

ASSESSMENT OF INFORMATION LITERACY COMPETENCIES
OF PRACTICING NURSES AT KENYATTA NATIONAL HOSPITAL,
KENYA.

BY

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A research project submitted in partial fulfillment of the degree of Master
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University

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DECLARATION

I confirm that this research project is my original work and has not been presented in any other university/institution for certification. The research project has been complemented by referenced works duly acknowledged. Where text, data, graphics, pictures or tables have been borrowed from other works- including the internet, the sources are specifically accredited through referencing in accordance with anti-plagiarism regulations.

Signature..... Date.....

Supervisors' Declaration: this research project has been submitted for appraisal with my approval as University Supervisor.

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DEDICATION

This work I dedicate to my family and friends for their support.

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I express my sincere appreciation to Almighty God for His grace and blessings. I would not have completed this research project without Him. I acknowledge invaluable assistance offered by my supervisor Dr. Rose Njoroge who provided guidance and advice throughout this research project. I thank KNH Management for great cooperation and the assistance you offered. To all the respondents in this study thank you for the information you provided. To my employer Gretsia University thank you for the time and resources you availed to me during this research.

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ABBREVIATIONS AND ACRONYMS

ACRL	Association of College and Research Libraries
EBP	Evidence Based Practice
ICT	Information Communication Technology
KNH	Kenyatta National Hospital
MTRH	Moi Teaching and Referral Hospital
NACOSTI	National Commission for Science Technology and Innovation
SPSS	Statistical Package for Social Science
USAID	United States Agency for International Development

ABSTRACT

The aim of the research project was to assess the information literacy competency skills of practicing nurses at KNH with the objective of establishing, the information needs of practicing nurses, awareness of potential sources of information in nursing profession, ability to evaluate the retrieved information and establish their knowledge of ethical, legal and social-economic issues surrounding information use. The research adopted a case study focusing on single case of KNH, with a target population of 1723 registered nurses and a sample size of 347 respondents was selected. Structured questionnaires were used to collect data. Data was analyzed by use of likert scale and SPSS and presented through tables, charts, figure, graphs and percentage. The study established that information literacy program is taught at nursing schools in Kenya, four professional information needs were cited by practicing nurses at KNH; patient care, in-house presentation, presentation at a professional meeting/seminar and scholarship application/career development. Patient care recorded the highest frequency of 163(83%). All practicing nurses at KNH were aware of reference books, textbooks and human sources as sources of professional information. Human source was most preferred source of information; only 41% of practicing nurses had access to online medical databases since graduating. Low information literacy skills was reported on evaluation of information retrieved, use of online medical databases and on intellectual properties. The research recommends establishment of conducive environment for sharing professional knowledge, establishment of an information center to acquire information resources and develop specialized information services as well as information literacy programme tailor made to nurses and other medical practitioners in support of evidence based practice. The insights from the research findings will help nursing schools across the country in designing of information literacy curriculum, help health organizations in design of information literacy policies and staff trainings, guide future researchers and contribute to the professional knowledge.

CHAPTER ONE

INTRODUCTION AND BACKGROUND TO THE STUDY

1.0 Introduction

The chapter presents the background to the study, states the problem under investigation, purpose of the study, research objectives, research questions, assumptions, significance of the study, limitations and delimitations, theoretical and conceptual framework.

1.1 Background to the Study

Information literacy is an important skill in the acquisition of knowledge. It involves skills to recognize when information is needed and the ability to efficiently locate information sources, accurately evaluate, effectively use the acquired information, and clearly communicate the newly acquired knowledge and old knowledge in various formats (Wesleyan University Library, 2016). Information literacy involves skills to navigate the exponential growth in information environment, which is characterized by an increasing number of information providers such as, professional bodies, media centers, libraries, the world wide web, research organizations and hospitals. The phenomenal has been motivated by increasingly information being provided in unevaluated formats, raising eyebrows about its truthfulness, reliability, and validity. At the end the abundance of information becomes a blessing to expert information users while presenting more challenges to novice users.

The emergence of information society, characterized by rapid growth of information environment and accompanied by rapid growth in technology used to generate disseminate and manage information, gave birth to the concept of information literacy. The interest in information literacy is largely driven by the need to equip people with the skills to navigate through the information driven society (Bruce, 1997). For the past four decades information literacy has been a subject of interest in the literature of information science profession (Bonstein, 2006; Choo, 2005; cheuk, 2002; Lloyd, 2004; Conly and Gill, 2011). Within the literature much focus has primarily been on education setting (Bruce, 2011; Candy, 1998).

Lloyd, (2004) is of the opinion that the concept of information literacy should not be limited within the education framework since doing so limits our understanding of what it means to be information literate. She suggests that information literacy as learned in the education framework silences other complexities that affect learning outside the education framework. In this relation she suggests that educators should move towards real-world information setting to get an understanding of the complexities and reflect on challenges faced by information users in different environmental settings outside the education framework.

The medical and healthcare field is one of the most dynamic fields in the history of mankind. The field is anchored on solid research based evidence, best practices and well established procedures. Since research is a key pillar in the field, there is exponential growth of literature in medical and healthcare literature (Majid, Foo, Luyt, Xue, Yin-Leng, Chang, and Mokhtar, 2011). The need to train medical and healthcare practitioners on information literacy is paramount.

The need for information literacy among the medical practitioners arises from the fact that there are new and more effective medicines being discovered, new medical devices and procedures being invented and new diseases which havoc calamities to humanity such as Ebola, Zika virus and HIV virus are emerging, which need research to establish measures to contain them and find cure, establish medical procedures for treating patients, find vaccines etc.

Nurses form the largest group of health professionals all over the world and the case is no different in Kenya. Much research work has examined the role of nurses in delivery of healthcare services, (Needleman, 2016; Stertler , 1998; Eileen, 2005) have concluded that nurses play a central role in health care service delivery. On average nurses do more work than doctors and other healthcare practitioners in the delivery of healthcare services, among the key tasks performed by nurses include; ongoing monitoring of patients, initiating interventions to address complications, educating patients and coordinating healthcare delivery.

Taylor; Lillis; Lemone and Lyon, (2011) notes that nursing practice is anchored on principals of best practice and solid research-based evidence. For nurses to deliver quality and efficient healthcare, they need to possess information literacy skills to help them incorporate the research findings into their practice. Although the value of information literacy skills in nursing practice is undisputed, little evidence exists to support possession of these skills among practicing nurses (Bretta, 2007, Rose, 2010). Bretta (2007) suggest the need for more research to get an understanding of the complexities and challenges affecting acquisition and utilization of information by practicing nurses to effectively navigate through the medical and health care literature.

This research project presents an opportunity to gain more insight into information literacy in nursing practice within Kenyan context by exploring the information needs of practicing nurses at Kenyatta National Hospital (KNH), their knowledge of information sources and any challenges that, they might be facing when accessing, evaluating and incorporating evidence based research into their practice.

KNH is the largest national referral and teaching hospital in Kenya. It is also one of the oldest hospitals in Kenya with over 115 years in existence since its establishment in 1901. Currently KNH has 50 wards, 22 outpatient clinics, 24 theatres and a bed capacity of 1800 with a workforce of 6000. The hospital caters for 2500 to 3000 patients per day in its wards. (Kenyatta National Hospital, 2016)

For years now KNH has faced several challenges ranging from overcrowding due to high number of referrals and many outpatient patients seeking health care at the facility, shortage of medical equipment, shortage of skilled staff and quality of health care among other challenges.

The Kenya Government however has committed itself to address these challenges; there are plans in place to face out outpatient services at KNH by end of 2017 to reduce workload, the hospital has received a number of modern equipment such as radiology, lab equipment and many others and there are plans to purchase more and a number of nurses and other health professionals have been added to the workforce. One core challenge facing KNH is however not adequately being addressed; issues concerning staff skill development and

quality of services being delivered as noted by (Wanjau, Muiruri, and Ayodo, 2012, Munyao, 2013, Otiende, 2013 and Wamuti, 2015)

Addressing issues of information literacy skills at KNH, forms part of the solution to staff skills development which will help them effectively carry out evidence based practice and therefore improve quality of service delivery. Nurses make up approximately 27% of the total workforce of KNH and they are the largest single category of professionals working at KNH.

1.2 Statement of the Problem

The researcher has noted that, in higher education a lot of emphasis on information literacy has been placed on how learners can maximize the use of academic resources mostly those hosted in their libraries in order to meet the academic requirements of their courses. However information literacy goes beyond coursework. More needs to be done to strengthen the link between acquisition and use of information literacy skills to achieve academic goals and the role of information literacy skills in the workplace or in the professional world. The fact that information literacy skills are not confined in the academic framework but are transferable skills to the workplace needs to be reinforced.

The opportunity afforded by this research project enabled the researcher to examine the information literacy attributes possessed by practicing nurses at KNH and gain a viewpoint on whether the practicing nurses at KNH possesses adequate information literacy competency to comfortably navigate through the information environment, in an effort to demonstrate the link between information literacy skills and the workplace.

1.2.1 Purpose of the Study

The purpose of this research was to assess the information literacy competency of practicing nurses at KNH, Kenya, with the aim of establishing whether they can easily navigate through the information landscape.

1.2.2 Objectives of the Study

The study was guided by the following objectives:

1. To establish the information needs of practicing nurses at KNH.
2. To establish how practicing nurses at KNH find information to support clinical decisions.
3. To establish KNH practicing nurse awareness of health information sources for medical and healthcare practitioners.
4. To identify areas of strengths and weaknesses in information literacy skills among practicing nurses at KNH.

1.2.3 Research Questions

1. What are the information needs of practicing nurses at KNH?
2. Which information sources are available for medical and healthcare practitioners?
3. Which medical and healthcare information sources are practicing nurses at KNH aware of?
4. Where do practicing nurses at KNH seek information and what formats do they find most useful?
5. How successful are practicing nurses at KNH in searching and retrieving relevant information to meet their information needs?

1.3 Significance of the Study

The research reflected on information literacy competencies of practicing nurses at KNH. The insights from the research findings will help nursing schools across the country in design of information literacy curriculum, help health organizations in design of information literacy policies and staff trainings, guide future researchers and contribute to the professional knowledge.

1.4 Limitations of the Study.

In research, there are factors that are beyond the control of the researcher and which may negatively influence the outcome of the research. (Mugenda and Mugenda, 2003). One such limitation in this research was the busy working schedule of practicing nurses at KNH,

which meant that the researcher could not be able to employ some of data collection tools such as interviews and focus groups.

1.5 Delimitations of the Study.

In research, delimitations are factors that help the researcher overcome some of the potential problems in the research and which the researcher has control (Mugenda and Mugenda, 2003). One such factor in this research was the use of questionnaire to correct data; the questionnaires give the researcher flexibility and allowed the nurses to answer the questions at their own free time.

