FACTORS ASSOCIATED WITH STAFFING OF MEDICAL DOCTORS AND NURSES IN RURAL AREAS

BY

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CERTIFICATE OF COMPLETION OF DISSERTATION

I Elijah Mutoloki Munachonga hereby certify that this dissertation is the product of my own work, and in submitting it for my MPH programme, further attest that it has not been submitted in part or in whole to another University.

Signature:..... Date:...29/12/04

(Student)

I Professor Seter Siziya having supervised and read this dissertation am satisfied that this is the original work of the author under whose name it is being presented. I confirm that the work has been completed satisfactorily and is ready for presentation to the examiners.

Signature/Supervisor

DEDICATION

This study is dedicated to my late son Samuel, May His Soul Rest In Peace. I also remember my heavenly father for the good health enjoyed and the direction given unto me throughout my study.

DECLARATION

This dissertation is the original work of Elijah Mutoloki Munachonga. It has been prepared in accordance with the guidelines for MPH dissertations of the University of Zambia.

It has not been submitted elsewhere for a degree at this or another University.

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LIST OF ABBREVIATIONS

AIDS	-	Acquired Immune Deficiency Syndrome
CBOH	-	Central Board Of Health
DHO	-	District Health Office
GMO	-	General Medical officer
HQ	-	Headquarters
HIV	-	Human Immune Deficiency Virus
JRMO	-	Junior Resident Medical Officer
KCH	-	Kitwe Central Hospital
MOH	-	Ministry of Health
NCH	-	Ndola Central Hospital
PHC	-	Primary Health Care
PHD	-	Provincial Health Director
PHO	-	Provincial Health Office
PMO	-	Provincial Medical Officer
RDA	-	Resident Doctors Association
RHC	-	Rural Health Centre
RM	-	Registered Midwife
RN	-	Registered Nurse
SHC	-	Secondary Health Care
SRMO	-	Senior Resident Medical Officer
UNZA	-	University of Zambia
USA	-	United States of America
USAID	-	United States Agency for International Development
UTH	-	University Teaching Hospital

ZEM	-	Zambia Enrolled Midwife
ZEN	-	Zambia Enrolled Nurse

4. DEFINITION OF TERMS USED IN THE REPORT

Basic training: It is the first level of professional training that an individual completes before being accredited as a member of a particular profession.

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Post basic training: Formal studies, by an individual who has basic qualification, which can lead to an additional professional qualification.

In service training: A course of study undertaken by a staff member to improve his/her performance but does not lead to any recognized qualification.

Continuing Education: Term used to define any course of study undertaken by an employee throughout his working life. This may be through individual study programmes, attachments to learn on the job from more experienced staff e.t.c.

Staff establishment: Number of posts (by Staff category and location) approved for the MOH/CBOH.

Staff in post: The number of staff actually employed in the established post.

Vacancy: An established post for which there is no incumbent.

Rural Area/Settings: Any health institution outside of the main cities and towns.

ABSTRACT

Objective: To determine the factors associated with staffing of doctors and nurses in rural Health Institutions in Zambia.

Design: This was a cross-sectional study using a structured self-administered closed and open-ended questionnaire.

Setting: The study was undertaken at the University Of Zambia School of Medicine, University Teaching Hospital, Ndola Central Hospital, Kitwe Central Hospital, Kasama General Hospital and Chinsali District Hospital.

Subjects: A total of 230 consenting practicing doctors and nurses, and final year medical and nursing students were interviewed.

Sampling method: A convenient sample was used for the provinces and districts. Since we had only three main Registered Nursing Schools and one medical school at the time, all these were selected for the study. Due to the low numbers of doctors, nurses and students found in the study settings, all those found at the stations at the time of interviews were enrolled in the study.

Main outcome measure: The main outcome measure was the willingness of medical personnel to work in the rural areas for at least five years continuously.

Results

After adjusting for confounding factors, the study revealed that for practicing Doctors and Nurses, age and marital status were the only factors significantly associated with the outcome. At each birthday respondents were 1.08 (95%CI; 1.001, 1.156; p=0.046) times more likely to

be willing to work in rural areas for more than five years. Respondents who were married were 55% (OR=0.45, 95%CI; 0.205, 0.973; p=0.043) less likely to be willing to work in the rural areas for more than five years compared to those who were single.

For student Doctors and Nurses, curricula and age were the only factors significantly associated with the outcome (length of stay longer than five years in a rural area). Students were 23% (OR=1.23, 95%CI; 1.04, 1.44; p= 0.013) times more likely to be willing to work in rural areas. Students who were of the conviction that the curricula prepared them adequately to work in rural areas were 6.56 (95%CI; 1.80,23.83; p=0.004) more likely to be willing to work in rural areas for more than five years compared to those who were of the conviction that the curricula did not prepare them to work in the rural areas.

CONCLUSION

The study found out that for most Zambian doctors, nurses, medical and nursing students, the overall factors influencing willingness to work in rural areas were age, marital status and curricula. Both student and practising doctors and nurses as they grew older at each birthday were more likely to be willing to work in rural settings continuously for more than five years.

For the qualified staff, the respondents who were married were less likely to work in rural settings continuously for more than five years, while students who were of the conviction that the curricula prepared them adequately to work in rural areas were more likely to be willing to work in rural settings for more than five years .

RECOMMENDATIONS

Following the findings of this study, it is recommended that:

1. Relevant authorities consider extending the policy of compulsory rural posting to married doctors and nurses.
2. Relevant authorities continue the policy of compulsory rural posting to younger doctors and nurses.
3. Policy makers agree upon specific policies and guidelines and that a rural medical manpower plan be put in place.
4. Similar studies and cohort studies be conducted in future to compare the present findings and monitor trends of workers and students preferences of where to work.
5. That a more comprehensive study including other health professionals such as clinical officers and laboratory technicians etc be conducted in future.
6. Internship be extended to all categories of health workers.
7. That the use of telemedicine be explored for its potential to reach isolated areas.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background Information

Located in south central Africa, Zambia is a developing land locked country with a land area of 752,600 sq. km and a total population of 10,285,631millions (2000 Census). The country is divided into nine provinces. The communication network is best in urban areas and along the line of rail. The rural areas are quite often disadvantaged due to the prevailing bad roads, poor radio and TV reception, lack of good schools, and poor opportunities for career advancement. The country is making efforts to improve the delivery of health services to the population in rural areas, as enshrined in the health reforms whose main aim is to provide quality equitable health care services as close to the family as possible (MOH, 1992a).

In Zambia, the government, churches, private institutions, armed forces, and traditional healers provide health care services to the community. Of all these, the government is the main health provider through a wide network of hospitals and health centers as shown in Table 1. However, most of these government health institutions experience critical shortages of qualified medical manpower. Recruitment of enough medical professionals has failed in Zambia, especially in the rural areas where the heaviest blow is felt. Coupled with the economic decline, which Zambia has been, experiencing since 1970, the problem of staffing in rural settings had reached such alarming levels that in 1999, it was presented to the National Parliament by one of the members of Parliament as shown in Table 2.

Table 1

Distribution of Public Health Facilities by ownership (1999)

Institution Type	Number of Health Facilities		
	Government	Mission	Total
Central Hospitals	3	0	3
Specialized Hospitals	4	0	4
General Hospitals	12	6	18
First level Hospitals	32	27	59
Urban Health Centers	153	0	153
Rural Health centers	851	65	916
All Health centers	1004	98	1069

Source: National 10 year Human Resource Plan for the Public Health Sector 2001 First Edition. Improved distribution of health care providers throughout the country.

Is it not over whelming that in 1999 at Kasama General Hospital there were only four doctors working out of the twenty-three which were needed according to the establishment? During the same period there were only 119 out of the154 nurses required at the same institution as per establishment. This sad situation of fewer health care professionals was found to be the same in many other rural and district hospitals as shown in table 2. At Chipata General Hospital, there was over employment of two (2) enrolled midwives and at Kabwe General Hospital, there was over employment of seventeen (17) nurses.

