Toward an Evidence-Based Medical Practice Model for Health Science Library Services in Public and Private Hospitals within a South African Context

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DECLARATION

I, Saroj Bala, declare that this dissertation is a representation of my own work, both in conception and execution. This work has not been submitted in any form for another degree at any university or institution of higher learning. All information cited from published or unpublished works has been acknowledged.

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Toward an Evidence-Based Medical Practice Model for Health Science Library Services in Public and Private Hospitals within a South African Context

By

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This document has been edited using British English and parenthetical referencing according to the DUT citation and referencing guide (2013).

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Thank you for your business!

This work is dedicated

to

late Prc Prenitha

(Penny) Singh

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ABSTRACT

This study investigates the attitude and opinion of health science librarians toward their qualification and services in support of evidence-based medical practice (EBMP); the attitude and opinion of university academic staff toward the preparedness, training, and qualification of health science librarians to support evidence-based medical practice; and the attitude and opinion of medical practitioners regarding health science library services to support them in evidence-based medical practice by providing the latest and most reliable information related to their practice in public and private hospitals in the eThekwini district, South Africa.

The aim of this research was to develop an evidence-based medical practice (EBMP) model for health science library services within a South African context. The objectives of the study were to identify: the types of medical library services and resources available in public and private hospitals in the eThekwini district to support EBMP; medical practitioners' perceptions, use, and needs regarding the library services in the hospitals in which they are practicing; the role of health science librarians in the hospitals; librarians' level of training and qualification to support EBMP; training for health science librarians provided by the universities that train librarians in SA; and the barriers faced by health science librarians supporting EBMP.

The target population for this study was medical practitioners from public and private hospitals, health science librarians of the eThekwini district, South Africa, and academic staff at universities and universities of technology that offer a qualification in Library and information Science (LIS). In other words, they train librarians in SA. To achieve the aim of the study, a survey was conducted. Qualitative and quantitative data were collected via open-ended and closed questions on the questionnaires administered to the research participants.

The results of this study show that health science librarians in the eThekwini district are not providing medical practitioners with useful services to support EBMP. They are providing only basic services by helping doctors in searching for books and other reading materials, subscribing to newspapers, cataloguing, classifying, marketing, and providing library services but they do not work with specialist medical practitioners. Overall, the findings of this study indicate that health science librarians are very positive and interested in taking courses or training related to EBMP so they can provide the latest and most reliable information/literature to the medical practitioners. Health science librarians mentioned that library service provision is not a priority for the Department of Health in the eThekwini district. Therefore, it is a daily

struggle to acquire resources to support EBMP and, hence, there has been no improvement in library services for a long time.

Medical practitioners from government and private hospitals require libraries in their hospitals with expert librarians in EBMP. Lack of personal time is the major barrier to medical practitioners using EBMP. Medical practitioners agree that librarians can save their time by assisting them with their research in complicated cases, with research/literature in cases where little is known about a disease or illness, in the case of infectious diseases, and by providing relevant information for individual cases. These findings show that, although the Department of Library and Information Science/Studies at universities in South Africa are not training the librarians to help medical practitioners in EBMP, specifically academic staff members of universities welcomed the idea of training the librarians in EMBP. Such training may be considered in future.

Based on the discussion and conclusion, the study recommends that library services should be established in every public and private hospital, with a librarian expert in EBMP. The courses or training related to EBMP should be provided to health science librarians. Health departments should make arrangements for training courses to be offered. The Department of Library and Information Science/Studies should collaborate with health science faculties at the universities in South Africa and offer specialised training in EBMP to library students and librarians.