1.6 Assumptions

Mugenda and Mugenda (2003) defines an assumption as any fact that the researcher takes as true about the nature and behavior of population, methods of measurement and the conditions under which behavior occurs without verifying it. The researcher assumed the following:

- a. All practicing nurses at KNH had gone through information literacy training during nursing training because it is part of nursing curriculum in Kenya and in many other countries.
- b. All the practicing nurses were familiar with questionnaires because questionnaires are popular tools of data collection.

1.7 Theoretical Framework

There are many potential theories that can be applied in the field of information literacy and there is lack of consensus on the most appropriate theoretical framework to guide practitioners and researchers in the field of information literacy. This has led to a range of frameworks, Reckwitz, A. (2002). A theory of social practices, Seven Pillars of Information Literacy (1999), Lloyd, (2010) Information literacy as information practice and many others. A closer examination of the popular theoretical frameworks in the field, reviews that they all emphasis on acquisition of skills and knowledge through a “path” which a person follows to develop from novice user of information to an expert.

However getting an information literacy theoretical framework that is industry specific makes it easier for practitioners and researchers in the industry to adapt and use it. Therefore this research adopts Bystrom's (1999) theory of information activity in work. The theory is based on empirical research in the field of information literacy in the workplace. The theory was developed to provide guidance in research that relates to real life context in working environment where information activities occur. The theory is built upon relationship between information sought and the information sources used where information itself is considered as a tool that enables a task to be completed.

The assumption of information activity in work theory is that information activities of workers/professionals are influenced by contextual characteristics as well as individual's characteristics. Bystrom (1999) characterize information practice in the workplace as a practice that is composed of a range of activities which includes searching, acquiring, evaluating, sharing and putting newly acquired information into use, while being information literate is characterized as, possessing the skills to identify information need and its extent, effectively searching for information, acquiring, evaluating, sharing and effectively using the information to solve a problem (meet the information need). Bystrom (1999) however notes that the above information activities in workplace can be influenced by individual activities such as withholding information, providing partial information or providing misleading information that directly or indirectly affects other workers output. Information activities in the workplace are also influenced by workplace conditions and setting such as availability of information resources, the complexity of tasks performed for example performance of routine verses innovation oriented work task or administration work.

Bystrom (1999) Information activities in the workplace theory may be divided into three phases:

Phase 1

Task Construction: in this phase the worker recognizes and analysis his/her need for information to accomplish a specific task.

Phase 2

Task performance: in this phase the worker searches and acquires the needed information.

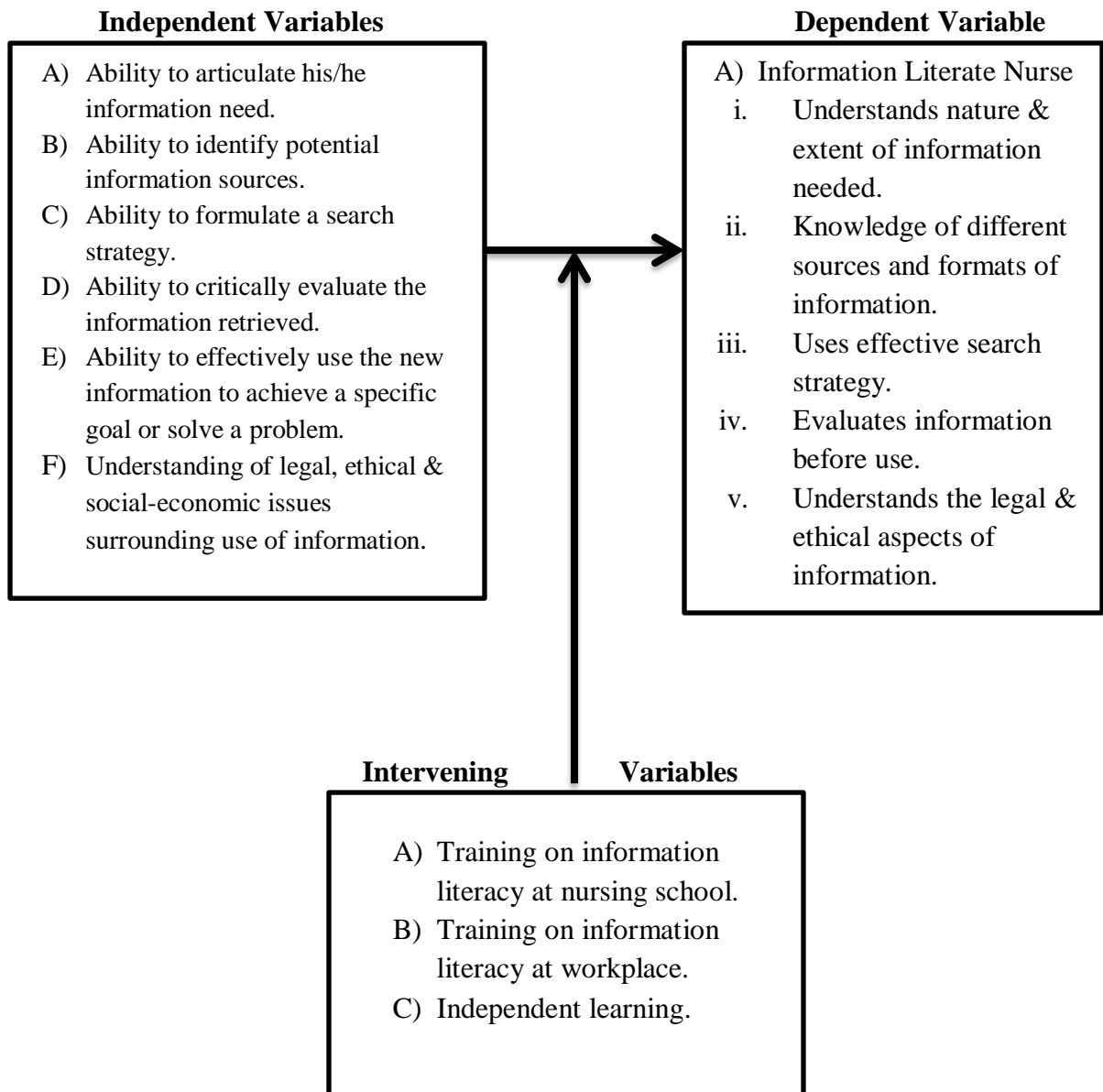
Phase 3

Task completion: the worker evaluates and uses the information to accomplish the specific task.

Bystrom's (1999) theory proposes a "map" of important issues and concepts on information literacy that researchers should take into account when researching on information literacy in the workplace. The theory enabled the researcher to understand how information is acquired and transformed into knowledge within the work/professional environment. It also helped the researcher gain theoretical basis of information activity in work outside the orally expressed and documented information to the information that is embodied, tacit and socially legitimate.

Bystrom's (1999) information activity in work theory provide applicability in the nursing practice where nurses need a wide variety of health information to meet the clinical and educational information needs in order to accomplish work tasks of varying complexities. The theory is also applicable to this research since it is based on real-life context where information activities occur.

1.8 Conceptual Framework



Source: Weber, (2010)

The Conceptual Framework shows a graphic representation of how variables operate in influencing each other; the dependent variable, independent variables and intervening variables in this study are interrelated. The independent variables;

- a) Ability to articulate his/her information need
- b) Ability to identify potential information sources
- c) Ability to critically evaluate the information retrieved.

- d) Ability to efficiently use the information to accomplish a specific goal or solve a problem.
- e) Understanding of the legal, ethical and socio-economic issues surrounding use of information.

The independent variable guide the dependent variable; information literate nurse. The benefits of information literate nurse can only be realized on promoting the intervening variables which revolve around training on information literacy at nursing school, training on information literacy at workplace and independent learning on information literacy.

1.9 Operational Definition of Terms

This section defines key terms used in the research that are not used in conventional manner.

Electronic Information Resource

Any information resource such as journal, book, conference proceedings, reports and research projects that the library or information centre provides access to in electronic format mostly though the web.

Information Literacy

Information Literacy constitutes the abilities to articulate information need, identify potential information sources, locate the information sources, evaluate both the information and the source, effectively use the new knowledge, and communicate with an understanding of legal, ethical and socio-economic issues surrounding information.

Practicing Nurse

A practicing nurse is a registered and licensed nurse by Nursing Council of Kenya who cares for the sick, injured or disabled.

Professional Information Need

The desire to seek information to solve or provide a solution to a work related problem.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

1.1 Introduction

The literature review provides an account of what has been previously researched on information literacy skills in the nursing practice focusing on Kenyatta National Hospital in Kenya by credible scholars and researchers. It involved examining documents such as books, journals, magazines, thesis and dissertations and other credible information sources that have a bearing on information literacy in the workplace. With the exception of a few works from 1980s to 1990s the literature presented in this review is from 2000 to 2016 given that interest into the subject was mostly driven by technological, social and economic developments linked to information society (Obsborne, 2011).

2.1 Overview of Information Literacy.

The theme discusses the concept of information literacy from different viewpoints with emphasis on the emerging trends in the early 21st century as presented by Lyloyd, (2004; 2006) and Webster, and Johnston, (2003) shifting the concept of information literacy away from the education setting and proposing that it could be more beneficial when approached from a wider context of “real world”. This concept reflects thoughts of O’Sullivan, (2002) who in her research on “Is information literacy relevant in the real world?” concluded that librarians and educators needed to move towards real world information environments rather than promote a library viewpoint of information literacy and limit themselves to a theoretically constructed information environment. She was of the opinion that such change of approach would facilitate an in-depth understanding of information landscape especially in the 21st century.

This approach is relevant to the first, second and third objectives of this research which focuses on information literacy in the “world” of nurses. There is a consensus that Information Communication Technology (ICT) has greatly impacted our way of life in terms of access to information, transmission, creation and storage (Floridi, 2005). However Horton, (2007) is the opinion that ICT alone is not enough if nations, governments and individuals are to exploit the full benefits of global knowledge. He notes that individuals

need to be empowered with the skills to seek, evaluate, use and communicate information effectively.

2.2 Definitions of Information Literacy

Information literacy is a set of skills requiring someone to "...recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information" (American Library Association, 1989). The United States National Forum on Information Literacy (2012) on the other hand defines information literacy as "... the ability to know when there is a need for information, to be able to identify, locate, evaluate, and effectively use that information for the issue or problem at hand". The chartered Institute of Library Professionals (2015) defines information literacy as "...knowing when and why you need information, where to find it, and how to evaluate, use and communicate it in an ethical manner". All the above definitions point out that information literacy is a set of skills that helps an individual discover an information need, identify potential information sources, locate the sources, evaluate both the information and the source and finally use the newly acquired information effectively to solve an information need.

Webster and Johnston, (2003) defines the information literacy as a process of adopting appropriate information behavior to identify information through the different channels and medium and be able to isolate information that suits your information need leading to wisdom while observing the ethical and legal requirements. They are of the opinion that information literacy is not just possession of a set of skills, rather its adoption of a behavior that puts into use these skills every time one has information need.

