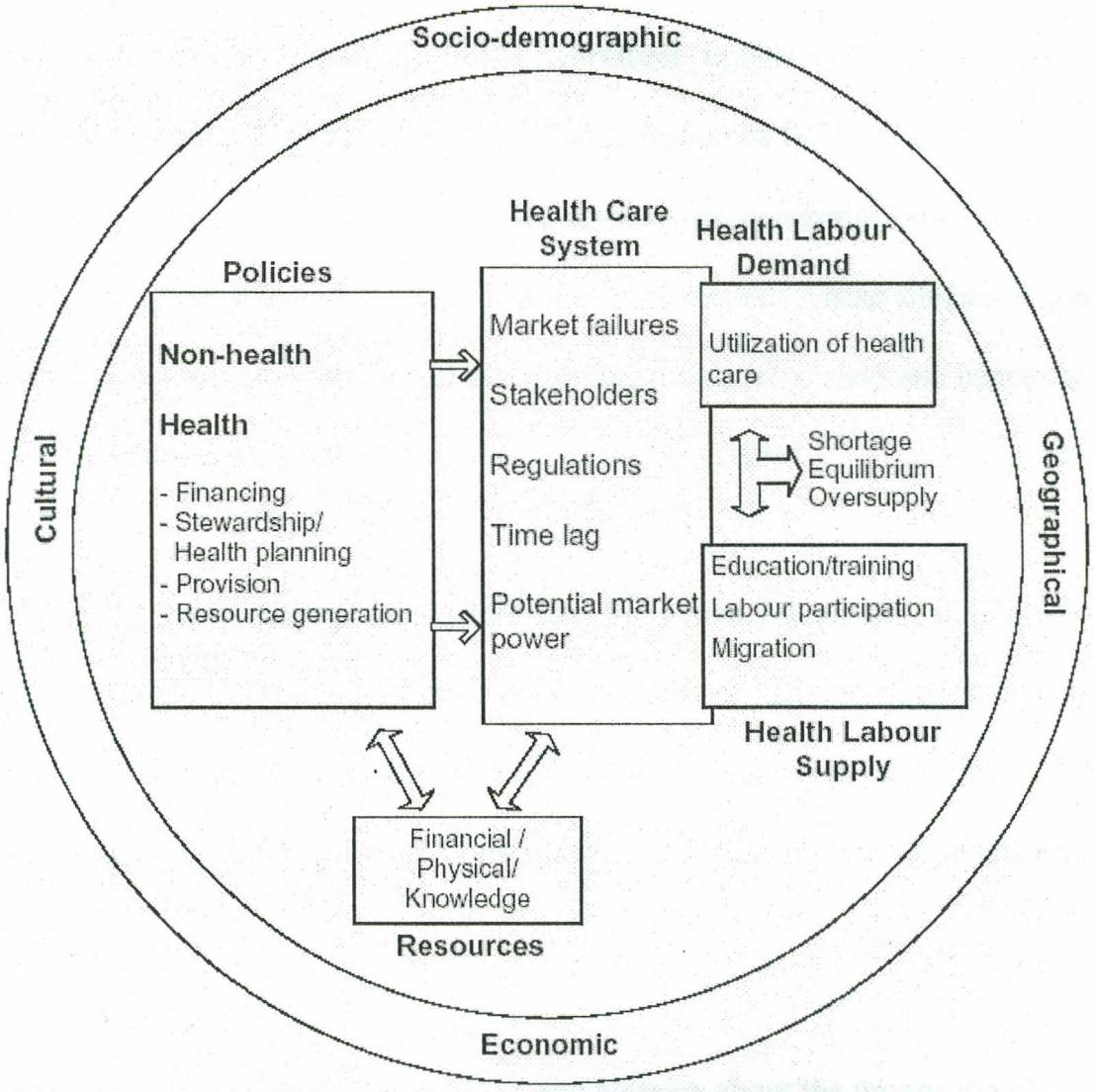


Figure 1
Framework for imbalance of human resources for health

The framework contains six main components: the demand for health labour, the supply of health labour, the health care system, policies, resources and "global" factors. Central to this framework are the demand for and supply of health labour. Also included in the

framework is the health care system, and in particular, some of its features that are likely to have an impact on health workforce imbalances. Policies constitute another crucial element of the framework. In effect, health policies but also nonhealth-oriented policies can have an impact on health workforce imbalances. The framework also incorporates financial, physical and knowledge resources that contribute to model the health workforce. Finally, "global" factors such as economic, socio-demographic, political, geographical and cultural factors are included. These elements contribute directly or indirectly to shaping and transforming the entire society and hence the health workforce (Zurn et al, 2004).

Applying the rural shortage of doctors into the above framework, it is obvious that further investment in training of more doctors addresses just one component among the multiple determinants of distribution of medical doctors in Tanzania. Adequate attention must also be given to the other factors which contribute to maldistribution of doctors.

The present study therefore attempted to find answers about the proportion of medical students in their final year of study who would express willingness to work as doctors in rural areas and some of the factors which could predict the potential distribution.

CHAPTER 2

2.0 LITERATURE REVIEW

2.1 Global overview of human resources crisis in the health sector

All poor countries in the world face a severe human resources crisis in their health sectors. The problem is most acute in Sub-Saharan Africa where an estimated workforce of 750 000 health workers in the region serves 682 million people. By comparison, the ratio is ten to 15 times higher in developed countries. This estimated workforce of doctors, nurses and allied health workers in sub-Saharan Africa compose 1.3 % of the world's health workforce while Africa suffers from 25% of the world's burden of diseases (WHO, 2000).

To achieve the Millennium Development Goals, the minimum level of health workforce density is estimated at 2.5 health workers per 1,000 people. Out of 46 countries in Africa, only 6 have workforce density over 2.5 per 1000 population. Indeed, Africa's health workforce density averages 0.8 workers per 1000 population; significantly lower compared to the other regions and to the world median density of 5 per 1,000 populations (Huddart et al, 2003).

2.2 Impact of health worker shortages on health

A number of other researches justify this outcry over the progressively dwindling numbers of doctors available for rural populations of the world. A positive correlation has been established between health worker density and various health indices, notably

infant mortality rate, maternal mortality rates, and various disease specific mortality and morbidity rates, whereby an increase in the number of health workers per cluster of people was associated with a notable decline in the mentioned rates (Khan et al, 2003). Low health worker density has also been found to be associated with poverty as assessed by per capita income, housing and sanitary conditions, low literacy rates and health lowering practices (Khan et al, 2003). It appears therefore that health worker density affects health in its multidimensional nature, and not merely in terms of the alteration of the epidemiological indices of disease conditions. Further evidence for this is recorded in the work by Nullis-Kapp who demonstrated that health worker shortages impeded development goals implementation in many poor countries (Nullis-Kapp, 2005).

2.3 Tanzania's situation of human resources for health

Analysis of the composition of human resources for health in Tanzania reveals that unskilled workers form the largest group comprising 35% of the health labour force, followed by the professional group of nurses and midwives (31.5%). The physicians per population ratio is 4.2 per 100,000-population (World Bank/WDI, 2001; Kurowski et al 2004). Medical cadres constitute 14% of the entire health workforce, and comprise health workers who are trained to meet medical needs at the primary care level but lack a formal medical university degree. Including these health workers (assistant clinical officers, clinical officers and assistant medical officers) in the group of physicians, the physician per 100,000-population ratio becomes 25.3. Physicians account for 1% of the

health workforce (Kurowski et al, 2004). It is obvious that doctors as human resources are so scarce that no health system can afford to have them maldistributed.

2.4 Maldistribution of human resources for health

Virtually all countries suffer from a geographical maldistribution of human resources for health, and the primary area of concern is usually the physician workforce (Blumentahl, 1994). In both industrialized and developing countries, urban areas almost invariably have a substantially higher concentration of physicians than rural areas (Zurn, 2004).

Understandably, most health care professionals prefer to settle in urban areas, which offer opportunities for professional development as well as education and other amenities for themselves and their families. But it is in the rural and remote areas, especially in the developing countries, that most severe public health problems are found. The geographical maldistribution of doctors has been the object of particular attention. In general there is a higher concentration of general practitioners in the inner suburbs of the metropolitan areas. According to the Australian Medical Workforce Advisory Committee in 1998, the reasons for high concentration of general practitioners in inner city areas are: historical, lifestyle-related (access to amenities), spouse/husband-related (greater employment opportunities), child-related (better access to secondary and tertiary education services), professional, family and social ties and professional ambitions.

The geographical distribution of health care personnel is an important issue in many countries. Managua, the capital of Nicaragua, contains one-fifth of the country's population but around half of the available health personnel (Nigenda et al, 2000). In Bangladesh, most of the doctors (35%) and nurses (30%) in health services are located in four metropolitan districts where only 14.5% of the population lives (Hossein et al, 1998). This concentration pattern is characteristic of developing countries. In Indonesia the geographical distribution of physicians is a particular concern, since Indonesia's vast size and difficult geography present a tremendous challenge to health service delivery (Chomitz et al, 1998). It is difficult to place doctors in remote islands or mountain or forest locations with few amenities, no opportunities for private practice, and poor communications with the rest of the country. An almost similar pattern of imbalance was demonstrated by Kurowski et al in Chad, where approximately half of the health professionals worked in the capital N'djamena where less than 10% of the population resided (Kurowski et al, 2004). More detailed research by the same authors in Tanzania demonstrated that distributional imbalances were to a large extent determined by the level of physical infrastructure. However, significant imbalances remained when results were controlled for infrastructure, indicating that differences could be addressed by human resource policies.

2.5 Maldistribution of doctors in Tanzania

In Tanzania, the government has been the main trainer and employer of medical doctors for over four decades. The state controlled the placement of doctors in which 77%

accepted and reported at their initial (first appointment) posts (UDSM, 2004). Most of these doctors were however posted in regional hospitals which are all located in urban areas. Rural district hospitals have for years, continued to be mainly operated by AMO's and Clinical Officers (UDSM, 2004).

The Tanzanian rural population stands at 66% to 80% of the total population (SADC, 2001; World bank/WDI 2002), but only one third of all doctors in the country work in the rural areas (Khan et al, 2003).

2.6 Factors influencing maldistribution of doctors

Multiple factors influence the maldistribution of doctors, ranging from general social and economic inequity, medical education system, payment incentives and public/private health system development. Thus the problem of maldistribution of doctors should be considered as part of an overall social inequity, as well as a problem in health system management (Wibulpolprasert, 1999).

While describing the factors determining distribution of human resources for health, Wibulpolprasert (1999) placed those factors into three groups, namely health service factors, socioeconomic factors, and human resources development factors (Wibulpolprasert, 1999). In the health service factors, the author included health development policies, private sector growth, financial management and Centralization/Decentralization. Socioeconomic factors determining health workers'

distribution are economic growth, income distribution, socio-economic disparities between rural and urban areas, investment policies, social norms with the influence of globalization, and education/communication facilities. Several human resources development factors determine distribution of human resources for health, and these include the students' socio-economic background, the medical education system, the supply of medical graduates, human resources management and specialist training.

The economic disadvantages of many developing countries complicate the medical workforce maldistribution even further (Martinez et al, 2002). Countries may report overall staffing 'shortages' due to the inability to attract and retain sufficient numbers, or due to financial constraints that may be externally imposed e.g. as part of structural adjustment (Martinez et al, 2002). The authors further noted an over-concentration of staff in urban areas at the expense of poorer, more remote, under-served areas where posts are left vacant (Ghana, India, Bangladesh and many poor countries) and in Hospitals as opposed to primary care facilities. In the private sector it is largely the market that determines where people work. According to Martinez et al(2002), the same market will affect public sector employees, if they supplement their incomes with additional private practice. In countries where new graduates fill posts in rural areas as part of a bonding system (for example the community service in South Africa or compulsory rural posting for young Indian doctors) the shortages may be alleviated, but the inexperience of these staff means they are less effective and the high turnover

caused by the desire to spend the minimum amount of time in these areas severely disrupts service provision (Martinez et al, 2002).