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INTRODUCTION AND BACKGROUND TO THE STUDY

1.1. Introduction

Evidence-based medicine (EBM) is the process of systematically finding, appraising, and using simultaneous research findings as the basis for clinical decisions (Rosenberg and Donald 1995: 1123). EBM, also known as evidence-based medical practice (EBMP), is based on the concept "practice should be based on up-to-date, valid and reliable research" (Brice and Hill 2004: 13; Akobeng 2005: 837). Furthermore, EBMP is the process of minimising medical mistakes and eliminating or reducing uncertainty in medical practice (Gavgani and Mohan, 2008). Medical practitioners must make decisions about patient care based on the best available evidence: thus, EBMP has gained acceptance worldwide. Therefore, it has been recognised as a key competency factor for doctors (Muller 1984: 155; Walton 1994: 1; Gibbs and Gambrill 2002: 452; Morris and Maynard 2007: 534).

Online health information, its access and use, has become both a concern and an expectation of clinicians and, hence, many healthcare institutions are now considering EBM as a priority for professional medical practice. These changing scenarios have resulted in challenges and opportunities for medical librarians to support the medical practitioners for EBMP (McKibbon and Bayley 2004: 50; Kronenfeld *et al*. 2007: 394).

Medical practitioners are facing many barriers to EBMP, but the lack of time is the common barrier worldwide (Dans 2000: 11; Al-Ansary and Khoja 2002: 537; Fedorowicz, Jette *et al.* 2003: 786; Almas and Keenan 2004: 470; Dans and Gavgani and Mohan 2008: 1; Ulvenes *et al.* 2009; Mozafarpour *et al.* 2011: 651). Evidence drawn from the research literature supports the view that librarians can help medical practitioners in EBMP by providing them with evidence-based information in a timely manner (McGowan *et al.* 2010).

> Evidence-based practice depents on a literature search. The key underlining factors for successful search is the awareness of where to search. Therfore, it is the duty of health librarians to provide evidence-based medical information to health professionals which will enable them to make better informed clinical decisions (Olayemi 2016:10).

Gavgani (2009) also stated that "librarians can play a vital role supporting EBMP through searching, organizing, evaluating, reviewing and offering evidence to physicians at the moment of care". Libraries and librarians can play a vital role by providing evidence-based information to the medical practitioners with their knowledge of health information resources, information search and retrieval expertise (Perry and Kronenfeld, 2005: 1). Health science librarians can play a role in almost every EBMP process, except making clinical decisions (McKibbon and Bayley 2004:50). They have been carried out various responsibilities and tasks that help to support EBMP and participated in EBMP initiatives to help improve patient care (McKibbon and Bayley 2004: 50; Verhoeven and Schuling 2004: 27; Ward, Meadows and Nashelsky 2005: 88; Banks *et al*. 2007: 381). This study seeks to discover firstly, if this kind of approach would be welcomed by the medical practitioners in the eThekwini district, in South Africa and secondly, to what extent the librarians in the district would be able to provide this kind of service. This, in turn, identifies the need for professional training in the Library and Information Science (LIS)field.

The librarians working in hospital environments may be called hospital librarians, medical librarians, health librarians, clinic librarians, health information specialists or health science librarians. For the purpose of this study they will be referred to as health science librarians. Those engaged in medical practice in the various studies may have been called physicians, clinicians, doctors or primary-care workers. For the purpose of this study they will be referred to as medical practitioners. Those employed at universities in a teaching capacity in the LIS departments will be referred to as academic staff.

The purpose of this chapter is to provide the introduction and the background to the study. The chapter covers the gap in previous studies; the aim of the study; the objectives of the study; research questions; the data collection method; the population of the study; the rationale for focusing on the above population; the rationale for focusing on the eThekwini district; and the importance of the study. This is followed by an overview of the chapters and a summary.

1.2. Gap in previous studies

Several studies have been conducted amongst physicians, general practitioners, primary health-care workers and hospital-care staff in many countries to assess their attitude and awareness

toward EBMP (Hagdrup, Falshaw and Gray 1998; McColl *et al.* 1998; Al-Ansary and Khoja 2002; Murelli and Arvanitis 2003; Al-Baghlie and Al-Almaie 2004; Chan and Teng 2005; Al-Omari and Al-Asmary 2006; Poolman *et al*. 2007; Rabe, Holmen and Sjorgen 2007; Gavgani and Mohan 2008; Nwagwu 2008; Al-Gelban *et al*. 2009; Ahmad *et al.* 2009; Ulvenes et al. 2009; Novak *et al. 2010*; Risahmawati *et al.* 2011).