Wesleyan University (2016) defines information literacy as the ability to "...recognizing when information is needed and being able to efficiently locate, accurately evaluate, effectively use, and clearly communicate information in various formats." Wesleyan University recognizes information literacy as a crucial skill that helps an individual to navigate the rapidly growing information environment, which is characterized by an increasing number of information suppliers such as professional bodies, social media, libraries, the internet, databases, media centers, publishers, government ministries and departments, individuals and many more. The information environment is

also characterized by, information being available in unfiltered formats such as personal blogs, social media platforms etc. raising questions about its authenticity, validity, and reliability.

2.3 Information Literacy and Nursing Practice

The medical and health field has been characterized by steady and rapid growth in research and literature in the past two decades. Glashion, (2008) estimates that over 12,000 new articles are added to MEDLINE database per week, keeping in mind that MEDLINE is just one of the many databases containing medical and healthcare research. The principal objective behind this large investment in healthcare research is to facilitate doctors, nurses and other healthcare practitioners provide quality and best possible care to patients (Majid et al. 2011). Nurses on the other hand are expected to base their practice on concrete research based evidence as pointed out by Majid et al. (2011).

Osborne, (2011) notes that the concept of information literacy in the context of “real world” is not new to the nursing practice, this is because nurses have always been equipped with the skills to learn from their colleagues at work as well as from the education framework. Actually the concept has been practiced since early 1980’s as pointed out by Benner, P. (1984) in her research on information skills in nursing practice, where she notes that nurses should be equipped with information skills that help them develop nursing skills through theory in the nursing school in conjunction with clinical experience at a hospital. Banner, P. (1984) created a link between information literacy and nursing practice long before the evidence-based practice movement in nursing began in late 1990’s.

2.4 The Link Between Information Literacy and Evidence Based Practice

Evidence Based Practice (EBP) is the integration of clinical expertise, patient values and best available external research evidence into the decision making process for patient care and clinical refers (Sackett, 2002). The research evidence alone is not sufficient for clinical decision making neither is clinical expertise sufficient, the health providers needs to integrate both the evidence based research with his/her clinical expertise in order to make quality decision. Evidence based research however requires information literacy skills in

order for the health provider to be able to search, acquire, evaluate and integrate the evidence based research into the decision making process.

Pravikoff, (2006) is of the opinion that information literacy was no longer an option for medical and health practitioners but “a professional” obligation. The Royal College of Nursing (2016) encourages its members to see information literacy as a life skill rather than academic qualification. In the year 2011 the role of information literacy in promoting evidence based practice was recognized in United Kingdom through the launch of the Royal College of Nursing, Information Literacy Competencies while in USA, in the year 2014 recognized the role of information literacy in promoting evidence based practice and in the nursing profession by establishing, Information Literacy Competency Standards for Nurses (2014).

Jacobs, Rosenfeld, and Haber, (2003) in their research on, “information literacy as the foundations for evidence-based practice in graduate nursing education: a curriculum integrated approach”, concluded that information literate nurses were better at incorporating evidence based research into their practice which resulted in efficient and quality service delivery compared to nurses who did not possess adequate information literacy skills.

Beke-Harrigan, Hess and Weinland, (2008), in their research, “A survey of registered nurses’ readiness for evidence-based practice: a multidisciplinary project” using a descriptive correlation research methodology and having corrected data from 1442 registered nurses in Ohio State in United states of America, concluded that without adequate information literacy skills, evidence based practice (EBP) cannot function and as a result nursing practice would become a dangerous practice for both the patient and nurses. Despite the role of information literacy in the nursing practice being acknowledged, nurses have been found lacking these skills as noted by (Bruce and Hughes, 2010, Majid et al 2011, Ross, 2010)

Layton, (1995) and Majid et al. (2011) noted that historically, nurses have made less use of medical and health research findings compared to other health professionals such as doctors and clinicians, this phenomenon has been explained by Majid et al. (2011) in their

research on Evidence Based Practice in clinical decision making, having used descriptive survey research design and administered 2100 questionnaires to registered nurses in Singapore, to nurses having little time and possessing few information literacy skills.

Klem and weiss, (2005); Tanney, Wessel, Epstein and Gadd, (2007) noted nurses having difficulties in searching, locating and evaluating evidence based research as some of possible barriers to adoption of evidence based practice into the nursing practice, surprisingly the barriers noted reflects those noted by Hunt, (1981) in his research on health literacy in public hospitals in Canada, that nurses had difficulties in searching, understanding and integrating research findings into decision making process. Osborne, (2011) in his research on the value of information literacy in nursing practice, questioned why the same barriers were still being reported many years later, he employed phenomenography research methodology and a sample of 68 respondents and concluded that it was related to the nursing as a profession which has a history of being suspicious of quantitative research and their lack of sufficient information literacy skills to search, retrieve, evaluate and effectively use the evidence based research. Among his recommendations was for more research to be done to establish the relationship between academic learning, clinical learning and the role information literacy can play.

Brown, Murphy and Nanny, (2003) in their research on integrating information literacy with science curriculum, concluded that the skill gap noted in nurses may be as a result of misperception that use of internet to retrieve information or internet literacy is the same as information literacy. If this is the case then the problem goes back in time to 1980s where the terms information skills/literacy and computer skills/literacy were used interchangeably (Cheek and Dosketch, 1998). However in the information age, information literacy means that being knowledgeable about new technologies and the internet is not good enough. Alexandria, (2005) notes that one has to learn how to utilize the new technologies efficiently to search, retrieve, analyze and use the newly acquired information in decision making or problem solving. Alexandria, (2005) describes Information literacy as the beacons of the information age.

Secker, and Coonan, (2011) in their journal article on information literacy for 21st century, attributed lack of sufficient information literacy skills in nurses partly due to over-

confidence in their information literacy skills in that, since they can easily retrieve information from the internet they do not see the need to equip themselves with more traditional-like information skills, this is particularly true with the “Google generation”. However CIBER report (2016) on “knowledge for healthcare” concluded that there was no sufficient evidence that the “Google generation’s” information literacy skills were any better or worse than other generations. The same report found out that although the “Google generation” demonstrated good internet searching skills, they were often unaware of the credibility and ethical issues associated with the internet, they took the information retrieved as simple truth.

Catatan, (2005) in his key note presentation at “The Alexandria Proclamation on Information Literacy and Lifelong Learning” held at UNESCO, is of the opinion that information literacy should not be seen as an independent discipline or subject nor should it be seen as a high point on the scales of education that can be achieved and the learner comfortably sits back, rather information literacy is a continuous process that must be undertaken by everyone.

Similar information literacy gap was noted by Bruce, (2010) who concluded that although nurses used internet more frequently when searching for evidence based research than in his previous research in 2004, they were overwhelmed by information overload and experienced difficulties in evaluating the information retrieved. Crotty, (2010) and Bruce, (2010) points out that nursing professional culture which prefers consulting colleagues over searching for evidence based research was also a barrier to information literacy and evidence based practice. However the findings of Mellon, (1986) in her research on library anxiety, that nurses tended to over-estimate the competences of their colleagues and therefore avoided asking for help in fear of exposing their own perceived inadequacies, points to personal barriers that contradicts the conclusions of Crotty, (2010) and Bruce, (2010) that nurses prefer consulting colleagues.

Kimberly, (2015) notes that nurses who rely on their colleagues for information are limited to the information offered, which might be inaccurate or biased and such nurses cannot keep up with changes in health care. She argues that the nature of nursing profession demands nurses to be knowledgeable professionals in order to deliver quality health care.

Patients and the society expect nurses to understand medical procedures, offer proper medication, proper diagnosis and education to patients. With such high expectations from the society, nurses must continue advancing in knowledge and skills, which is only possible if they possess the right skills to search, evaluate, analyze and make use of new research based evidence.

2.5 Information Needs of Practicing Nurses

Information need according to Mahajan, (2009) is the extent to which an individual requires information to solve a problem. Kakai, Ikoja, and Kigongo, (2004) are of the opinion that understanding the information needs of health workers and how they use information in their practice is a major step in designing an effective information literacy delivery system.

In their survey on information needs and seeking behaviors of nurses at Buyale State Nigeria, using a descriptive survey methodology and having collected data from 180 respondents, Boro and Ebhomeya, (2012) concluded that nurses have various information needs which include, keeping up-to-date with new developments in the profession (Evidence Based Practice), offering explanations on clinical procedures to patients and relatives, researching on community health problems, and preparing for seminars and conferences.

In their research on information needs of rural public health nurses in Oregon, Anne, Zoe, Debra and Rita, (2008) used semi-structured in-depth interviews in their research and collected data from 1486 nurses and concluded that nurses in public health care have information needs ranging from need to know the regulations, policies and laws governing public health, research findings to support Evidence Based Practice, clinical procedures and personal information needs such as employment opportunities, investment and personal hygiene. They also concluded that information need of nurses depend on job position and professional responsibilities, however on average nurses' information needs of public nurses can be grouped into; clinical procedures, primary health care, family planning, conducting health research, community outreach and personal needs.

The findings are similar to those of Royal College of Nursing (2015) in the research on information needs of nurses, although using a different research methodology of comprehensive literature review concluded that nurses are motivated by need to support clinical decisions, academic purpose, personal needs and regulatory framework in their search for information.

Francis, (2008) in his research on suitable methodology for identification of information needs of users and potential users, notes that only after identifying the information needs of each group of clients precisely then can an organization develop specific and suitable information literacy program and policies that will be relevant and useful to their clients.

2.6 Nurses Awareness of Potential Information Sources

A research on hospital nurses' knowledge base on information resources carried out by Tamery, Epstern, Wessel, and Gadd, (2007) in Charlotte, USA, using descriptive survey design concluded that nurses were aware of popular health information sources such as reference books, textbooks, medical databases, professional blogs and medical videos. The same conclusions were made by Marshall, Morgan, Klen, Thompson and Wells, (2014) in their research on the value of library services in nursing practice where 6788 nurses across 118 hospitals in Sydney Australia were sampled. In the same research, by Mashall et al., (2014) noted that nurses preferred obtaining new information through "social means" over other sources of information, a phenomenal that was attributed to busy working schedules, inadequate information skills and poor library services infrastructure.

The findings reflect those of Aitlan, (2010) who in his research on preferred information sources for clinical decisions concluded that when nurses are faced with a clinical question, they were more likely to consult a colleague over any other source of information.

Nurses are familiar with popular scholarly information sources such as journals, abstracts, reports, books, online databases and reference materials, however nurses rarely use journals and online databases when searching for information because they are not easily accessible and are not easy to understand. These are the conclusions of Stanley (2005) in his research on information needs of Thai nurses having used a survey design methodology.