TABLE 2: Staff Distribution as presented in parliament. ORDER BOOK NO. 96 of 1999

INSTITUTION	ESTABLISHMENT	FILLED	VACANT
CHIPATA GENERAL HOSPITAL:			
- Doctors	31	9	22
- Enrolled Nurses	41	28	23
- Enrolled Midwives	30	32	-2
- Clinical Officer	34	16	18
NOTE: 4 Doctors leaving in May, 2001			
KASAMA GENERAL HOSPITAL:			
- Doctors	23	4	19
- Nurses	154	119	35
- Clinical Officers	38	7	31
MANSA GENERAL HOSPITAL			
- Doctors	22	6	16
- Nurses	191	116	75
- Clinical Officers	25	12	13
SOLWEZI GENERAL HOSPITAL			
- Doctors	20	4	16
- Nurses	200	85	115
- Clinical Officers	16	10	6
NDOLA CENTRAL HOSPITAL			
- Doctors	136	57	79

- Nurses	421	389	32
- Clinical Officers	64	36	28
ARTHUR DAVISON HOSPITAL			
- Doctors	35	23	12
- Nurses	140	127	13
- Clinical Officers	12	10	2
KITWE CENTRAL HOSPITAL			
- Doctors	72	72	0
- Nurses	454	332	122
- Clinical Officers	26	21	5
KABWE GENERAL HOSPITAL			
- Doctors	36	-7 +10 Chinese Doctors	27
- Nurses	194	211	-17
- Clinical Officers	49	22	29
LEWANIKA GENERAL HOSPITAL			
- Doctors	32	-8	24
- Nurses	111	136	25
- Clinical Officers	39	11	28

The public in such rural settings is always complaining about the lack of proper medical care due to the unavailability of qualified medical personnel. This pressure from the people has now and then forced our civic leaders and health care policy

makers to seek rapid short- term solutions to this problem such as employing non-nationals to be posted to rural areas and the utilization of non-physicians as substitutes for qualified physicians. However, the problem always resurfaces after some time. It is, therefore necessary to have a clear long-term policy to solve this problem.

1.2 STATEMENT OF THE PROBLEM

There are so many factors that determine the provision of quality health care services but of paramount importance is the availability of enough trained medical personnel. The government introduced "Health Reforms" aimed at providing all Zambians with equity of access to a cost effective and quality health care as close to the family as possible (MOH, 1992). To achieve this, it is necessary that a sufficient number of medical staff be equally distributed throughout the country.

Most rural health centers and district hospitals can be considered to be the closest and most accessible health facilities to the family. According to the "service delivery policy" recommended by the health reforms the first level of patient contact is the health center followed by the District hospitals (level one), General hospitals (level two) and Central hospitals (level three) (HRIT, 1996b).

This implies that all patients are first supposed to be attended to at the health centers or health posts and be referred to the higher levels of service delivery only when necessary. The Health centers/posts are, therefore, expected to provide most of the health services to most of the patients within the community, whilst levels one, two and three hospitals deal with referred special cases (MOH, 1996). For this to be achieved, the health centers need to be staffed with all the clinical professional staff

required in order to provide high quality services. However, recent studies show that most of the qualified clinical staff is employed in level three hospitals.

According to anecdotal reports, Zambia has trained more than 600 doctors since independence. Generally speaking, the medical and nursing schools in Zambia train enough doctors, nurses and other medical personnel per year. Table 3 shows that on average the University of Zambia enrolls 69 students each year out of which 42 graduate. The Registered and Enrolled Nursing Schools combined enroll 574 and 426 students graduate each year (MOH, 2001).

Table 3

Average student Intakes and Graduates Per training Institution Per Year

Training Institution	Programme	Average Intake	Average Graduates
Kitwe	RN	46	42
Ndola	RN	41	31
UTH	RN	64	53
UNZA	MBCHB	69	42

Source: National 10 year Human Resource Plan for the Public Health Sector 2001

Moreover, there are a number of other medical personnel, Doctors and Nurses in particular trained outside the country.

Despite this high number of graduates, there are still not enough medical personnel especially in rural Zambia. A good number of the graduates migrate to other countries for "greener pastures" while the few who chose to remain in the country prefer to work in big hospitals. The critical problem is that most established schools train doctors and nurses to work in well equipped and well staffed hospitals in big towns. Consequently, very few of these graduates find their way into rural or district

hospitals. Most of them prefer to remain in big towns where they are better prepared to work. The problem is further exacerbated by the inequities in the distribution of health staff, which can be attributed to factors such as uneven distribution of health facilities.

It has been and still is government policy that every doctor who completes internship goes for rural posting before seeking further or postgraduate studies. Recently, the Ministry of Health announced its intention to extend this policy of compulsory internship and rural posting to nurses as well.

Despite this and other efforts to redress the situation by the Government and its co-operating partners, the shortage of medical personnel in rural areas has persisted. However, without any innovative long-term policy, rural settings will continue to experience the shortages of staff. This problem is expected to continue for a long time if the government and CBOH do not establish clear targets and packages to attract staff to work in more disadvantaged locations.

It is the aim of this study to determine the factors associated with staffing of Doctors and Nurses in rural settings. We would like to find out what can be done to lure medical and nursing students to live and work in rural areas upon graduation. For those who opt to work in the rural areas we would like to know how long they are willing to live there continuously. This study hopes to derive insight into alternative approaches for meeting rural health manpower needs by analyzing the responses from doctors and nurses working in rural settings, and from students who are likely to be posted there upon completion of their studies

1.3 STUDY OBJECTIVES

1.3.1 General Objectives

1. To assess the factors associated with staffing of Doctors and Nurses in rural health institutions in Zambia.

2.2 Specific Objectives

1. To assess the willingness of medical and nursing students to work in rural areas.
2. To identify factors related to practice that contribute to willingness of medical and nursing students to work in rural areas.
3. To find out if medical and nursing students are adequately prepared to work in rural areas.
4. To establish the opinion of medical and nursing students on the government policy of rural posting.
5. To establish the opinion of Doctors and Nurses working in rural settings on whether they think its good working there.
6. To determine how long Doctors and Nurses are willing to live and work in rural areas.
7. To identify community factors that are associated with willingness to work in rural areas.
8. To determine what incentives can lure medical personnel to go and work in the rural areas
9. To make recommendations to Central Board of Health, Ministry of Health and cooperating partners.

1.4 HYPOTHESES

1. The adverse working conditions in rural areas are associated with the reluctance by medical personnel to work in rural areas.

2. Incentives can attract Doctors and Nurses to live and work in rural settings.

CHAPTER TWO

2.0 LITERATURE REVIEW

The problem of too few health care professionals working too hard to satisfy the health needs of the population defy a simplistic solution. Shortages of health care providers have existed in Zambia for a long time. There has been so much criticism of the deployment of health care providers, doctors and nurses in particular, ranging from their lack in rural areas to their lack as clinical specialists in different fields. This shortage of doctors and nurses is more critical in rural settings. Critical shortages have been reported in places like Kabwe General Hospital, where there were only five out of the thirty-six doctors required, as per establishment in 1990, attending to more than 1000 patients a day, (Anecdotal report).

Similar shortages were reported in the whole Central province, but it was more critical at Mumbwa and Mkushi District Hospitals, which had to operate without any medical officers (Anecdotal report).

In the same period, an exodus of doctors and nurses in Southern province created a critical shortage at Livingstone and Batoka General Hospitals, leaving only four doctors working out of the forty-eight required by the establishment. Moreover, the number of nurses drastically dropped from over a hundred to less than fifty within a few weeks (Anecdotal report).

It was also reported that Zambezi and Kabompo district hospitals had not had any doctors for more than three years, (Anecdotal report).

Now and then, shortages have been reported in Northern Province. Table 5 show that at one time, Kasama General Hospital had only four doctors out of the twenty-three doctors required in the establishment. A similar situation applied at Mbala General Hospital.