Studies have also been conducted to assess barriers to the practice of EBM and how healthcare and health science librarians are helping medical practitioners in utilising EBMP (Cimpl 1985; Demas and Ludwig 1991; Veenstra 1992; Kuller *et al.* 1993; Weiner 1995; Nagle 1996; Sackett *et al*. 1996; Braude 1997; Giuse 1997; Giuse *et al.* 1998; McKibbon 1998; Slawson 1998; McAlister *et al.* 1999; Scherrer and Dorsch, 1999; Dans and Dans 2000; Murphy 2000; Mayer, Schardt and Ladd 2001; Iqbal and Glenny 2002; Kaplan and Whelan 2002; Reid, Ikkos and Hopkins 2002; Rigby *et al.* 2002; Atlas *et al.* 2003; Bexon and Falzon 2003; Bhandari *et al.* 2003; Booth and Bath 2003; Fedorowicz, Jette *et al.* 2003; Lalloo 2003; Almas and Keenan 2004; Keating *et al.* 2004; McKibbon and Bayley 2004; Verhoeven and Schuling 2004; Byham-Gray *et al.* 2005; Edwards 2005c; Perry and Kronenfeld 2005; Schwing and Coldsmith 2005; Ward, Meadows and Nashelsky 2005; Amin, Fedorowicz and Montgomery 2006; Schwartz and Millam 2006; Banks *et al*. 2007; Kronenfeld *et al.* 2007; Bracke *et al.* 2008; Hill, 2008; Al-Gelban *et al*. 2009; Al Omari *et al.* 2009a; 2009b; Beverley, Gavgani 2009; Davies 2009; Kelly 2009; McGowan *et al.* 2010; McInerney and Suleman 2010; Flynn and McGuinness 2011; Li and Wu 2011; Mozafarpour *et al.* 2011; Risahmawati *et al.* 2011, 2012). The consideration of these studies and their findings has been the principal motivation for the present research, with the aim of assisting health science librarians to prepare themselves with the necessary skills, tools, and resources to support medical practitioners interested in EBMP.

To the best of the researcher's knowledge, no studies have been conducted to assess the awareness of EBMP in hospitals in the eThekwini district in South Africa, a community that includes public and private hospitals, medical practitioners, and health science librarians. Furthermore, there is no previous study to assess the preparedness, training, and qualification of health science librarians who support EBMP in public and private hospitals.

1.3. Aim of the study

The aim of this study is to develop an EBMP model for health science library services within a South African context.

1.4. Objectives of the study

In order to meet the above aim, the following objectives have been addressed:

- To determine what medical library services and resources are available in public and private hospitals in the eThekwini district to support EBMP;
- To understand medical practitioners' perceptions, use, and needs regarding the library services in the hospitals in which they are practicing;
- To determine the role of health science librarians in the hospitals;
- To identify librarians' level of training and qualification to support EBMP;
- To determine the extent of training for health science librarians provided by the universities that train librarians in South Africa; and
- To identify barriers faced by health science librarians who support EBMP.

1.5. Research questions

This study sought to address the gaps identified in section 1.2 and to investigate the issues raised through the use of three questionnaires. The following research questions were asked to meet the above objectives:

- What are the attitudes and opinions of health science librarians toward evidence-based medical training and qualification?
- What are the attitudes and opinions of university academic staff teaching Library and Information Science (LIS) toward the preparedness, training, and qualification of health science librarians to support EBMP in public and private hospitals in the eThekwini district in South Africa?