A multicentre survey carried out in five countries (Egypt, China, India, Kenya and Thailand) on health workers, noted that textbooks were the most popular sources of clinical information, journals and medical databases were the least popular (Page, Kinly, Qian & Macharia, 2005)

Nursing knowledge is drawn from multiple information sources and nurses need multiple information sources to meet their information needs, they need latest medical knowledge based on solid research on top of best practices to support their clinical decisions and provide necessary education to patients (Stanely & Dee, 2005)

2.7 Evaluate Information Before Use

Nurses and other health workers must use reputable information sources when searching for information and strive to develop a culture of professional practice based on information literacy skills in order to be in a position to offer best clinical decisions based on solid research based evidence and best practice. This was the conclusion of a nursing workshop held at University of Missouri, Colombia (2015). The goal of the workshop was to empower nurses with information literacy skills and link them to reputable information sources in an effort to address the disconnect between convenience of modern information retrieval tools such as Google and purposeful searching for reliable, up-to-date, credible and relevant research based information.

The Association of College and Research Libraries (2014) developed Information Literacy Standards for Nursing based on a two years research on information needs of practicing and nursing students in an effort to address the information literacy gap noted among registered nurses in America. The Information Literacy Standards for Nursing (2014) is made up of five major standards and 23 indicators of how each standard can be achieved. Standard three points out that information literate nurse should be in a position to critically evaluate information procured/retrieved before using it.

The research on “Readiness of U.S. Nurses for Evidence Based Practice” by Pravikoff, Tanner and Pierce, (2005) using a stratified random sample of 3000 registered nurses across U.S found out that 75% of respondents did not always use professional information sources when searching for information to support clinical decisions. Another 59% rarely

used more than one source to determine the credibility of information retrieved. The research recommends development of health oriented information literacy program to address the information literacy gap noted.

Beve-Harrign, Rosanna and Weinland, (2008) in their survey of registered nurses in Ohio readiness for Evidence Based Practice, using a descriptive correlation research design and a sample of 1442 registered nurses reported similar findings as those of Pravikoff, Tanner and Pierce (2005) where 43% of respondents reported using Google only to search for information to support clinical decisions, 20% of respondents reported using professional databases and another 24% reported using more than one source to determine credibility and reliability of information retrieved before use.

Diane (2015) notes that evaluating information is more important in this error of internet than ever since anyone with basic computer skills can easily publish on the internet and by default by-pass traditional filters of quality such as editors, libraries, journal review board etc. Diane's opinion can be supported by evidence documented by Federal Trade Commission (2015) of dubious web sites that purport to treat HIV and Cancer among other chronic diseases.

On top of misleading claims is the problem of inaccurate or incorrect information from seemingly credible sources. America Academy of Pediatrics (2013) in its research on Evidence Based Practice management and patient education reported that 20% of the 60 medical websites sampled had misleading information on treatment of diarrhea in children.

Evaluation of information is complex judging from the review and logically more complex to a consumer who does not possess adequate information literacy skills. The National Cancer Institute (2016) warns healthcare workers and patients about need to critically evaluate medical information before using it even when it comes from a credible source because it may mean the difference between life and death.

2.8 Legal and Ethical Issues in Information Access and Use

Ethics are the moral principles concerned with distinguishing right from wrong in a society. Laws on the other hand are made to address principles and values of a society with respect

to right and wrong (Pollack, 2006). Ethical and legal issues in information revolve around: access, quality, ownership, privacy and economic aspects of information (smith, 2010)

Nurses make clinical decisions every day based on information gathered from the patient, solid evidence based research and best practices, therefore nurses come across a lot of information in a single working day. In the modern litigious society, nurses must understand the scope of legal and ethical responsibilities and stay up-to-date with laws and regulations covering information access and use. (Miller, 2005)

Privacy of information obtained from patients is a core value in nursing profession, it is fundamental in respecting the dignity and building professional relationship with the patient based on trust. However in the increasingly interconnected web of health information facilitated by advance in ICT, it becomes difficult for health workers to safeguard the privacy of patient's information (The Canadian Nurses Association, 2001). In an effort to address ethical and legal challenges faced by nurses, The Canadian Nurses Association (2001), formulated code of ethics for registered nurses to help nurses become more aware of ethical issues in connection to access and use of information and patient's rights. National Nurses Association, Kenya (2009) formulated a similar code of ethics that guides registered nurses in Kenya.

In a survey on every day ethical issues facing nurses in California USA, Ulrich, (2010) used self-administered questionnaire to collect data from 422 registered nurses across California, and found out that 89% were aware of legal and ethical issues concerning information obtained from patients while only 23% were aware of legal and ethical issues concerning information obtained from other sources. The research recommends for creation of more awareness on legal and ethical issues in access and use of information in general since nurses have information needs that will require use of information from other sources other than the patient.

2.9 Summary and Conclusions

From the selective literature review, it is evident that the concept of information literacy has evolved in different ways since its conception and there have been discussions about different frameworks, concepts and ideas. The 1990s saw the information literacy defined

in clarity as skills that are required for information handling basically within the education framework only for the definition to be challenged in 2000s to a set of competencies that an information literate person should possess with the notion of a wider context, outside the education framework.

The linear developments that occurred through the work of Lylod, (2004); Bruce, (2004); Bruce, (2011); Majid et al. (2011) and Osbone, (2011) have shaped the positioning of this research project into information literacy in the wider context of “real world” and specifically focusing on information literacy in the “world” of nurses.

The literature by Ebhomaya, (2012), Oregon et al., (2008) and Francis, (2008) points a knowledge gap in information needs of nurses that this research will seek to address through the first objective while literature by Tamery et al., (2007) and Marshall et al., (2014), points knowledge gap in nurses knowledge of reputable sources of information which this research seeks to address in its second and third objective.

The literature by Association of College and research libraries (2014), Pravikoff and Piece, (2005) and Beve-Harrign, Rosanna & Weinland, (2008) point’s knowledge gap in nurses’ information evaluation skills, which this research will seek to address through object four. Finally the literature by Miller 2005 and Ulrich, (2010) Points knowledge gap on legal and ethical issues surrounding use of information, which this research will seek to address through objective four.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter explains the overall strategy and methodologies that were used to address the research questions. The chapter elaborates the research design, location of the study, study

variables, study population and sample, research instruments, data collection procedures, data analysis techniques, logistical and ethical considerations.

When carrying out research, the researcher has to make a number of decisions; one of these decisions is the research design and methodology to adopt; the one that will be the most appropriate for the specific nature of the research. Trochim, (2005) describes research design as the glue that holds the research together; it binds all major parts of the research together with the aim of addressing the research problem. Nebeker, (2015) compares research design to a recipe, just like a recipe provides a list of ingredients and instructions for preparation of a particular dish, so does the research design provide the components and the strategy to successfully carry out the research.

3.2 Research Design

The research adopted descriptive survey design. Descriptive survey is a research design which employs interviews or questionnaires to a sample population. It can be employed in social science when the researcher want to collect information about people's opinions, habits, perceptions or any other social science issue (Kombo, 2006). Descriptive survey was deemed suitable for this research because it presented the opportunity to combine both the qualitative and quantitative research design. Descriptive survey can be a case study, observation or survey.

Out of the different descriptive survey design approaches, this research adopted the case study method. A case study describes a unit in detail either within a context or holistically. It allows an in-depth investigation of the research problem (Kombo and Trump, 2006). Stake, (1995) notes that a case study is much defined by interest in an individual case, and less by the methods of inquiry used.

According to Jwan and Ong'ondo, (2011) a case study can either take a quantitative approach or qualitative approach depending on the methods of inquiry used and the basic concept underlying case study research design is that one unit will be studied in detail to develop an in-depth understanding of the research problem.

Although the critics of case study approach argues that the research findings of a case study cannot be generalized to wider population outside the unit under study, Flyvbjerg, (2006) argues that a case study is the preferred method when ‘how’ or ‘why’ questions are being asked or when the phenomenon under investigation is within some real life context. As such this research focused on the single case of practicing nurses at KNH.

3.2.1 Variables

In this research the independent variables are:

- a. Practicing nurse ability to articulate his/her information need.
- b. Ability to identify potential information sources
- c. Ability to critically evaluate the information retrieved.
- d. Ability to effectively use the new information to accomplish a specific goal or solve a problem.
- e. Understanding of the legal, ethical and socio-economic issues surrounding use of information.

The independent variables guide the dependent variable; information literate nurse. The intervening variables are; training on information literacy at nursing school, training on information literacy at workplace and independent learning on information literacy.

Practicing nurse ability to articulate information need, will be measured by extent to which the nurse has knowledge of the nature of his/her information need. The ability to identify potential information sources will be measured by extent to which the nurse has a working knowledge of the different literature in the nursing field.

The ability to critically evaluate the information retrieved will be measured by the extent to which the nurse is able to establish the currency, truthfulness, reliability, validity, value added contradictions or other unique characteristics of information gathered and determine whether the initial query needs to be revised. The ability to efficiently use the information to accomplish a specific goal or solve a problem will be measured by the extent to which the nurse applied new knowledge to accomplish a specific goal or solve a problem.

Understanding of the legal, ethical and socio-economic issues surrounding use of information will be measured by the extent to which the nurse followed laws, regulations, institutional policies and etiquette when accessing and using information and acknowledged the use of information sources when communicating the product.

3.3 Location of the Study

The research was carried out at Kenyatta National Hospital. KNH is the largest national referral and teaching hospital in Kenya. KNH is guided by the following core values: Customer focus, Professionalism & integrity, Teamwork, Equity and Equality, Employee empowerment and Environmental safety. The vision of the hospital is to be a world class patient-oriented hospital. The hospital is located in Upper-Hill within Nairobi, the capital city of Kenya off Mbagathi road, approximately three kilometers from Central Business District (CBD).

KNH does not have an operational library or an information centre to cater for information needs of staff members, however it has a children's library dedicated to children admitted at the hospital. Members of staff can access information services from Kenya National Library Services Upper-Hill, just a few meters from the hospital or from University of Nairobi College of Health sciences, Medical Library located within the hospital.

3.4 Target Population

Mugenda and Mugenda (2003) define target population as the population to which the research findings can be reasonably generalized. Target population represents overall context about which research findings can be generalized (Trent, 2015). In line with the title and objectives of the research, the target population constituted 1723 registered nurses working at KNH. For the purpose of this research, registered nurse is a person who is trained in scientific basis of nursing and has been licensed to practice nursing in Kenya by Nursing Council of Kenya.

3.4.1 Sampling Techniques

Sampling is the process of selecting a sample from target population such that the selected sample is a representative of the entire population. Sampling techniques are the methods

used to select a sample. When dealing with people, sampling techniques indicates how the respondents are to be selected (Kombo and Trump, 2006).