Table 4. Number of Nurses per District in Northern Province

Institution (Hospital)	Establishment	Actual	Variance
Kasama	179	90	89
Isoka	100	34	66
Nakonde	100	36	64
Mpulungu	100	16	84
Mporokoso	100	22	78
Chilonga	100	38	62
Mungwi	100	28	72
Kaputa	100	13	87
Mpika	100	32	68
Luwingu	100	13	87
Chinsali	100	44	56
Chilubi	100	9	91
Mbala	179	44	135

Source: Prototype establishment. Memo from CboH (Nov. 2002)

Table 5

Number of Doctors per District in Northern Province

Institution/Hospital	Establishment	Zambian in post	Expatriate in post	Total in post
PHO	1	1	0	1
Kasama Hospital	23	4	3	7

Mporokoso	7	0	3	3
Luwingu	7	0	1	1
Mpika	7	0	2	2
Chilonga	7	1	2	3
Isoka	7	0	1	1
Mbala	23	1	2	3
Nakonde	7	1	0	1
Chinsali	7	1	0	1
Kasama DHMT	1	1	0	1
Total	83	10	14	24

Source: Kasama PHO Registry

There was a shortage of 600 doctors in 1993 and the Ministry of Health had to employ 300 doctors from other countries to meet the shortfall (Anecdotal report).

So many reasons have been given for the lack of doctors in rural areas in Zambia but the main one is the poor conditions of service. The government then even admitted that it was not capable of retaining the Zambian doctors due to the prevailing poor conditions of service (Anecdotal report). Meanwhile the exodus continued and the Zambian doctors who remained in the country continued to press for better conditions of service, culminating in the revival of the Resident Doctors Association (RDA) at UTH in 1994. The R . D . A pledged to fully address the problem of the "exodus " of doctors. The government, also, introduced measures to cut the brain drain. In 1992, it proposed a regional exchange program for medical professionals). It also embarked on a program of rehabilitating most of the health institutions, which were in a state of

disrepair and lacked most of the medical supplies and equipment essential for proper health care provision. On the other hand, medical professionals were requested to be more committed to their work instead of demanding high salaries and preferring to be posted in urban centers .

The government also tried to solve the problem of manpower shortages by working with other countries. Under bilateral agreements, a lot of doctors were brought to Zambia from the Netherlands, China and Cuba, with the aim of deploying them to remote areas where there were no doctors. However, most of those sent to rural areas abandoned their posts and preferred to return to their countries of origin, while some asked to be transferred to urban centers.

The Zambian government introduced compulsory rural posting and rural hardship allowance for doctors and nurses after internship. Furthermore, only those with rural experience were allowed to go for postgraduate training. However, these measures were not welcomed by most medical personnel as evidenced by the outcry by doctors when this policy was implemented in 2001. Most rural bound doctors preferred to resign instead of reporting to their new posts in rural settings. Those who chose not to resign had to be removed from the payroll to compel them to go to their new posts The then minister of health also assured them that the health institutions in rural areas were not as bad as perceived by many because the government had improved the stocking of drugs and that the most serious problem there was manpower .

It is evident that some measures taken to solve shortages are sometimes not popular even to the population, as displayed by the residents who staged a demonstration against the redeployment of their medical officer to another district, which needed a doctor .

One of the components of the Health Reforms implementation in Zambia is Human resource development. As earlier stated, most doctors in Zambia are trained at UNZA School of medicine, although some are trained abroad. Upon graduation, the new doctors must complete at least one year of compulsory internship at any of the three central hospitals namely; Kitwe Central, Ndola Central, and University teaching Hospitals respectively. During this time they are called Junior Resident Medical Officers (JRMO), and they are supposed to practice under supervision. After successful completion of internship the doctor, now called Senior Resident Medical Officer (SRMO), is supposed to undergo compulsory rural posting for at least one year. Upon completion of the year, the doctor may then opt for further training in a specialty of his choice or may choose not to specialize and may proceed to the post of General medical officer by promotion (MoH, 2001).

The Registered and Enrolled nurses join the ministry of health after completing their respective training and obtaining practicing licenses from the General Nursing Council. After working for two years, a Registered nurse is eligible to apply for acceptance into post basic training (MoH , 2001). Recently, the Ministry of Health introduced a system of internship and compulsory rural posting for nurses as well.

"Prior to the health sector reform process, distribution of health care staff was controlled by the establishment. Each health facility was allowed to have a specified number of staff in each category. This system worked to some extent but was flawed because some staff refused to accept their posting while others used influence to achieve preferred posting. Conditions of service also required that female employees be allocated posts near to their husbands which led to more female employees being employed in urban areas than the number required by the establishment. Currently, a

mixture of mechanisms is in place. However, the establishment and postings by the Ministry of Health are still the predominant influences on staff distribution. It should be noted here that the number of posts a district is allocated would have little influence on the actual number of staff they can attract. The district hospitals are mostly staffed with general medical officers. These are well-rounded "generalist" doctors with all round basic experience and capability of dealing effectively with the commoner problems and emergencies of the four main divisions of medicine; Internal Medicine, Pediatrics, Obstetrics and Surgery. Cases beyond the competence of these doctors are referred to specialists at general and central hospitals (MoH, 2001)."

In some districts in Zambia poor health services have been cited as major contributors to the swelling number of women who die due to pregnancy related complications. Most pregnant women in rural areas are attended to by (untrained) Traditional Birth Attendants who whenever there is a complication do not know what to do. Most of the time patients are referred to rural health posts, which are very far and even there they may not find qualified personnel or if available, no theatre facilities to help solve most of those problems which need surgical intervention. Consequently these cases are referred to the district or provincial hospitals and considering the poor road network and time lapse it is very difficult to save the patient or baby at this level. Because of these incidences which demonstrate the poor services provided in rural health centers, there are some traditional beliefs now that are against women giving birth at rural clinics because, they believe that they contribute to the high maternal mortality. Most villagers would prefer to go to a traditional healer instead of going to an institution which has neither qualified personnel nor drugs to offer.

There are differences between the developed and developing countries in terms of health services provision. In developed countries physicians take the main responsibility for primary health care (PHC), as there are sufficient doctors to undertake this work. Hospital services are all at specialist level and the secondary health care (SHC) is almost non-existent (Munachitombwe, 1996). However, the situation is quite different in developing countries, which are relatively poor, have large population and fewer doctors.

Zambia has a total of 1069 health facilities distributed as shown in Table 1.

Table 6: Prototype Establishment as at November 2002

Profession	First level Hospital	Second level Hospital	Third level Hospital
Doctors	7	23	93
Nurses	100	179	394

Source: CBoH Memorandum to all Directors 26/11/2002

It can easily be deduced from tables 1 and 6 that most of the nurses and doctors are supposed to be employed at the third level hospitals. This underscores the recommendations of the health reforms, which state that the first level of patient contact is the health center, followed by district, general, and central hospitals in that order respectively. Being the first level of contact, the health centers are expected to attend to a higher number of patients and to provide most of the services. This can only be achieved if the lower levels are equipped with enough qualified medical staff as per establishment. Looking at the percentages, we found that most 1st level hospitals have a lower percentage as compared to the 2nd and 3rd level hospitals. This will ensure that high quality of health services are provided to the community. As earlier stated, the problem of staffing is more pronounced in rural areas, but this does not mean that there is no shortage in urban settings as shown below.

Table 7

Actual number of Doctors and Nurses at Kitwe and Ndola Central Hospitals as at July 2002.

	Kitwe Central Hospital	Ndola Central Hospital
Doctors	46	39
Registered Nurses	145	140
Zambia Enrolled Nurses	190	237

KCH and NCH Human Resource Department

Table 8

Actual number of doctor at UTH per Department as at July 2002

Department	Establishment	Actual	Variance
Pediatrics	56	37	-19
Obstetrics	53	39	-14
Medicine	80	36	-44
Surgery	153	62	-91
Pathology and Microbiology	31	15	-16
Total	373	189	-184

Source: UTH Human Resource Department

Table 9

Actual Number of Nurses at UTH for Selected Departments as at July 2002.

Department	Establishment	Actual	Variance
Specialist Clinic	185	31	154
A block	203	129	74

Source: UTH Human Resource Department

By 1989, in Zambia the number of people per physician was 7,154 and per nurse was 744, ratios far below those recommended by WHO .Due to this disparity, PHC in Zambia is now done mainly by non-physicians such as village health workers, nurses and clinical officers serving in rural health posts (MoH, 2001).

