

**ASSESSMENT OF PHYSICIANS' AND NURSES' ATTITUDES TOWARDS  
PHARMACISTS AS COLLABORATORS IN MEDICATION THERAPY  
MANAGEMENT AT KENYATTA NATIONAL HOSPITAL.**

**BY : WACHIRA N. T.  
U59/70491/2007**

**A DISSERTATION SUBMITTED FOR THE PARTIAL FULFILLMENT  
FOR THE AWARD OF DEGREE OF MASTER OF PHARMACY IN  
CLINICAL PHARMACY**

**DEPARTMENT OF PHARMACEUTICS AND PHARMACY  
PRACTICE  
SCHOOL OF PHARMACY  
UNIVERSITY OF NAIROBI**

**NOVEMBER 2009**



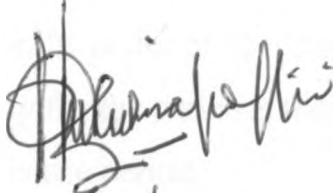
**UNIVERSITY OF NAIROBI  
MEDICAL LIBRARY**

## DECLARATION

This is my original research project which has not been submitted in any other university for degree award.

Submitted by: Wachira N. T.

Signature



Date:

18/4/2009

The entire work was supervised and approved for submission by;

- (i) Name: Dr. James N. Ombega, Pharm. D., FPACT, OGW,  
Senior Lecturer in Clinical Pharmacy, UON.

Signature



Date

18/11/2009

## **ACKNOWLEDGEMENTS**

I would like to acknowledge the guidance I got from my supervisor, Dr. J. Ombega, who from the beginning guided and finally came with a final report. Also, I cannot forget the nurses, medical and pharmacy practitioners of K.N.H, for responding to the questionnaires despite their busy schedules. Its because of them that the entire project came to completion.

Finally, to my family for the patience they had during the hectic time we went through during the entire period.

## **DEDICATION**

This project is dedicated to my older brother, Isaac, for his interest in what I was doing in College during those two years.

## TABLE OF CONTENTS

Title page.....	i
Declaration .....	ii
Acknowledgement .....	iii
Dedication .....	iv
TOC.....	v
Acronyms and abbreviations .....	vi
Abstract .....	vii
Definition of terms .....	viii
<b>1. INTRODUCTION .....</b>	<b>1-7</b>
1.1 Background	
1.2 Statement of the research problem	
1.3 Purpose of The Study	
1.4 Objectives	
1.5 Research Questions	
1.6 Justification of the Study	
1.7 Limitations	
<b>2. LITERATURE REVIEW .....</b>	<b>8-24</b>
2.1 Collaboration between medical doctors and pharmacists	
2.2 Pharmaceutical care process	
2.3 Pharmacists have a potential role to play in health care	
2.4 The Pharmacist as a member of the health care team	
<b>3.0METHODOLOGY .....</b>	<b>25-26</b>
3.1 Area of study	
3.2 Target population	
3.3 Inclusion and exclusion criteria	
3.4 Sample size	
3.5 Method of data collection	
<b>4.0RESULTS AND DATA ANALYSIS .....</b>	<b>27-37</b>

<b>5.0DISCUSSION AND CONCLUSION .....</b>	<b>38-41</b>
<b>6.0RECOMMENDATION .....</b>	<b>42-44</b>
<b>7.0REFERENCES .....</b>	<b>45-46</b>
<b>8.0APPENDICES .....</b>	<b>47-72</b>
8.1 Questionnaires	

## ACRONYMS

USA	-	United States of America
WHO	-	World Health Organization
MPHARM	-	Masters in pharmacy
P/C	-	Pharmaceutical care
NHS	-	National Health Services (of England)
FDA	-	Food and Drug administration, USA
CDC	-	Centre for Disease Control
GPP	-	Good Pharmacy Practices
HIV/AIDS	-	Human Immunodeficiency virus / Acquired immunodeficiency disease syndrome
KNH	-	Kenyatta National Hospital
MOH	-	Ministry of Health
HMO	-	Health Management Organization
CPD	-	Continuous Professional Development
FIP	-	International Pharmaceutical Federation
ICU	-	Intensive Care Unit

## ABSTRACT

**Purpose.** The purpose of the study was to assess physicians' and nurses' attitudes toward pharmacists as collaborators in medication therapy management. This was to shed more light to the extent at which clinical pharmacy services were rendered at the medical institutions. The study was conducted at K.N.H. in the months of July and August 2009. K.N.H. is a referral hospital located at capital city, Nairobi. It is a few kilometres from the city centre and also serves residents of Nairobi and surrounding areas.

**Methods.** The study involved construction of appropriate questionnaires validated via pilot study and eventual distribution to three professional groups viz nurses, medical doctors and pharmacist. All pharmacists who have worked for at least two years were included plus the relevant medical doctors and nurses in wards at levels 7 and 8. The in-charges in various stations were used to aid in the distribution. Daily follow-up and visits during night shift were done to make sure as many as possible of these professionals responded.

**Results.** One hundred and fifteen of the medical professionals responded of which 26 were medical doctors, 51 were nurses and 38 were pharmacists. The results were analysed statistically from the various groups by use of graphs.

**Conclusion.** Pharmacists are absent in the wards and medical doctors and nurses rarely sought drug information from them, they use other sources. These professionals recognize the pharmacist's knowledge on drugs and would like them to be readily available to give the necessary information as well as train nurses more about drugs. This will be achieved more effectively by pharmacists holding a joint ward rounds with other professionals and not their own. Pharmacists are well aware of clinical pharmacy but do not practice it. Medical services delivery can be improved if pharmacists are involved in treatment plans and are available in the wards. And this will favourably increase therapeutic outcomes in the hospital.



**Recommendations.** Pharmacists at KNH should be assigned to work in particular wards and a therapeutic committee formed to oversee enhanced collaboration between medical professionals in clinical care teams. Curriculum of the medical and pharmacy students should be revised so that rapport between them can start forming early enough. And clinical pharmacy services should be fully implemented in KNH to improve therapeutic outcomes. All institutions training pharmacy personnel should be affiliated to a medical institution where pharmaceutical care will be vigorously instructed and implemented.

The various professional bodies of the health workers should address the issue of collaboration in their agendas as often as possible.

## DEFINITION OF TERMS

- Health care professionals – members of the medical, dental, pharmacy and nursing professions and other persons who may as a result of their legal qualification are able to prescribe, supply or administer medicines.
- Health workers – people whose main activities is aimed at enhancing health. They include doctors, nurses, pharmacists, laboratory technicians, management and support workers.
- Cognitive services – those services or functions which require professional knowledge and skills beyond the ones required for the dispensing of a prescription e.g. counseling.
- Evidence based medicine (EBM) – the conscientious, explicit and judicious use of current best evidence in making, decisions about the care of individual patients.
- Health promotion – the process of enabling people to increase control over, and to improve their health.
- Morbidity – the rate of illness not death.
- Mortality – the rate of death

## 1. 0 INTRODUCTION

### 1.1 BACKGROUND

Effective collaboration between medical doctors and pharmacists is important for favourable therapeutic outcomes. This call for conscientious effort to improve clinical pharmacy services at Kenyatta National Hospital. Clinical pharmacy training will go a long way in addressing this professional gap in our main referral hospital. And when fully implemented, albeit cautiously, will be introduced in the other public hospitals.

To improve the delivery of health care in this country the pharmacist must be fully involved, so is the same if the pharmacy profession is to flourish and grow to greater levels. The one to one relationship of patient and physician cannot be maintained if such a system is to meet all of today's health needs effectively. This is where the other health professions, such as pharmacy, can assume their rightful positions as contributing members of the health care team.

Clinical pharmacy is a recent concept in pharmacy practice. It comprises a set of functions that promote the safe, effective and economic use of medicines for the improvement of individual patient quality of life. "Clinical" implies the practice of pharmacy in the presence of patients, whether they are hospitalized or outpatients visiting their community pharmacy or neighbourhood health care centre (Charles W. Blisitt et al). The term does not imply that this practice be confined to the institutional setting. However, institution provides the ideal place.

Clinical pharmacy emerged from the presence of pharmacists in the inpatient areas and their interest in promoting cost effective medical use in hospitals. This role was recognized by UK government who, in 1988, endorsed the implementation of clinical pharmacy services to secure value for money

from medicines (Roger Walker et al 2007). This was initially termed 'ward pharmacy' but participation in medical ward round in the late 1970s signaled the transition to clinical pharmacy. In 1980s clinical pharmacy grew because of its ability to promote cost-effective medicines use in hospitals.

Clinical pharmacy service has made it possible for the pharmacy to shift from product orientated role towards direct engagement with patients. This way the pharmacist is able to solve the problems the patient encounters with their medicines. Clinical pharmacy better addresses the role the pharmacists play in medication therapy management of the patients, which is a vital segment in this era of numerous therapeutic agents.

Clinical pharmacy is an essential component of pharmaceutical care. Pharmaceutical care is a co-operative, patient centered system for achieving specific and potential patient outcomes from the responsible provision of medicines (Roger walker and Café Whitt lesea, 2007). Clinical pharmacy therefore embraces the philosophy of pharmaceutical care undertaken with sole aim of achieving explicit outcomes for the patients.

The need to review the future for pharmacy was first formally recognized in 1979 in a report on the NHS(A.J. Winfield and R.M.G Richards 2004). This was followed by a succession of key reports and papers which repeatedly identified the need to exploit the pharmacist expertise and knowledge to better effect.

One of the reports was Nuffield report of 1986. This report had 100 recommendations which led the way to many new initiatives. It laid the development for the recent developments of the practice of pharmacy. The Nuffield report recommended that priority should be given to the continuing

education of existing pharmacists (Nuffield foundation, London, 1986). In response to Nuffield report the Royal Pharmaceutical Society set up a working party council with the aim of producing a strategy to consolidate, maintain, extend and assess the competence of the pharmacists through CPD and post graduate education and training(Pharmacy journal 1989).

Clinical pharmacists function as integral members of health care teams working with physicians to achieve desired therapeutic outcomes, prevent or minimize drug related problems, and improve medication use. Although greater collaboration between healthcare professions has been widely advocated, little has yet been done to improve doctor – pharmacist relationship in KNH. The primary objective of clinical pharmacy, in concise terms, is to improve pharmaceutical services to the patients and to the paramedical and medical professionals in the community. The premise of bringing together distinct professional is very admirable and it present ideals of improving service quality for patients and increasing efficiency and skills for professionals. Collaboration between the various professional, mostly between pharmacist, doctors and nurses, will bring greater satisfaction in working on busy hospital wards and bring in a new era in patient safety.