Stratified and purposive sampling techniques were chosen for this research. Through stratified sampling the entire population was divided into departments to ensure all nursing departments at KNH were represented in the research and proportionate number of respondents assigned to each department. After which purposive sampling was used in choosing respondents across all ages and gender. Table 1 represents the entire population in their respective departments

Table 1 Stratified Sample

Department	No. of Nurses
-------------------	----------------------

1. Administration	13
2. Human resource	5
3. Corporate affairs & communication	2
4. Planning	5
5. Medicine	242
6. Surgery	507
7. Reproductive Health	223
8. Pediatrics	126
9. Health information	18
10. Orthopedics	72
11. Accidents & Emergency	115
12. Radiotherapy/Cancer treatment	41
13. Therapeutic & SPU	31
14. Nutrition	17
15. Rehabilitation	51
16. Medical and Social work	11
17. Prime care centre	204
18. Infection and Prevention centre	2
Total	1723

Source: KNH Human Resource Department (2016)

3. 4.2 Sample Size

A sample size is the total units selected to participate in the research from the target population. Mugenda and Mugenda (2003), notes that where resources and time are sufficient, a researcher should select as big sample as technically possible.

The Fisher's formula was applied in calculating the sample size (Fisher *et al.*, 1998).

$$N = Z^2 pq / d^2$$

Where,

N= desired sample size (when the population is more than 10,000)

Z= standard normal deviate set at 1.96 at (95% confidence level)

P= proportion in the targeted population that have the characteristic being measured, estimated at 50%.

$$q = 1 - p$$

d= level of accuracy set at 0.05

$$\text{Thus } n = 1.96^2 * (0.5 * (1 - 0.5)) / 0.05^2$$

$$\text{Hence; } n = (1.96 * 1.96) * (0.5 * 0.5) / (0.05 * 0.05) = 3.8416 * 0.25 / 0.0025$$

$$n = 384$$

For a population of less than 10000

$$n_f = n / (1 + (n/N))$$

where n_f = Final desired sample estimate

n = Desired sample size (where population is less than 10,000)

N = Estimate of the population size

For a population of 1723 of all practicing nurses at KNH

$$n_f = 384 / (1 + 384/1723)$$

$n_f = 314.24$

$n = 315$

sample size will be 315 nurses.

The researcher added 10% (32 questionnaires) to cater for non-response adding up to a sample size of 347.

Table: 2 Sample Size

Department	No. of nurses	Sample size
-------------------	----------------------	--------------------

Administration	13	2
Human resource	5	1
Corporate affairs & communication	2	1
Planning	5	1
Medicine	242	52
Surgery	507	108
Reproductive Health	223	48
Pediatrics	126	25
Health information	18	3
Orthopedics	72	14
Accidents & Emergency	115	23
Radiotherapy/Cancer treatment	41	8
Therapeutic & SPU	31	6
Nutrition	17	3
Rehabilitation	51	10
Medical and Social work	11	2
Prime care centre	204	41
Infection and Prevention centre	2	1
Total	1723	347

Source: KNH Human Resource Department 2016

3.5 Research Instruments

Research instruments are the tools used by a researcher to collect data. They include observations, questionnaires, interviews and focus group discussions. In this research, the researcher used questionnaires to collect data. Herman, (2000) defines questionnaire as a research instrument consisting of questions designed to solicit information from respondents.

Considering that health practitioners are more often busy, Jacobsen, (2011) recommends use of well-structured questionnaires with relatively few questions to researchers investigating aspects of health workers. The questionnaires provides flexibility in that it allows the health workers complete the questions in their free time unlike other methods of data collection such as interviews and focus groups.

Questionnaires can be open-ended or closed-ended and more often questionnaires use both open and closed questions to collect data (Saul, 2014). This research used open and closed questions; this was beneficial as it meant that the researcher had the opportunity to collect both quantitative and qualitative data.

3.6 Pre-testing/Piloting Study

A pilot study also known as feasibility study or experimental study is a small scale research carried out prior to the final research, to assess the feasibility of the research. (Taylor, 2006). Taylor recommends that a pilot study should be carried out in a way that is close to the actual research, using the same research instruments and if possible actual target population.

The pilot study was carried out at Thika Level Five hospital and targeted a total of 32 (10% of the sample size) practicing nurses at the hospital. Questionnaires were distributed to all the 16 nursing departments at the hospital with 2 practicing nurses being randomly selected in each department, a total of 20 questionnaires were properly filled and returned which implies 65% response rate. Table 3.6.1 provides details of pilot study.

The pilot study was conducted in an effort to examine the feasibility of collecting data using the designed questionnaire, for example time taken to fill the questionnaire, cost of production and distribution, response rate and completion rate.

Table: 3 Pilot Study Response

Questionnaires distributed	Questionnaires returned	Response rate completion rate	Average
32	20	65 %	87%

Source: Research data

3.6.1 Validity

Mugenda and Mugenda (2003) define validity as how accurately research instruments actually reflect the reality it represents consistently after repeated trial. To ensure validity of this research, the research instrument was subjected to a pilot study prior to the final research, considering average completion rate of 87% the questionnaire was adjusted appropriately. Any item found to yield irrelevant information was removed such as questions on gender, age, and working experience. A more outstanding questionnaire with few relevant questions was drafted for the final research. To ensure validity, the researcher also employed stratified sampling method where the entire population was be divided into departments to ensure all nursing departments at KNH ware represented in the research and proportionate number of respondents assigned to each department.

3.6.2 Reliability

To establish reliability the researcher conducted a pilot study prior to the final research. The findings of the pilot study allowed the researcher to adjust the research instruments appropriately before carrying out the actual research.

The research assistant was trained on the research instruments prior to pilot study and was involved in the pilot study to help her familiarize with the exercise. She was issued with a copy of table 3.1 of sample size and assigned specific nursing departments to ensure accuracy.

3. 7 Data Collection Techniques

The research targeted practicing nurses at KNH. The questionnaires were equally distributed to a sample size of 347 registered nurses as demonstrated in table 3.1. The distribution of questionnaires was carried out with the help of a research assistant. The research assistant was a nursing student doing her work-study internship program at KNH, she was trained by the researcher, prior to data collection, on the purpose of data collection, target population, research ethics, and distribution of the questionnaire following the sample size table.

To get access to the nurses the researcher got a research permit from National Commission for Science Technology and Innovation (NACOSTI). The permit from NACOSTI was copied to Chief Executive Officer KNH, department of Security and Safety Services KNH and County Commissioner for clearance before distributing the questionnaires.

The questionnaires were distributed early on Thursday 9th March morning and the completed questionnaires were collected on Tuesday 14th March giving the respondents five days to complete the questionnaires.

3.8 Data Analysis

The research was a descriptive survey design adopting a case study approach and was expected to generate both qualitative and quantitative statistics in line with the research objective. Objective 3 of the research project generated interval data which was analyzed by use of Likerts scale while computer based Statistical Package for Social Sciences (SPSS) was used to generate tables and charts necessarily for presentation of quantitative data generated from objective 1,2 and 4. Other presentations were made in form of figures, text, graphs and percentages.

3.9 Logistical and Ethical Considerations

Permission was sought from NACOSTI and KNH prior to data collection. During data collection the respondent, participated in the excise voluntarily and consent was sought though an introduction letter that informed the respondents on the objectives of the research, they were also assured that data collected was to be used for academic purpose

alone. The questionnaires were anonymous to protect the privacy of the respondents and information obtained was treated as confidential.

CHAPTER FOUR

PRESENTATION OF FINDINGS, INTERPRETATION AND DISCUSSIONS

4.1 Introduction

The chapter discusses and presents findings of the study in-line with the objectives and research questions of the study.

4.2 General Information

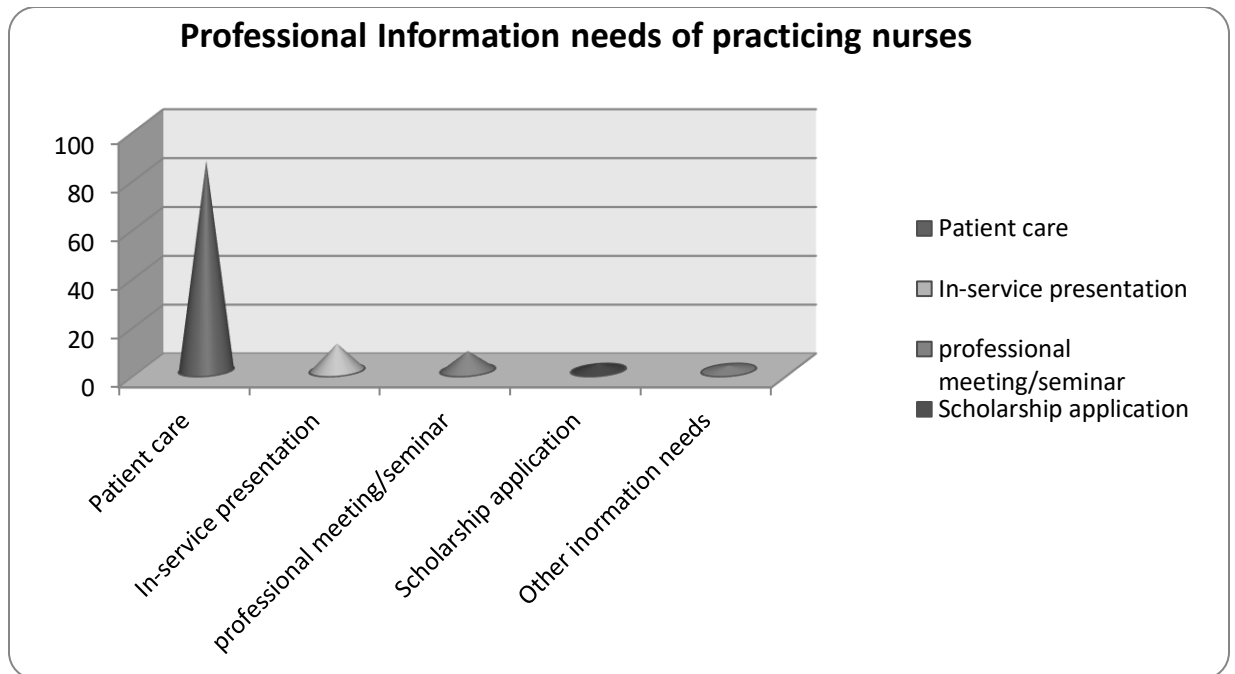
The study was carried out by the researcher with the help of a research assistant to help in distribution of questionnaires and collecting filled questionnaires. The administration of KNH showed cooperation in assisting the research. The researcher faced some challenges while collecting data, for instance the research tools were bulky and could not be allowed inside KNH premises without going through stringent security check. Data collection demanded a lot of patience since the respondents were quite busy due to doctor's strike. Overall data collection was successful.

4.2.1 Response rate

The target population constituted 1723 registered nurses working at KNH. A sample size of 347 nurses was selected based on Fisher's Formula for calculating sample size for a population less than 10, 0000 (Fisher *et al.*, 1998). 347 questionnaires were administered, a total of 189 questionnaires were properly filled and returned which implies 54% response rate. Properly filled response rate of 50% can be used to establish research objectives (Mugenda & Mugenda 2003). A research carried out by Baruch and Holton (2008) on questionnaire based survey, having sampled more than 100,000 research publications with over 400,000 respondents, found an average response rate of 52.7%. Therefore the response rate for this study of 54% is within the acceptable limits.