2.7 Reasons for not accepting rural posts in Tanzania

In the tracer study conducted by the University of Dar-es-Salaam between the years 2002 and 2004, several doctors who did not accept their initial posts were interviewed, and they cited a variety of reasons. These were doctors who had graduated in the University of Dar-es-salaam between the early 1970's and the year 2001. The common reasons for not accepting rural posts among Tanzanian doctors were contract with another organization at the time of placement, social commitment with spouse or family, and existence of better options elsewhere. Other reasons were need for further studies, remoteness of the area, and unconducive working environment (UDSM, 2004). It is important to note here that those who had refused to accept initial rural posts comprise only 23% of the study sample, and their ages, gender and year of graduation were not indicated in the report.

2.8 Perceived benefits of a rural career and attractors to recruitment

Benefits of working in a rural area seem to be related to the level of economic development of the country in question. Australian medical students for instance perceive the following as benefits of working in a rural area: community appreciation, community support, rural environment is friendlier and there is less pressure and stress of work. They also stated that the salaries are higher in the rural areas (Azer, 2001).

Tanzania has not yet embarked on a scheme of differential remuneration in favour of doctors working in rural areas. The Tanzanian Ministry of health acknowledges the fact that employment conditions and remuneration of human resources of health are unsatisfactory (MoH, 1995).

Evidence from Australian and international research indicates that the most important attractors to rural practice are sense of community, rural lifestyle, scope and variety of work, hospital access and procedural work, independence and autonomy, comprehensiveness and continuity of care, and happiness of spouse and family (McDonald et al, 2002). The sense of community in rural areas is highly valued by Australian rural GPs. The key elements of this include connectedness, the degree of community recognition and appreciation, and a feeling that they were making a difference to the community (McDonald et al, 2002). In professional practice, rural GPs have to rely heavily on their own knowledge, skills and medical preparedness. The inherent challenge and responsibility of rural medical practice is widely reported as an advantage. This appears to be a particular feature for GPs in towns of less than 20,000 people (McDonald et al, 2002).

2.9 Perceived disadvantages of a rural medical career and barriers to recruitment

Disadvantages of working in rural areas seem to be almost similar across continents. Both African and Australian health workers and medical students mention such disadvantages as isolation or remoteness, lack of facilities, heavy workload, less

opportunities for postgraduate studies and lack of peer support and consultation with others. There was also a common lamentation on too much and challenging expectations from the community and subordinates (Azer et al 2001, Lisse et al 2004).

In other research settings, disadvantages of rural posts have been viewed as barriers for recruitment (McDonald et al, 2002). The authors summarized research evidence about the barriers to recruiting and retaining rural general practitioners. In descending order, the most significant barriers were lack of access to quality secondary schooling, heavy workload, spouse or partner's unhappiness, lack of community resources, professional isolation, low remuneration, lack of locum relief, difficulty accessing continuing medical education (CME), conflict with the medical community, personal isolation, and lack of privacy and anonymity (McDonald et al, 2002).

2.10 Medical students' willingness for a rural medical career

Perception of the state of rural health services influenced Australian medical students' choice of a rural career. In a cross sectional survey of 100 first year medical students in the University of Melbourne, Azer in 2001 found that perception of rural health services was associated with the students' background, with the rural students awarding better scores to their rural hospitals in comparison to their urban counterparts (Azer, 2001). Urban students based their perception on media reports while rural students based their perception on personal experience. Willingness to practice in rural areas

was greater among rural students. As for urban students, willingness to practice in rural areas was associated with their intended fields of specialization (Azer, 2001).

Training institutions have a role to play in modifying their students' intentions and willingness for rural practice. In a prospective survey of 189 medical students at the Monash University in Australia, Somers (2000) found that the intention to practice in rural areas increased as from the second year of study among a group of students exposed to rural attachment and assigned a rural mentor. The effectiveness of the rural attachment was associated with a stronger self-reported intention for a rural career. A negative rural attachment was worse than no attachment at all, and the same was reported of rural mentors (Somers, 2000).

There is reported evidence that having a rural background is the strongest predictor of entry into rural practice. Various studies have reported that doctors with a predominantly rural childhood are up to 4 times more likely to enter rural practice than those who grew up in urban areas (McDonald et al, 2002). The sub-predictors associated with a rural background that increase the likelihood of a rural practice include having a rural primary school education, which appears to be more important than a rural secondary school education. Having a family living in a rural area has been found to be significantly associated with long term-plans to practice in a rural area (McDonald et al, 2002). Australian researchers have also found that undergraduate and postgraduate clinical experience in a rural setting is the second strongest predictor of

rural practice (McDonald et al, 2002). Other predictors of willingness to practice in a rural area are male gender and being older (Wilkinson, 2000).

By the end of the 1980's in the US, four basic 'truths' of rural health were put forward by Talley based on observations from medical school initiatives designed to attract rural doctors (Talley, 1990). They were that: (i) students of rural origin were more likely to return to rural areas to practice medicine; (ii) recent medical graduates trained in rural areas were more likely to choose rural practice; (iii) family medicine (general practice) was the key discipline of rural health care; and (iv) the likelihood of recent medical graduates practicing close to where they train.

In the United States, Rabinowitz et al. reported further on data collected as part of the Jefferson Longitudinal Study, relating to medical students graduating from Jefferson Medical College between 1972 and 1991, and practicing in Pennsylvania in 1996 (Rabinowitz et al, 1999). Their study analysed more than 90 variables for 1609 Jefferson graduates over 20 classes. 'Growing up in a rural area' was the most important independent predictor of practice in a rural area. 'Entering medical school with plans to become a family physician' was the only other independent predictor of rural practice.

In a systematic review of factors associated with recruitment and retention of primary care physicians in rural areas, those factors were divided into pre-medical school

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factors, medical school factors and residency training factors (Brooks et al, 2002). The authors refined their search to approximately 400 articles on primary care in rural areas between 1990 and 2000. Of those only 21 met their criteria. The strongest studies were cohort studies with control groups and multivariate analysis. From these they concluded that pre-medical school factors such as rural origin and specialty preference were most strongly correlated with recruitment to rural areas. Policies should be aimed at selecting the right students (rural up-bringing and specialty preference) and exposing them to the curriculum and experiences needed to succeed in primary care in rural settings. In their review of predictors of recruitment and retention, using an evidence-based approach with more emphasis on Australian literature, McDonald et al. concurred that rural background was clearly the primary predictor of entering rural practice, and that the link between rural placements in training and later working in a rural practice is more tenuous, though there still appears to be an association (McDonald et al, 2002).

In a study among Australian medical students, Azer et al showed a strong relationship between a student's rural background and an intention to undertake internship training in a rural hospital (86% of rural students vs 30% urban students) or accept a position as a doctor in a rural area after completing postgraduate training (Azer et al, 2001). The top most demotivators against choosing or accepting a rural career vary in different parts of the world. Some have cited a heavy work load and too much expectation from the community as the most pressing demotivators (Azer, 2001).

2.11 Areas of failure in addressing the maldistribution

Urban bias in selecting candidates for training has been identified as a failure on the part of human resources development policies in many countries (Standing, 2004). Human resources planning and policy has failed in several respects to deliver an appropriately trained workforce to the places where it is actually needed, whereas poor selection of candidates for training (e.g. through urban bias in recruitment) is among the areas of failure (Wibulpolprasert, 1999).

There has been much less emphasis on gender in relation to the *production* of health care (Bloom, 1991; Standing, 1997). Formal health systems tend to be gender differentiated in terms of their divisions of labour and associated hierarchies, with women frequently concentrated in specific segments of the health care labour force. They are less likely than men to be in senior professional, managerial and policy making roles (Bloom, 1991; Butter et al, 1987; Holden, 1991). A study of human resources in Zimbabwe notes that in health, women outnumber men as employees, holding 57.4% of the total employment, but they are concentrated at the lower end of the hierarchy and salary grades (UNIDO, 1989). In many countries, women still tend to concentrate in the lower-status health occupations and to be a minority among more highly trained professionals and managers (Zurn et al, 2004). In Bangladesh, the distribution by gender of the health workforce shows that the total proportion of women accounts for little more than one-fifth in health services (Dussault, 1999). The distribution of women by occupational category is biased in favour of nurses. Women are very poorly represented in other categories, such as

dentists, medical assistants, pharmacists, managers/trainers and doctors (Zurn et al, 2004).

Rural students face many barriers to pursuing medical education. Apart from geographical isolation, rural communities lack facilities and resources (Western et al, 1998). Rural students often lack access to educational opportunities that are available in suburban settings (Kamien, 1987). Students from rural schools are also less likely to perform very well in their final high school examinations, hence they are often unable to compete with their urban counterparts on the basis of meeting the entry requirements set by most universities (Kamien and Buttfiels, 1990)

To increase the number of students from a rural background attending undergraduate medical programs, one author recommended provision of support to school educational programs in rural communities and a selection of students into medical schools based on an appropriate mix of academic results and rural interests (Rabinowitz, 1988). Some have proposed using quotas or geographical criteria for selecting candidates for health professions training. Academic merit has often been faulted in Africa for producing elitist professionals as rural candidates often attend schools with poor infrastructure who simply cannot be expected to compete with city based elite high schools. The question is whether rural trainees necessarily go back to serve in their areas and even if this exists what the implications are for national and ethnic integration (Dovlo, 2003).

CHAPTER 3

3.0 OBJECTIVES

3.1 Broad objective:

To determine the proportion of Tanzanian final year medical students willing to apply for, and/or accept jobs as doctors in the rural areas of Tanzania and factors influencing such willingness.

3.2 Specific objectives:

1. To determine the medical students' perception of the state of rural health facilities and services.
2. To identify the sources of information on which the students' perception of the state of rural services is based.
3. To identify the students' preferred choice of hospitals for internship training.
4. To determine the proportion of students willing to apply and/or accept a job as a doctor in a rural hospital in Tanzania.
5. To explore the students' perceived advantages and disadvantages of working as doctors in rural areas.
6. To determine the influence of medical students' demographic characteristics, rural experience, perception of state of rural health services, intended specialty and perceived advantages and disadvantages of a rural career, on the willingness to practice in rural areas.

CHAPTER 4

4.0 METHODOLOGY

4.1 Study areas:

There are five recognized medical schools in Tanzania that offer undergraduate medical training leading to the award of a degree in medicine. The International Medical and Technological University (IMTU) based in Dar es Salaam prepares its students for the award of a bachelors degree in medicine and surgery (MBBS) after four and half years of training. At the time of this study, the IMTU was in the midst of an administrative crisis, so its students were not available for the survey. The Bugando University College of Health Sciences (BUCHS) is a constituent college of the Saint Augustine University in Tanzania (SAUT) based in Mwanza, which began offering a five-year medical training leading to the Doctor of Medicine (MD) degree in the academic year 2003/04. Due to its lack of final year students at the time of the study, BUCHS could not qualify for inclusion in the survey. The remaining three universities whose students were included in the study are described below.

4.1.1 The Muhimbili University College of Health Sciences (MUCHS)

The Muhimbili University College of Health Sciences is a constituent college of the University of Dar-es salaam. MUCHS campus is located within the same premise as The Muhimbili National Hospital. The MUCHS campus is located about 2.0 kilometres from the city centre. The College has five schools; namely Medicine, Pharmacy, Dentistry, Nursing, and Public Health and Social Sciences. It also has Institutes of

Traditional Medicine and Allied Health Sciences. The Muhimbili University College of Health Sciences (MUCHS) was established in July 1991 when the then Faculty of Medicine was upgraded to a College. The Faculty started as a School of Medicine in 1963, within the premises of the then Princess Margaret Hospital. The School started with a modest intake of 10 students studying for a Diploma in Medicine and Surgery. In 1968 the School became a Faculty of Medicine of the University College of Dar es Salaam, a constituent College of the University of East Africa. In April 1969 the Faculty launched an intensive course in biomedical sciences for the diploma students. This was meant to convert their diplomas to the Bachelor of Medicine and Bachelor of Surgery (M.B.Ch. B.) which was being offered by the University of East Africa.