Today pharmacists deal with more potent and sophisticated medicines and this requires a different type of knowledge than was previously the case. Furthermore the public is becoming more aware of pharmacist services. They are making increasing use of the pharmacist as a source of information and advice about their minor conditions and non-prescription medicines. Further changes reflecting the merging of professional and competency – based delivery of health care are likely to be seen in near future. Tasks

undertaken by one profession may be undertaken by many. In addition in order to have professional time we expect to see pharmacy technicians taking on greater responsibility for the technical aspects of the pharmacists functions whilst qualified pharmacists concentrate on cognitive functions and interact directly with the patient, thus the need to adequately collaborate with the medical practitioners and the nurses. Patient files should be clearly documented by these professionals so that each can be adequately updated on the progress of the patient. The pharmacist should hold continuous workshops with nurses so that they can address their issues as regards drugs, their common and dangerous adverse effect, administration, and their storage when not in use.

## **1.2 Statement of the problem**

If the medical doctors and pharmacists can work as a team, a lot can be achieved for the wellbeing of the patient. Also, the cost of health care delivery is expected to go down as prescribing errors will be reduced. The cost-saving realized will go a long way in improving the services offered in K. N. H. Equally important is that the pharmacists should be recognized as potential provider who needs to be mobilized and integrated in health care services.

## **1.3 Purpose**

- The purpose of this study was to determine how the physicians and nurses perceive the pharmacists as collaborators in medication therapy management at K. N. H.

## **1.4 Objectives**

- To determine to what extent physicians and nurses believe or agree that pharmacists are a vital segment of the clinical care teams.
- To determine the extent to which physicians and nurses regard pharmacists as authoritative and knowledgeable professionals on drug therapy management.
- To determine whether the pharmacists are aware of their expanded role in pharmaceutical care of the patient.

## **1.5 Research questions**

- Do the medical doctors and nurses regard pharmacist as authoritative professional in drug therapy management?
- Are the pharmacists aware of their evolving and expanded roles as clinical team members?
- Can pharmacists make a difference in the delivery of health care services?.

## **1.6 Justification of the study**

The practice of clinical pharmacy in Kenya is relatively new. The traditional role of the pharmacists has mainly been drug supply, dispensing and occasionally drug information. Recently, however, and especially in the west (USA and UK mainly) pharmacists started participating in patient care and taking more responsibility in medication therapy management.

Here in Kenya, the concept of clinical pharmacy and pharmaceutical care is relatively new. Infact, it is perceived as a new innovation in the practice of pharmacy. And it is probable that it may not be better understood by other health professionals who only perceive pharmacy from the traditional point of view. It is important to know what other health professionals (mainly medical doctors and nurses) think of this practice as collaborators. This understanding will help the managers and educators of clinical pharmacy address issues such as how best to collaborate with medical doctors and nurses for optimal therapeutic outcomes.



### **1.7. Limitations**

Various challenges were encountered in the course of the study. First and foremost was the slow response of the medical professionals in filling the questionnaire. I had to visit some pharmacy stations more than five times to remind them and eventually get them to respond. In fact, there is one station I collected only one out of the six given out. Physicians took their time saying they are very busy. Sometimes I had to seek their cell phone numbers so that I could call them. Nurses responded well except where they were sudden change in shifts.

Then there was the issue of external validity because the other doctors and nurses were not involved. This is considering that they also prescribe drug although not as extensive as in the internal medicine areas.

## **2. LITERATURE REVIEW**

In 1950s patients used to ask their pharmacists “is this the right medicine, doc. Fifty years later, patients do not refer to their pharmacists as “doc”, but they still ask the same question. However, physicians seem concerned about pharmacists intruding on their turf as provider of medical care and advice.

Pharmacists are one of the most underutilized resources in health care. The managed care system needs to take advantage of this resource and develop collaborations models with other medical professionals. In a capitated environment globally with limited treatment dollars, this is a way of cutting costs and improving therapeutics outcomes. But many clinicians are afraid of the development happening in clinical pharmacy practice because of the belief that they are giving pharmacists more responsibility than they are trained to handle. However, clinical pharmacy is a reality in today’s world without which therapeutic outcomes will not be wholly realized as a goal is towards that end.

### **2.1 COLLABORATION BETWEEN MEDICAL DOCTORS AND PHARMACISTS**

The latest word in health care is “Collaboration”. It aims at bringing together distinct professionals, is admirable and presents ideals of improving service quality for patients and increasing efficiency and skill for professionals. “To collaborate” is “to work jointly on an activity or project”, as defined by the English Oxford Dictionary, 2004 edition.

Many of the healthcare professionals may think of the later definition as to work closely with others traditionally considered as separate breed. It

is also noteworthy to bear in mind that recently some medical schools are sending students doctors on nursing shifts to help them understand the nursing role.

Also notable is that the medical doctor-pharmacist relationship has not been brought more to the fore but is noted that collaboration of the two professionals will bring greater satisfaction in working on busy hospital wards and bring in a new error in patient safety leading to improved “patient care”, the very core of creating hospitals.

“The roles of the medical doctor and pharmacists are complementary and it has been established that the expertise of pharmacists when channeled through a co-operative relationship with doctors has a positive impact on patient outcomes” (Sandeef Nizzer et al, 2008). The benefits of this collaboration within the hospital environment include the taking of complete histories, the provision of drug information, the use of evidence – based prescribing, improved detection of prescribing errors and improved drug safety through careful drug monitoring. Furthermore close collaboration should improve the cost – effectiveness of prescribing.

Inter-professional collaboration will also lead to greater knowledge, skills and satisfaction for staff and a better service for patients. The patient will benefit from simple outcomes such as getting the correct medicines at the correct dosing intervals and getting their discharge medicines in a timely fashion.

If the collaboration is poor it may have a negative impact on the healthcare provided and the outcome for a patient will be failure to detect or communicate a prescribing issue.

The interaction should include self-introduction with a statement of the professional's role in relation to the patient, sharing of details of any planned interventions for the patient and then discussing the point of view of the fellow professional. When important conversations take place on an *ad hoc* basis, relying on implied or implicit information, then errors can be introduced resulting in poor outcomes and mistrust between professionals. Healthcare is complex with many variables potentially leading to error. Controlling communication and formally exchanging precise information controls some of these variables and thus reduces errors.

In a busy hospital environment there are many barriers to good communication between professionals. These barriers include lack of access to required information, time constraints (perceived or otherwise), lack of understanding, failure to recognize or a misconception of the role and responsibilities of other members of the team. Other potential barriers relate to the professional isolation, "us and them" and perceived status. The more junior medical staff may not feel they have the autonomy to make decisions with regard to drug-related questions from pharmacists and may be embarrassed by questioning on areas of which they have little or no knowledge. Understanding the hierarchy of medical staff is a key component to successful collaboration. However, this does not mean only discussing patients with senior doctors. Engaging junior staff early in their postgraduate training will pay dividends for future collaboration working.

### **2.1.1. Improving Collaboration**

So how can collaboration be improved?

“Zullich and colleagues identified certain attributes such as proximity, time, clinical knowledge, mutual professional practice interests and professional equality as essential components for practitioner collaboration” (Zillich et al, 2004). Ward – based clinical pharmacy services provide a solid foundation for meeting these attributes. This Zullich group also identified three types of variables that influences the development of a collaboration relationship; participant (personal variables), exchange characteristics (the nature) of the social exchanges between the practitioners and context (the practice environment).

At personal level it would be appropriate if a school of pharmacy and medicine had formal inter-professional communication training. Structured supported ongoing work – based assessments may also help develop such skills. Broadly exchange characteristics look at whether people can get on. They are the dominating forces affecting doctor – pharmacist collaboration. Trust and accountability between individuals are keystones that allow good social exchange and rapport to develop between practitioners. An individual’s ability to be persuasive can alter how an exchange proceeds but both parties must consider the interaction to be fair without one side being forced into an action for that exchange to be truly collaborative. Developing trust takes time and effort on all parts. Rotations, where medical or pharmacy staff change wards on a regular basis, can make it difficult to establish trust.

Practice environment must also change to optimize collaboration, opportunistic interaction between healthcare professionals is not

sufficient. Effective working and collaboration is hindered by incomplete documentation, difficulties in contacting other professionals and the lack of a standardized way of communicating in writing to ensure that any recommended action has been taken. Medical teams should communicate with each other using patients' notes, recording findings, thoughts and action in a standardized way.

Many pharmacists do not routinely document their comments in a patient's notes. Instead, comments are made verbally or on the drug chart in the hope that they will be spotted on the next ward round. There is no guarantee that these comments will be seen, read or even actioned by the doctor. This practice may increase delays in communication between doctors and pharmacists, resulting in delays in patient management or errors.

Encouraging pharmacists, to document their input in patients' notes may help to ensure that information is transferred, acknowledged and acted on. Documentation should be legible, objective and useful to the care of the patient.

### **2.1.2. The collaboration should be cautiously implemented.**

Some doctors still believe that pharmacists challenge their authority, a belief that may not augur well in the working relationship. "Roberts and Stokes, encouraged cautious implementation of inter-disciplinary collaboration because rapidly imposed change can create conflict and resistance" (Roberts Ms & Stokes JA, 1998). The first interaction between a doctor and a pharmacist may well be one of conflict e.g. a disagreement over the doctor's prescribing or because the discharge

medicines have not been prepared by the pharmacy at the point of discharge. Subsequent relationships may be affected by this and it may lead to later resistance to collaborative work. A phased collaboration seems appropriate, interacting with and welcoming foundation doctors and junior doctors during their induction period seems an ideal way of encouraging a positive attitude towards doctor-pharmacist collaboration. Skilled communication can ensure that even the most resistant become involved with a collaborative team, especially when the benefits become evident.

Overall doctors and pharmacists need to work collaboratively with one another and they should be respected for their skills and knowledge. Understanding of individual roles, accessibility, effective communication, trust and mutual respect are of utmost importance. Professional bodies representing doctors and pharmacists should provide guidance on effective collaboration and include it as part of their good practice guidelines. Effective collaboration will ensure optimal and safe management of the patient. Healthcare delivery is a complex multistep process and errors are easily introduced with potentially catastrophic consequences. Good collaboration between doctors and pharmacists should at least reduce some of these errors and improve service delivery as well as being an educational two-way process that will continue to add value to both set of professionals.

### **2.1.3. Collaboration between pharmacists and nurses**

This is essential to ensure drugs are administered appropriately, wards stocks are replete and nurses are aware of common and dangerous side

effects of medicines. This is important on specialist wards such as oncology or cardiology where errors can be costly. To enhance knowledge on adverse effects the pharmacists will provide regular education to nurses based on the drugs commonly used in their respective units.