- What are the medical practitioners' attitudes and opinions toward EBMP and their responses toward health science library services to support them in EBMP?

1.6. Data collection method

To achieve the aim of the study, a survey was conducted. According to McBurney and White (2012), a survey is for the assessing of public opinion or individual characteristics, using questionnaires, interviews or focus groups. Qualitative and quantitative data were gathered via open-ended and closed questions on the questionnaires administered to the study participants.

1.7. Population of the study

The surveys were conducted with the following groups: medical practitioners; health science librarians; and academic staff.

- Medical practitioners: General physicians and specialists based in the sixteen public and twenty-three private hospitals in the eThekwini district (Appendix 16)
- Health science librarians: Health/hospital librarians based in public and private hospitals in the eThekwini district. According to the health department, only six public hospitals have a library (Addington, R.K. Khan, King Edward VIII, Prince Mshiyeni, Memorial, Wentworth, and Inkosi Albert Luthuli) out of sixteen public and twenty-three private hospitals
- Academic staff teaching at South African universities and a university of technology that offer a qualification in Library and Information Science. In other words, they train librarians in South Africa. Currently, there are nine universities and one university of technology that offer this qualification, namely, the University of Zululand, University of Limpopo, University of Pretoria, Universities of Western Cape, University of Cape Town, University of South Africa, University of Fort Hare, Walter Sisulu University, University of KwaZulu-Natal and the Durban University of Technology

1.8. Rationale for focusing on the above population

Medical practitioners and health science librarians in all the public and private hospitals were included in the study so that the researcher could get a full picture of the usage, the requirements, the needs, and the shortcomings of library services in supporting EBMP.

Academic staff at the nine universities and one university of technology mentioned above were included because health science librarians based at the public and private hospitals in the eThekwini district are likely to have been trained at any one of these universities.

1.9. Rationale for focusing on the eThekwini district

The eThekwini district has a large number of hospitals (thirty-nine), and thus offers a good base for obtaining a broad perspective on library services in hospitals. Furthermore, because the researcher resides in the eThekwini district, it was decided to base the study in this district.

1.10. Importance of the study

The findings of this study will lead to recommendations to the Health Professions Council of South Africa (HPCSA) regarding EBMP. It will contribute to the improvement of health services and the provision of new opportunities for librarians to serve medical practitioners as health science librarians. The study shows the importance of EBMP and draws the attention of government, medical industries, as well as funding agencies toward evidence-based medical libraries in public and private hospitals. The study will make a significant contribution to literature regarding health science librarians in EBMP.

1.11. Overview of the chapters

This study contains five chapters:

1.11.1. Chapter one: Introduction

Chapter one is the introduction to the study and explains the gap in previous studies; the aim of the study; the objectives of the study; the research questions; the data collection method; the population of the study; the rationale for focusing on this population and this district; and the structure of the thesis.

1.11.2. Chapter two: Review of the literature

Chapter two provides a review of the literature related to EBMP and the role of health science librarians when supporting medical practitioners in EBMP, as follows: the history of EBMP; the role of health science librarians in EBMP; international practice of EBMP; EBMP in South Africa; training of health science librarians to work in hospital libraries and assist with EBMP; the theory of lifelong learning; the theoretical framework underpinning this study; and the summary of the chapter.

1.11.3. Chapter three: Methodology

Chapter three discusses the research design and methodology: the study population and sampling; the development of the research questionnaire; data collection and analysis; and the research methods utilised. This is followed by discussions regarding ethical considerations and the reliability and validity of the study.

1.11.4. Chapter four: Results and discussion

Chapter four presents the results of the study. The use of tables and charts is employed to ensure ease of reference. The results are based on an analysis of data collected from three type of questionnaires that were given to three participant groups: medical practitioners; health science librarians; and academic staff of LIS departments at universities. This chapter contains the discussion of the findings from the questions asked of the participants.