The Mission of the College, as defined by the Act establishing the University College is among others, to provide in Tanzania a place of learning, education, research in health sciences and through these provides a service of a quality required and expected of a university institution of the highest standard. Among the objectives of the college is to provide for all hospitals (including private and NGO) at least 100 Doctors, 25 Dentists, 25 Pharmacists, and 30 Nurse graduates per year.

Annual student enrollment for Doctor of Medicine degree was gradually increased and reached 50 in 1972. The annual intake stagnated around this number until 1997 when the multipurpose laboratory (MPL) building was commissioned and the University of

Dar es Salaam started implementing the students' expansion programme. Through this programme, the intake of undergraduate students has increased to 179 in the academic year 2001/2002, 195 in academic year 2002/2003 and 233 in 2003/2004. Up to 1996, almost all students were government sponsored. Since 1997 however, privately sponsored student intake into the MD course has increased to 57 during the academic year 2003/2004. The School plan is to have 20% of the annual undergraduate intake as privately sponsored candidates. Postgraduate training in the then faculty of Medicine started in 1973 with an initial intake of 18 students. It is intended to have at least 5 postgraduate students per programme within the next five years.

4.1.2 The Kilimanjaro Christian Medical College (K.C.M-College).

The Kilimanjaro Christian Medical College is a constituent College of the Tumaini University. The College is located within the premises of the Kilimanjaro Christian Medical Centre (KCMC), an institution of the Good Samaritan Foundation based in Moshi, under the auspices of The Evangelical Lutheran Church of Tanzania (ELCT).

Kilimanjaro Christian Medical College is located within the Kilimanjaro Christian Medical Centre, 6 Kilometres from Moshi Town, Kilimanjaro Region. Since its inception in 1971, KCMC has made big strides towards fulfilling its teaching function. The College now has 16 Schools of Allied Health Sciences grouped under the Institute

of Allied Health Sciences. It also has the faculties of Medicine, Nursing, and Rehabilitative Sciences. Postgraduate training is provided under the Institute of Postgraduate studies and Research. The faculty of medicine runs an undergraduate program for medical doctors (MD).

The college's teaching hospital (KCMC) is a referral hospital for over 11 million people in Northern Tanzania. The hospital is a huge complex with over 450 beds, with hundreds of outpatients and visitors coming to the centre everyday. Over 1000 staff are employed at the centre.

4.1.3 The Hubert Kairuki Memorial University (HKMU)

The Hubert Kairuki Memorial University (HKMU) is a Private Medical University, established in August 1997. In June 2000 it was fully accredited by the Higher Education Accreditation Council of the Ministry of Science, Technology and Higher Education of the United Republic of Tanzania. The university is owned and directed by a Non Governmental Organization known as the Mission Mikocheni Health and Education Network (MMHEN).

The Mission of the HKMU is to "to educate liberally and broadly qualifying men and women to undertake research and provide service to the public". The HKMU campus is located in the Mikocheni area, some 7 kilometres from the Dar-es-salaam city centre.

The University is also a World Health Organization (WHO) recognized medical school and appears on the International Medical Education Directory (IMED). It offers degrees, diplomas, and certificates in a variety of courses including the Doctor of Medicine (MD) degree.

4.2 Study design:

A cross sectional survey was conducted among fifth year undergraduate medical students in the medical faculties of MUCHS (University of Dar es salaam), HKMU (Dar-es-salaam) and KCMC (Tumaini University, Moshi campus). Structured questionnaire was administered to 130 fifth year medical students, representing 95.6% of all Tanzanian final year medical students in the three universities.

4.3 Study Population:

The study population was all fifth year medical students in the three universities.
The choice of fifth year students was made on the grounds that they were in the final year of study, by virtue of which they had already covered their community health rotation and hopefully they had some exposure to essential community health issues. After more than four years in medical school a medical student was also expected to have gathered adequate clinical knowledge and exposure to guide him/her through future prospects of employment and at least a rough idea on further professional development.

4.4 Sample size and selection

Since the proposal was to include all Tanzanian fifth year students totaling 136, there was no sampling procedure or selection criterion unless one declined to be recruited into the study.

4.5 Data collection procedure

The procedure for data collection employed interviews using structured questionnaire. The investigator trained four research assistants who worked with the investigator in administering the questionnaire to the respondents. At MUCHS, the investigator met the fifth year students during one of the Friday Community Health Seminars, where the lecturer allowed some few minutes for the investigator to address the students and ask for appointments for the interview. The investigator proposed the dates for the interview, then each student indicated on a sheet of paper the time and place he/she would be available for the interview, considering the convenience of both the investigator and the students. At HKMU and KCMC the students were assembled through the kind efforts of their class representatives, and a similar arrangement was made. The interviews were conducted on a one-to-one basis in various places including the students' hostels, cafeteria, bar, library, playground, tea rooms, etc. If a respondent was not found at the agreed meeting point, he/she was traced back to the college premises during the normal working days for re-appointment during the midmorning or afternoon recess.

4.6 Data collection instrument

The survey employed a structured questionnaire which had five main sections: (i) background and demographic data; (ii) rural experience; (iii) perception of rural health services; (iv) career development, internship and further training; and (v) employment prospects. The section on background and demographic information (questions 1 to 7) was designed to obtain the following information about the participants: age, sex, marital status, whether they had dependants or not, whether they grew up in a rural or urban area, and the main sponsor in their medical studies. A students' background was recorded as the district where he/she was raised up and spent most of his/her lifetime before joining the university. It was strictly self-reported, no use of records from any source. The city of Dar es Salaam and all other districts which were also headquarters of their respective regions were conventionally classified as "urban", the rest of the districts were termed "rural".

Questions addressing the students' rural experience (questions 8 to 11) were designed to assess their experience with Tanzanian rural areas and the types of exposure to rural health facilities they had experienced.

Under the section on perception of rural health facilities (questions 12 to 17), students were asked to rate the state of both private and public health facilities on a scale of four (from "very poor" to "very good"). They were also asked to rate on the same scale of four, the quality of health services offered in rural health facilities, with particular

emphasis on the five priority areas which form the national essential health package for Tanzania. It was in this section that respondents gave their opinion about the rural-urban differences in terms of relative distribution of medical doctors, and they mentioned the sources of information on which they based their perception of rural health facilities and services.

The fourth section (questions 18 to 25) addressed the students' career prospects, starting with an open ended question on what had motivated the student to apply for a medical course, whether the motivation had changed and reasons for the change, their choice of hospital for internship and reasons for the choice, preferred fields for postgraduate training and how soon they would like to enroll for postgraduate studies.

The fifth (and last) section (questions 26 to 36) was designed to assess students' willingness to apply for and/or accept a medical job in a rural area and factors that would affect their decision. This section also included questions addressing factors interfering with acceptance of a job in rural areas and expected benefits and disadvantages of working as a doctor in rural areas. To get an idea about the type of a rural area they were referring to, the students were asked in this section to mention one district in Tanzania they would be most willing to work in as doctors, and one that they would be most unwilling to accept to be posted to.

4.7 Data analysis

Each data entry field in the questionnaire was appropriately coded and the information was later entered into a computer using the Epi info version 6.04 software package (Dean et al, 1994). The findings were summarized in tables of results. The exposure variables age, gender, marital status, rural experience, sponsor, perception of rural health services, perceived advantages and disadvantages of a rural career and intended field of specialization were cross-tabulated against the outcome variable of willingness to accept a rural post. Using the chi-square test, associations were considered statistically significant if p value was less than 0.05.

4.8 Data dissemination

This work is submitted to the University of Dar es Salaam in partial fulfillment of the requirements for the Master of Public Health (MPH) degree. Other potential areas for dissemination are the Ministry of Health, regional and council health management teams, The Civil Service Department, other medical schools, development partners and other stakeholders who might take an interest in incorporating the findings and recommendations into their policies and plans.

4.9 Perceived constraints, biases and limitations

This study has only been able to determine the proportion of those students who, at the time of the interview, expressed willingness to practice in rural areas. This may not be the exact proportion of those doctors who will actually accept rural posts after their

internship. However these findings are still reflective of the general feelings of the final year students towards a rural career bearing in mind the exposure they already have in the profession.

Some students may have been worried about how their volunteered information would be used, fearing that it could affect their studies, future employment and sponsorship. To allay this fear, the purpose of the study was clearly explained to every respondent. In addition, they were not required to reveal their identity during the interview. They were further assured that the information they gave would be dealt with in the strictest confidential manner and solely for the purpose of this study.

4.10 Ethical issues

Ethical clearance for the study was sought from the Director of Postgraduate Studies, MUCHS. The investigator also sought permission from the Dean of the School of Medicine at MUCHS, The Provost of KCMC and the Vice Chancellor of HKMU, to conduct the study among their medical students.

Respondents received adequate information about the purpose, nature, and scope of the study. They were also assured of the confidential treatment of their responses, which were entirely used for the purpose of this study only. Participation in this study though very important, was entirely voluntary and at individual level. Respondents were not required to reveal their identity or registration details.

CHAPTER 5

5.0 RESULTS

5.1. Demographic characteristics and rural experience

A total of 130 fifth year medical students were interviewed in the three medical schools namely MUCHS, HKMU and KCMC. The total number of all Tanzanian fifth year medical students in the mentioned medical schools was 136, so this makes a response rate of 95.6%.

Table 1a: Distribution of fifth year medical students in Tanzanian universities by college

University	Students in 5th year	Tanzanians	Students interviewed	Percentage of sample
HKMU	22	14	11	8.5
KCMC	12	10	9	6.9
MUCHS	115	112	110	84.6
Total	149	136	130	100.0

A total of 130 final year medical students from three universities were interviewed. Students from MUCHS formed the largest group, comprising 84.6% of the respondents.

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Table 1b: **Demographic characteristics of the Tanzanian fifth year medical students (n=130)**

Characteristic	Categories/details	Statistic	Figure
Age (years)		Mean ± S.D	26.7±2.1
		Mode	26
		Median	27
Gender	Male	Count(Proportion)	84(64.6%)
	Female		46(35.4%)
Marital status	Single		121(93.1%)
	Cohabiting		3(2.3%)
	Married		4(3.1%)
	Separated		2(1.5%)
Background	Dar es salaam		45(34.6%)
	Other urban districts		46(35.4%)
	Rural districts		39(30.0%)
Having dependants	Students with dependants		41(31.5%)

Table 1b shows that male gender and urban background dominated the student population. Students of rural origin constituted 20.5% of the female students (9 out of 44), and 34.9% of male students (30 out of 86).

Table 2: Distribution of Tanzanian 5th year medical students according to their experience with Tanzanian rural areas (n=130)

Experience	Number of respondents	Percent
Community health rotation	109	83.8
Ever stayed in a rural area	94	72.3
Studied in a rural area	54	41.5
Parents stay in a rural area	38	29.2
Parents hail from a rural area	38	29.2
Hail from a rural area	36	27.7
Worked in a rural area	32	24.6

Many students had more than one type of experience, of which the commonest (83.8%) was the Community Health rotation conducted as part of their training during the fourth year of study.

Table 3: Distribution of Tanzanian 5th year students according to their experience with Tanzanian rural health services (n=130)

Experience	Number of respondents	Percent
Field work during medical training	109	83.8
Relatives are attended at rural facilities	57	43.8
Received treatment at rural facilities	39	30.0
Worked in a rural health facility	28	21.5
Parents work in a rural health facility	16	12.3
No experience	5	3.8

Field work during medical training was the commonest experience, shared among 83.8% of the respondents. Only 5 students (3.8%) reported to have had no experience with Tanzanian rural health services. The proportion of students who have received treatment from rural health facilities (30.0%) is the same as that of students who reported to have been raised in rural areas (table 1b). The proportion of students whose relatives received treatment from rural health facilities (43.8%) was higher than the proportion of rural background students(30%), giving an impression that some urban students still had their relatives receiving treatment from rural facilities.