It is at the district hospital level where the shortage of doctors is most felt.

In most rural hospitals, even sending doctors for further training tends to permanently deprive the community of their services. Consequently the institution is often not willing to release them. This creates a serious constraint to the academic progress of the doctor. Secondly, there are a lot of shortages, which make it difficult for doctors to practice medicine professionally. This, coupled with long standing dissatisfaction with the conditions of service in rural areas, results in poor motivation even for the few who are willing to work there (MOH,2001).

The shortage of manpower in rural settings is a worldwide problem. In a study done in Papua New Guinea, (Biddulph, 1979) it was found that out of 124 doctors trained in the previous twenty seven years, only sixty six were still working in the country and these were evenly distributed across the country except in rural settings (highland provinces). In Australia, it was demonstrated that the non-metropolitan areas were relatively underserved by doctors as compared to the metropolitan areas. Hoping that most graduates would remain where they were trained, a new medical school was opened in the under staffed regions of Australia. The aim was to admit students from the rural region and offer them rural community based education. In the long run, this was expected to help alleviate the problems of shortages faced in rural areas (Prideaux et al, 2001.

There are so many other hardships that need to be addressed in rural areas. Long distances to health centers, erratic supply of drugs, high incidence of malaria, HIV/AIDS, tuberculosis and diarrhea diseases are some of the critical health issues that need urgent attention.

In its continued effort to encourage doctors and nurses to go to rural areas, the CBoH introduced compulsory rural posting and rural hardship allowance for doctors and

nurses after internship. Furthermore, only those with rural experience were allowed to go for postgraduate training (anecdotal reports). However, these measures were not welcomed by most medical personnel's as evidenced by the outcry by doctors when this policy was implemented in 2001. Most rural bound doctors preferred to resign instead of reporting to their new posts in rural settings (Anecdotal report).

On the other hand it has been shown that rural medical practitioners need to have adequate training in emergency medical care since they have considerable responsibility for providing emergency care. These doctors, therefore, need to have extensive experience. This raises the question as to whether it is right to send the new graduates to the rural areas, where they have to work alone, or in small contemporary groups, under the most trying conditions. They have to manage all conditions presented to them whether they have the appropriate skills or not, because referral is often impossible for a variety of reasons such as no transport, long distances to tertiary institutions; patient too ill to be moved or that the patient can not afford the user fees at the other end (Reid et al, 2000). As for the doctor himself, the heavy clinical workload leaves him with little time for study and relaxation. The broad range of skills needed requires specific preparation and without it, there will be poor management of patients and the morale of the health workers themselves will be low. However, the rural hospital is an ideal learning site for generalist medical practitioners, provided that these hospitals are well stocked and have the necessary staff (Reid et al, 2000).

In many African countries a lot of strategies have been put in place to address this problem. Among the factors, which are, being redressed are the low wages and deficiencies in medical training. Nigeria was the first country in Africa to respond to

the deficiencies in medical education by introducing a postgraduate training for General Practice to form doctors who would serve the country's district hospitals. (Olebute and Pearson, 1986).

Similar programs were introduced in India, Nepal, Australia and some measures to introduce this system in Zambia started in 1991 (Tribhuran University, 1993, Shuhabudin, 1995, 1992).

One may wonder why so many foreign doctors and nurses were willing to come and work in Zambia while the locals were fleeing. This was attributed to the disparities in the salaries and conditions of services between the two. The non-nationals were offered better "expatriate " conditions of services (Anecdotal report.). Consequently, the number of non-nationals continued to increase at the expense of the locals.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Study Type

This was a cross sectional study whose conceptual framework of study was problem analysis, whose variables are listed below:

(Are the following factors better in rural or urban settings?)

- Salary
- Job availability
- Job challenge
- Patient contact
- Housing expenses/availability
- General living expenses
- Continuing education
- Schools for children
- Private practice
- Standard of living
- Prestige among colleagues
- Prestige in community
- Environmental surrounding
- Chance to be of service
- Transport
- Opportunities for career development

3.2 Study Setting

The study setting for students was the University of Zambia School of Medicine, University Teaching Hospital, Ndola Central Hospital and Kitwe Central Hospital Schools of Nursing. For doctors and nurses, it was at all the three Central Hospitals (namely Kitwe Central Hospital, Ndola Central Hospital and the University Teaching Hospital), Kasama General and Chinsali District Hospitals in the Northern Province of Zambia. Only Zambian doctors and nurses in Government Health Institutions were interviewed.

3.3 Sample

The study population was composed of students and qualified doctors and nurses drawn from the sampled health institutions and training schools.

3.4 Sample size Sampling Method

Due to the low numbers, all the doctors, nurses, nursing and medical students in the selected study sites who were found at the station during the time the study was conducted were interviewed

A convenient sample was used for the provinces and districts. For training institutions, all the three old established Registered Nursing Schools and the only school of medicine in Zambia were selected for the study.

3.5 Pilot Study

A pilot study to assess and evaluate the questionnaire was conducted at Kitwe Central Hospital and Kitwe School of Nursing. The respondents had no difficulties in answering the questions and no changes were made to the questionnaire. This site was also used in the final interview.

3.6 Data Collection Technique

Permission to conduct the study was sought from the Dean of the University of Zambia School of Medicine, and the respective Directors (see annex).

Questionnaires were administered to the students just before or after classes/lectures (the time when most of the students were found in one place), while to the doctors and nurses, it was administered during working hours or any other convenient time they chose. Filled questionnaires were collected thereafter.

3.7 Ethical Consideration

The study was approved by the Research and Ethics Committee (see Annex). A Consent form was attached to the questionnaire for respondents to read and sign (See Annex). All information was kept confidential and the results provided in such a way that no individual could be identified.

3.8 Data Processing and Analysis

Before analysis, data was examined to verify that it was complete. Responses to questions; 9 to 13 which indicated that respondents were not sure or did not know the answer(s), were excluded from further analysis because it was not possible to group them. Responses to open ended questions were tabulated in their entirety. This method entailed close reading and re-reading of the text to identify persistent words and phrases. Categories were drawn from the data and common themes derived. All responses were analyzed using Epi-info and SPSS programmes.

Bivariate analysis involved the use of Chi-square to compute associations between qualitative variables in exposure category with the outcome (length of stay in rural areas for at least five years). The Kruskal Wallis was used to compute the difference in the distribution of a continuous variable, which was not normally distributed

between groups. The significant level was set at 10% level for bivariate analysis and at 5% for multivariate analysis.

3.9 Study Limitations

The ideal situation would have been to collect data from all the different categories of Medical personnel like doctors, nurses, clinical officers, laboratory technicians etc. However, time, logistics and financial limitations could not permit this.

CHAPTER FOUR

4.0 RESULTS

Results have been grouped into two: qualified staff and students. Due to the problem of small numbers, the analysis could not be further grouped into doctors and nurses. Totals of 133 qualified staff and 97 students were recruited into the study.

4.1 RESULTS FOR WORKERS

Out of 133 respondents, 117(88.0%) were not willing to work in rural areas for more than five years, as compared to 16(12.0%) who were willing to work in rural areas for more than five years.

4.1.1 Demographic Characteristics

As earlier stated, two samples of qualified staff and student populations in the medical field were used. The respective sample size for qualified staff was 133.

4.1.2 Sex of respondents

Out of the 133 qualified Doctors and Nurses, the majority 86(64.7%) were females and the rest 47(35.3%) were males. Of the 47 males 9(19.1%) were willing to work for more than five years in rural areas while 7 (8.1%) out of 86 females were willing to work for more than five years, these percentages denote some statistical significance (p=0.062) in terms of association between sex and length of stay in rural areas.

4.1.3 Marital status

There was significant (p=0.007) association between marital status and length of stay. Out of 58 respondents who were married, 56(96.6%) were not willing to work for more than five years in the rural area in comparison to 61(81.3%) out of 75 respondents who were single.

4.1.4 Age

The median (Q1, Q3) computed ages in years for those willing and those not willing to work for more than five years in rural areas were 36.5 (30,43.5), and 30(28,35) respectively. These percentages were of significance (p=0.018) indicating an association between age and length of stay in rural areas.