## **2.2. PHARMACEUTICAL CARE PROCESS**

The infections diseases society of America in the year 2007 published a statement that attempts to cut pharmacists off at the dispensing counter. Therapeutic decisions and recommendations should be made by physicians (Michael Levin – espstein 2008). However pharmacists are not waiting for the blessing of other medical profession to venture in pharmaceutical care. It is the belief of the pharmacist by getting totally involved in pharmaceutical care health delivery to the patient will be improved in many ways. In USA about 17 states authorize the pharmacists to prescribe drugs. Most prescribing pharmacists are in hospitals or managed care organizations. But some are in community settings. The Western Virginia university school of pharmacy and the Centers for Disease Control has joined forces to expand the role of rural community pharmacists as advocates and providers of childhood immunizations (Michael Levin – Espstein). The Food and Drug Administration has asked for comments on whether labels on all over the counter medications should say “consult your doctor or pharmacist” rather recommend the buyer consult a doctor. Physician groups are opposing the change. Most likely these physicians do not know how the pharmacists are trained because they do not see them in the ward.



Pharmacists are winning support from HMOs and group practices. These organizations are beginning to recognize that pharmacist can play a key role in preventative medicine and reducing the cost of care. As a way to increase the role of pharmaceutical care pharmacists should work with physicians at clinics to monitor drugs and provide patient education service. They should also help the physician decide the drugs to use and at the same time distribute newsletters to educate physicians on medication and prescribing questions.

Pharmaceutical care includes medication monitoring, drug adjustment, patient education, pharmaceutical compliance and toxicity profiling. By taking all these variables into account pharmacist can recommend a drug regimen that provides the most cost – effective outcome. With such cost saving implications the need of expanding the role of pharmacist is the key. A health institution is the ideal place for the clinical practice of pharmacy because it provides the following;

- i) Study and observe many disease states and drug therapy regimens.
- ii) Observe on a day-to-day basis responses to drug therapy.
- iii) Gain access to the patients' medical records.
- iv) Communicate directly with patients, physicians, nurses and other health professionals.
- v) Monitor patients on a myriad of drug regimens and detect, observe or minimize drug-drug interactions, drug – food interactions, drug-laboratory test interactions, adverse drug reactions and iatrogenic diseases.

The most important educational aspect of clinical exposure to patients is the added relevance that it gives to the didactic portion of the pharmacy curriculum. The patient, for whom the pharmacist must develop a deep concern, becomes the point of application of acquired knowledge.

Adverse drug reactions and interactions are commonly believed to cost KNH, and the whole country at large, million of shillings per year. Having pharmacists consult on drug therapies and monitor drug treatments, even without prescribing, could lower those costs significantly. As managed care and cost saving factors fuel the growth of pharmaceutical care pharmacists and physicians are beginning to find a common ground.

As the patient asks “Is this the right medicine?” It is the correct answers that counts, not the provider. A recent national consumer, survey conducted by prevention magazine and the American pharmaceutical Association found that patients are increasingly turning to pharmacists for information on the growing number of over – the counter products. Patients who have personal pharmacists depend on them for advice about what to buy and for information about drug products they have seen advertised, the survey found. This way the consumer will be encouraged to ask questions about dosage, side effects and storage so that they become more knowledgeable about the drugs they are taking. They will in turn take greater responsibility for their own care. The FDA wants the physicians and pharmacists to reinforce one another’s written and oral communications to patients about drugs. Both the pharmacist and physician should convey risk information to the patient. This way the

enormous amount of money spent on the misuse of drugs can be greatly reduced.

The ability to demonstrate that clinical pharmacy practice improves patient outcomes is of great importance to the pharmaceutical care model: In the USA pharmacists' participation in physician ward rounds has been shown to reduce adverse drug events by 78% and 66% in general medicine and intensive care settings respectively, (Roger Walker et al, 2007).

### **2.3. PHARMACISTS HAVE A POTENTIAL ROLE TO PLAY IN HEALTH CARE.**

The majority of pharmacists practice in private pharmacies, a few in hospitals and other medical facilities. It is important to note, from the onset, that pharmacists are hardly ever mentioned as key health professionals. For example an article in daily nation states "The council clinics have a shortage of 35 doctors, 105 nurses, 50 clinical officers and 60 public health officers" (Daily Nation newspaper, 12<sup>th</sup> Jan 2009). This clearly shows that the pharmacists are neglected work force and some people ignore their existence. Another one from the same media, "medical practitioners will converge in Nakuru to discuss new challenges in the fight against non-communicable diseases. The four day conference whose theme is "emerging trends in non-communicable diseases" brings together medical doctors, nurses, registrars and medical students from across the country (Daily Nation of 19<sup>th</sup> March, 2009). "When you seek health care you must interact with physicians, nurses and other health care professionals. The section describes the diverse kinds of physicians.

Then we look at nurses, including some of the newer roles that they have taken on” (David E. Larson, et al). They have been a neglected healthcare workforce, yet pharmacists can make a unique contribution to the outcome of drug therapy, to their patient’s quality of life and to public health. Therefore pharmacists have a critical role to play and a gap to fill in the health workforce. WHO defines health workers as all people whose main activities are aimed at enhancing health. Without them, prevention and treatment of diseases and advances in healthcare cannot reach those in need. These health workers are the doctors, pharmacists, nurses, laboratory technicians and management and support workers. Around the world there is a chronic global shortage of health workers. There is very little published international data on the pharmacy workforce. In 2006 a survey by FIP revealed that the pharmacist to population ratios vary widely from less than 5 to over 200 pharmacists per 100,000 population (<http://www.medicusmundi.chmms/services/bulletin104> 2007). In many countries pharmacists are the most accessible of all healthcare worker and as such play a key role in the delivery of healthcare services at all levels. However, reports on health providers often exclusively focus on doctors and nurses.

Today pharmacists have been faced with increasing healthcare demands. An ever-growing and complex range of medicines and poor adherence to prescribed medicines has forced the evolution of the pharmacists’ role into a more patient controlled approach.

Pharmacists are rarely represented in health facility committees and are often used as information sources about procurement and stock of medicines. Nonetheless, the importance of pharmacists in the healthcare sector is underestimated, particularly in developing countries.

A significant proportion of pharmacy knowledge and skills is wasted and remains untapped for public health and patient care. Over the past four decades there has been a trend for pharmacy practice to move away from its original focus on medicine supply to a more inclusive focus on patient care. This patient centered care includes all the cognitive functions of counseling, drug information and monitoring drug treatment.

By taking direct responsibility for individual patients' medicine – related needs, pharmacists can make a unique contribution to the outcome of drug therapy and to the patient quality of life. Certain responsibilities of pharmaceutical operations such as stock control can be transferred to lower skilled technicians.

The WHO has called for greater involvement of pharmacists in the general healthcare system. The movement towards the patient care approach has occurred to varying degrees in countries such as the UK and the USA. It accords the pharmacists the opportunity to change and improve patient outcomes as integral and active members of patient care team. The training of pharmacist has shifted from the old paradigm of product focus so as to prepare the pharmacist for the expanded role. Such expanded roles include working as clinical pharmacists in hospitals and clinical settings to provide patient – rather than product-oriented services. The pharmacy profession has evolved, in certain countries to the point that clinical pharmacy with patient focused practice is no longer the exception but carried out by most pharmacists.

A recent review in Turkey investigated the effectiveness of professional pharmacist services in terms of patient education. Its key findings,

illustrate that the patients adherence to TB treatment improved when a pharmacist provided patient education on medication use (Roughead et al). Another study in Malaysia demonstrated significant cost savings with pharmacist interventions in ICU patients (Clark, P etal). Hence pharmacists' services and involvement in patient – centered care have been associated with improved health and economic outcomes, reduced adverse drug events, improved quality of life and reduced morbidity and mortality. These accomplishments have been achieved through gradual expansion of traditional roles of the pharmacist and the emergence of collaborative drug therapy management programmes.

For the pharmacists to be recognized as full members of the healthcare team they need to adopt the essential attitudes required by all health professionals i.e. visibility, responsibility and accessibility, in a practice aimed at the general population as well as commitment to confidentiality and patient orientation. A key to ensuring that pharmacists do move towards the new goal is their proper reimbursement. Such a step can only be realized if there is effective documentation of what pharmacist actually do to improve outcomes and if its economic value is recognized and acknowledged. The pharmacy profession has a responsibility to identify new practice opportunities in a changing health sector context and to demonstrate their potential to fulfill them successfully. Pharmacist have an important role to play in health care, which is much more than selling medicines (Dr. Hans V. Hogerzeil, WHO)

## **2.4 THE PHARMACIST AS A MEMBER OF THE HEALTH CARE TEAM;**

The words “Clinical Pharmacy” were coined to describe the work of pharmacists whose primary task is to interact with the health care team, assess patients, make specific therapeutic recommendations, monitoring drug therapy and provide medicines formation. Therapeutic clinical pharmacists work in hospitals and acute care setting and provide patient – oriented rather than product oriented services. Patient-focused practice is exclusively in in-patient settings and hospital, where access to patient data and the medical team is available. The medical record also known as patient file is a legal document including hospital – specific admission information, initial patient history and physical examination, daily progress notes made by health care professionals who interact with the patient, consultations, nursing notes, laboratory results, diagnostic procedures, dietary recommendation, radiology and surgery reports. (Karim Wieldenmayer et, al 2006).

A clinical pharmacist requires a good knowledge of therapeutics, a good understanding of disease processes and knowledge of pharmaceutical products. It also requires one to have strong communication skills with solid knowledge of the medical terminology, drug monitoring skills information, therapeutic planning skills and the ability to assess and interpret physical and laboratory findings. There is a need for keeping patient profiles and to record pharmacist’s interventions (A. J. Winfried and R.M.G Richards, 2004). Pharmacists need independent, comprehensive, objective and current information about drugs. Also should accept personal responsibility for life - long learning and educational programmes should address changes in the practice. National

standards of GPP need to be put in place and adhered to. The FIP guidelines for GPP have four main elements. These are promotion of good health, the supply and use of medicines, self care and influencing prescribing and medicine use. It also encompasses cooperation with other health professionals in health promotion activities, including the minimization of abuse and misuse of medicines.

Pharmaceutical care is a great notion, with every great notion there come a time to move beyond the original idea. It is time for us to move beyond pharmaceutical care to “pharmaceutical health care” that embodies the idea of wellness rather than illness (American journal of hospital pharmacy, 1994). The new model would incorporate an awareness by the pharmacist of how spiritual, mental, emotional and physical factors influence a patient, state of health. In addition it would incorporate a philosophy of patient-participatory care rather than patient – focused care.