5.2. Perception of the state of rural health facilities

The general state of rural health facilities was ranked by the students in a scale of four as summarized in table 4 below:

Table 4: The state of Tanzanian rural health facilities as perceived by 5th year medical students

Facilities	Students' perception				Total
	Very good	Good	Poor	Very poor	
Public facilities	0(0%)	24(18.5%)	83(63.8%)	23(17.7%)	130(100.0%)
Private facilities	1(0.8%)	65(50.0%)	57(43.8%)	7(5.4%)	130(100.0%)

The public facilities were generally rated as "poor" by the majority (63.8%) of students. Half of the students rated private facilities as "good". No student rated public facilities as "very good", while only one student rated private facilities as "very good".

5.3. Perception of the services offered in rural health facilities

When asked for their opinion regarding the relative distribution of medical doctors In Tanzania, majority of the respondents (95.4%) shared the opinion that there were more doctors in urban than rural areas. Only 6 respondents (4.6%) were unable to comment on this issue. Eighty respondents (61.5%) described the number of medical doctors in Tanzanian rural districts as "severely inadequate" while 42 respondents (32.3%) described it as "inadequate". Eight respondents (6.2%) could not comment.

Students' perceptions on specific services offered in rural areas are summarized in table 5 below. The mentioned services address the five priority areas of the Tanzanian Essential Health package.

Table 5: Tanzanian medical students' perception of services offered in rural health facilities

Service or program	Perception				Total
	Very good	Good	Poor	Very poor	
Reproductive and child health services	11(8.5%)	42(32.3%)	74(56.9%)	3(2.3%)	130(100%)
Control of communicable diseases	9(6.9%)	75(57.7%)	45(34.6%)	1(0.8%)	130(100%)
Treatment of common conditions of local importance	5(3.8%)	59(45.4%)	64(49.2%)	2(1.5%)	130(100%)
Community health promotion	12(9.2%)	82(63.1%)	35(26.9%)	1(0.8%)	130(100%)
Control of Non-Communicable diseases	19(14.6%)	89(68.5%)	21(16.2%)	1(0.8%)	130(100%)

Table 5 shows that quite a few students rated any of the mentioned services as "very good". Reproductive and child health services were rated by the majority (56.9%) as "poor" and so was Treatment of common conditions of local importance (49.2%). Services generally rated by the majority as "good" were Communicable diseases

control (57.7%), Community health promotion (63.1%), and Control of Non-Communicable diseases (68.5%).

5.4 Sources of information on which perception is based

Students were asked to mention the sources of information on which they based their responses about the number of medical doctors in Tanzania and the relative rural-urban distribution, the state of rural health facilities and the services offered in rural health facilities. The sources are summarized in table 6 below.

Table 6: Sources of information on which Tanzanian medical students base their perception of rural health services (n=130)

Source	Number of respondents	Percent
Field experience during training	108	84.4
Personal experience	96	75.0
Newspapers	59	46.1
Radio	60	46.9
Television	54	42.2
Lectures in medical school	44	34.4

Table 6 shows that respondents based their perception on multiple sources of information, of which field experience was the commonest, shared among 84.4% of them all. Lectures in medical school ranked last (34.4%) in providing a basis for students' perceptions of rural health services.

5.5 Students' preferred choices of hospitals for internship training

Each student was asked to mention one consultant hospital he/she would prefer most, as a first choice for internship training. They were also requested to enumerate the factors that they considered in making such a choice. Tables 7 and 8 below summarize their responses.

Table 7: Distribution of Tanzanian 5th year medical students according to their preferred choices of hospitals for internship training:

Preferred Hospital	Number of respondents	Percent
MNH	47	37.0
Bugando	45	35.4
Mbeya	24	18.9
KCMC	11	8.7
Total	127	100.0

Three respondents said they would not do internship because they intended to change career and go into private business. Muhimbili and Bugando Hospitals were chosen by the majority (37.0% and 35.4% respectively) while only 8.7% preferred to do their internship at KCMC.

Table 8: Factors considered by final year medical students in their choice of hospital for internship (n=127)

Reason/factor	Number of respondents	Percent
Better exposure to clinical practice	53	41.7
Opportunities for continuous education	27	21.3
Want a different environment	24	18.9
Close to my home	23	18.1
Dignity (including accommodation)	20	15.8
Good working environment	17	13.4
Easier to get alternative jobs	15	11.8
Different experience	13	10.2
Familiar with the hospital	13	10.2
Complete internship in time	13	10.2
Opportunities to make money	9	7.1
Other factors*	21	16.5

*These other factors were: better facilities, lighter workload, good climate, access to further (postgraduate) studies and opportunities to take part in research activities.

Table 8 shows that the students considered multiple factors in their choice of hospital for internship. Better exposure to clinical practice was an important factor to 41.7% of students. Some students (21.3%) wanted to do their internship in a hospital where they

would have both time for, and access to continuous medical education during the internship. Exposure to an environment and clinical experience different from the medical school was desirable to 18.9% and 10.2% of the students respectively. About 10% of the students wanted a hospital which they were familiar with, and where they would complete internship in time, while respect, good treatment from seniors and assurance of good accommodation facilities attracted 15.8% of the students.

5.6 Employment prospects and willingness to apply and /or accept a rural based medical job

Intention to continue with a medical career was expressed by 106 respondents (81.5%). Thirty seven respondents (28.5%) were assured of jobs or retained their posts in various institutions; hence they would not apply for a job elsewhere. The rest (93) would apply for jobs from various employers as summarized in table 9 below, of which 37 respondents (39.8%) would include a rural based medical post in their job search (**"willingness to apply"**). All respondents (those assured of employment and the potential job-seekers) were also asked whether they would accept a job as a doctor in a rural area if their prospective employer offered them one. Sixty three respondents (48.5%) would accept such an offer (**"willingness to accept"**).

Table 9: Institutions where Tanzanian medical students would apply for employment after graduation (n=93):

Institution	Number of potential applicants	%
Government	59	63.4
Parastatals	23	24.7
Private hospital	33	35.5
FBO*	20	21.5
NGO**	41	44.1
Self employment	3	3.2

*Faith Based Organization **Non-Governmental Organization

The government is expected to receive most of the job applications (63.4%), followed by NGO's (44.1%) and private hospitals (35.5%).

Table 10: Factors which medical students consider in their decision about a rural career (n=102)

Factor	Number of respondents	Percent
Economic opportunities	69	68.3
Higher education opportunities	57	56.4
Socio-cultural facilities	48	47.5
School availability for children	37	36.6
Proximity to home area	30	29.7
Spouse/partner needs	28	27.7

Table 10 shows that most students would consider economic opportunities (68.3%) and higher education opportunities (56.4%) in their decision about a rural career

5.7 Perceived advantages of working as doctors in a rural area according to Tanzanian final year medical students

When asked to enumerate the advantages they perceived could emanate from working in a rural area, respondents listed the advantages as summarized in table 11 below. Eight students declined to respond to this question, hence the denominator was 98 respondents.

Table 11: Advantages of working as a doctor in a rural area as perceived by Tanzanian final year medical students (n=98):

Perceived advantage	Number of respondents	%
More clinical experience	41	41.8
Low cost of living	37	37.8
Community appreciation and status	29	29.6
No benefit	27	27.6
More friendly environment	22	22.4
Low pressure/stress of life	21	21.4
Better community support	20	20.4
Better economic opportunities	4	4.1

Table 11 shows that most students (41.8%) perceived clinical experience as an advantage of a rural medical post. Twenty seven students (27.6%) did not see any

benefit of working in a rural area. A minority (4.1%) felt that there were better economic opportunities in rural areas.

5.8. Perceived disadvantages of working as a doctor in a rural area.

Table 12 below lists the perceived disadvantages that Tanzanian final year medical students attribute to working in a rural area. Four respondents declined to answer this question.

Table 12: Disadvantages of working as a doctor in a rural area as perceived by Tanzanian final year medical students (n=102):

Perceived disadvantage	Number of respondents	Percent
Poor economic opportunities	75	73.5
Poor standards of living	71	69.6
Lack of peer support and consultation	64	62.7
Isolation/remoteness	62	60.8
Less opportunities for PG* training	54	52.9
Heavy work load	48	47.1
Too much expectation from community	30	29.4

PG=Postgraduate

Table 12 shows that poor economic opportunities and poor standards of living were a concern to 73.5% and 69.6% of the respondents respectively, ranking top among the disadvantages of a rural medical career

Aspiration for postgraduate training:

Among the 130 students interviewed, 119 (91.5%) expressed intention to enroll for postgraduate studies within 1 to 5 years after graduation, with a mean waiting time of 2.1 years and a standard deviation of 0.9 years. The students' preferred fields for postgraduate studies are summarized in Table 13 below:

Table 13: Distribution of Tanzanian final year medical students according to their preferred fields for postgraduate studies:

Preferred field¤	Number of respondents	%
Clinical specialty (M.Med)*	84	70.6
Public Health ¶	28	23.5
Other fields ‡	5	4.2
Biomedical sciences**	2	1.7
Total	119	100.0

¤Details of preferred fields of study (number of students in brackets) are as follows:

*The preferred M.Med (Master of Medicine) specializations were: Internal Medicine (21), Obstetrics and gynaecology (17), Surgery (13), Paediatrics (7), Ear Nose and Throat (2), and Psychiatry (2). The other students (31) were undecided.

¶The preferred public health courses were Master of Public health (MPH) (8), Epidemiology (4) and tropical diseases control (4). Twelve students were undecided.

‡The other fields were Business Administration (3) and Hospital Administration (2)

**Microbiology

Table 13 shows that majority of the respondents (70.6%) preferred to pursue a clinical specialty in their postgraduate studies. All the 119 who expressed an intention to pursue postgraduate studies had tentatively decided on the main field of study (clinical areas, public health, biomedical sciences or other fields).

5.9 Factors associated with willingness to apply and/or accept a rural based medical job among Tanzanian final year medical students

In determining the factors which might influence willingness for a rural post, only those students who expressed determination to continue with a medical career after their graduation were interviewed for the details, hence the denominator used in these computations was 106. In the following tables (from table 14 to table 31), some variables are cross-tabulated against "willingness to apply for" and "willingness to accept" a rural post to find out associations between those variables and willingness for rural medical practice. The variables tested are socio-demographic characteristics, types of rural experience, types of experience with rural health services or facilities, perception of rural public and private health facilities, preferred hospital for internship, preferred field for postgraduate studies and perceived advantages and disadvantages of a rural career.

Table 14: Influence of some socio-demographic characteristics on willingness to apply for a rural based medical job among final year medical students in Tanzanian universities (n=106):

Characteristic	Statistic	Categories/details	Figure	p-value	Conclusion
Gender	Proportions willing	Male	39.4%	0.16	N.S
		Female	25.7%		
Age(years)	Means (S.D**)	Willing	27.4(2.4)	0.06	N.S
		Unwilling	26.2(2.0)		
Background	Proportions willing	Rural	54.5%	0.004*	S
		Urban	26.0%		
Sponsorship	Proportions willing	Government	35.4%	0.14	N.S
		NGO	100%		
		Private firm	66.7%		
		FBO	12.5%		
		Family	25.0%		
Dependants status	Proportions willing	With dependants	37.9%	0.69	N.S
		No dependants	33.8%		

Key: N.S=Not statistically significant. *S=statistically significant

SD=Standard Deviation

Table 14 shows that students from a rural background were twice more likely to express willingness to apply for a rural based medical job compared to their urban

counterparts. The influence of the other sociodemographic variables (gender, age, source of sponsorship and dependants' status) did not show statistically significant differences among the compared groups.