4.1.5 Place of work

A significant (p=0.015) association was noted between one's place of work and preference to work in the rural area. For Kitwe Central Hospital all 23(100%) respondents were unwilling to work in rural areas, a situation which was very similar to Ndola Central Hospital where all 8(100%) respondents were unwilling to work in the rural areas. Out of the 55 respondents at UTH, 50(90.9%) were not willing to work in rural areas, while in northern province (Kasama and Chinsali Hospitals), 36 (76.6%) out of 47 respondents were not willing to work for more than five years in rural areas

4.1.6 Compulsion

There was significant (χ^2=5.68,p=0.017) association between compulsion and length of stay in rural areas. Most of the respondents 58(81.7%) out of 71 respondents who were in agreement with compulsory rural posting after internship, were not willing to work for more than five years in the rural areas while 59(95.2%) out of the 62 respondents who were not in favor of compulsory rural posting were not willing to work in rural areas for more than five years.

4.1.7 Chance of being of service

An association (χ^2= 3.89, p=0.048) was noted between chances of being of service in rural areas and the length of stay. Of the 66 respondents who agreed that there were

more chances of them being of service in rural areas than in urban areas, 54 (81.8%) were not willing to work in rural areas for more than five years, while out of the 51 respondents who did not agree with the above state of affairs 48 (94.1%) were not willing to work in rural areas for more than five years.

Table 10

Non-Significant Factors in Bivariate Analysis for workers.

Factor		>=5years n(%)	<5years n (%)	χ^2	P-value
Past rural experience	Agree	14(13.1%)	93(86.9%)	0.57	0.448
	Disagree	2(7.1%)	24(92.3%)		
Category of respondents	Nurses	14(13.0%)	94(87.0%)	0.47	0.492
	Doctors	2(8.0%)	23(92.0%)		
Living expenses lower in rural areas	Agree	8(10.1%)	71(89.9%)	0.67	0.414
	Disagree	8(14.8%)	46(39.3%)		
Better opportunities for Continued Medical Education in rural areas	Agree	5(13.9%)	31(86.1%)	0.16	0.688
	Disagree	11(11.3%)	86(88.7%)		
No good school in rural areas	Agree	13(11.9%)	96(88.1%)	*	1.00
	Disagree	3(12.5%)	21(87.5%)		
More private					

practice	Agree	2(8.7%)	21(91.3%)	*	0.738
opportunities	Disagree	14(12.7%)	96(87.3%)		
Standard of					
living higher in	Agree	11(11.5%)	85(88.5%)	0.1	0.744
urban areas	Disagree	5(13.5%)	32(86.5%)		
Transport					
better in urban	Agree	14(12.2%)	101(87.8%)	0.02	0.897
areas	Disagree	2(11.1%)	16(86.9%)		
Rural medical					
personnel					
considered to	Agree	10(13.2%)	66(86.8%)	0.21	0.644
be of lower					
caliber	Disagree	6(10.5%)	51(89.5%)		
Level of care	PHC	4(13.8%)	25(86.2%)	2.2	0.346
preferred	SHC	6(18.2%)	27(81.8%)		
	THC	6(8.5%)	65(91.5%)		
Salary better in	Agree	6(15.8%)	32(84.2%)	0.26	0.608
rural areas	Disagree	10(12.3%)	71(87.7%)		

* Fisher's exact test

working in rural areas for more than five years. These factors were considered in a multivariate analysis.

Table 11: Results of Significant factors in Bivariate Analysis for workers.

Factor	P Value
Place of work	0.015
Compulsory rural posting	0.017
More chance to be of service in rural areas	0.048
Age	0.018
Sex	0.062
Marital Status	0.007

4.1.8 Multivariate Analysis for workers.

After adjusting for confounding factors, age and marital status were the only factors significantly associated with the outcome. At each birthday, respondents were 1.08 (95%CI; 1.001,1.156; p=0.046) times more likely to be willing to work in rural areas for more than five years. Respondents who were single were 55% (OR=0.45, 95%CI; 0.205,0.973; p=0.043) less likely to be willing to work in the rural areas for more than five years compared to those who were married.

Table 12: Multivariate Analysis for workers

Factor	Odds Ratio (95% CI)	P Value
Marital status		
Single	0.45(0.21,0.97)	0.043
Married	1	
Age	1.08 (1.00,1.16)	0.048

4.2 RESULTS FOR STUDENTS

Out 97 respondents, 66(68.0%) were not willing to work in rural settings for more than five years as compared to 31(32%) who were willing to work in rural settings for more than five years

RESULTS OF BIVARIETE ANALYSIS

4.2.1 Demographic Factors

4.2.2 Category of student respondents.

There was no significant association between category of student respondents and length of stay in rural areas. Out of 97 student respondents, the majority, 76 (73.7%) were nursing students. Out of the 21 medical students, 4(19.0%) were willing to work in rural areas for more than five years while 27(39.5%) out of the 76 nursing students were willing to work in rural areas for more than five years (X2=2.05, p=0.152)

4.2.2 Sex

Out of the total of 97 students, 65 (67.0%) were females. Of the 32 males, 9(28.1%) were willing to work for more than 5 years in rural areas, while 22(33.8%) out of the 65 females were willing to work in rural areas for more than five years, χ^2=0.32, p=0.570.

4.2.3 Age

The median age (Q1, Q3) for students who were prepared to work in rural settings was 29 (25,32) years. compared to 26 (24,27) years for students who were prepared to work in rural settings for less than five years only. On average students who were prepared to work in rural settings for more than five years were older than students who were prepared to work in rural settings for at most five years. (p<0.001).

4.2.4 Marital status.

Out of 74 (76.8%) single students, 19(26.0%) were willing to work in rural settings for more than five years, compared to 12(52.2) out of 23(23.7%), married students, (χ^2=5.97, p=0.050).

4.2.5 Place of study

There was no significant association (χ^2=2.60, p=0.458) between one's place of study and preference to work in rural settings. Out of the respondents at Kitwe Central Hospital, 15(39.5%) were willing to work in rural settings for more than five years, while at Ndola Central Hospital, 6(31.6%) out of 19 respondents were willing to work for more than five years in rural settings, a situation which was exactly the same for University \teaching Hospital. As for Chinsali hospital, 4(19.0%) out of 21 were willing to work in rural settings for more than five years.

4.2.6 Preference of level of medical care

Table 16 shows the relationship between the level of Medical Care and the length of work in rural settings .A significant association (χ^2=10.99, P = 0.004) was observed between preference of Medical Care and working in rural areas.

The less level of care preferred, the more likely they were to work for more than five years in rural areas.

Table 16 : Preference of level of medical care

	PREFERENCE OF LEVEL OF CARE			
	> 5YEARS	< 5 YEARS	χ^2	PV
RHC	13 (59.1)	9 (40.9)	10.99	0.004
SHC	9 (32.1)	19 (67.9)		
THC	9 (19.1)	38 (80.9)		

4.2.7 Compulsory rural posting

A significant association (χ^2=5.81, p = 0.016) was observed between compulsion and preference to work in rural areas. Asked whether compulsory rural posting after internship was good, 78 (80.4%) out of the 97 student respondents were not affirmative and 19 (19.6%) were affirmative. Out of the 19 persons who responded yes, 11 (57.9%) were willing to work in rural setting for more than five years compared to 20(25.6%) out of the 78 who did not think that compulsory rural posting after internship was good.

4.2.8. Rural Experience

A significant (χ^2=8.65, P=0.003) association was noted between one's past rural experience and preference to work in rural Areas. Out of 58 respondents who responded affirmative to having past experience in rural settings, 24(41.4%) were willing to work for more 5 years in Rural Areas while 7 (20.6) out of the 39 who had no past Rural experience were willing to work in Rural Areas for > 5 years.

4.2.9 More jobs for medical personnel

A significant association (χ^2=7.31, p=0.007) was observed between the availability of jobs for medical personnel in rural settings and the length of work in rural settings. Out of 65 respondents who were of the conviction that there were more jobs in rural areas, 29(44.6%), were willing to work in rural settings for more than five years, while 7(20.6%) out of the 34 who disagreed were willing to work in rural areas for more than five years.