In conclusion we do not hesitate to retaliante and say that access to essential medicines is still lacking in many parts of the world. Health care reforms are necessary throughout the world because of the rising health care costs and changes in social, technological, economic and political environment. New approaches are needed at individual and at population level to provide safe and effective pharmaceutical therapy to patients in an ever more complex environment. Pharmacists are in excellent position to assure safe and effective use of medicines. To be able to do this pharmacists must assume greater responsibilities than they currently have for the management of drug therapies for the patient they serve. The



responsibility talked of goes beyond the traditional dispensing activities that have been the main stay of pharmacy practice. The routine activities, such as medicine distribution, will be handled by qualified pharmacy assistants. Thus pharmacists, responsibilities must be expanded to include monitoring therapeutic progress, consulting with prescriber, and collaborating with other care practitioners on behalf of the patients. The movement towards pharmaceutical care is a critical factor in this process.

The pharmacy practice activity classification initiated by the American pharmacists Association provides a common language for a consistent classification of pharmacy practice activities that represents a new way to describe or document pharmacists' activities in a common language (Karim Wieldenmayer et al 2004).

As members of the health care team pharmacists need to be able to assume many different functions. To better understood these functions the concept of the seven-star pharmacist was introduced by WHO and FIP. These concepts include; caregiver, decision-maker, communicator, manager, life-long learner, teacher, and leader. An added function of researcher was added so that the pharmacist is able to use the evidence based – medicine effectively in order to advise on the rational use of medicines in the health care team.

Pharmacists have the potentials to bring greater impact on therapeutic outcomes and patients' quality of life within the available resources. To do this they must position themselves appropriately within the health care system. Accordingly pharmaceutical education has a responsibility to produce graduates who are competent to deliver pharmaceutical care.

Recently changes in the training and assessment of junior doctors have presented opportunities for hospital pharmacists to develop their relationship with doctors. Education and training of junior doctors has recently become part of the formal agenda for some hospital pharmacists. Apart from these interactions within the clinical setting many trusts are now actively encouraging interaction between doctors and pharmacists off the wards via formal teaching and education. Junior doctors have welcomed pharmacists to play a greater role in their continuing education. In future senior pharmacists may specialize in educational roles within the hospital setting.

Education and training of pharmacists and doctors should be a collaborative two-day approach. Doctors should offer teaching to pharmacists, which will in turn enhance pharmacists understanding of the doctor's role, responsibility and actively encourage effective communication between the professions.

## **3.0. METHODOLOGY**

### **3.1. Area of Study**

The research project was carried out at KNH division of internal medicine and also at all pharmacies in the hospital. The hospital is the biggest hospital in the country and services patients referred from other hospitals as well as those from Nairobi. Each ward (level 7&8) in the internal medicine division is served by about five physicians, and ten nurses. The latter operates in shifts (night and days).

There are about nine pharmacy stations spread all over the hospital manned by pharmacists and pharmaceutical technologists. Both of these personnel were involved in the study.

### **3.2. Sample size / study population**

All the doctors and nurses in the division of internal medicine were targeted for the study. These were 40 doctors and 72 nurses. All the pharmacists in the hospital were recruited for the study. They were 50 in number.

### **3.3 Inclusion and Exclusion Criteria**

Those nurses, doctors and pharmacists involved, have worked in the hospital for at least two years. They were also not to go on leave during the two months the questionnaires were be in circulation.

### **3.4 Methods of data collection**

Questionnaires were constructed in the month of May. These were validated after subjecting them to a pilot study. Consent form were also

prepared and given to the respondent at the time of issuing the questionnaires.

We started giving the questionnaires in mid-July by starting first with the pharmacists. All pharmacy station were visited and after introducing myself plus a short brief of the study issued out the questionnaires to the person in-charge to be circulated to the other members.

This took about three days so as to make sure I had reached everybody.

At the same time the number of questionnaire given in each station was noted.

For about one week questionnaires were distributed to medical doctors and nurses in level seven and eight. To cover most of them as quickly as possible night visits were also done during this period. After one week, after we were through with issuing, the process of collecting responses started. This went on until the end of August.

### **3.5 Data Analysis**

The data were analyzed by first computing the percentages to get the responses overall in each group with each specific issue. Descriptive statistics were used to analyse the data. Bar graphs were used where applicable.

## 4.0. RESULTS AND DATA ANALYSIS

A total of 115 health professional were interviewed out of which, 26 were medical doctors 51 were nurses and 38 were pharmacists. Majority were MOI (38.4%) and SHO (34.6%) with a median working duration of two years. The nurses were mainly NOII (27.5%), 52.9% were qualified with RN and had worked for a median duration of 10 years. Similarly, 71.1% of the pharmacists were trained in Kenya and had worked for a median period of nine years. A half of the pharmacists were qualified with diploma in pharmacy while 31.6% had a bachelor's degree in pharmacy.

4.0 Table 1: Demographic Data

Variable	Frequency	Percent (%)
<b>Medical doctors' designation</b>		
MO	3	11.5
MOI	10	38.4
MOII	1	3.8
PD	1	3.8
SHO	9	34.6
Not stated	2	7.7
<b>Nurses' designation</b>		
ECN	2	3.9
ECNI	6	11.8
ENI	1	2.0
NO	1	2.0
NOI	8	15.7
NOII	14	27.5
NOIII	5	9.8
SEN	1	2.0
Not stated	13	25.5
<b>Nurses' qualifications</b>		
RN	27	52.9
EN	14	27.5
BSN	3	5.9

Others	7	13.8
<b>Pharmacists' training</b>		
Kenya	27	71.1
Outside	1	2.6
Missing	10	26.3
<b>Pharmacists' qualifications</b>		
BPharm	12	31.6
MPharm	5	13.2
Dip. Pharm	19	50.0
Missing	2	5.3

4.1. Table 2: Participation in the ward rounds

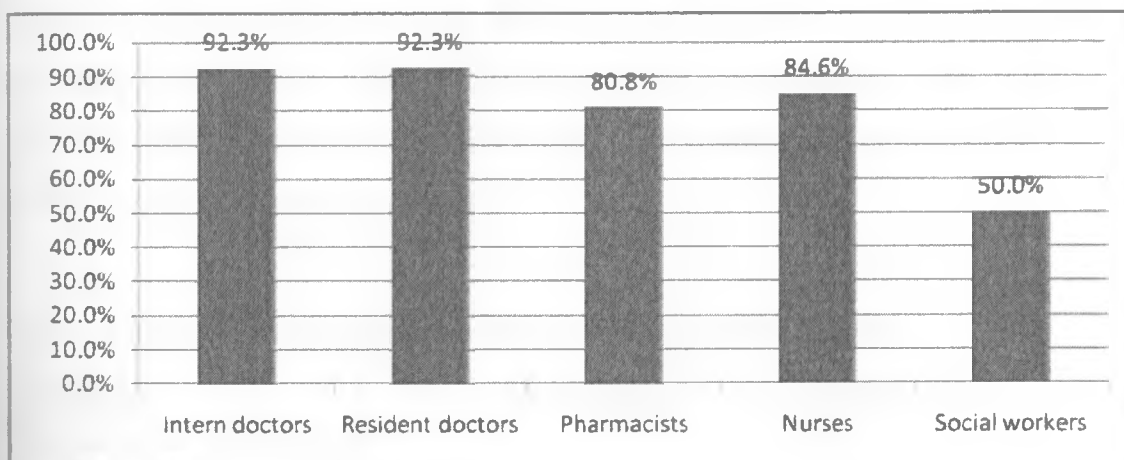
Variable	Frequency	Percent (%)
<b>Number of ward rounds per week (Medical doctors)</b>		
Daily	22	84.6
Alternate days	1	3.8
5 days	3	11.5
<b>Nurses' ward rounds</b>		
Yes	38	74.5
No	4	7.8
Sometimes	9	17.6
<b>Pharmacists' involved in ward rounds</b>		
Frequently	2	5.3
Sometimes	9	23.7
Rarely	17	44.7
Not at all	10	26.3
<b>Nurses knowledge on pharmacists participation</b>		
Yes	2	3.9
No	35	68.6
Sometimes	6	11.8
Never at all	8	15.7

Most of the medical doctors reported that they do ward rounds daily (84.6%) and majority of them thought intern doctors, resident doctors, pharmacists and nurses are necessary to participate in ward rounds (Figure 1). Similarly,

74.5% of the nurses participate in ward rounds with other health care team. In addition, the nurses reported that the pharmacists do not participate in ward rounds (68.9%). Also, the pharmacists reported to either be never or rarely involved in a multi-disciplinary health care team in ward rounds as reported by 26.3% and 44.7% of them respectively.

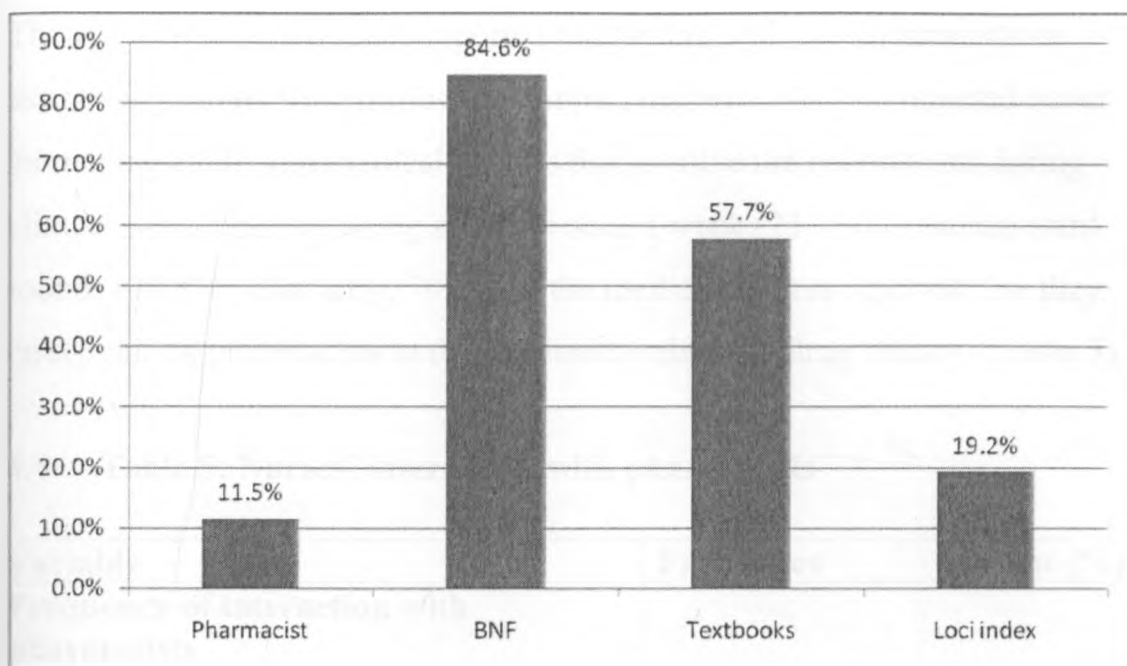
**4.2. Table 3: Perception of medical doctors on health professionals' participation in ward rounds**

Participation	Very necessary	Necessary	Undecided	Not necessary
Interns doctors	23 (88.5%)	2 (7.7%)	0 (0.0%)	0 (0.0%)
Resident doctors	21 (80.8)	3 (11.5)	0 (0.0%)	0 (0.0%)
Pharmacists	8 (30.8)	11 (42.3)	2 (7.7)	2 (7.7)
Nurses	19 (73.1)	4 (15.4)	0 (0.0%)	0 (0.0%)
Social workers	4 (15.4)	13 (50.0)	1 (3.8)	2 (7.7)



**Figure 1**

The participation in ward rounds of the intern doctors, resident doctors and the nurses were viewed by the medical doctors to be very necessary. Though the doctors viewed the participation of pharmacists and social workers to be necessary, it was not in the same extent as the other groups of health professionals.