1.11.5. Chapter five: Conclusion and recommendations

Chapter five provides a conclusion, as well as recommendations based on the findings in the literature and the results, limitations, future work and objectives of the study.

1.12. Summary

This chapter provides the introduction to the study. It also presents the background to the study, the gap in previous studies; the aims and objectives of the study; and research questions to match the objectives. Information about data collection; population; the rationale for focusing on this population; the rationale for focusing on the eThekwini district; the importance of the study; and an overview of the chapters are also provided in this chapter.

The next chapter focuses on the literature pertaining to this study.

REVIEW OF THE LITERATURE

2.1. Introduction

This chapter provides a review of the literature that is directly or indirectly related to the topic of study. The purpose of this chapter is to delineate the history of evidence based medical practice EBMP; the role of health science librarians in EBMP; international practice of EBMP; EBMP in South Africa; training of health science librarians to work in hospital libraries and assist with EBMP; and the theoretical framework underpinning this study.

2.2. History of EBMP

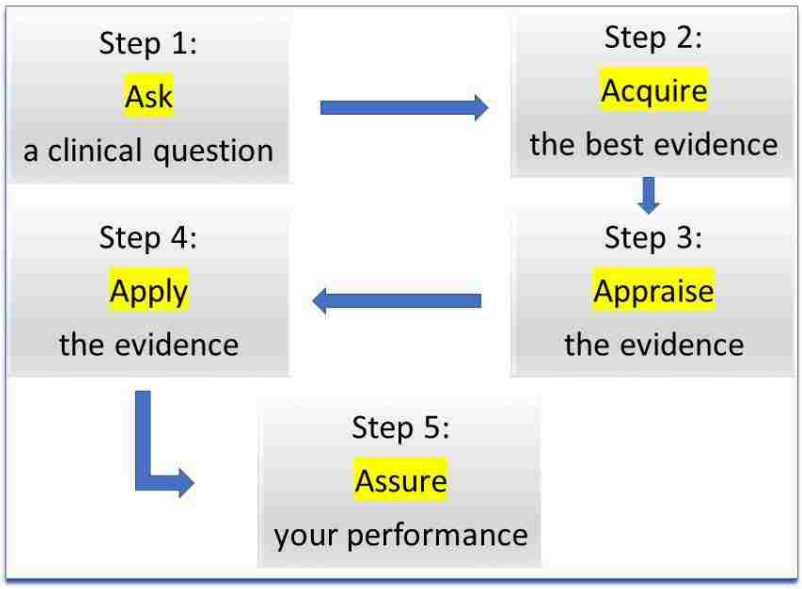
Evidence-based medicine (EBM) is defined by Rosenberg and Donald (1995: 1123) as, "the process of systematically finding, appraising, and using simultaneous research findings as the basis for clinical decisions". EBM, also known as evidence-based medical practice (EBMP) (Akobeng 2005: 837), came into existence in the early 90's. The concept was first proposed by Guyatt from McMaster University in Canada, in 1992 (Evidence-based Medicine Working Group 1992: 2420). A group of primary-care clinicians and epidemiologists introduced a new approach to teaching medicine and practicing medical care, and phrases such as "information pathologies", "information overload" and "slow dissemination of research findings" were coined and introduced in routine practice (Guyatt 1991; Sackett *et al.* 2000). Originally known as evidence-based medicine (EBM) and now usually referred to as evidence-based health care (EBHC) to embrace all healthcare professions, the movement has achieved much but has also attracted criticism and concerns. There are concerns from the clinical side, often concerned with information overload (Wieringa *et al.*2017: 964). However, there are also concerns from the side of the professional librarians because of the dangers inherent in filtering information before supplying it to medical practitioners. In light of this, this study needs to determine what the current trend is in EBMP, with particular reference to South Africa, so that health science librarians can prepare themselves to provide information to medical practitioners according to their requirements.