Table 15: Influence of some socio-demographic characteristics on the willingness to accept a rural based medical job among Tanzanian final year medical students (n=106)

Characteristic	Statistic	Categories/details	Figure	p-value	Conclusion
Gender	Proportions willing	Male Female	60.6% 57.1%	0.73	N.S
Age(years)	Mean (S.D)	Willing Unwilling	26.8(2.7) 26.5(1.1)	0.6	N.S
Background	Proportions willing	Rural Urban	72.7% 53.4%	0.61	N.S
Sponsorship	Proportions willing	Government Private firm FBO Family	58.5% 80.0% 28.6% 75.0%	0.18	N.S
Dependants status	Proportions willing	With dependants No dependants	65.5% 57.1%	0.43	N.S

N.S=Not statistically significant

Table 15 shows that acceptance of a rural based medical job did not have statistically significant association with any of the socio-demographic variables listed. However,

students from a rural background still showed a relatively increased likelihood of expressing willingness to accept a rural post compared to urban students.

Table 16: Influence of rural experience on willingness to apply for a rural based medical job among Tanzanian final year medical students: (n=106)

Type of Rural experience	Number of willing Respondents		p-value	Conclusion
	Among those Exposed to the experience	Among those Not exposed to the experience		
Hail from there	15(55.6%)	22(27.8%)	0.009	Significant
Worked there	13(50.0%)	24(30%)	0.06	N.S
Studied there	20(46.5%)	17(27.0%)	0.038	Significant
Parents stay	17(56.7%)	20(26.3%)	0.003	Significant
Parents origin	12(41.4%)	25(32.5%)	0.39	N.S
Community health rotation	26(30.6%)	11(52.4%)	0.06	N.S

N.S=Not statistically significant

Table 16 shows that students who hail from rural areas, and those whose parents stay in a rural area are twice more likely to express willingness to apply for a rural based medical job compared to those hailing from elsewhere, and the observed difference is

statistically significant in both cases. The influences of the other experiences were not statistically significant.

Table 17: Influence of rural experience on willingness to accept a rural based medical job among Tanzanian fifth year medical students (n=106)

Rural experience	Number of willing Respondents		p-value	Conclusion
	Among those Exposed to the experience	Among those Not exposed to the experience		
Hail from there	21(77.8%)	42(53.2%)	0.02	Significant
Worked there	20(76.9%)	43(53.8%)	0.036	Significant
Studied there	31(72.1%)	32(50.8%)	0.028	Significant
Parents stay	26(86.7%)	37(48.7%)	0.0003	Significant
Parents origin	21(72.4%)	42(54.5%)	0.094	N.S
Community health rotation	47(55.3%)	16(76.2%)	0.08	N.S

N.S=Not statistically significant

Willingness to accept a rural based medical job is associated with a rural origin, previous work in a rural area, studying in a rural area during primary or secondary school, and having one's parents staying in a rural area. The influence of community health rotation did not show a statistically significant difference.

Table 18: Influence of experience with rural health services on willingness to apply for a rural based medical job among Tanzanian 5th year medical students (n=106).

Experience with rural health services	Number of willing Respondents		p-value	Conclusion
	Among those Exposed to the experience	Among those Not exposed to the experience		
Received treatment at a rural health facility	14(45.2%)	23(30.7%)	0.15	N.S
Relatives treated at rural health facilities	22(46.8%)	15(25.4%)	0.02	Significant
Worked in a rural health facility	9(34.6%)	28(35.0%)	0.97	N.S
Parents working in a rural health facility	10(71.4%)	27(29.3%)	0.002	Significant
Field work in a rural area as part of medical training	27(31.0%)	10(52.6%)	0.07	N.S

N.S=Not statistically significant.

Willingness to apply for a rural post was significantly associated with having one's relatives treated at a rural health facility and having one's parents working in a rural health facility.

Table 19: Influence of experience with rural health facilities on willingness to accept a rural based medical job among Tanzanian 5th year medical students (n=106)

Experience with rural health services	Respondents willing among those		p-value	Conclusion
	Exposed	Not exposed		
Received treatment at a rural health facility	20(64.5%)	43(57.3%)	0.49	N.S
Relatives treated at rural health facilities	34(72.3%)	29(49.2%)	0.015	Significant
Worked in a rural health facility	19(73.1%)	44(55.0%)	0.10	N.S
Parents working in a rural health facility	13(92.9%)	50(54.3%)	0.006	Significant
Field work in a rural area as part of medical training	51(58.6%)	12(63.2%)	0.71	N.S

N.S=Not statistically significant.

Willingness to accept a rural based job was significantly associated with having one's relatives treated at a rural health facility and having parents working at a rural health facility. Students whose relatives were treated at rural health facilities and those whose parents worked in rural health facilities were more likely to express willingness to accept rural posts compared to those who were not exposed to these experiences.

Receiving treatment at rural health facilities and previous work experience in a rural health facility were also associated with an increased likelihood of expressing willingness to accept a rural post, although the difference was not statistically significant. Exposure to a rural field work did not seem to significantly alter the proportions of students willing to accept a rural post.

Table 20: Influence of perception of rural public health facilities on willingness to apply for a rural based medical job among final year medical students in Tanzania

Perception	Number of respondents		
	Willing	Not willing	Total
Poor	5(27.8%)	13(72.2%)	18(17.0%)
Good	30(42.3%)	41(57.7%)	71(67.0%)
Very good	2(11.8%)	15(88.2%)	17(16.0%)
Total	37(34.9%)	69(65.1%)	106(100.0%)

χ^2=6.10, df=2, p value =0.047 (Significant)

A statistically significant association was demonstrated between the perception of rural public health facilities and willingness to apply for a rural based job. Students with a poor perception of rural public health facilities were less likely to express willingness to apply for such posts. Paradoxically, only 11.8% of those students perceiving rural public health facilities as "very good" expressed willingness to apply for rural posts.

However the overall effect of perception on willingness is maintained when those responding "very good" and "good" are combined, showing that 36.7% (32 out of 88) students who have a positive perception were willing to apply for rural posts. Hence a positive perception of rural public health facilities increased the likelihood to express willingness to apply for rural posts.

Table 21: Influence of perception of rural public health facilities on willingness to accept a rural based medical job among final year medical students in Tanzania

Perception	Number of respondents		
	Willing	Not willing	Total
Poor	12(66.7%)	6(33.3%)	18(17.0%)
Good	47(66.2%)	24(33.8%)	71(67.0%)
Very good	4(23.5%)	13(76.5%)	17(16.0%)
Total	63(59.4%)	43(40.6%)	106(100.0%)

χ^2=10.83, df=2, p value =0.0044 (Significant).

Regarding acceptance of an "imposed" rural post, students with poor perception of rural public health services had almost the same likelihood of expressing willingness to accept a rural post as those with a good perception (66.7% and 66.2% respectively), while majority (76.5%) of those who perceived rural public health facilities as "very good" were unwilling to accept such posts. However, when a combination of "good" and "very good" perception was compared against the "poor" perception, it showed that

57.9% (51 out of 88 respondents) of the combination were willing to accept rural posts compared to 66.7% of those with a poor perception. This suggests that respondents would still accept the rural posts despite their negative perception of such posts.

Table 22: Influence of perception of rural private health facilities on willingness to apply for a rural based medical job among Tanzanian final year medical students

Perception	Number of respondents		
	Willing	Not willing	Total
Very poor	1(100%)	0(0%)	1(0.9%)
Poor	22(41.5%)	31(58.5%)	53(50.0%)
Good	13(27.7%)	34(72.3%)	47(44.3%)
Very good	1(20.0%)	4(80.0%)	5(4.7%)
Total	37(34.9%)	69(65.1%)	106(100.0%)

χ^2=4.46, df=3 p value =0.21(Not Significant)

Perception of private health facilities did not influence willingness to apply for rural posts.

Table 23: Influence of perception of rural private health facilities on willingness to accept a rural based medical job among Tanzanian final year medical students

Perception	Number of respondents		
	Willing	Not willing	Total
Very poor	1(100%)	0(0%)	1(0.9%)
Poor	36(67.9%)	17(31.1%)	53(50.0%)
Good	23(48.9%)	24(51.1%)	47(44.3%)
Very good	3(60.0%)	2(40.0%)	5(4.7%)
Total	63(59.4%)	43(40.6%)	106(100.0%)

χ^2=4.42, df=3, p value =0.22(Not Significant)

The perception of private health facilities does not seem to have an influence on willingness to apply and/or accept a rural post (this may probably be associated with the fact that most of the job applications will be directed to the government)

Table 24: Association between preferred hospital for internship and willingness to apply for a rural based medical job among Tanzanian final year medical students

Preferred hospital	Number of respondents		
	Willing	Not willing	Total
MNH	4(11.4%)	31(88.6%)	35(33.3%)
KCMC	2(20.0%)	8(80.0%)	10(9.5%)
Bugando	18(47.4%)	20(52.6%)	38(36.2%)
Mbeya	13(59.1%)	9(40.9%)	22(21.0%)
Total	37(35.2%)	68(64.8%)	105(100.0%)

χ^2=17.65, df=3, p value=0.0005 (Significant)

More students aspiring to conduct their internship in Bugando and Mbeya Consultant Hospitals also expressed willingness to apply for rural based medical jobs compared to those who preferred KCMC and Muhimbili Hospitals.

Table 25: Association between preferred hospital for internship and willingness to accept a rural based medical job among Tanzanian final year medical students

Preferred hospital	Number of respondents		
	Willing	Not willing	Total
MNH	12(34.3%)	23(65.7%)	35(33.3%)
KCMC	5(50.0%)	5(50.0%)	10(9.5%)
Bugando	30(78.9%)	8(21.1%)	38(36.2%)
Mbeya	15(68.2%)	7(31.8%)	22(21.0%)
Total	62(59.0%)	43(41.0%)	105(100.0%)

χ^2=16.20, df=3, p value=0.0010 (Significant)

Mbeya and Bugando Consultant Hospitals have more internship aspirants who are willing to accept rural based medical jobs compared to KCMC and Muhimbili Hospitals.

Table 26: Association between preferred fields of postgraduate studies and willingness to apply for a rural based medical job among final year Tanzanian medical students

Field of study	Number of students		
	Willing	Not willing	Total
Medical specialty (M.Med)	33(40.2%)	49(59.8%)	82(78.8%)
Public Health	2(10.5%)	17(89.5%)	19(18.3%)
Other fields	0(0.0%)	3(100%)	3(2.9%)
Total	35(33.7%)	69(66.3%)	104(100.0%)

χ^2=7.67, df=2, p value=0.02 (Significant)

Students intending to specialize in the clinical areas were more likely to express willingness to apply for a rural post compared to those interested in other fields, including public health.

Table 27: Association between preferred fields of postgraduate studies and willingness to accept a rural based medical job among final year Tanzanian medical students

Field of study	Number of students		
	Willing	Not willing	Total
Medical specialty (M.Med)	48(58.5%)	34(41.5%)	82(78.8%)
Public Health	11(57.9%)	8(42.1%)	19(18.3%)
Other fields	2(66.7%)	1(33.3%)	3(2.9%)
Total	35(33.7%)	69(66.3%)	104(100.0%)

χ^2=0.08, df=2, p value=0.95 (Not Significant)

Regarding acceptance of a rural post as a directive from the employer, there was no difference in expressed willingness as far as the students' intended fields of specialization were concerned.

Table 28: Influence of perceived benefits of a rural career on willingness to apply for a rural based medical job among final year Tanzanian medical students (n=106):

Benefit	Number of willing respondents		χ^2	p value	Conclusion
	Among those Perceiving the benefit	Among those Not perceiving the benefit			
Community appreciation of job and status	11(37.9%)	24(34.8%)	0.09	0.75	N.S
More friendly environment	13(59.1%)	22(28.9%)	6.75	0.009	Significant
Better community support	10(50.0%)	25(32.1%)	2.3	0.13	N.S
More clinical experience	24(58.5%)	11(19.3%)	15.99	0.00006	Significant
Low pressure/stress of life compared to urban areas	7(33.3%)	28(36.4%)	0.07	0.79	N.S
Low cost of living	17(45.9%)	18(29.5%)	2.71	0.09	N.S
Better economic opportunities	2(50.0%)	33(35.1%)	0.37	0.54	N.S

N.S=Not statistically significant.