4.3 Professional Information Needs of Practicing Nurses

Figure: 2 Professional information needs of practicing nurses



Source: Research data 2017

Nurse's work environment is complex, understanding their professional information needs is key to identifying research utilization and information literacy skills needed. In this context the section intended to determine for what professional information needs, practicing nurses sought information after graduating from nursing school, as shown in figure 2, 163(86%) of respondents reported seeking information for patient care, another 21(11%) sought information for in-service presentation, 15(8%) sought information for presentation at a professional meeting/ seminar, 6(3%) sought information for scholarship application, and 3(2%) sought information to meet other professional information needs not listed in the questionnaire, all on career development.

The fact that practicing nurses at KNH mostly seek information on patient care 163(86%), can be attributed to the fact that patient care is the primary role of nurses in any hospital. Nurses are expected to administer medication, maintain patient records, provide basic health education to patient and give feedback to doctors.

The findings of this study are similar to those of Royal College of Nursing (2015) in its research on information needs of nurses, although using a different research methodology of comprehensive literature review concluded that nurses are motivated by need to support

patient care decisions, academic purpose, personal needs and regulatory framework in their search for information.

4.4 Sources of Information for practicing nurses.

Research on nurse's information seeking behavior suggests that knowledge of an information source does not guarantee its use (Griffiths, 2003). That is why the study sought to determine the information seeking behavior of practicing nurses. The respondents were asked to select their preferred source of information whenever they have an information need using Likert scale 1-5, where 1- indicated strongly disagree; 2- disagree; 3- uncertain; 4- agree; 5- strongly agree. The responses are presented in table 4.

Table: 4. Preferred source of information

Source	Rating										Mean Score
	Strongly agree (5)		Agree (4)		Uncertain (3)		Disagree (2)		Strongly disagree (1)		
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	
Personal contacts (i.e colleagues, supervisor, physician, doctors)	163	86	20	11	4	2	2	1	0	0	4.8
Internet/ world wide web	80	42	94	50	9	5	4	2	2	1	4.3
Public library	65	35	72	38	11	6	25	13	16	8	3.7
Personal library	16	8	20	11	49	26	74	39	30	16	2.5
Other sources	5	3	3	2	41	22	75	40	65	34	2.0

Source: Research data 2017

From table 4. it is observed that personal contacts (i.e colleagues, supervisor, physician, doctors) is the most preferred source of information by practicing nurses with a mean score of 4.8, this can be out of necessity rather than choice because colleagues and doctors are readily available compared to other sources of information. For example nurses at KNH could not easily access medical databases because the hospital had not subscribed to any professional medical databases not unless they use the available open source databases.

Fox J., Richter J. and white N. (2003) in their study on nurse's information seeking behavior, noted that due to time restrictions, nurses preferred colleagues and Internet as sources of information more than other sources.

The findings of this study reflect those of Aitlan, (2010) who in his research on preferred information sources for clinical decisions concluded that when nurses are faced with a clinical question, they were more likely to consult a colleague over any other source of information.

Personal contacts were followed closely by Internet/ World Wide Web with a mean score of 4.3, then Public libraries with a mean score of 3.7. It is therefore a fair conclusion that personal contacts, Internet and public libraries are crucial sources of information for practicing nurses, since they all have a mean score above 3 which is the neutral score. Personal Library and other sources recorded the lowest rating with mean score of 2.5 and 2.0 respectively.

4.5 Awareness of Information Sources for Medical and Healthcare Practitioners.

Table: 5 Awareness of information sources for medical and healthcare practitioners.

Practicing nurses' awareness of potential information sources for medical and healthcare practitioners.

Source of Information	Yes		No	
	Frequency (n=189)	Percentage	Frequency (n=189)	Percentage
Reference books e.g medical dictionaries and medical encyclopedia	189	100	0	0
Textbooks	189	100	0	0
Colleagues and doctors	189	100	0	0
Medical databases e.g POPLINE, MEDLINE	107	56	82	46
Nursing Council of Kenya	96	50	95	50
Research publications e.g from NGO's, Research Institutions and Universities	32	17	157	83

Source: Research data 2017

This section sought to determine whether practicing nurses have knowledge on information sources for medical and healthcare practitioners. The respondents were asked to select information sources they were aware of from a list of potential information sources for medical and healthcare practitioners. Table 5 presents the response, all the respondents 189(100%) were aware of reference books, textbooks, colleagues & doctors as sources of information. 107(56%) were aware of medical databases such as POPLINE and MEDLINE as sources of information, 32(17%) were aware of Research publications as sources of information.

Books still remain popular sources of scholarly information, the reason why all practicing nurses at KNH are aware of them. Colleagues and doctors were also recognized as source

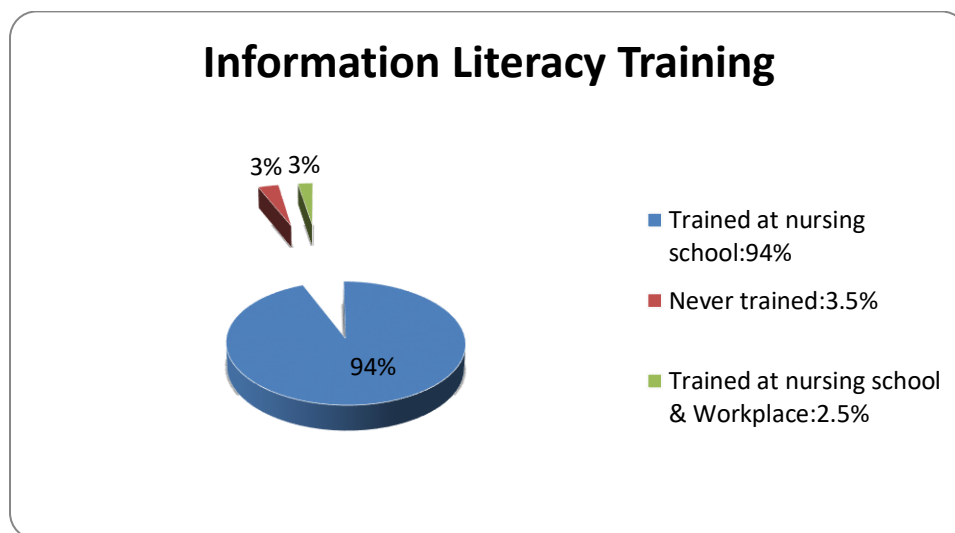
of information by all practicing nurses at KNH probably because they are easily accessible. The findings reflect those of other researchers such as Thompson and Wells (2014), Aitlan (2010) and Stanley (2005) which concluded that nurses are aware of the popular sources of information such as books, colleagues, medical databases and professional blogs.

Low awareness of research publications as sources of information 32(17%), can probably be attributed to lack of publicity of research work by Research Organizations and Universities in Kenya or low research work in Kenya. More research however needs to be carried out on the subject to establish the reasons behind.

4.6 Information Literacy Skills Training

This section was intended to determine whether practicing nurses had been trained on information literacy skills either at nursing school or at workplace, since competency in information literacy has been identified in the nursing literature as a requirement for the nursing profession.

Figure: 3 Practicing nurses information literacy skills training



Source: Research data 2017

The analyses of responses as demonstrated in figure 3, show that 177(94%) of respondents acknowledged having been taught/trained on information literacy at nursing school, 5(3%)

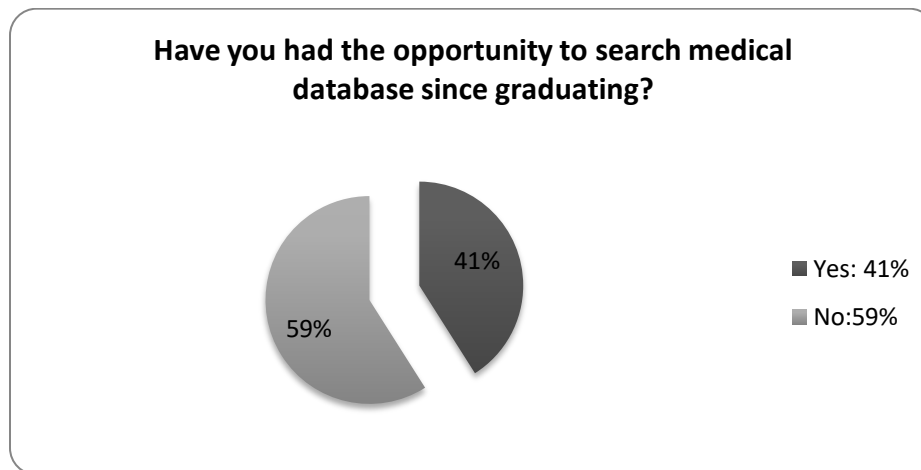
have been trained on information literacy at nursing school and at workplace while 7(3%) have never been trained on information literacy skills.

The findings of this study where 177(94%) of respondents have been trained on information literacy at nursing school, demonstrate that information literacy has been integrated in the nursing curriculum. Arguelles (2012) notes that nurses need to be information literate in order to effectively use evidence-based information.

4.6.2 Access to and use of online medical databases

Considering that online medical databases usually contain the most up-to-date research based medical and health-care information, long before it is published in books and other secondly sources of information, the study sought to know if practicing nurses had the opportunity to use an on-line medical database since graduating from nursing school.

Figure: 4 Access to medical database after graduating from nursing school.



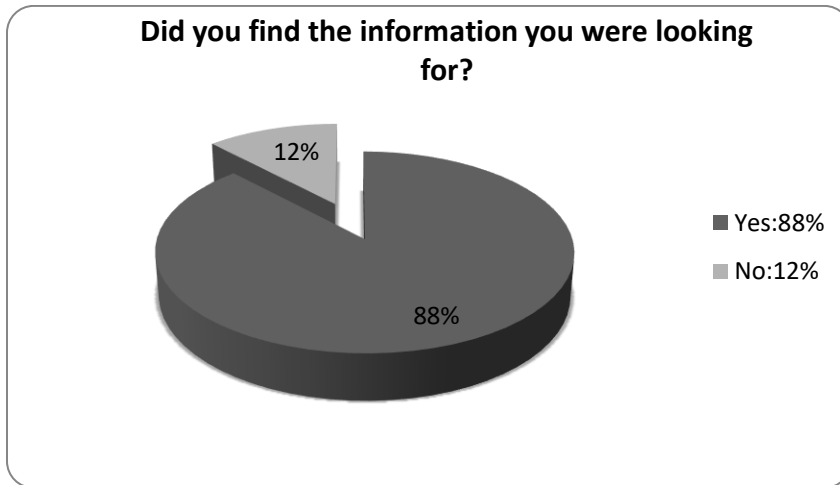
Source: Research data 2017

Figure 4 demonstrates that only 78(41%) of the respondents had the opportunity to access an on-line medical database since graduating from nursing school. The findings suggest that regular use of electronic medical databases is not the norm among practicing nurses at KNH. The findings can be attributed to lack of access to medical databases since the hospital has not subscribed to any Medical database.