4.2.10 Salary:

There was a significant association ($\chi 2$ =3.50 p=0.061) between the salary and willingness to work in rural settings for more than 5 years. Out of 43 respondents who responded affirmative to salaries being better in rural settings, 18(62.1%) were willing to work for more 5 years in Rural Areas while 11(37.9%) out of the 47 who disagreed were willing to work in Rural Areas for more 5 years.

TABLE 13: NON SIGNIFICANT FACTORS FOR STUDENTS

Factor		>=5years n(%)	<5years n (%)	χ^2	P-value
More job challenges in rural areas	Agree	31(40.2%)	46(59.8%)	0.64	0.423
	Disagree	5(26.3%)	14(73.7%)		
Long term solution	Incentives	27(32.9%)	55(67.1%)		
	Compulsion	4(26.7%)	11(73.3%)	*	0.768
Transport better in urban areas	Agree	26(29.5%)	62(70.5%)	2.54	0.110
	Disagree	5(55.6%)	4(44.4%)		
Standard of living higher in urban areas	Agree	25 (80.6%)	6 (19.4%)	*	0.940
	Disagree	52 (80.0%)	13 (20.0%)		

* Fisher's exact test.

Table 14 shows a summary of factors that were significantly p<0.010) associated with working in rural areas for more than five years. These factors were used in a multivariate analysis.

Table 14 Results of Bivariate Analysis for Students.

Factor	P Value
Marital status	0.017
Preferred level of medical care to work	0.004
Compulsory rural posting	0.007
Salary	0.061
More jobs in rural areas	0.003
More contact with patients	0.016
Rural experience is essential	0.042
More chance to be of service in rural areas	0.076
Better environment in rural areas	0.005
Curriculum prepares for work in rural areas	0.003
Age	0.001

4.2.11 Multivariate Analysis

After controlling for confounding variables, curricula and age were the only factors significantly associated with the outcome (length of stay longer than five years in a rural area). Students at each birthday were 1.23 (95% CI; 1.04,1.44; p= 0.013) times more likely to be willing to work in rural areas. Students who were of the conviction that the curricula prepares them adequately to work in rural areas were 6.56 (95% CI;

1.80,23.83; p=0.004) more likely to be willing to work in rural areas for more than five years compared to those who were of the conviction that the curricula did not prepare them to work in the rural areas.

Table 15 Results of Multivariate Analysis of Students.

Factor	Odds Ratio (95% CI)	P Value
Current curricula prepares one to work in rural areas		
Yes	6.56(1.80,23.83)	0.004
No	1	
Age	1.23 (1.04,1.44)	0.013

CHAPTER FIVE

5.0 DISCUSSION OF FINDINGS

The vast majority of Zambia is rural and the need for adequate health care in these areas is not being met. This study explored several different aspects of health personnel staffing in rural settings of Zambia including medical students views to working in rural settings for more than five years, the lifestyle and work environment of the physician and nurses in rural settings, and their status in rural areas. Finally, the study also addressed some of the measures used to alleviate the shortage of health care in rural areas.

This study was aimed at finding out the factors, which contributed to the willingness of health personnel to work in rural settings for at least five years. Most health workers are willing to work in rural areas for one or two years, but it was felt that this was the minimum time needed for the workers to get acquainted to their environment and understand the community. It is therefore unfair to transfer them just when their services are becoming better. Five years was considered to be a good period for their services to be appreciated more by the community. One of the most important findings of this study is that most respondents were convinced that the Zambian curricula adequately prepared them to work in rural areas. Most respondents also believed that compulsory rural posting of newly graduated doctors and nurses was good. This contradicts a study done by Reid et al in which he raised a question as to whether it was right to send the new graduates to the rural areas, where they had to work alone, or in small contemporary groups, under the most trying conditions. He agued that rural medical practitioners needed to have adequate training in emergency medical care since they had considerable responsibility for providing emergency care. These doctors, therefore, needed to have extensive experience since they had to

manage all conditions presented to them whether they had the appropriate skills or not, because referral was often impossible for a variety of reasons such as no transport, long distances to tertiary institutions; patient too ill to be moved or that the patient can not afford the user fees at the other end (Reid et al, 2000).

5.1 Methodology

The study was carried out from June 2001 and November 2002. There were no major problems encountered during the study. Some limiting factors of this study were the inherent weakness of a descriptive cross-sectional study and a small sample size. It would have been better to enroll more staff from rural settings but this was not possible due to financial constraints.

5.2 Demographic data

As expected, medical students were younger than qualified medical staff. The higher ratio of female (67.0% for students and 64.7% for qualified staff) may be accounted for by the high female recruitment in the nursing schools. The low response rate observed especially for Medical Officers in comparison to the other groups may be due to the low available staff numbers in this group which were more overworked and had little time to spare for the survey.

As for marital status in the qualified staff, the majority of the respondents were single, which was expected in the student group but not in the qualified group. This can be due to the fact that all the widows, divorcees and those on separation were recorded as "single".

Another important findings of this study was that the medical personnel who were older and those who were married were more likely to opt to work in rural areas.

This differs from findings of a study done in Zimbabwe by Siziya and Woelk (Predictive factors for medical students and housemen to work in rural health institutions in Zimbabwe). This study suggested that 'if the prestige in the community, the standard of living and salary would be raised for physicians working in rural areas, these would attract more physicians to work in rural settings'. Salary difference between doctors working in Urban and Rural may also explain the difference in the analysis because no salary difference exists in Zimbabwe while in Zambia there is rural hardship allowance It should be noted here, though that this study was mainly for physicians while ours included physicians, nurses and students.

Our results of no significant associations between working in rural areas for at least five years and increasing opportunities for continuing education, career development, good school for children, transport and accommodation contradicts earlier studies done in the USA in which one of the suggested factors for attracting physicians in rural settings was the increasing of opportunities for continuing education. Students in Kwazulu - Natal and in Ethiopia also found that opportunities for continuing education were considered better in urban areas (Edington et al, 1991).

Our results coincided with those of an earlier study done in terms of patient contact being more favorable in rural settings and that environmental surroundings and job availability were better in rural areas.

The differences in results with those from USA, South Africa and Ethiopia could be partly associated to the difference in our target groups and study populations. Our target population included both qualified and student doctors and nurses, while the

above stated studies were specifically for physicians. The usage of different statistical methods, bivariate versus multivariate and finally checking for confounding factors using forward logistic regression certainly contributed to the differences in results. This study has verified that marital status and age, is a major contributing factor in the willingness of medical personnel to work in rural setting. In both groups the medical personnel who were married were more likely to opt to work in rural settings. For both groups, the older respondents were more willing to work in rural settings for more than five years. Most medical and nursing students believed that the current curricula adequately prepared them to work in rural settings. Most respondents favored compulsory rural posting.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 CONCLUSION

The study has verified that marital status and age are major contributing factors to the willingness of medical personnel to work in rural settings. In the two groups studied, it has been observed that the medical personnel who were married were more willing to work in rural settings as compared to their counterparts who were single.

For both groups, it was also observed that the older respondents were more likely to work in rural settings for more than five years.

However, despite the fact that most of the respondents considered compulsory rural posting to be good and that the curriculum prepared them adequately for rural posting, the majority were still not willing to work in rural settings for more than five years.

6.2 RECOMMENDATIONS

Following the findings of this study, it is recommended that:

1. Relevant authorities consider extending the policy of compulsory rural posting to the older and married doctors and nurses.
2. Similar studies and cohort studies targeting doctors and nurses separately be conducted in future to compare the present findings and monitor trends of workers and students preferences of were to work

3. That a more comprehensive study including other health professionals such as clinical officers and laboratory technicians be conducted in future.

4. Internship be extended to all categories of health workers.

5. The use of telemedicine be explored for its potential to reach those areas where there is a shortage of health care workers.