**Figure 2: Sources of drug information for the medical doctors**

Majority of the medical doctors (84.6%) reported BNF as their usual source of drug information. The other source for the doctors was textbooks (57.7%). Pharmacists as a source of drug information was reported by 11.5% of the medical doctors (Figure 2).

**4.3. Table 4: Pharmacists' participation in clinical work**

Variable	Frequency	Percent
<b>Pharmacist professional input</b>		
Once in a week	6	23.1
During ward rounds	8	30.8
Never at all	12	46.2
<b>Discuss drug therapy with pharmacist</b>		
At least once a week	4	15.4
Rarely	20	76.9
Never at all	2	7.7



Though the medical doctors reported interacting with the pharmacists in situations needing their professional input, majority (46.2%) reported never interacting at all. The medical doctors that involve the pharmacists during clinical work reported doing so either once a week (23.1%) or during ward rounds (30.8%). Similarly, 76.9% of the medical doctors reported that they rarely call on pharmacists to discuss issues related to drug therapy (Table 3).

#### 4.4. Table 5: Nurses' interaction with pharmacists

Variable	Frequency	Percent (%)
<b>Frequency of interaction with pharmacists</b>		
More that three times in a week	7	13.7
Once a week	10	19.6
Rarely	34	66.7
<b>Seek info from pharmacist</b>		
More that three times in a week	17	33.3
At least once a week	5	9.8
Rarely	23	45.1
Never at all	6	11.8
<b>Pharmacist training on drug administration</b>		
Yes	4	7.8
No	39	76.5
Rarely	7	13.7
Never at all	1	2.0

The nurses reported that they rarely interact with pharmacists (66.7%) and they also rarely call the pharmacist to seek information about therapy (45.1%). In addition, majority of the nurses (76.5%) said that they do not receive training from the pharmacists on drug administration.

**4.5. Table 6: Perception of medical doctors about pharmacist involvement**

<b>Pharmacist involvement</b>	<b>Yes</b>	<b>No</b>	<b>Not sure</b>
Pharmacist involvement will improve health care services	22 (84.6%)	1 (3.8%)	2 (7.7%)
Pharmacist involvement will improve drug supply management	21 (80.8%)	2 (7.7%)	1 (3.8%)
Pharmacist is a important in drug administration	23 (88.5)	2 (7.7)	0 (0.0%)
Pharmacists needs to do their ward rounds	5 (19.2)	19 (73.1)	1 (3.8)

Majority of the medical doctors thought that involvement of pharmacists would improve health care services, drug supply management and are important in drug administration. However, the doctors did not have preferences of pharmacists holding their own ward rounds.

**4.6. Table 7: Nurses' perceptions on drug supply and pharmacists' involvement**

<b>Variable</b>	<b>Frequency</b>	<b>Percent (%)</b>
<b>Satisfied with drug availability and supply</b>		
Yes	12	23.5
No	26	51.0
Sometimes	13	25.5
<b>Pharmacist respond better</b>		
Yes	44	86.3
No	2	3.9
Not sure	5	9.8
<b>Pharmacist in every ward</b>		
Yes	44	86.3
No	7	13.7
<b>Pharmacist reduce dosage errors</b>		
Yes	49	96.1

No	2	3.9
<b>Efficient process seeking drugs</b>		
Yes	25	49.0
No	13	25.5
In most cases drugs not available	12	23.5
Missing	1	2.0
<b>Pharmacist seeking information</b>		
Frequently	1	2.0
Sometimes	17	33.3
Undecided	1	2.0
Rarely	16	31.4
Not at all	16	31.4
<b>Pharmacists collaborate with medical doctors</b>		
Yes	6	11.8
No	20	39.2
Do not know	3	5.9
Sometimes	17	33.3
Never at all	4	7.8
Missing	1	2.0

### **Drug availability and supply**

Majority of the nurses (51%) were not satisfied with the issues about drugs availability and supply. However, most of the nurses (49%) said the process of seeking drugs from the pharmacy was efficient.

### **Pharmacists' involvement drug therapy management**

According to 86.3% of the nurses, pharmacists can respond better to issues related to drugs and the same proportion suggested that every ward should have a pharmacist. Also, 96.1% thought that dosage errors would be minimized if pharmacists are involved in care plan.

According to the nurses (33.3%), the pharmacists call them sometimes to seek patient information for medication therapy management. Besides, majority (39.2%) thought that pharmacists and medical doctors do not collaborate to enhance therapeutic outcomes.

#### 4.7. Table 8: Clinical pharmacy training

Variable	Frequency	Percent (%)
<b>Clinical pharmacy course</b>		
Yes	36	94.7
No	2	5.3
<b>Satisfied with clinical pharmacy course</b>		
Well covered	30	78.9
Was only mentioned	5	13.2
Not sure	1	2.6
Missing	2	5.3
<b>Formal introduction on clinical pharmacy</b>		
Yes	10	26.3
No	28	73.7

Most of the pharmacists (94.7%) received training on clinical pharmacy in their undergraduate programme. Out of those that were trained, 78.9% reported that the course on clinical pharmacy was well covered. In addition, 26.7% of the pharmacists reported ever receiving a formal introduction on offering clinical pharmacy services in KNH.

#### 4.8. Table 9: Perception of pharmacists on pharmaceutical care

Perception	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
(i) Availability of medicines is good pharmaceutical practice	17 (44.7)	11 (28.9)	0 (0.0)	8 (21.1)	1 (2.6)
(ii) Wards visits and talking with patients is good pharmaceutical practice	11 (28.9)	10 (26.3)	1 (2.6)	14 (36.8)	1 (2.6)
(iii) Pharmacist in touch with patients is not necessary	1 (2.6)	3 (7.9)	0 (0.0)	17 (44.7)	16 (42.1)

(iv) Physician duty to regularly monitor patients for response/failure of therapy	4 (10.5)	11 (28.9)	3 (7.9)	13 (34.2)	6 (15.8)
(v) Pharmacist share equal responsibility with doctors for appropriate therapy	16 (42.1)	20 (52.6)	1 (2.6)	0 (0.0)	0 (0.0)
(vi) Pharmaceutical care a component of clinical pharmacy practice	16 (42.1)	21 (55.3)	0 (0.0)	0 (0.0)	0 (0.0)
(vii) KNH conditions not conducive for practice of pharmaceutical care	3 (7.9)	4 (10.5)	4 (10.5)	21 (55.3)	5 (13.2)
(viii) Clinical pharmacy practice requires advanced training in pharmacy	4 (10.5)	13 (34.2)	2 (5.3)	15 (39.5)	3 (7.9)
(ix) Clinical pharmacy practice is inappropriate in resource-challenged KNH	1 (2.6)	1 (2.6)	3 (7.9)	22 (57.9)	10 (26.3)
(x) Doctor's acceptance determines effectiveness in clinical pharmacy	6 (15.8)	11 (28.9)	2 (5.3)	15 (39.5)	3 (7.9)

Majority of the pharmacists (44.7%) strongly agree that availability of medicines is good pharmaceutical care. Though majority (36.8%) disagreed that ward visits and talking to patients by the pharmacist was good pharmaceutical practice, many did not agree to the statement that pharmacists getting in touch with patients is not necessary.

Furthermore, 34.2% disagreed that it a physician duty to monitor patients regularly to assess the response or failure of therapy. There was an overall agreement that pharmacists share equal responsibility with doctors for appropriate therapeutic outcomes. Similarly, majority agreed that pharmaceutical care is a component of clinical pharmacy. However, there was disagreement that clinical pharmacy practice is inappropriate in resource-challenged institutions like KNH. Also, majority (39.5%) did not agree that doctor's acceptance determines effectiveness in clinical pharmacy.

4.9. Table 10: Practice of clinical pharmacy

Variable	Frequency	Percent (%)
<b>Committee member</b>		
Yes	10	26.3
No	27	71.1
Missing	1	2.6
<b>Pharmacist work in one department all time</b>		
Yes	21	55.3
No	16	42.1
Missing	1	2.6
<b>Medical practitioner seek drug information</b>		
Many times	11	28.9
At least once in a week	16	42.1
Very rarely	10	26.3
Missing	1	2.6
<b>CPD</b>		
Many times	10	26.3
Once	11	28.9
Sometimes	15	39.5
Never at all	1	2.6
Missing	1	2.6
<b>Training nurses</b>		
Yes	11	28.9
No	20	52.6
Very rarely	5	13.2
Never at all	1	2.6
Missing	1	2.6

The pharmacists that reported being members of hospital committee were 26.3% and 55.3% work in one department all the time. Medical practitioners were reported to seek drug information at least once a week (42.1%) from the pharmacists. Furthermore, majority of the pharmacists (39.5%) reported that they sometimes attend continuing professional development (CPD). On

training of the nurses, 52.6% said they do not organize training in administration of drugs.

**4.10. Table 11: Perception of pharmacists on their role in pharmaceutical care**

	<b>Strongly agree</b>	<b>Agree</b>	<b>Undecided</b>	<b>Disagree</b>	<b>Strongly disagree</b>
<b>(i)</b> Pharmacists with unmatched medication therapy ability	5 (13.2)	19 (50.0)	2 (5.3)	9 (23.7)	2 (5.3)
<b>(ii)</b> Pharmacists drug therapy knowledge is critical in designing treatment plans	14 (36.8)	21 (55.3)	1 (2.6)	1 (2.6)	0 (0.0)
<b>(iii)</b> Pharmacist collaborator in designing, monitoring and evaluating Rx plans	2 (5.3)	1 (2.6)	2 (5.3)	25 (65.8)	7 (18.4)
<b>(iv)</b> Pharmacist rarely interested in monitoring drug therapy	3 (7.9)	15 (39.5)	4 (10.5)	14 (36.8)	1 (2.6)
<b>(v)</b> Pharmacist virtually absent in designing in-patient Rx plan	8 (21.1)	24 (63.2)	1 (2.6)	3 (7.9)	0 (0.0)

Pharmacists agreed that they are the single most appropriate members of the clinical team with unmatched medication therapy ability and that their drug therapy knowledge are critical in designing treatment plans. However, the pharmacists did not agree that collaborate with medical doctors in designing, monitoring and evaluating treatment plans. On the other hand, they were in agreement that the pharmacists were rarely interested in monitoring drug therapy and are virtually absent in designing in-patient treatment plan

## DISCUSSION

Pharmacists are rarely involved in such clinical pharmacy activities as routine ward rounds. According to the nurses and the pharmacists themselves, it is only in rare cases where they participate in ward rounds. In addition, medical doctors thought that pharmacists' involvement in clinical care would improve health care services, drug supply management and drug administration. However, medical doctors viewed the pharmacists to be necessary during ward rounds and they rarely interact with other professionals. According to this study, less than 30% of the medical doctors interact with pharmacists and three-quarters of them rarely seek clarifications from the pharmacists concerning drug therapy.