4.6.3 Success in retrieving information from medical databases

Further to access to medical databases, the study sought to establish whether the respondents were successful in retrieving the information they were seeking for.

Figure: 5 Success rate in retrieving information from medical database.



Source: Research data 2017

Figure 4 shows that majority of those who had access to medical database 69(88%) were successful in retrieving the information being sought. Though the number of practicing nurses who have access to medical databases is low, it is encouraging that those who have access to medical databases are mostly successful in retrieving information being sought.

4.6.4 Preferred formats of information sources

The research also sought to know the formats of information that practicing nurses found most useful.

Table 6 Preferred formats of information sources.

Format of Information	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
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	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Mean Score
Unpublished information formats (i.e information from personal contacts)	113	86	18	9	4	2	2	1	1	0.5	4.00
Print materials (i.e Books)	83	44	71	36	10	5	23	12	2	1	3.73
Electronic information formats (i.e online Medical databases, websites)	14	1	25	6	47	24	80	60	11	8	2.56
Others (i.e CD-ROMs, Microfilm)	1	0.05	5	3	87	46	91	48	4	3	2.50

Source: Research data 2017

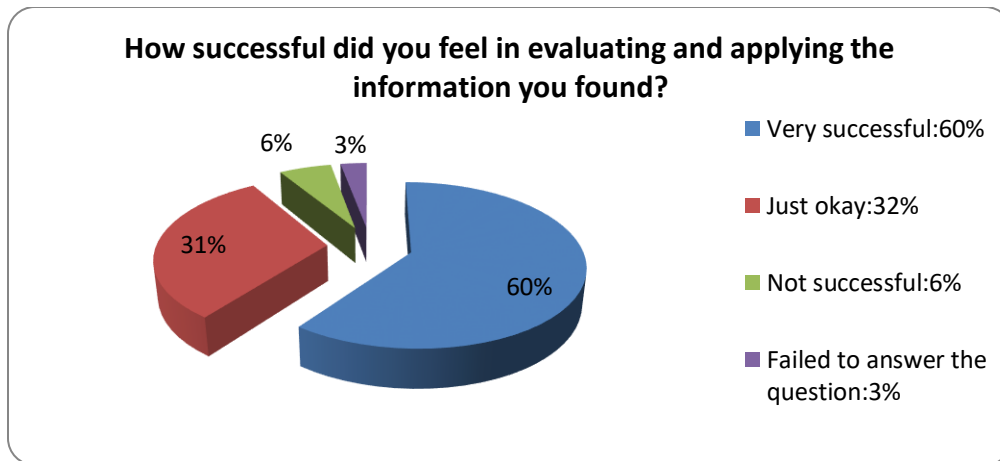
The study established that unpublished information formats such as verbal information from colleagues was the most preferred format of information source with a mean score of 4.00, followed closely by print media such as books with a mean score of 3.73, electronic formats came a third with a mean score of 2.56. Other formats such as CDROM and Microfilm were rated lowly with a mean score of 2.50.

The fact that verbal information was the most preferred format of information, can be attributed to the preference of colleagues and doctors as sources of information who are likely to offer information verbally than in any other format. Formats such as CDROM and Microfilm were list preferred probably because the technology is becoming obsolete because of the continued rise of digital media.

4.7 Information Literacy Skills (evaluation & use)

In order to assess the aspects of information literacy skills on evaluation of information found before use and successful application of the newly acquired information to meet a specific information need, the study asked the respondents to write a brief description of the most recent information need for which they have sought information.

Figure: 6 Information literacy skills (evaluation & use)



Source: Research data 2017

The respondents reported searching for information on a wide range of subjects ranging from patient education, family planning, clinical guidelines, drug abuse, maternal healthcare, child healthcare, treatment options and assistive technologies. On how successful they were in evaluating and using the newly acquired information, of the 184 respondents as shown in figure 6, the majority 114(60%) felt that they had been very successful, 59(31%) felt they were average (“just okay”) and 11(6%) reported failure at evaluating and effectively using the newly acquired information. 5 respondents (3%) did not attempt the question.

Table:7 Aspects of Information literacy skills.

Statement	Rating
-----------	--------

	Strongly agree		Agree		Uncertain		disagree		Strongly disagree		Mean score
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	
I understand what evidence based practice is.	116	61	67	35	3	2	3	2	0	0	4.54
I am in a position to know the nature and extent of information I need.	105	55	59	31	18	10	7	4	0	0	4.37
I am in a position to establish the accuracy, up-to-dateness and validity of information I obtain before using it.	81	42	92	49	14	7	2	1	0	0	4.33
I am confident the information I use is accurate.	88	47	74	39	19	10	7	4	1	0.5	4.25
I usually apply clinical interventions based on the most available evidence based research recommendations.	74	39	81	43	25	13	7	4	2	1	4.15
I understand it is important to use acceptable information sources in nursing profession.	85	45	68	36	12	6	22	11	2	1	4.10
I know when confidential information should not be shared.	68	36	79	41	34	18	7	3	1	0.5	4.07
I can tell when the information is biased.	66	35	70	37	14	7	25	13	14	7	3.77
I can figure out for whom the information is intended.	50	26	56	30	31	16	36	19	16	8	3.47
I can confidently spot inaccuracy and errors in information I have retrieved	43	23	51	30	35	19	34	18	26	14	2.90
When communicating newly acquired knowledge I usually credit the author/source of the information.	27	14	40	21	35	19	38	29	49	26	2.78
If you paraphrase (use your own words) the main idea of an article, you need to acknowledge the author.	23	12	44	23	30	16	42	22	50	26	2.71

Source: Research data 2017

Further to information evaluation and use, the study sought to access the practicing nurses competences on different aspects of information literacy. The respondents were asked to rate the information literacy aspects that they felt are essential in facilitating successful

retrieval and use of professional information using Likert scale 1-5, where 1- indicated strongly disagree; 2- disagree; 3- uncertain; 4- agree; 5- strongly agree.

Table 7 shows that, 90% of practicing nurses at KNH evaluate information before use, only 6% reported perceived lack of skills to evaluate newly acquired information before use. This is encouraging considering that evaluation of information before use is key to evidence based practice especially in this error of internet as pointed out in standard number three of Information Literacy Standards for Nursing (2014) which points out that information literate nurse should be in a position to critically evaluate information procured/retrieved before using it.

The need to evaluate information before use can be supported by research findings of America Academy of Pediatrics (2013) in its research on Evidence Based Practice management and patient education reported that 20% of the 60 medical websites sampled had misleading information on treatment of diarrhea in children.

All practicing nurses at KNH understood the concept of evidence based practice, this can be predicted because nurses are expected to base their practice on concrete research based evidence.

Table 7 shows that all practicing nurses at KNH are in a position to know the nature and extent of information needed when faced with an information need this is encouraging considering that ability to identify the nature and extent of information needed is a key skill of an information literate nurse according to Information Literacy Standards for Nursing (2014) . Practicing nurses were also able to establish the accuracy, up-to-dateness and validity of information obtained with a mean score of 4.33 which is way above 3.00 which is the average, except for a few nurses (11%) who were uncertain of whether they could comfortably establish the accuracy, up-to-dateness and validity of information obtained.

Practicing nurses at KNH are confident that the information they use is accurate with a mean score of 4.25 and they usually apply clinical interventions based on the most available evidence, 80% of practicing nurses understands the importance of using professionally accepted information sources when searching for information, they also understand when

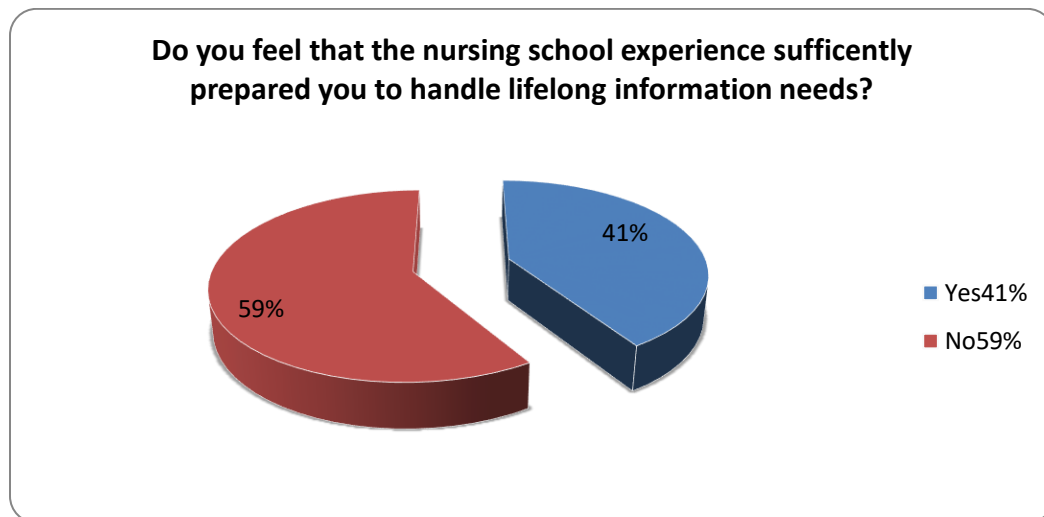
to share confidential information with third parties. They can also identify for whom the information is intended.

The study established that 50% of practicing nurses can confidently spot inaccuracy and errors in information retrieved, while 49% acknowledge the author while communicating the newly acquired information.

4.8 Recommendations for Improving Information Literacy Instructions at Nursing School

The respondents were asked if they felt that the nursing school experience had provided sufficient information literacy instructions to successfully handle lifelong learning needs.

Figure: 7 Information literacy instructions at nursing school



Source: Research data 2017

The majority 111(59%) as demonstrated in figure 7 felt that the nursing school experience had not sufficiently prepared them to handle lifelong learning experience. The respondents were also asked to give some recommendations that could improve information literacy instructions at nursing school.

A few of the respondents 10 (5%) of recommendations given were complimentary in nature such as:

“The library seminar we attended on how to search internet effectively was extremely useful. I would recommend such seminars to emphasize on professional websites such as BioMed Central”

“The seminars we attended reluctantly in the library on e-journals have proved to be very useful after graduation I recommend students to be made to understand the value of these seminars.”

“Maybe retaliate to students several times the need for these classes, they were useful but I was very busy with other things.”

Another 28 (15%) respondents recommended ways to improve the information literacy curriculum, recommendations given were; the instructions to involve practical aspects especially with use of online databases, the instructions to be offered throughout the academic life of the student as opposed to only in first year first semester, the instructions to be offered by both librarians and teaching staff, nursing schools to organize workshops and seminars for students on information literacy and students to be explained well the value of information literacy skills.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The chapter presents summary of the findings of the study, makes conclusions from the findings and the chapter closes with recommendations.

5.2 Summary of the Findings

The section presents a summary of the findings of the study.