6. That polices be practical and relevant to the prevailing local conditions.

7. Clear and consistent policies be formulated to motivate and encourage retention of rural health workers.

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INFORMED CONSENT

Factors Associated with Staffing of Medical Officers and Nurses in Rural Settings

I am conducting a survey about "willingness" of medical students to work in rural areas upon graduation. I would very much appreciate your participation in this survey. I would like to ask you about the reasons why you would like to work or not to work in rural health posts/hospitals. This information could help government to plan health services and conditions of service in rural areas. Whatever information you provide will be kept strictly confidential and will not be shown to other persons.

Participation in this survey is voluntary and you can choose not to answer any individual questions or all the questions. However, I hope you will participate in this survey since your views are important.

Thank you.

23. SIGNED:_____

(Respondent)

DATE: _____

SERIAL NO: _____

INSTRUCTIONS

A. Answer all the questions.

B. Tick the correct answers in the boxes provided.

23. C. Write answers for open questions in the spaces provided.

24. D. Questionnaire number one is for students.

1. Name of Institution

1. Kitwe Central Hospital.
2. Ndola Central Hospital. ☐
3. University Teaching Hospital ☐
4. UNZA-Ridgeway campus. ☐

2. Category of respondents.

1. 3rd (last) year Nursing students ☐
2. 7th year student ☐
3. Other

3. SEX 1 Male ☐ 2Female ☐

4. Age at last birthday. ☐

5. Marital status.

1. Single ☐
2. Married ☐
3. Divorced ☐
4. Widow ☐
5. Other ☐

QUESTIONS AND FILTERS CODING CATEGORIES

6. At what level of medical care would you prefer to work. ☐

primary Health Care (PHC) e.g. urban health center/rural health center ☐

1. Secondary Health Care (SHC) e.g. Rural /District hospital. ☐

2. Tertiary health care (THC) e.g. Provincial/central hospital

7. How long are you prepared to work in rural setting?

   1. One year only ☐

   2. 2 – 3 years ☐

   3. 4 –5 years ☐

   4. Above 5 years ☐

8. Do you think compulsory rural posting after internship is good?

   1. Yes ☐

   2. No ☐

   3. Other ☐

9. What do you think can be the long-term solution to the problem of Staffing in rural areas?

   1. Incentives, financial/material support ☐

   2. Postgraduate opportunities ☐

   3. Improve status of rural doctors ☐

   4. Use compulsion ☐

   5. Other

10. How can you rate the salary in rural areas as compared to urban areas?

1. Good ☐
2. Better ☐
3. Bad ☐
4. Worse ☐
5. Other ☐

11. There are more Jobs for medical personnel in rural areas as compared to urban areas.

1. Strongly agree
2. Agree ☐
3. Disagree ☐
4. Strongly disagree ☐
5. Do not know. ☐

12. There is more job challenge in rural areas than in urban areas.

1. Strongly agree ☐
2. Agree ☐
3. Disagree ☐
4. Strongly disagree ☐
5. Do not know. ☐

13. There is more contact with patient in rural areas than in urban.

1. Strongly agree ☐
2. Agree ☐
3. Disagree ☐
4. Strongly disagree. ☐
5. Do not know.

14. Rural experience is essential for all medical personnel.

1. Strongly agree ☐
2. Agree ☐
3. Disagree ☐
4. Strongly disagree ☐
5. Do not know. ☐

15. General living expenses are lower in rural areas as compared to urban areas.

1. Strongly agree ☐
2. Agree ☐
3. Disagree ☐
4. Strongly disagree ☐
5. Do not know ☐

16. Opportunities for " continuing education" are better in rural settings.

1. Strongly agree ☐
2. Agree ☐
3. Disagree ☐
4. Strongly disagree ☐
5. Do not know ☐

17. There are no good schools for children in rural areas.

1. Strongly agree ☐
2. Agree ☐
3. Disagree ☐
4. Strongly disagree ☐
5. Do not know ☐

18. There are a lot of opportunities for Private practice in rural areas.

1. Strongly agree ☐
2. Agree ☐
3. Disagree ☐
4. Strongly disagree ☐
5. Do not know ☐

19. The standard of living is higher in urban areas.

1. Strongly agree ☐
2. Agree ☐
3. Disagree ☐
4. Strongly disagree. ☐

20. Transportation system is better in urban areas than in rural areas.

1. Strongly agree ☐
2. Agree ☐
3. Disagree ☐
4. Strongly disagree ☐
5. Do not know ☐

21. Medical personnel working in rural areas are considered to be of "lower Caliber" by colleagues working in urban settings.

1. Strongly agree ☐
2. Agree ☐
3. Disagree ☐
4. Strongly disagree ☐
5. Do not know ☐

22. Do you think there is more chance for you to be of service

in rural areas than in urban areas?

1. Yes
2 No
3. Other

23. The environmental surrounding in rural areas is better than in urban areas

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree
5. Do not know.

24. There are more opportunities for career development in rural areas than in urban Areas.

1. Strongly agree
2. Agree
3. Strongly disagree
4. Disagree
5. Do not know.

25. Do you think the current curriculum prepare you to

Work in rural settings?

1. Strongly agree
2. Agree
3. Strongly disagree
4. Disagree
5. Other

26. Make suggestions of some measures you think can encourage you to live and work in rural settings ----------

---

Note: You can write on separate papers where the provided space is not enough.

End of questionnaire number one.

INFORMED CONSENT

Factors Associated With Staffing Of Medical Officers And Nurses In Rural Settings.

I am conducting a survey about "willingness" of medical students to work in rural areas upon graduation. I would very much appreciate your participation in this survey. I would like to ask you about the reasons why you would like to work or not to work in rural health posts/hospitals. This information could help government to plan health services and conditions of service in rural areas. Whatever information you provide will be kept strictly confidential and will not be shown to other persons.

Participation in this survey is voluntary and you can choose not to answer any individual questions or all the questions. However, I hope you will participate in this survey since your views are important.

Thank you.

24. SIGNED: _____

(Respondent)

DATE: _____

QUESTIONNAIRE NUMBER TWO

INSTRUCTIONS

1. Answer all the questions
2. Tick the correct answers in the provided space.
3. Write answers for open questions in the spaces provided.
4. Questionnaire number two is for practicing medical officers and nurses.

QUESTIONS AND FILTERS CODING

CATEGORIES

1. Name of Institution
   1. Kitwe Central Hospital.
   2. Ndola Central Hospital.
   3. University Teaching Hospital
   4. UNZA-Ridgeway campus.
2. Category of respondents.
   1. 3rd (last) year Nursing students
   2. 7th year student
   3. Other
3. SEX 1 Male ☐ 2Female ☐
4. Age at last birthday. ☐

5. Marital status.

   1. Single ☐
   2. Married ☐
   3. Divorced ☐
   4. Widow ☐
   5. Other ☐

6. At what level of medical care would you prefer to work. ☐

   1. Primary Health Care (PHC) e.g. Urban health center/rural health center 1 ☐
   2. Secondary Health Care (SHC) e.g. Rural /District hospital. ☐
   3. Tertiary health care (THC) e.g. Provincial/central hospital

7. How long are you prepared to work in rural setting? ☐

   1. One year only
   2. 2 – 3 years ☐
   3. 4 –5 years ☐
   4. Above 5 years ☐

8. Do you think compulsory rural posting after internship is good?

   1. Yes ☐
   2. No ☐
   3. Other ☐

25. Staffing in rural areas?

4. Incentives, financial/material support ☐
5. Postgraduate opportunities ☐
6. Improve status of rural doctors ☐
7. Use compulsion ☐
8. Other

10. How can you rate the salary in rural areas as compared to urban areas?

1. Good ☐
2. Better ☐
3. Bad ☐
4. Worse ☐
5. Other ☐

11. There are more Jobs for medical personnel in rural areas as compared to urban areas.

1. Strongly agree
2. Agree ☐
3. Disagree ☐
4. Strongly disagree ☐
5. Do not know. ☐

12. There is more job challenge in rural areas than in urban areas.

1. Strongly agree ☐
2. Agree ☐
3. Disagree ☐
4. Strongly disagree ☐
5. Do not know. ☐

13. There is more contact with patient in rural areas than in urban.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree.
5. Do not.

14. Rural experience is essential for all medical personnel.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree
5. Do not know.