Similarly, nurses thought that pharmacists can respond better to issues related to drugs and that they are necessary in every ward. Furthermore, the nurses thought that dosage errors would be minimized if pharmacists are involved in clinical pharmacy activities. However, nurses rarely interact with pharmacists and most of them do not seek information from the pharmacists about drug therapy. This is largely because the pharmacists are not available in the wards, to form such rapport so that nurses may feel free when asking a drug issue. Also, the nurses reported that they do not receive any training from the pharmacists on drug administration.

The pharmacists thought that it is necessary for them to get in touch with patients though they thought that ward visits and talking to patients was not necessarily a good pharmaceutical practice. Also, the pharmacists held the view that pharmacists have the same responsibility as medical doctors in



determining an appropriate therapy for the patients. According to the pharmacists, clinical pharmacy plays a great role in ensuring a good pharmaceutical care. However, the pharmacists did not view the medical doctors accepting their important role to be necessary for effectiveness of clinical pharmacy. Furthermore, the pharmacists believed that they possess important medication therapy skills necessary for designing treatment plans. However, the pharmacists do not collaborate with medical doctors in designing, monitoring and evaluating treatment plans. They also aver to some extent that they are rarely interested in monitoring drug therapy.

## CONCLUSION

Physicians and nurses in KNH are concerned that the pharmacist is not doing all that he/she is trained to do. Pharmacists need to interact with other professionals for the therapeutic outcomes of the patient to be taken to a higher level.

They should take an active role in collaborating with other members of the clinical care team so as to give the needed drug information during ward rounds. Pharmacists themselves should be more innovative in rendering pharmaceutical care to the patient. The major ward rounds should be done in the presence of all the professionals and every member should make sure he/she contributes to the care of the patient.

The pharmacist resourcefulness is under-utilized at KNH and something drastic ought to be done to tap the full potential of this professional. Pharmacists are quite aware, and have undergone formal training, of clinical pharmacy, and therefore should not shy away to fully put it in practice. Pharmacy practice is undergoing changes all over the world and we should not be left behind. KNH should be an example in this area to other medical institutions, since it serves also as a training institution of medical professionals. The referral hospital is blessed with a number of clinical pharmacists and therefore should be in the forefront to fully practice clinical pharmacy.

The Ministry of Health should sponsor more pharmacists to train as clinical pharmacists, at masters level, so that even in district hospitals we have at least one of these professionals.

Medical doctors should have more time for the pharmacist and vice versa so that the much widely advocated “collaboration” will be enhanced for the benefit of the patient. When the pharmacists are more accessible nurses will

be in position to ask drug related issues and feel more secure when dealing with patients. Likewise it will become more easier to get patient information from the nurses. And that's why the pharmacist is greatly needed in the wards all the time.

Since pharmacists, nowadays, are pursuing masters in various disciplines in pharmacy more posts should be created as the case with medical doctors. At the same time the KNH administration should employ more pharmaceutical technologist so that the pharmacist can take their rightful position in the hospital.

Pharmacists are well known by the doctors and nurses when it comes to supplying drugs to the wards. This trend ought to change as quickly as possible by taking our rightful position in KNH. Monitoring drug therapy in the wards as well as in out-patient clinics should be the guiding principle.

## RECOMMENDATION

Collaboration between health professionals should be considered more seriously in KNH so that medical service delivery is enhanced. Globally this collaboration is being implemented in most countries and in others to very high levels. The collaboration will lead to cost – saving by the medical institutions as well as improved medical services to the patients. This will be ideal in our own country considering the limited dollar and the increased cases of HIV and related infections. And to realize this collaboration we might start working on it right now and not in future at KNH. A therapeutic committee comprising the nurses, medical doctors and pharmacists should be set-up immediately to work out and monitor the progress of the collaboration.

To enhance the collaboration I recommend the following;

- i) Pharmacists, who are trained up to degree level, should forthwith be assigned to work in particular wards at KNH. Here they will be responsible for ;
  - a. Drug administration, should be the ones responsible to make sure every patient receive her/his prescribed drug/s at the right time.
  - b. Holding workshop with nurses to train them on what to look for (i.e adverse effects) when giving drugs.
  - c. Present in all ward rounds to update the clinical care team on which drugs are available and suggests alternatives where possible. He/she should be ready to give further information about drugs in these rounds to the other members and the medical student. On request can make arrangement to train junior doctors and medical students on certain classes of drugs.

Pharmaceutical technicians will be left to dispense in the pharmacy (and supply to the wards), with the supervision of the pharmacist when he is not in the wards. Every pharmacy should be responsible for particular wards and considering the time of ward rounds and other clinics in the hospital the pharmacist can arrange his time accordingly. If the work in the wards become overwhelming he/she can select the most services cases which will be given prevalence as far as rounds with other clinical care member, is concerned.

- ii) KNH should immediately come up with a team to make sure the collaboration between professionals is progressing well. The team should be meeting monthly to audit the progress and take the necessary measures to make the process successful.
- iii) The Schools of Medicine and Pharmacy at UON should revise their curriculum such that the students do their clinical together in the wards for one year. This is more so with the groups that are in their final years. When starting their clinical the students should be involved in nursing work for at least three month so that in future they can fully appreciate the nurses' role.
- iv) Clinical pharmacy training should be taken seriously in all institutions training pharmacists. All these institutions should be affiliated to a hospital where the student will have access to the patient and learn as is expected as pertains to pharmaceutical care.
- v) Pharmacists in the wards should daily be documenting their findings in the patient file. This will make it possible for the other members of clinical care team to be fully updated on the status of patient's medications.

- vi) Punctuality and daily presence of every member of the clinical care team in every aspect towards health service delivery should be adhered to.
- vii) The professional bodies of the different professional should have guidance in their articles about collaboration with other staff in the hospital. This should be emphasized during their meetings and progress noted by the end of every year.
- ix) Further research: A similar study involving more health facilities should be done with the aim of assessing and implementing clinical pharmacy services.

## REFERENCES

1. A. J. Winfield and R.M.S Richards, Pharmaceutical practice, third edition 2004 pg 344 – 347.
2. Clark P et al Effect of Pharmacist – led patient education on adherence to TB treatment, AJHSP 2007.
3. David E. Larson et al Mayo Clinic Family Health book, 2000 pg 1194.
4. Hans V. Hogerzeil, WHO director of medicines policy and standards, 2007.
5. Karin Wiedenmayer et al, Developing pharmacy Practice, 2006 edition pgs 3 – 39.
6. Roger Walker and Cate Whittlesea, Clinical pharmacy and therapeutics, 4<sup>th</sup> edition 2007 pg 3 – 11
7. Ronghead et al, Value of community services, pharmacy Guild of Australia, 2003.
8. Sandeep Nijjer MPHARM et al, effective collaboration between doctors and pharmacists 2008 pg. 179-182.
9. Roberts Ms. Stokes JA, prescriptions, practitioners and pharmacists better communication and teamwork for improved patient outcomes Medical Journal of Australia 198 pg 317-318.
10. Zillich At et al influential characteristics of physician / pharmacist collaborative relationship. Annual of pharmacotherapy, 2004 pg 764-770.
11. American journal of hospitals, 1994

12. Pharmacy journal, a strategy for post graduate education and training, 1989 page 142.
13. The feasibility of assessing competence to practice pharmacy, 1990
14. Pharmacy practice activity classification(PPAC), American Pharmacy Association Academy of Pharmaceutical research, Website [www.alphanet.org/default.htm](http://www.alphanet.org/default.htm)
15. <http://www-medicins Mundi.ch ms/services/bulletin 104,2007>.



# APPENDICES

## Appendix I

### Medical Doctors

**Introduction:** I am a postgraduate student in Clinical Pharmacy and am doing a study on physicians perception of the role of pharmacist in Clinical Care of patient. The purpose of this study ultimately to see how pharmacist and medical doctors can work harmoniously to enhance therapeutic outcome. Please spare a moment to answer the following questions.

#### Personal information

Name ..... (you may only give the initials)

Designation

.....

Number of years worked in KNH

.....

1. How many times are you involved in ward rounds as a member of the health care team in a week .....
- a) Daily ( )
- b) Alternate days ( )
- c) Once in a week ( )
- d) Two days ( )
- e) 5 days ( )

2. Which of the following health care professionals do you consider necessary to participate in ward rounds.

- a) Interns medical doctors ( )
- b) Resident doctors ( )
- c) Pharmacists ( )
- d) Nurses ( )
- e) Social workers ( )

3. In view of the professionals you have selected in No. 2 above how do you view his / her participation

a) Internal medical doctors; very necessary ( ) necessary ( )  
undecided ( ) not necessary ( )

b) Resident doctors; very necessary ( ) necessary ( )  
undecided ( ) not necessary ( )

c) Pharmacists; very necessary ( ) necessary ( )  
undecided ( ) not necessary ( )

d) Nurses; very necessary ( ) necessary ( ) undecided ( )  
not necessary ( )

e) Social workers; very necessary ( ) necessary ( )  
undecided ( ) not necessary ( )

4. How often do you interact with a pharmacist in your clinical work that requires his or her professional input

- a. every day ( )

- b. Once in a week ( )
- c. During ward rounds ( )
- d. Never at all. ( )
- e. There is no need ( )

5. Which of the following are your usual sources of drug information ?

- a. Pharmacist ( )
- b. BNF ( )
- c. Text books ( )
- d. Loci index ( )
- e. Martindale ( )

6. How often do you call on a pharmacist to discuss issues related to drug therapy?

- a. Many times ( )
- b. At least once in a week ( )
- c. Rarely ( )
- d. Never at all. ( )

7. Do you think delivery of health care services will be improved if pharmacists are involved on a daily service patient-oriented services, apart from the traditional dispensing?