Students perceiving a rural post as advantageous in subjecting one to more friendly environment and exposure to more clinical experience are more likely to express willingness to apply for a rural post compared to those who perceive otherwise. The other perceived advantages did not show a statistically significant association.

Table 29: Influence of perceived benefits of a rural career on willingness to accept a rural based medical job among final year Tanzanian medical students (n=106):

Benefit	Number of willing respondents		χ^2	p value	Conclusion
	Among those Perceiving the benefit	Among those Not perceiving the benefit			
Community appreciation of job and status	18(62.1%)	41(59.4%)	0.06	0.8	N.S
More friendly environment	14(63.6%)	45(59.2%)	0.14	0.7	N.S
Better community support	17(85.0%)	42(53.8%)	6.45	0.01	Significant
More clinical experience	31(75.6%)	28(49.1%)	6.98	0.008	Significant
Low pressure/stress of life compared to urban areas	12(57.1%)	47(61.0%)	0.10	0.74	N.S
Low cost of living	27(73.0%)	32(52.5%)	4.05	0.044	Significant
Better economic opportunities	4(100%)	55(58.5%)	2.76	0.09	N.S

N.S= Not statistically significant.

Perceived advantages of a rural post influenced the students' willingness to accept such a post. More of those students who thought that rural posts could offer them more clinical experience, better community support and low cost of living were more likely to express willingness to accept such posts when compared to those students who did not perceive these advantages.

Table 30: Influence of perceived disadvantages of a rural career on willingness to apply for a rural based medical job among final year Tanzanian medical students (n=106):

Disadvantage	Number of willing respondents		χ^2	p value	Conclusion
	Among those Perceiving the disadvantage	Among those Not perceiving the disadvantage			
Isolation/remoteness from family and peers	20(32.3%)	15(37.5%)	0.30	0.6	Not significant
Heavy work load	21(43.8%)	14(25.9%)	3.58	0.06	Not significant
Less opportunities to undertake postgraduate training	17(31.5%)	18(37.5%)	0.41	0.5	Not significant
Poor economic opportunities	25(33.3%)	10(37.0%	0.12	0.7	Not significant
Lack of peer support and consultation with other doctors	25(39.1%)	10(26.3%)	1.72	0.2	Not significant
Too much expectation from the community	9(30.0%)	26(36.1%)	0.35	0.6	Not significant
Poor standards of living	21(29.6%)	14(45.2%)	2.33	0.1	Not significant

None of the perceived disadvantages was significantly associated with willingness to apply for a rural post.

Table 31: Influence of perceived disadvantages of a rural career on willingness to accept a rural based medical job among final year Tanzanian medical students (n=106):

Disadvantage	Number of willing respondents		χ^2	p value	Conclusion
	Among those Perceiving the disadvantage	Among those Not perceiving the disadvantage			
Isolation/remoteness from family and peers	40(64.5%)	21(52.5%)	1.46	0.2	Not significant
Heavy work load	32(66.7%)	29(53.7%)	1.78	0.2	Not significant
Less opportunities to undertake postgraduate training	30(55.6%)	31(64.6%)	0.86	0.4	Not significant
Poor economic opportunities	45(60.0%)	16(59.3%)	0.00	0.9	Not significant
Lack of peer support and consultation with other doctors	40(62.5%)	21(55.3%)	0.52	0.5	Not significant
Too much expectation from the community	17(56.7%)	44(61.1%)	0.17	0.7	Not significant
Poor standards of living	38(53.5%)	23(74.2%)	3.84	0.05	Not significant

None of the perceived disadvantages had a statistically significant association with willingness to accept a rural post.

CHAPTER 6

6.0 DISCUSSION

The present study has identified some factors that can predict willingness for rural medical practice among Tanzanian final year medical students as an attempt to modify the currently prevailing maldistribution of the medical workforce in Tanzania. The study has unveiled some characteristic features of the medical students' population, potentially capable of influencing their deployment to rural areas of the country when they graduate.

6.1. Urban-bias and gender imbalance

The composition of final year medical students in Tanzania seems to follow almost the same trend of maldistribution. Only 30% of the final year medical students in the three Tanzanian Universities were from a rural background. Rural girls were more underrepresented where only 20% of the girls came from a rural area. The city of Dar es salaam alone contributed 34.6% of all fifth year medical students in the three universities. Gender imbalance is also imminent, with girls forming 35.4% of the final year students' population (Tables 1a and 1b). Although this bias is not a deliberate action by the universities to discriminate girls and rural students, it is a reflection of the extent of failure of the human resources development policy in addressing equity and removing imbalances and biases. Similar findings of urban bias in selecting candidates for training have been noted and identified as a failure on the part of human resources development policies in many other countries (Standing, 2004; Wibulpolprasert, 1999).

Poor representation of girls in medical school found in this study is a feature that has also been noted in previous other researches on human resources for health. There has been much less emphasis on gender in relation to the *production* of health care (Bloom, 1991; Standing, 1997). Formal health systems tend to be gender differentiated in terms of their divisions of labour and associated hierarchies, with women frequently concentrated in specific segments of the health care labour force. Women are less likely than men to be in senior professional, managerial and policy making roles (Bloom, 1991; Butter et al, 1987; Holden, 1991). A study of human resources in Zimbabwe notes that in health, women outnumber men as employees, holding 57.4% of the total employment, but they are concentrated at the lower end of the hierarchy and salary grades (UNIDO, 1989).

The poor representation of women in Tanzanian medical schools needs to be studied further. Such a poor representation may be related also to the number of female students who manage to complete high school, and pass in the science subjects. If fewer girls are in high school compared to boys, and if the proportion of girls taking science subjects is small, or if girls perform poorly in science, the poor representation in medical school can be explained. The other source of the disparity is the number of girls interested in pursuing medical studies, which may be affected by the gender-based division of labour, a socially constructed phenomenon found in many societies. Promoting higher education opportunities for girls must start at the household level by giving both girls and boys equal access to education at all levels with support from the society. In many countries, women still tend to concentrate in the lower-status health

occupations and to be a minority among more highly trained professionals and managers (Zurn et al, 2004). In Bangladesh, the distribution by gender of the health workforce shows that the total proportion of women accounts for little more than one-fifth in health services (Dussault, 1999). The distribution of women by occupational category is biased in favour of nurses. Women are very poorly represented in other categories, such as dentists, medical assistants, pharmacists, managers/trainers and doctors (Zurn et al, 2004). The observed trend of poor representation of women in medical school in this study is likely to deny Tanzanian women opportunities to both serve as doctors and receive services from female doctors. The findings also show that affirmative action is still needed to spearhead empowerment of women in the area of medical training.

Rural students face many barriers to pursuing medical education. From the early primary school days, rural people in Tanzania attend schools of mainly poor quality, grossly deficient in both quantity and quality of the infrastructure, supplies and teachers. Although urban students also face almost the same problems in public schools, they have an advantage in that they can attend tuition classes, a common source of extra income for teachers and additional instructions to students in most urban areas. Urban students also have access to libraries, information and communication facilities. Such opportunities are rarely available in rural areas. Apart from geographical isolation, rural communities lack facilities and resources. Given these circumstances, it is not surprising therefore, to find more urban students making it to secondary schools

and subsequently to universities compared to rural students, leading to the observed poor representation of rural students in universities including medical schools. Similar findings of poor representation of rural students have been recorded by other researchers with almost the same possible explanations (Western et al, 1998; Kamien, 1987). Students from rural schools are also less likely to perform very well in their final high school examinations, hence they are often unable to compete with their urban counterparts on the basis of meeting the entry requirements set by most universities (Kamien and Buttfiels, 1990). To increase the number of students from a rural background attending undergraduate medical programs, one author recommended provision of support to school educational programs in rural communities and a selection of students into medical schools based on an appropriate mix of academic results and rural interests (Rabinowitz, 1988).

The poor representation of rural background medical students in Tanzanian Universities calls for an urgent remedial action. Factors leading to this poor representation need to be thoroughly studied and acted upon. Urban bias in the selection of candidates for medical undergraduate training has a negative impact on the distribution of medical doctors in the country. The present study found that a medical student's rural background was one of the strongest predictors of willingness for rural medical practice. Continuing to recruit mainly from urban areas will therefore amount to exacerbation of the current maldistribution of doctors in Tanzania.

6.2 Medical students' rural experience

Most Tanzanian medical students (84%) draw their rural experience mainly from the community health rotation (Table 2) which is commonly held in rural locations especially for students in MUCHS. It was noted in this study that a good proportion (72%) had also stayed in a rural area for at least a month, although for most respondents this experience was also linked to the community health rotation. Table 3 also shows again that 84% of medical students cite the community health rotation as their source of experience with rural health services. Community health rotation in a rural setting during medical training appears to be an important source of experience with rural life and rural health services. The importance of this component of medical training is further stressed by the fact that 70% of the students were from an urban background. Several other studies have identified rural medical exposure as an important component in the undergraduate training of medical doctors (Dunbabin and Levitt, 2003)

6.3. Perception of the state of rural health facilities and services

Perception of the state of rural health facilities by medical students seems to vary with the type of facility (table 4). While most students rated public facilities as "poor", half of the students rated private facilities as "good". Given their experience during community health rotation, the observed perceptions are a reflection of the true state of public and private health facilities in the country. Most private health facilities in Tanzania are located in urban areas, and these are mostly private-for-profit. The private health facilities found in rural areas are almost exclusively run by voluntary agencies

and are entirely not-for-profit. Residents of both rural and urban areas have often lamented about the poor state of public health facilities in the country through the mass media and civic gatherings. The fact that medical students based their perceptions on multiple sources of information and not merely on adverse media reports gives an impression that their perceptions are genuine.

Perception of services offered in rural health facilities according to medical students, shows that the preventive and promotive health services were perceived as performing better in comparison to curative services (Table 5). This may serve as another reflection of the impact of the shortage of trained medical personnel in rural areas. The perception may have also been influenced by the type of rural experience the respondents had. Since most of the students based their perception on field experience, it is thought that the content of the said field work may have given them more capacity to assess the preventive health services, so they were probably more informed about rural preventive health services than curative services.

6.4 Sources of information on which perception of rural health services is based

Field experience during medical training was the commonest source of information on which most students (84.4%) based their perception of rural health services (Table 6). Personal experience, which is also reflected in the field experience for 75% of the students, was an important source of information for three quarters of the students. Media reports and medical school lectures had a lesser contribution. In a study among

medical students in an Australian university, there were differences in the resources used by rural and urban students. A relatively higher percentage of urban students than rural students used state newspapers (70% vs 31%, *P*= 0.003), television (68% vs 44%, *P*= 0.07), radio (41% vs 6%, *P*= 0.008) and local newspapers (33% vs 25%, *P*= 0.8) as the major source of information on which they based their perception. In contrast, 81% of rural students chose personal experience as their source of information compared with 20% of urban students (Azer et al, 2001). In the present study, the influence of field experience is overwhelming, while that of media reports is not as high, and hence a comparison on the basis of background is unwarranted.

The present study has further underscored the importance of field experience, particularly that which exposes medical students to rural areas so that they can orient themselves to the realities of the health situation in the country. Community health rotation in rural areas is draws its enhanced usefulness from the fact that most (70%) of the students are from an urban background, it is for the majority the only reliable source of experience with rural health services. When respondents cited personal experience in this study, they were referring to issues they had personally noticed and experienced in the rural areas as opposed to what they heard from colleagues who lived in those areas. There is therefore a need to revise the content of the community health rotation in medical schools so that it addresses the requirements of urban-oriented students. It may be important to start with introductory lessons on rural sociology in an organized orientation phase before the students leave for their field work. If the rural orientation is

not properly planned, the students may develop a negative attitude towards the rural locations they visit, and end up losing interest in rural practice. There is documented research evidence that a negative rural attachment is worse than no attachment at all (Somers, 2000).