15. General living expenses are lower in rural areas as compared to urban areas.

1. Strongly agree
2 Agree
3 Disagree
4 Strongly disagree
5 Do not know

16. Opportunities for " continuing education" are better in rural settings.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree
5. Do not know

17. There are no good schools for children in rural areas.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree
5. Do not know

18. There are a lot of opportunities for Private practice in rural areas.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree
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1. Strongly agree
2. Agree
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5. Do not know

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Work in rural settings? ☐

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2. Agree ☐
3. Strongly disagree ☐
4. Disagree ☐
5. Other ☐

25. Make suggestions of some measures you think can encourage you to live and work in rural settings ----------

---

26. Make suggestions of some measures you think can encourage you to live and work in rural settings ----------

---

---

27. If you have worked in rural setting explain in your on words what you found frustrating or/and encouraging during your stay there----------

---

---

28. What do you think are the reasons for the high attrition (drop out) rates of doctors and nurses working in rural areas? Explain in your on words. ----------

---

THANK YOU FOR YOUR COOPERATION

END OF QUESTIONNAIRE NUMBER TWO.

University Of Zambia,
School Of Medicine,
P.O.Box 50110,
Lusaka.
24th March 2002.

The Executive Director,
Kitwe Central Hospital,
P.O. Kitwe,
Kitwe.

Approved

Dear Sir / Madam:

RE: Permission to conduct a study among the Resident Doctors and Nurses at Kitwe Central Hospital.

I hereby wish to apply for permission to conduct a cross sectional survey among the doctors and nurses at your Institution. This is an effort towards the fulfillment of the Masters in Public Health (MPH) part II Dissertation.

Find enclosed the summary of the study and a sample of the questionnaire to be used to collect data.

I will be very grateful if permission will granted.

Thanking you in anticipation.

Yours faithfully,

E.M.MUNACHONGA.

University of Zambia
School of Medicine
P.O. Box 50110
Lusaka

24th March, 2002

The Executive Director
Ndola Central Hospital
P.A. NDOLA

Dear Sir,

RE: PERMISSION TO CONDUCT A STUDY AMONG THE RESIDENT DOCTORS AND NURSES AT NDOLA CENTRAL HOSPITAL

I hereby wish to apply for permission to conduct a cross sectional survey among the doctors and nurses at your Institution. This is an effort towards the fulfillment of the Master in public Health (MPH) part II Dissertation.

Find enclosed the summary of the study and a sample of the questionnaire to be used to collect data.

I will be very grateful if permission will granted.

Thanking you in anticipation.

Yours faithfully,

E.M. MUNACHONGA

A/DCS
no objection
I have no objection
F/A
ED
07/06/02

Returned
to
07

University Of Zambia,
School Of Medicine,
Department Of Community Medicine,
P.O.Box 50110,
Lusaka.
24th March, 2002.

3032

Approved

e Executive Director,
iversity Teaching Hospital,
.Box Rw 1,
saka.

ar Sir / Madam:

E: Permission to conduct a study among the Resident Doctors, Nurses and final year rsing Students at the University Teaching Hospital.

ereby wish to apply for permission to conduct a cross sectional survey among the ctors, nurses and final year nursing students at your Institution. This is an effort vards the fulfillment of the Masters in Public Health (MPH) part II Dissertation.

d enclosed the summary of the study and a sample of the questionnaire to be used to lect data.

ill be very grateful if permission will granted.

anking you in anticipation.

urs faithfully,

M.MUNACHONGA

C: The Principal Tutor; UTH School of Nursing.

THE UNIVERSITY OF ZAMBIA
SCHOOL OF MEDICINE
RESEARCH ETHICS COMMITTEE

Telephone: 252641
Telegrams: UNZA, LUSAKA
Telex: UNZALU ZA 44370
Fax: + 260-1-250753

Dean's Office
P.O. Box 50110
Lusaka, Zambia

Assurance No. FWA00000338
IRB00001131 of IOR G0000774

5th April, 2002

Dear Mr Munachonga
C/o Department of Community Medicine
UNZA - SOM
LUSAKA

Dear Mr Munachonga

RE: SUBMITTED RESEARCH PROPOSAL

Reference is made to your research proposal submission of October 2001. I am pleased to inform you that the changes you made to your research proposal as recommended by the Research Ethics Committee have now been approved.

Title of proposal: **Factors associated with staffing of medical doctors and nurses in rural areas.**

Please note that it is mandatory that you submit a copy of your research findings to this committee.

Yours sincerly

Prof. J T. Karashani
CHAIRPERSON
RESEARCH ETHICS COMMITTEE

THE UNIVERSITY OF ZAMBIA
School of Medicine

Telephone: 252641
Telegram: UNZA, Lusaka
Telex: UNZALU ZA 44370
Fax: + 260-1-250753

Dean's Office
P.O. Box 50110
Lusaka, Zambia

SRO
Mr. Ndalama
please assist

A/D
2/5

Your Ref:

Our Ref:

18th April 2001

TO WHOM IT MAY CONCERN

Re: ELIJAH MUTOLOKI

The above mentioned is a Masters of Public Health (MPH) student with the University of Zambia, School of Medicine. Kindly assist him with the information he may need from your organisation even as he conducts research.

Yours sincerely

Dr. L. Chiwele
HEAD, DEPARTMENT OF COMMUNITY MEDICINE

MEMO

To: All the Consultants
The Acting Nursing Services Manager
The Acting Nursing Education Manager

From: The Executive Director

Subject: Study on Doctors, Nurses & Student Nurses - Kitwe Central Hospital

Date: 11 June 2002

Attached are questionnaires from Mr. Munachonga of the University of Zambia who is conducting the above mentioned study.

Kindly ensure that the doctors/nurses in your department fill in the questionnaires by 11.00 hours tomorrow.

DR CHANDWA NG'AMBI

The University of Zambia

DIRECTORATE OF RESEARCH AND GRADUATE STUDIES

Telephone: 290258/291777
Telegrams: UNZA LUSAKA
Telex: UNZALU ZA 44370
Fax: + 260 - 1 - 290258/253952
E-mail DirectorPostgrad@postgrad.unza.zm

P O Box 32379
Lusaka, Zambia

Your Ref:
Our Ref:

2nd October 2002

Dr Elijah Mutoloki Munachonga
C/O Department Community Medicine
School of Medicine
UNZA

Dear Dr Munachonga

RE: MASTER OF PUBLIC HEALTH (MPH) RESEARCH PROPOSAL

Your research proposal for the Master of Public Health (MPH) entitled: ***"Factors associated with staffing of medical doctors and nurses in rural settings"*** was presented at the 72nd meeting of the Board of Graduate Studies held on 30th August, 2002.

I am pleased to inform you that the proposal was approved by the Board. You can proceed to Part II of the programme and your Supervisor is Dr S. Siziya and your Co-supervisor is Dr S. Miti.

I wish you every success in your studies.

Yours sincerely

Professor Geoffrey Lungwangwa
DIRECTOR

cc Dean, School of Medicine
Head, Department of Community Medicine
Assistant Dean (PG), School of Medicine
Dr S. Siziya, School of Medicine
Dr S.Miti, School of Medicine

In reply please quote

No.

REPUBLIC OF ZAMBIA

CENTRAL BOARD OF HEALTH

NORTHERN PROVINCE HEALTH OFFICE

P O Box 410026, Kasama, Zambia
Telephone 260-4-222078, Telefax 260-4-221501

REPUBLIC OF ZAMBIA
CENTRAL BOARD OF HEALTH
OFFICE OF THE DIRECTOR
15 OCT 2002
PROVINCIAL HEALTH OFFICE
P.O. BOX 410026
KASAMA

5 October 2002

O WHOM IT MAY CONCERN

E: RESEARCH FACTORS ASSOCIATED WITH STAFFING OF OCTORS AND NURSES IN RURAL AREAS

his is to confirm that Dr E.M. Mutoloki has been allowed to conduct the ove mentioned research in the Northern Province.

hank you

BASIL
UMAN RESOURCES SPECIALIST
or/PROVINCIAL HEALTH DIRECTOR