- a. Yes ( )
- b. No. ( )
- c. Not sure ( )
- d. Never at all ( )

8. Drug supply management in the wards is a big problem, to you think if the pharmacist is member of the health care team this will be minimized.

- a. Yes ( )
- b. No. ( )
- c. Not sure ( )
- d. Never at all ( )

9. In your view do you think it is important for pharmacists to be involved in drug administration.

- a. Yes ( )
- b. No ( )
- c. Not decided ( )

10. Would you prefer pharmacist to do their own ward rounds

- a. Yes ( )
- b. No. ( )
- c. Not sure ( )
- d. Never at all ( )

## Appendix II

### Nurses

#### Introduction:

This investigation attempt to find out what your perception of pharmacy services is like.

Please answer the following questions as frankly as you can.

#### Personal information

Name

---

(you may give your initials only)

Designation

---

Qualifications    RN (    )        EN (    )    BSN (    )    Others  
(        )

Number of years worked in KNH

---

#### Questions

- 1) Do you participate in ward rounds with the other health care team?
  - a. Yes        (    )
  - b. No        (    )
  - c. Sometimes (    )

- 2) Are issues about drugs availability and supply, handled to your satisfaction?
- a. Yes ( )
  - b. No ( )
  - c. Sometimes ( )
- 3) Do pharmacists participate in the ward rounds?
- a. Yes ( )
  - b. No ( )
  - c. Sometimes ( )
  - d. Never at all ( )
- 4) Do you think Pharmacist can respond better to issues related to drugs better than anybody else.
- a. Yes ( )
  - b. No ( )
  - c. Not sure ( )
  - d. Never at all ( )
- 5) To your opinion should every ward be having a pharmacist to respond to drug related issues.
- a. Yes ( )
  - b. No ( )
  - c. Will not make a difference ( )
- 6) Do you think dosage errors should be minimized if pharmacists are involved in care plan for the patient.
- a. Yes ( )

- b. No ( )
- c. Not sure ( )

7) How often do you interact with the pharmacist?

- a. Many times ( )
- b. Once in a week ( )
- c. Rarely ( )
- d. Never at all ( )

8) How often do you call on the pharmacist, in the pharmacy, to seek information about drug therapy

- a. Many times ( )
- b. At least once in a week ( )
- c. Rarely ( )
- d. Never at all ( )

9) Do the pharmacist ever train you on drug administration, especially precautions to take sometimes

- a. Yes ( )
- b. No ( )
- c. Rarely ( )
- d. Never at all ( )

10) When you are seeking drugs from the pharmacy to the wards, is the process efficient

- a. Yes ( )
- b. No ( )
- c. In most cases drugs not available( )

11) How frequent do pharmacist call you seeking patient information for medication therapy management purpose?

- a. Frequently ( )
- b. Sometimes ( )
- c. Undecided ( )
- d. Rarely ( )
- e. Not at all ( )

12) In clinical activities i.e. treatment of patients to your view do pharmacists and medical doctors collaborate to enhance therapeutic outcomes.

- a. Yes ( )
- b. No ( )
- c. Do not know ( )
- d. Sometimes ( )
- e. Never at all ( )



## Appendix III

### Pharmacist

**Introduction:** I am a postgraduate clinical pharmacy student attempting to determine the extent to which pharmacist are informed about their new expanded role.

Please spare a moment to answer the following questions as frankly as possible.

Please note any information you provide will not reflect your identity and all information will be kept confidential and will only be used for the purpose of this study.

#### Personal information

Name \_\_\_\_\_

(initials are okay)

Training Institution      Kenya                      (   )                      Outside the  
country                      (   )

Designation

\_\_\_\_\_

Qualification:      BPharm      (   )      MPharm      (   )      PhD(   )  
                         Dip. Pharm (   )      Others                      (   )

Any other qualification gained after the basic training

\_\_\_\_\_

Number of years worked in KNH

---

Present station/department

---

**Questions**

1. Was a course in clinical pharmacy offered in your undergraduate programme?
  - a. Yes ( )
  - b. No. ( )
2. If Yes, to No. 1 above, to what extent do you believe that clinical pharmacy was instructed to your satisfaction.
  - a. Well covered ( )
  - b. Was only mentioned ( )
  - c. Not sure ( )
  - d. Not mentioned at all ( )
3. Have you ever had a formal introduction on offering clinical pharmacy services in KNH.
  - a. Yes ( )
  - b. No ( )
4. To what extent are you involved in a multi-disciplinary healthy care team in ward round?
  - a. Frequently ( )
  - b. Sometimes ( )
  - c. Rarely ( )

d. Not at all ( )

5. To what extent do you agree or disagree with the following statement. Please indicate whether you strongly agree, undecided, disagree or strongly disagree

i. Availability of all the essential medicines is part of good pharmaceutical care

a) Strongly agree ( )

b) Agree ( )

c) Un decided ( )

d) Disagree ( )

e) Strongly disagree( )

ii. Visiting the ward occasionally, when time allows, and talking to the patients is a good pharmaceutical care.

a) Strongly agree ( )

b) Agree ( )

c) Un decided ( )

d) Disagree ( )

e) Strongly disagree( )

iii. It is not necessary as a pharmacist to always get in touch with patients.

a) Strongly agree ( )

b) Agree ( )

c) Un decided ( )

d) Disagree ( )

e) Strongly disagree( )

iv. It is the physician duty to monitor a sick patient regularly to assess response or failure of therapy.

- a) Strongly agree ( )
- b) Agree ( )
- c) Un decided ( )
- d) Disagree ( )
- e) Strongly disagree( )

v. A pharmacist shares equal responsibility with the medical doctor in determining appropriate therapeutic outcomes.

- a) Strongly agree ( )
- b) Agree ( )
- c) Un decided ( )
- d) Disagree ( )
- e) Strongly disagree( )

vi. Pharmaceutical care is a component of clinical pharmacy practice.

- a) Strongly agree ( )
- b) Agree ( )
- c) Un decided ( )
- d) Disagree ( )
- e) Strongly disagree( )

vii. The current working environment in KNH is not conducive for the practice of pharmaceutical care.

- a) Strongly agree ( )
- b) Agree ( )
- c) Un decided ( )
- d) Disagree ( )
- e) Strongly disagree( )

viii. Clinical pharmacy practice requires advanced training in pharmacy.

- a) Strongly agree ( )
- b) Agree ( )
- c) Un decided ( )
- d) Disagree ( )
- e) Strongly disagree( )

ix. Clinical pharmacy practice is inappropriate in a resource challenged institution like KNH.

- a) Strongly agree ( )
- b) Agree ( )
- c) Un decided ( )
- d) Disagree ( )
- e) Strongly disagree( )

x. Doctors' acceptance determine how effective clinical pharmacy will be

- a) Strongly agree ( )
- b) Agree ( )
- c) Un decided ( )

d) Disagree ( )

e) Strongly disagree( )

6. Are you a member of any committee in the hospital?

a. Yes ( )

b. No ( )

7. Do you work in one department / station all the times.

a. Yes ( )

b. No ( )

8. How often do medical practitioner call on you to seek drug information

a. Many times ( )

b. At least once in a week ( )

c. Very rarely ( )

d. Never at all ( )

9. How many times in a month do you attend continuing professional development (CPD), either in KNH or outside

a. Many times ( )

b. Once ( )

c. Sometimes ( )

d. Never at all ( )

10. Do you organize training workshops for nurses, as administration of drugs is concerned, in KNH
- a. Yes ( )
  - b. No ( )
  - c. Very rarely ( )
  - d. Never at all ( )

Question 11 – 15; please indicate whether you strongly agree, agree, undecided, disagree or strongly disagree with the following statements.

11. Pharmacists are the single most appropriate members of the clinical team with unmatched medication therapy ability.

- a. Strongly agree ( )
- b. Agree ( )
- c. Undecided ( )
- d. Disagree ( )
- e. Strongly disagree ( )

12. Pharmacists drug therapy knowledge is critical in designing treatment plans;

- a. Strongly agree ( )
- b. Agree ( )
- c. Undecided ( )
- d. Disagree ( )
- e. Strongly disagree ( )

13. I regularly work with a pharmacist as a collaborator in designing, monitoring, and evaluating my treatment plans;

- a. Strongly agree ( )
- b. Agree ( )
- c. Undecided ( )
- d. Disagree ( )
- e. Strongly disagree ( )

14. Pharmacist are rarely interested in monitoring drug therapy for the patient

- a. Strongly agree ( )
- b. Agree ( )
- c. Undecided ( )
- d. Disagree ( )
- e. Strongly disagree ( )

15. Pharmacists are virtually absent when it comes to designing in-patient treatment plan.

- a. Strongly agree ( )
- b. Agree ( )
- c. Undecided ( )
- d. Disagree ( )
- e. Strongly disagree ( )



## Appendix IV

### CONSENT FORM

My name is ..... and I am conducting a study for my masters degree in Clinical Pharmacy.

The aim of the study is assess the attitude of nurses and medical doctors toward pharmacists collaboration in medicine therapy management.

The purpose of this study is to find out ways that Pharmacists plus Medical Doctors and nurses can work harmoniously in drug therapy management for better patient care. The information you provide will be used solely for this academic purpose and will be treated with strict confidentiality. You may and may not participate if you so wish. There are no any consequence if you wish not to participate. If you agreed to participate in the study please sign the attached consent form as an indication that you have freely and in your own volition agreed to participate.

Name: ..... (Initials only).

I have been fully explained the purpose of the study and all the details and I have agreed to participate in the study.

Date: .....

Signature: .....