6.4 Preferred choice of hospital for internship

Among the four consultant hospitals in Tanzania approved to provide internship training to doctors after their first degree, most medical students expressed preference for Muhimbili and Bugando hospitals (table 7). The students considered multiple factors before arriving at their choice (table 8). Although well over a third of the students would consider better exposure to clinical practice as an important factor, several other factors, mainly opportunities for continuous medical education, need for a change of environment, need to work within the proximity of their homes and several others were concurrently taken into account in arriving at a decision.

Most students would prefer to do their internship in Muhimbili because of what they described as opportunities to take part in continuing medical education, research, and keep studying as they proceeded with internship. Muhimbili is also near to the homes of 34.5% of the students (a hospital close to one's home was desirable), and in Dar es Salaam one could easily get alternative jobs and make money. Students from KCMC expressed concern over the small number of interns in the hospital, which ultimately leads to a too heavy work load and too little time left for them to engage in other

activities. Muhimbili was perceived as an ideal place where one could have plenty of time to engage in other activities unrelated to internship.

Bugando and Mbeya Hospitals were mostly chosen with the perception that they were the best hospitals for an intern to acquire the much-needed hands-on exposure to clinical practice and experience. This was further proven by the established association between willingness for rural practice and preference for Bugando and Mbeya hospitals. Higher proportions of students who expressed preference for Mbeya and Bugando hospitals for their internship were also willing to practice in rural areas (tables 24 and 25).

6.5 Medical students' prospects for employment after graduation

While exploring the medical students' employment prospects, 81.5% expressed an intention to continue with a medical career after graduation. If it works out as they expressed, this will amount to a brain "wastage" rate of 18.5%. Although the actual number of expected drop-outs from the medical field after graduation remains unknown, the mere expression of intention to drop out is an indication of dissatisfaction with the career. In their job search (including the non-medical jobs), the students would apply for jobs from mainly the government (63.4%) private hospitals (35.5%) and other employers (table 9). It could not be established whether this interest in government employment is a result of the confidence and trust the students have on the government as an employer, or whether it was due to lack of better opportunities elsewhere.

In a tracer study of 500 university graduates who had completed their degrees between 1980 and 1999 in Tanzania, it was found that 95% of medical graduates were working in the health sector while the corresponding figures for engineering, commerce, agriculture and education graduates were much less (Mukyanuzi, 2003). The drop-out (or "wastage") rate among the medical graduates in the foregoing case was only five percent, a low figure which the author attributed not to the group's satisfaction in their jobs, but to lower potential for labour mobility since the skills of medical graduates did not make them marketable across sectors. In the present study 18.5% of the students had chosen not to practice medicine after graduation, citing a variety of reasons including the poor remuneration they believed doctors were paid and the poor working environment among many others. The study was however unable to establish whether the training offered to doctors in recent years gives them more capacity for inter-sectoral mobility than was the case a decade ago or earlier.

6.6 Willingness to apply for, or accept a rural-based medical job

The proportion of medical students willing to apply for a rural based medical post was 34.5% (37 students) based on the 106 students who expressed an intention to continue with a rural career. This figure was equivalent to 39.8% of the 93 students who were unsure of employment at the time of the interview, and 28.5% of all the 130 students interviewed. Willingness to accept a rural placement as a directive from the employer was expressed by 63 students, making 59.4% of the 106 students intending to practice as doctors and 48.5% of all the 130 students. These figures are another reflection of

potential persistence of the existing rural-urban imbalance in the distribution of human resources for health. The urban areas in Tanzania contain barely 20-33% of the total population, but are served by two thirds of all doctors in the country (Khan et al, 2003).

The present study gives an impression that announcement of a vacancy by a rural employer (a district council for example) will attract applications from a mere 34.5% of medical job seekers, whereas if a central employer (like the government) assigned rural posts to new employees, 59.4% of such employees would accept such posts. The higher acceptance rate for such "imposed posts" calls for a further evaluation of reasons behind this phenomenon. Accepting a post is one issue but retaining it and performing according to employers' and clients' expectations is a completely different issue, which needs to be closely examined especially in the context of employees' readiness to accept posts which they would not initially apply for.

6.7 Factors medical students would consider in deciding about a rural career

In their decision about a rural career, medical students would mainly consider economic opportunities (68.3%) followed by higher educational opportunities and social/cultural facilities (table 11). The low weight respondents accorded to school availability for children could be attributed to the relatively young age of the group (mean 26.7 years). In many other countries, health workers cite the availability of professional camaraderie, greater likelihood of promotions, availability of schools, good housing,

leisure activities and other social infrastructure as their main reasons for preferring to work in urban areas (Huddart et al, 2003).

6.8. Perceived advantages of a rural post

More clinical experience and low cost of living are among the top two perceived advantages of working in a rural area according to Tanzanian medical students (table 11). About 28% of the respondents perceived that working in a rural area conferred no benefit at all. Only 4.1% felt that there could be some economic advantages in a rural area. In a survey involving 100 medical students in the University of Melbourne, students included in the study agreed that the expected benefits of working as a doctor in a rural area were in this order: better community appreciation of doctors (71% of rural students vs 76% of urban students, $P = 0.657$), more friendly environment (64% vs 74%, $P = 0.435$), better community support (57% vs 60%, $P = 0.827$), higher salary (21% vs 45%, $P = 0.100$) and less pressure and stress (21% vs 26%, $P = 0.737$). The response to these benefits was not statistically different when compared on the basis of background, citizenship or gender (Azer et al, 2001). In comparison to Tanzanian students in the present study, more Australian students perceived a benefit of a rural career, and the order of importance of perceived benefits was different. While the commonest perceived benefit among Tanzanian students was more clinical experience (table11), for the Australian students the top most benefit was better community appreciation. It is important to note also that income was a motivating factor towards a rural career in Australia where salaries for rural practitioners were higher.

Tanzanian students' interest in rural practice has been attributed in this study to the opportunities for more clinical experience that exist in rural areas. A doctor in a rural area in Tanzania often finds himself confronted with lots of challenges in the clinical disciplines in a place where he has virtually nobody to consult. The doctor has to function as several specialists rolled into one, an opportunity that is almost not available to doctors in urban areas. This opportunity to work freely between specialties enables the doctor to identify with certainty the specialty for which he/she would like to pursue postgraduate training. What Tanzanian students perceive as more clinical experience in rural areas is comparable to what McDonald reports about Australian rural general practitioners, referring to it as "independence and autonomy" (McDonald et al, 2002).

6.9 Perceived disadvantages of a rural post

Perceived disadvantages of a rural post among medical students provide another clue on the importance of economic opportunities in deciding about a rural career (Table 12). The top most disadvantages are poor economic opportunities, poor standards of living, lack of peer support and consultation with other doctors, isolation and remoteness, and less opportunities for postgraduate training, with each of these disadvantages perceived by more than half of the respondents. Heavy workload and too much expectation from the community were also of concern, but to a much lesser extent. However, when the perceived disadvantages of a rural post were cross-tabulated against willingness for rural medical practice (tables 30 and 31), none of the perceived

disadvantages seemed to significantly influence the willingness. This suggests that the students with a rural intent would be willing to pursue their intent despite the perceived disadvantages. Stated in other words, a students' expressed intention to work in the rural area is unlikely to be hindered by the perceived disadvantages of a rural post. A possible explanation to this is that the perceived advantages of a rural post far outweigh the perceived disadvantages.

One advantage that positively influenced the willingness to both apply and accept a rural post was clinical experience. It appears that clinical experience was so much valued by some students that they were willing to tolerate the disadvantages of a rural career to get it. These students may have viewed the rural post as a necessary extension of their training, an opportunity to earn an extra qualification that they can use elsewhere for gainful purposes. It could not be established in this study as to where students would like to utilize the clinical experience gained from a rural post, but it is obvious that the extra value that the clinical experience adds to their qualification is likely to give them more capacity and confidence to seek employment in other areas with more perceived benefits. In such a situation, retention of the doctor in the rural post is at stake and the maldistribution will persist.

Heavy workload and too much expectation from the community were among the perceived disadvantages of a rural post expressed by 47% and 29% of the respondents respectively (Table 12). Some students felt that a rural post was too challenging and

that what was expected of them as doctors in rural areas was too much for them, and far more demanding than their capacities and skills could allow. Students with this perception were relatively less likely to express willingness for rural posts (tables 30 and 31), although the differences were not statistically significant. Despite this lack of statistical significance, the genuineness of the concern raised by the students should not be overlooked. Subjecting someone to the challenges of medical practice for which he/she feels inadequately prepared leaves a lot to be desired from the ethical point of view. It further violates distributive justice in that some parts of the country (mainly urban) are served by experienced doctors while other parts (mainly rural areas) are served by inexperienced doctors with nobody to guide them through. It sounds quite unfair and unjust to turn the rural areas into a training ground for doctors, operating virtually in the absence of trainers. It is therefore necessary to give the medical students and interns an opportunity to acquire the necessary knowledge, skills, competence and orientation that will adequately prepare them to tackle the challenges of rural medical practice.

Research from other countries shows that, in descending order, the most significant barriers to recruitment and retention of doctors in rural areas were lack of access to quality secondary schooling, heavy workload, spouse or partner's unhappiness, lack of community resources, professional isolation, low remuneration, lack of locum relief, difficulty accessing continuing medical education (CME), conflict with the medical community, personal isolation, and lack of privacy and anonymity (McDonald et al,

2002). The present study has confirmed that the same barriers operate in the Tanzanian situation although the order of their significance differs, with poor remuneration and poor standards of rural life at the top of them all.

6.10 Intended fields of postgraduate specialization

Nearly 92% of the Tanzanian medical students expressed intention to enroll for postgraduate studies, with over 70% of them interested in a clinical specialty (table 13). This casts a beam of hope to the future of health services in the country which is in a desperate need for experts in the clinical field. Intention for a clinical specialization is a positive predictor of willingness for rural practice (table 26)

6.11.0 Predictors of willingness for rural medical practice:

6.11.1 Demographic variables

Several demographic factors appeared to predict willingness for rural practice (tables 14 and 15), but only a rural background showed statistical significance, where rural origin students were twice more likely to express intention to apply for a rural based medical job compared to their urban counterparts (p=0.004). Other demographic factors demonstrated an increased likelihood to apply for a rural job but did not show statistical significance, and these were being male, being older, receiving a sponsorship from an NGO, and having dependants. Some respondents admitted during the interview that the NGO's that sponsored them put as a condition for their sponsorship a clause requiring the recipient of the sponsorship to accept a rural post. It could not be established as to

whether their expressed readiness for a rural post was voluntary or just a conditional response in fulfillment of the contract they had signed.

The findings of this study are consistent with enormous research evidence worldwide associating medical students' rural background and willingness to practice in rural areas (Talley, 1990; Rabinowitz et al, 1999; Azer et al, 2001; Brooks et al, 2002; McDonald et al, 2002).

The rural background referred to in the present study was actually based on where one was raised up before joining the university, not necessarily where he/she was born. This was not necessarily the same as "residence" or "place of birth" as might have been recorded in the admission offices of the three universities from which the study participants were drawn. Using a similar definition of rural background in a study which analysed more than 90 variables for 1609 Jefferson graduates over 20 classes, 'growing up in a rural area' was the most important independent predictor of practice in a rural area (Rabinowitz et al, 1999). Other authors employed cohort studies with control groups and multivariate analysis to conclude that rural origin was mostly correlated with recruitment to rural areas (Brooks et al, 2002). In order to prepare doctors who would be willing to practice in rural areas, policies should be aimed at selecting the right students (rural up-bringing and specialty preference) and exposing them to the curriculum and experiences needed to succeed in primary care in rural settings.