5.2.1 Professional Information Needs of Practicing Nurses

Four professional information needs were cited by practicing nurses at KNH; patient care, in-service presentation, presentation at a professional meeting/seminar and scholarship application/career development. Patient care recorded the highest frequency of 163(83%) followed by in-service presentation with a frequency of 21(11%).

The high demand for patient care information can be attributed to nurse's clinical work environment where evidence based patient care is required.

5.2.2 Sources of information for Practicing Nurses at KNH

The study points out that the most preferred source of information was human sources such as colleagues and doctors. In fact 100% of practicing nurses reported consulting human source on multiple occasions when searching for professional information. Internet came second as preferred source of professional information. Public libraries and personal libraries were rated lowly.

5.2.3 Awareness of Information Sources for Medical and Health-Care Practitioners.

Responses to the study suggest that all practicing nurses at KNH are aware of reference books, textbooks, personal contacts such as colleagues and doctors as sources of professional information. Although medical databases such as MEDLINE are valuable sources of professional information they are not known by majority of practicing nurses at KNH.

5.2.4 Information Literacy Skills Training

The study established that information literacy program is taught at nursing schools and on few occasions at KNH. The study also established that practicing nurses at KNH had gone through the program at some point during their nursing training at nursing school.

5.2.5 Access to and Use of Medical Databases

Electronic databases provide up-to-date and quality health-care information. In this study the use of medical databases was rated fairly low, only 78(41%) of practicing nurses have had an opportunity to access and use a medical database since graduation. Out of which 69(88%) were successful in retrieving the information they being sought. There is a reason to suppose that regular use of electronic medical databases is not a norm among practicing nurses at KNH and there is deficit and underutilization of this important sources of professional information.

5.2.6 Preferred Formats of Information

The study established that unpublished information formats such as verbal information from colleagues was the most preferred format of information, followed closely by print media such as books, electronic formats came a third. Other formats such as CDROM and Microfilm were rated lowly.

5.2.7 Information Literacy Skills (evaluation and use)

Majority of practicing nurses at KNH 170(90%), evaluate information before use; only 11(6%) reported perceived lack of skills to evaluate newly acquired information before use.

All practicing nurses at KNH understood the concept of evidence based practice, this can be predicted because nurses are expected to base their practice on concrete research based evidence.

All practicing nurses at KNH are in a position to know the nature and extent of information needed when faced with an information need. They were able to establish the accuracy, up-to-datedness and validity of information obtained except for a few 21(11%) who were

uncertain of whether they could comfortably establish the accuracy, up-to-datedness and validity of information obtained.

Majority of practicing nurses at KNH124(66%) are confident that the information they use is accurate and they usually apply clinical interventions based on the most available evidence, another 151(80%) understands the importance of using professionally accepted information sources when searching for information, they also understand when to share confidential information with third parties. They can also identify for whom the information is intended.

The study also established that 96(50%) of practicing nurses can confidently spot inaccuracy and errors in information retrieved, while 94(49%) acknowledge the author while communicating the newly acquired information.

5.2.8 Recommendations for Improving Information Literacy Instructions at Nursing School.

Majority of practicing nurses at KNH felt that nursing school experience did not provide sufficient information literacy instructions to sufficiently handle lifelong information needs. They gave a number of recommendations that would improve information literacy instructions at nursing school, which included incorporation of practical aspects when teaching information literacy especially use of medical databases, organization of workshops and seminars on information literacy and award of certificates to students who participate, information literacy instructions to be taught on multiple occasions during nursing training.

5.3 Conclusion

The aim of the study was to establish the information literacy competencies of practicing nurses at KNH. The study established that practicing nurses at KNH had knowledge of information sources for medical and healthcare information, however few made use of medical databases despite them containing quality research based information to support evidence based practice.

The study further established that practicing nurses at KNH mostly used colleagues (doctors, clinicians and other medical professionals) as the main source of information. The phenomenon has been attributed by previous research to colleagues being readily available and being perceived to deliver relevant information within the context of the problem at hand. However the availability of colleagues should not be considered over other factors such as reliability, validity and accuracy of the information source.

Practicing nurses at KNH understood the concept of evidence based practice, where they are expected to base their practice on concrete research based information and possessed adequate information literacy skills on evaluation of information and information sources. On the issue of intellectual property and copyright, the practicing nurses reported low information literacy skills. From the scenarios, the study concluded that practicing nurses at KNH possess inadequate information literacy skills to navigate through the information landscape. The study makes the following recommendations as presented in 5.4

5.4 Recommendations

1. An important finding of this study was that nurses preferred to consult their colleagues when faced with an information need. To improve on this aspect, the study recommends KNH management to create a conducive environment with adequate socializing opportunities for nurses to share professional knowledge.
2. The study also recommends nurses to continually improve on their information literacy skills to enable them adapt to the changing information landscape especially access to and use of online medical database an important skill that nurses need to develop to help them acquire quality research based information to facilitate delivery of high quality patient care.
3. The study recommends that the hospital should establish an information center to acquire information resources and develop specialized information services as well as information literacy programme tailor made to nurses and other medical practitioners in support of evidence based practice.
4. The study established low literacy skills on the aspect of information evaluation, the research recommends training workshop on information evaluation to be organized for nurses, to create awareness and help them use information

responsively without violating the intellectual property rights of authors. Majority of practicing nurses reported that the nursing school experience did not provide them with sufficient information literacy instructions to navigate through information landscape; the study therefore recommends a review of the information literacy curriculum in the nursing schools to address the existing gaps and emerging issues especially on online medical databases.

5.5 Recommendations for Further Research

Online medical databases are rich sources of quality and up-to-date research based information, which nurses can greatly benefit from in support of evidence based care. The study reported low utilization of medical databases and therefore recommends a study to establish the reasons behind the scenario and recommend solutions.

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Appendix I: Practicing Nurse's questionnaire

Instructions: please tick where applicable and fill on the spaces provided.

SECTION A: INFORMATION LITERACY SKILLS TRAINING

1. Have you ever been taught/trained on information literacy skills (skills to recognize need for information, search, evaluate and effectively use information) in nursing school or at workplace?
 - a. Yes at nursing school []
 - b. Yes both at workplace & nursing school []
 - c. Yes at workplace []
 - d. Never []

SECTION B: INFORMATION NEEDS OF PRACTICING NURSES

2. For what professional purpose(s) have you needed to find information since you graduated? (choose all that apply)
 - a. Patient care []
 - b. Scholarship application []
 - c. Research project (i.e writing a journal article, book, book chapter) []
 - d. In-service presentation []
 - e. Presentation at a professional meeting/seminar []
 - f. Others []
 - g. Please specify
 -
 -
 -

SECTION C: AWARENESS OF INFORMATION SOURCES FOR MEDICAL AND HEALTHCARE PRACTITIONERS.

3. Are you aware of the following potential sources of information in your profession? (please choose all that apply)

Source of Information	Yes	No

Reference books e.g medical dictionaries and medical encyclopedia		
Textbooks		
Directives from Kenya National Council of Nursing		
Nursing/ medical online tutorials		
Medical databases e.g POPLINE, MEDLINE		
Research publications e.g from NGO's, Research Institutions and Universities		
Colleagues and doctors		

4. When you have a professional information need, where do you turn to? (please choose all that apply)

Source	Strongly agree (5)	Agree (4)	Uncertain (3)	Disagree (2)	Strongly disagree (1)
Public Library					
Internet/ world wide web					
Personal contacts (i.e colleagues, supervisor, physician)					
Personal library					
Other sources (please specify)					

.....

.....

5. Have you had the opportunity to search medical databases (i.e MEDLINE, PubMed) since you graduated?

Yes []

No []

6. If yes did you find the information you were looking for in the database?

Yes []

No []

7. What formats of information do you find most helpful(please choose all that apply)

Format of Information	Strongly Disagree (5)	Disagree (4)	Uncertain (3)	Agree (2)	Strongly Agree (1)
Print materials(i.e Books)					
Electronic resources(i.e online Medical databases, e-journals, websites)					
Unpublished information formats(i.e Information from personal contacts)					
Others (i.e CD ROMs, Microfilm)					

SECTION D: INFORMATION LITERACY SKILLS

8. Thinking back on the most recent patient care issue or research project for which you have found any information. Please briefly describe what you were looking for.

.....
.....

9. In that instance, how successful did you feel in analyzing and applying the information you found?

Very successful []

Just okay []

Not successful []

10. What aspects of your information literacy skills do you feel helped you most in successfully seeking and using professional information (please choose all that apply)

Statement	Strongly disagree (5)	Disagree (4)	Uncertain (3)	Agree (2)	Strongly agree (1)
I am in a position to know the nature and extent of information I need.					
I understand it is important to use acceptable information sources in nursing profession.					
I am in a position to establish the accuracy, up-to-dateness and validity of information I obtain before using it.					
I can confidently spot inaccuracy and errors in information I have retrieved.					
I can figure out for whom the information is intended.					
I can tell when the information is biased.					
I am confident the information I use is accurate.					
I understand what evidence based practice is.					
I usually apply clinical interventions based on the most available evidence based research recommendations.					
I know when confidential information should not be used.					
When communicating newly acquired knowledge I usually credit the author/source of the information.					
If you paraphrase (use your own words) the main idea of an article, you need to acknowledge the author.					

11. Looking back on your nursing training, do you feel that the information literacy curriculum prepared you to handle your lifelong learning needs successfully?

Yes []

No []

Why or why not

.....
.....
.....
.....

12. Do you have any suggestions about lifelong learning skills or information resources that you wish you had learned about at nursing school? If so please

note them here.

.....
.....
.....

Thank you for your participation.

Activity	Time frame
Concept writing	January – February 2016
Concept presentation	February 2016
Proposal writing	March – April 2016
Proposal presentation	June 2016
Pilot study	July 2016
Data Collection	July 2016
Data analysis and presentation	July – August 2016
Project writing	August 2016
Project Submission	September 2016

Appendix III: Budget

Activity	Quantity	Cost per unit	Total cost in KSH
Proposal writing	Printing 60 pages (7 drafts)	180	1260
Proposal presentation	Flash disk 4GB	500	500
	Printing 30 slides	90	270
	Photocopy 4 copies of proposal	180	720
	Photocopy 10 copies of slides	90	900
	Spiral binding 7 copies of proposal	50	350
	Travel	2000	2000
	Miscellaneous	2000	2000
Pilot study	Travel	1000	1000
	Printing questionnaires 2 pages	3	6
	Photocopy 35 copies	6	210
	Miscellaneous	1000	1000
Data collection	Travel	2000	2000
	Printing questionnaires 2 pages	3	6
	Photocopy 347 copies	6	2082
	Hiring Research assistant 2day	1000	2000
	Miscellaneous	1000	1000
Project presentation	Printing approximately 150 pages	3	450
	Photocopy 6 copies	450	2700
	Binding 6 copies	250	1500
	Miscellaneous	3000	3000
Final Project	Printing 5 copies (150pages)	450	2250
	Hand cover Binding 5 copies	1000	5000
Grand total			29,988