## Statistics

### Number of years

N	Valid	23
	Missing	3
Mean		2.3696
Median		2.0000
Std. Deviation		1.65122

Variable	Frequency	Percent (%)
<b>Designation</b>		
	2	7.7
MO	3	11.5
MOI	10	38.4
MOII	1	3.8
PD	1	3.8
SHO	9	34.6
<b>Number of ward rounds per week</b>		
Daily	22	84.6
Alternate days	1	3.8
5 days	3	11.5
<b>Interns doctors</b>		
Yes	24	92.3
No	2	7.7
<b>Resident doctors</b>		
Yes	24	92.3
No	2	7.7
<b>Pharmacists</b>		
Yes	21	80.8
No	5	19.2
<b>Nurses</b>		
Yes	22	84.6
No	4	15.4
<b>Social workers</b>		
Yes	13	50.0
No	13	50.0

	Very necessary	Necessary	Undecided	Not necessary
<b>Interns participation</b>	23 (88.5%)	2 (7.7%)	0 (0.0%)	0 (0.0%)
<b>Resident doctors participation</b>	21 (80.8)	3 (11.5)	0 (0.0%)	0 (0.0%)
<b>Pharmacists participation</b>	8 (30.8)	11 (42.3)	2 (7.7)	2 (7.7)
<b>Nurses participation</b>	19 (73.1)	4 (15.4)	0 (0.0%)	0 (0.0%)
<b>Social workers participation</b>	4 (15.4)	13 (50.0)	1 (3.8)	2 (7.7)

Variable	Frequency	Percent
<b>Pharmacist input</b>		
Once in a week	6	23.1
During ward rounds	8	30.8
Never at all	12	46.2
<b>Pharmacist info source</b>		
Yes	3	11.5
No	23	88.5
<b>BNF info source</b>		
Yes	22	84.6
No	4	15.4
<b>Textbooks info source</b>		
Yes	15	57.7
No	11	42.3
<b>Loci index info source</b>		
Yes	5	19.2
No	21	80.8
<b>Martindale info source</b>		
No	26	100.0
<b>Discuss drug therapy with pharmacist</b>		
At least once a week	4	15.4
Rarely	20	76.9
Never at all	2	7.7

	Yes	No	Not sure	Never at all
<b>Improved HC with Pharmacist involvement</b>	22 (84.6%)	1 (3.8%)	2 (7.7%)	0 (0.0%)
<b>Drug supply mgt in wards</b>	21 (80.8%)	2 (7.7%)	1 (3.8%)	0 (0.0%)
<b>Drug administration</b>	23 (88.5)	2 (7.7)	0 (0.0%)	0 (0.0%)
<b>Pharmacists ward rounds</b>	5 (19.2)	19 (73.1)	1 (3.8)	

### Statistics

Number of years worked

N	Valid	33
	Missing	5
	Mean	9.5455
	Median	9.0000
	Std. Deviation	6.73304

Variable	Frequency	Percent (%)
<b>Training</b>		
Kenya	27	71.1
Outside	1	2.6
Missing	10	26.3
<b>Designation</b>		
	19	50.0
ACPT	1	2.6
DCP	1	2.6
P	1	2.6
PI	2	5.3
PT	7	18.4
PTI	4	10.5
SP	3	7.9
<b>Qualifications</b>		
BPharm	12	31.6
MPharm	5	13.2

<b>Dip. Pharm</b>	<b>19</b>	<b>50.0</b>
<b>Missing</b>	<b>2</b>	<b>5.3</b>
<b>Other qualifications</b>	<b>30</b>	<b>78.9</b>
<b>BPSYCH</b>	<b>1</b>	<b>2.6</b>
<b>BUS ADM</b>	<b>1</b>	<b>2.6</b>
<b>DIP MARKETING</b>	<b>1</b>	<b>2.6</b>
<b>HND</b>	<b>1</b>	<b>5.3</b>
<b>HNP</b>	<b>2</b>	<b>2.6</b>
<b>MTOX</b>	<b>1</b>	<b>2.6</b>
<b>PGHP</b>	<b>1</b>	
<b>Station</b>	<b>9</b>	<b>23.7</b>
<b>AE</b>	<b>3</b>	<b>7.9</b>
<b>CAS</b>	<b>1</b>	<b>2.6</b>
<b>CLIN</b>	<b>1</b>	<b>2.6</b>
<b>INTMED</b>	<b>1</b>	<b>2.6</b>
<b>ONCO</b>	<b>1</b>	<b>2.6</b>
<b>OPTPHARM</b>	<b>1</b>	<b>2.6</b>
<b>PAEDS</b>	<b>2</b>	<b>5.3</b>
<b>PHARM</b>	<b>18</b>	<b>47.4</b>
<b>PWING</b>	<b>1</b>	<b>2.6</b>

<b>Variable</b>	<b>Frequency</b>	<b>Percent (%)</b>
<b>Clinical pharmacy course</b>		
Yes	36	94.7
No	2	5.3
<b>Satisfied with clinical pharmacy course</b>		
Well covered	5	13.2

Was only mentioned	1	2.6
Not sure	2	5.3
Missing		
<b>Formal introduction on clinical pharmacy</b>	10	26.3
Yes	28	73.7
No		
<b>Involved in ward rounds</b>		
Frequently	2	5.3
Sometimes	9	23.7
Rarely	17	44.7
Not at all	10	26.3

	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
Availability of medicines	17 (44.7%)	11 (28.9%)	0 (0.0%)	8 (21.1)	1 (2.6)
Wards visits & talking with patients	11 (28.9%)	10 (26.3)	1 (2.6)	14 (36.8)	1 (2.6)
Pharmacist_patients not necessary	1 (2.6)	3 (7.9)	0 (0.0%)	17 (44.7)	16 (42.1)
Physician duty	4 (10.5)	11 (28.9)	3 (7.9)	13 (34.2)	6 (15.8)
Equal responsibility as doctors	16 (42.1)	20 (52.6)	1 (2.6)	0 (0.0%)	0 (0.0%)
Clinical pharmacy practice	16 (42.1)	21 (55.3)	0 (0.0%)	0 (0.0%)	0 (0.0%)
KNH unfavourable conditions	3 (7.9)	4 (10.5)	4 (10.5)	21 (55.3)	5 (13.2)
Advanced training	4 (10.5)	13 (34.2)	2 (5.3)	15 (39.5)	3 (7.9)
Inappropriate in KNH	1 (2.6)	1 (2.6)	3 (7.9)	22 (57.9)	10 (26.3)
Doctor's acceptance	6 (15.8)	11 (28.9)	2 (5.3)	15 (39.5)	3 (7.9)

<b>Variable</b>	<b>Frequency</b>	<b>Percent (%)</b>
<b>Committee member</b>		
Yes	10	26.3
No	27	71.1
Missing	1	2.6
<b>Work in one dept all time</b>		
Yes	21	55.3
No	16	42.1
Missing	1	2.6
<b>Drug information for medical pract</b>		
Many times	11	28.9
At least once in a week	16	42.1
Very rarely	10	26.3
Missing	1	2.6
<b>CPD</b>		
Many times	10	26.3
Once	11	28.9
Sometimes	15	39.5
Never at all	1	2.6
Missing	1	2.6
<b>Training nurses</b>		
Yes	11	28.9
No	20	52.6
Very rarely	5	13.2
Never at all	1	2.6
Missing	1	2.6

### Statistics

Years worked

N	Valid	49
	Missing	2
	Mean	10.0867
	Median	10.0000
	Std.	5.70671
	Deviation	

Variable	Frequency	Percent (%)
<b>Designation</b>		
	13	25.5
ECN	2	3.9
ECNI	6	11.8
ENI	1	2.0
NO	1	2.0
NOI	8	15.7
NOII	14	27.5
NOIII	5	9.8
SEN	1	2.0
<b>Qualifications</b>		
RN	27	52.9
EN	14	27.5
BSN	3	5.9
Others	6	11.8
Missing	1	2.0



<b>Variable</b>	<b>Frequency</b>	<b>Percent (%)</b>
<b>Participate in ward rounds</b>		
Yes	38	74.5
No	4	7.8
Sometimes	9	17.6
<b>Satisfied with drug availability and supply</b>		
Yes	12	23.5
No	26	51.0
Sometimes	13	25.5
<b>Pharmacists participate in ward rounds</b>		
Yes	2	3.9
No	35	68.6
Sometimes	6	11.8
Never at all	8	15.7
<b>Pharmacist respond better</b>		
Yes	44	86.3
No	2	3.9
Not sure	5	9.8
<b>Pharmacist in every ward</b>		
Yes	44	86.3
No	7	13.7
<b>Pharm reduce dosage errors</b>		
Yes	49	96.1
No	2	3.9
<b>Freq of interaction with pharmacists</b>		
Many times	7	13.7
Once a week	10	19.6
Rarely	34	66.7
<b>Seek info from pharmacist</b>		
Many times	17	33.3
At least once a week	5	9.8
Rarely	23	45.1
Never at all	6	11.8
<b>Pharmacist train on drug admin</b>		
Yes	4	7.8
No	39	76.5
Rarely	7	13.7
Never at all	1	2.0
<b>Efficient process seeking drugs</b>		
Yes	25	49.0
No	13	25.5
In most cases drugs not available	12	23.5

Missing	1	2.0
<b>Pharmacist seeking information</b>		
Frequently	1	2.0
Sometimes	17	33.3
Undecided	1	2.0
Rarely	16	31.4
Not at all	16	31.4
<b>Pharmacists collaborate with medical doctors</b>		
Yes	6	11.8
No	20	39.2
Do not know	3	5.9
Sometimes	17	33.3
Never at all	4	7.8
Missing	1	2.0

	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
q11	5 (13.2)	19 (50.0)	2 (5.3)	9 (23.7)	2 (5.3)
q12	14 (36.8)	21 (55.3)	1 (2.6)	1 (2.6)	0 (0.0)
q13	2 (5.3)	1 (2.6)	2 (5.3)	25 (65.8)	7 (18.4)
q14	3 (7.9)	15 (39.5)	4 (10.5)	14 (36.8)	1 (2.6)
q15	8 (21.1)	24 (63.2)	1 (2.6)	3 (7.9)	0 (0.0)

UNIVERSITY OF NAIROBI  
MEDICAL LIBRARY



**KENYATTA NATIONAL HOSPITAL**

Hospital Rd. along, Ngong Rd.

P.O. Box 20723, Nairobi.

Tel: 726300-9

Fax: 725272

Telegrams: MEDSUP", Nairobi.

Email: [KNHplan@Ken.Healthnet.org](mailto:KNHplan@Ken.Healthnet.org)

23<sup>rd</sup> April 2009

Ref. KNH/UON-ERC/ A/208

Dr. Tirus N. Wachira  
Dept. of Pharmaceutics & Pharmacy Practice  
School of Medicine  
University of Nairobi

Dear Dr. Wachira

**Research proposal: "Assessment of Physicians and Nurses Attitudes towards pharmacists as collaborators in medication therapy management at K.N. H." (P37/02/2009)**

---

This is to inform you that the Kenyatta National Hospital Ethics and Research Committee has reviewed and **approved** your above revised research proposal for the period 23<sup>rd</sup> April 2009 – 22<sup>nd</sup> April 2010.

You will be required to request for a renewal of the approval if you intend to continue with the study beyond the deadline given. Clearance for export of biological specimen must also be obtained from KNH-ERC for each batch.

On behalf of the Committee, I wish you fruitful research and look forward to receiving a summary of the research findings upon completion of the study.

This information will form part of database that will be consulted in future when processing related research study so as to minimize chances of study duplication.

Yours sincerely

**PROF. A N GUANTAI**  
**SECRETARY, KNH/UON-ERC**

c.c. The Chairperson, KNH/UON-ERC  
The Deputy Director CS, KNH  
The Dean, School of Pharmacy, UON  
The Chairman, Dept. of Pharmaceutics & Pharmacy Practice, UON  
Supervisor: ~~Dr. James Ombeaa~~ Dept of Pharmaceutics & Pharmacy Practice, UON