6.11.2 Type of rural experience

The present study shows that the type of rural experience can predict a medical student's willingness to apply for a rural post (Table 16). There was a two-fold increase in the likelihood of expressing an intention to work in a rural area among those students who hailed from a rural area, those whose parents stayed in a rural area, and those who studied in a rural area during primary or secondary school, in comparison to those who did not have similar experiences. The difference in each case was statistically significant.

The likelihood of expressing a willingness to accept an "imposed" rural post was also significantly associated with hailing from a rural area, having studied in a rural area during primary or secondary school, having a previous work experience in a rural area, and having parents staying in a rural area. Students exposed to each of the mentioned experiences were more likely to express willingness to accept a rural post (table 17). This finding is consistent with the work of McDonald et al. who found that having a rural primary school education (which appears to be more important than rural secondary education) and having a family living in a rural area are significantly associated with long-term plans to practice in a rural area (McDonald et al, 2002). The mentioned types of rural experience occurring during the early years of a person's upbringing give the student an opportunity to accept and accommodate rural life styles as "normal"; hence they will still consider a rural career as a viable alternative despite exposure to urban lifestyles later in life.

6.11.3 Experience with rural health facilities

The type of exposure to rural health facilities is another predictor of willingness for rural practice (Tables 18 and 19). One was more likely to accept a rural post if his relatives were treated at a rural health facility or if his parents worked at a rural health facility. Community health rotation in a rural facility did not seem to significantly influence willingness to accept a rural post. Only 21 students (16% of the sample) lacked exposure to rural community health rotation, so the chisquare statistical test could not be valid in the contingency table. The only way to demonstrate career (or choice of practice location) effects is to conduct controlled trials with students randomly assigned as program participants or non-participants (Campos-Outcalt et al, 1997), which can be difficult in an education setting. In the present study, almost all students participated in a community health rotation, except that the degree of individual participation varied across the colleges, and that the extent of emphasis on a rural location for fieldwork was not uniform. The apparent lack of a thorough clinical component in the community health rotation may also have diluted its effect on students' choice of career location.

There have been a number of preliminary evaluations of rural attachments as part of undergraduate training programs (Hays et al, 1995; Rolfe et al, 1995; Worley et al, 2000). The majority of studies have only examined student attitudes and intentions, which are generally positive, but do not provide behavioural outcomes that have a demonstrated effect on doctors' recruitment and retention. For example, Strasser

concluded from his study of rural attachments for undergraduates from Monash University, that they are effective in providing students with a broad range of clinical experience and in changing students' perceptions of rural practice, especially general practice (Strasser, 1992). Hays et al. reported that undergraduate rural clinical attachments did not appear to influence regional practice choice (Hays et al, 1995). Non-metropolitan attachments after graduation for those with no prior rural life experience did appear to have been an important influence. However, the sample size was not sufficient to draw any significant conclusions.

6.11.4 Perception of the state of rural public health facilities

Perception of the state of rural public health facilities was significantly associated with willingness to apply for a rural post (tables 20), where a positive perception was associated with increased willingness. The influence of perception of private health facilities in rural areas was not statistically significant (tables 22 and 23), and this could be attributed to the fact that most private facilities are located in urban areas, and the few in rural areas are run by voluntary organizations which are mainly not-for-profit hence their competition for staff can not be equaled to that of urban facilities.

6.11.5 Preferred hospital for internship training

Preferred hospital for internship training could predict willingness for a rural post (Tables 26 and 27). The proportion of students expressing an intention for rural practice was significantly higher among those wishing to do their internship in Bugando and

Mbeya Hospitals compared to KCMC and MNH. Students aspiring to do their internship in Mbeya and Bugando are apparently the same ones who are willing to apply for and accept rural posts. An alternative explanation to this scenario is that students with a predetermined intention to work in a rural area consider Bugando and Mbeya Hospitals as the best institutions where they can get the expertise they need for rural practice. It may also be true that the same factors that attract the students to rural practice operate towards attracting them also to Bugando and Mbeya Hospitals. Nearly 42% of the students perceived a rural post as beneficial in providing more clinical experience (Table 11), and almost 42% again would consider better exposure to clinical practice as an important criteria in their choice of a hospital for internship (table 8). Choice of Bugando and Mbeya hospitals is a reflection of the students' perception of the two hospitals regarding acquisition of their much desired skills and experience.

6.11.6 Intended field of postgraduate specialization

Intended field of specialization could predict willingness to apply for a rural post (Table 26) where students aspiring for postgraduate training in a clinical specialty were four times more likely to express such willingness when compared to students intending to develop a career in public health. This can be related to the perceived benefits of a rural career, where students determining to specialize in public health attach less importance to the clinical experience available in rural areas. Students wishing to specialize in a clinical discipline may consider a rural post as an important stage in their career development, thus are more likely to voluntarily apply for one, as revealed in this study.

More clinical experience was the only perceived advantage of a rural career which was significantly associated with willingness to both apply and accept a rural job (Tables 28 and 29). In the case of "imposing" a rural post on a new doctor (table 27), the intended field of specialization did not seem to affect acceptance of such a post, suggesting that there is a yet undisclosed motive behind the readiness to accept such "imposed" posts.

6.11.7 Perceived advantages and disadvantages of a rural post

The perceived advantages of a rural post which could predict willingness to apply for a rural post were more clinical experience (p=0.00006) and more friendly environment (p=0.009) (table 28). Willingness to accept a rural post could be predicted by perceived better community support in rural areas (p=0.01), perceived opportunities for more clinical experience (p=0.008) and perceived low cost of living (p=0.044) (table 29). Clinical experience as a perceived advantage of rural posts predicts willingness for rural practice at both levels of applying for the post and accepting it if offered or "imposed". None of the perceived disadvantages of a rural post could significantly predict willingness for a rural post (Tables 34 and 35). It appears that some respondents would be willing to tolerate some disadvantages of rural posts if some benefits were offered.

The readiness to tolerate the perceived disadvantages of a rural post speaks volumes about the value the students attach to the perceived benefits, mainly clinical experience in this case. It could not be established in this study whether the students would

continue to work in the rural areas after acquiring their much desired clinical experience. Students intending to pursue a clinical specialty in their postgraduate studies had the highest proportion of expressed willingness to apply for a rural post compared to other fields (table 26). These students may consider a rural post as a necessary stage in their clinical career development, and therefore they may be willing to pursue it against all odds.

CHAPTER 7

7.0 CONCLUSION

Students from a rural background are severely underrepresented in Tanzanian medical schools. The imbalance is more marked among the girls where only a fifth of them are from a rural background. Gender imbalance is another characteristic of the Tanzanian medical school population, with girls comprising 35.4%.

Medical students generally perceive the state of rural health facilities and the services provided therein as poor.

Field experience and personal experience were the most important bases for medical students' perception of rural health services. Only a 34.4% of the students would base their perception on medical school lectures.

After considering multiple factors, Muhimbili National Hospital and Bugando Medical Centre remain the two hospitals most preferred by medical students for their internship.

Although the proportion of students willing to apply for a rural post was only 34.9%, a rural placement as a directive by prospective employers would still be accepted by 59.4% of potential employees.

Government employment is desirable to most (64.8%) new doctors

In their decision about a rural career, most new doctors would consider economic opportunities, standards of living, and higher education opportunities as the most important factors on which to base their decision.

Medical students who express an intention to pursue a rural medical career mainly perceive that the rural post will give them more clinical experience. Other common perceived benefits of rural medical posts are low cost of living, a friendly environment and community appreciation of one's job and status.

Disadvantages of rural medical practice as perceived by majority medical students are poor economic opportunities, poor standards of living, lack of peer support and consultation with other doctors and less opportunities for postgraduate studies.

A rural background, studying in a rural area during primary or secondary school, previous work experience in a rural area, and having parents living or working in a rural area, can predict willingness for rural practice.

Preferred hospital for internship could predict one's willingness for rural practice, where Bugando and Mbeya Consultant Hospitals attracted most of the internship aspirants with an intention for rural practice compared to KCMC and MNH.

Willingness for rural practice is also influenced by intended specialty where expressed intention for a clinical specialty (compared to other fields) is more likely to be accompanied with expressed readiness to work in a rural area.

Some perceived benefits of a rural career, notably more clinical experience, predict willingness for rural practice, and generally this benefit seems to outweigh the perceived disadvantages.

CHAPTER 8

7.0 RECOMMENDATIONS

In line with the findings of this study, the author recommends the following:

1. The Government should embark on an affirmative action to increase representation of rural background students in medical schools. The overwhelming evidence that rural students are more likely to return to work in the rural areas makes their education a worthwhile investment for the country. A similar action should be designed for girls, especially those of a rural background.

2. The Boards and Managements of Bugando, KCMC, Mbeya and Muhimbili consultant hospitals should improve working conditions in these hospitals to meet expectations of prospective interns. Areas of particular concern are exposure to clinical practice for interns, opportunities for continuing medical education, assurance for good quality accommodation facilities, good working environment, and the necessary provision to enable interns to complete their internship within the prescribed period.

3. With more students graduating from medical schools in the recent years, and given the multiple factors students consider in their choice of hospital for internship, the Ministry of Health should now consider increasing the number of approved hospitals that can offer internship training. This will give the students a wider choice and decongest the four hospitals currently training interns.

4. The Ministry of Health should embark on a procedure to harmonize the internship training program so that all consultant hospitals can offer clinical exposures of the same desirable standards, in a conducive environment (for working, learning and

living) and within the prescribed internship period. This will help to standardize the quality of the training in terms of the knowledge, skills and attitudes.

5. Although, with decentralization, local authorities have a mandate to hire medical doctors according to need, central recruitment (through the Ministry of Health) remains an important and very useful option for ensuring supply of skilled manpower to those regions and districts which persistently fail to attract suitable applicants. The Ministry of Health should continue to recruit doctors and deploy them equitably to needy regions or districts. Other employers (e.g NGO's, FBO's, and parastatals) can address the maldistribution by employing centrally through their Headquarters then deploying the staff to peripheral units including rural areas according to their staffing needs.

6. It is high time that the government designs an incentive package to attract more doctors towards rural practice. Such a package should address remuneration packages, standards of living (including housing, communication and transport), and opportunities for higher education. In collaboration with training institutions, professional bodies and other stakeholders, the government should also work out a system of ensuring peer support and consultation between rural doctors and those in urban areas and training institutions, refresher courses and schedules for continuing medical education (KCMC Postgraduate seminars are a good example).

7. In view of the perceived challenges of rural practice and medical students' feeling of inadequate preparedness for rural practice; the Ministry of Health, training institutions and professional regulatory authorities should work in liaison to introduce

Rural General Practice in the medical school curriculum or as part of internship, in terms of rural clinical rotations. The rotation could be supervised by a GP experienced in rural practice. Such a rotation will give the new doctors the necessary knowledge, skills, attitude, experience and courage to embark on a rural career with confidence.

8. In the spirit of multisectoral collaboration, the government in liaison with local authorities, civic organizations and other stakeholders with a keen interest in health and education should consolidate efforts to improve the standard of education in primary and secondary schools in rural areas so that more students from such schools could join the university to study Medicine.

9. Since a health worker's previous work experience in a rural location has been shown to predict willingness for rural practice after further university medical training, the government should now press for changes in admission policies in universities, creating special provision for an enabling environment for service providers in rural health service to have access to university medical education. This can be achieved by providing for a certain quota of medical students to enter through the mature age entry scheme, with rural experience as a necessary qualification. The Universities can be asked to arrange for bridging courses (or foundation courses) for those candidates who may be unable to compete through the formal matriculation process. Through this arrangement, the government will manage to breed more medical doctors with a predetermined intent for rural practice from clinical officers, assistant medical officers and other related staff.

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