2.2.1. Developments in the definition of EBMP

EBMP has been defined in different ways by different authors. For example, it has been defined as an approach to decision making in which the medical practitioner uses the best evidence available, in consultation with a patient, to decide upon the option which suits the patient best (Gray, M., 2009: 17). Brice and Hill (2004: 13) stated that evidence-based practice is based on the concept "practice should be based on up-to-date, valid and reliable research". It has also been defined as "the integration of best research evidence with clinical expertise and patient values" (Sackett *et al*. 2000: 1). "EBMP is the systematic, explicit and judicious use of current best evidence in making decisions regarding the care of individual patients" (Sackett *et al.* 1996). High-quality healthcare implies clinical practice that is consistent with current best evidence (Evidence-Based Medicine Working Group 1992: 2420; Straus *et al.* 2005: 1). A special set of skills and a specific body of knowledge are needed by a medical practitioner to be able to retrieve, review, and apply current evidence. This is a lifelong, self-directed learning, as given in EBM concept (Shaughnessy, Slawson and Bennett 1994; Guyatt *et al.* 2000; Straus *et al.* 2005; Slawson and Shaughnessy 2005). Also, EBMP means "integrating individual clinical expertise with the best available external clinical evidence from systematic research" to achieve the best possible patient management (Sackett et al. 1996). "The practice of EBM is geared toward the reduction of clinical practice variation and the promotion of improved patient care" (McAlister *et al.* 1999: 236).

EBMP has gained acceptance worldwide as practitioners strive to make their decisions about patient care based on the best available evidence. Since it has undergone major development, it has been recognised as a key competency factor for doctors (Muller 1984: 155; Walton 1994: 1; Gibbs and Gambrill 2002: 452; Morris and Maynard 2007: 534). The five steps of EBMP are described by Haughom (2018) using five A's: "ask, acquire, appraise, apply, and assure" (Figure 2.1).

Figure 2.1: The five steps of EBMP include the 5 A's: Ask, Acquire, Appraise, Apply and Assure.



(Data source: Haughom, 2018)

According to McKibbon and Bayley (2004: 50-51), there are five essential steps to evidence-based practice (EBP): converting information needs into focused, answerable, clinical questions; efficiently tracking down best evidence to answer questions; critically appraising the evidence for validity and clinical usefulness; applying results in clinical practice; and finally, evaluating the performance of evidence in clinical application. Health science librarians can play a role in almost every EBMP process, except making clinical decisions (McKibbon and Bayley 2004: 50-51).

2.3. Health science librarians

According to Braude (1997: 1), health science librarianship has undergone lots of changes and development iterations which could be compared to the natural selection and differentiation of the beak of the bird finch, as described in the book *The beak of the finch* (Weiner 1995: 1):

> Medical librarians evolved out of general librarianship and continue to evolve in response to changing conditions. In short, Medical librarians adapt by learning, their form of natural selection. Health science librarians can be thought of as a species of librarian originally differentiated from the general species about one hundred years ago. The original differentiation occurred in response to a changing environment and the adaptation was to learn the skills that suited them better for the environment in which they wished to compete. Thus, medical librarians can look at education as their adaptive strategy, their process of selective differentiation if they will, whereby they changed their strategy to meet the changing conditions of the territory (Braude 1997: 1).

The specialisation and sub-specialisation of medical research and practice, especially in EBM, facilitates the proper coordination of essential information. Subject librarians are information professionals with an advanced degree, in addition to their degree and expertise in Library and Information Science (LIS) or similar (Chavez 2012: 1), whereas, in the case of EBM, they have training in the specific field of medicine and research methodologies applicable in medicine (Gavgani 2009: 1). Information professionals play a unique role in gathering, organising, and coordinating access to the best available information sources and evidence for medical practitioners, health practitioners, and patients to support decision making. (Veenstra 1992: 19; Giuse 1997: 437; Murphy 2000: 7; Beverley, Bexon and Falzon 2003: 112; Booth and Bath 2003: 65). These specialised information services are being provided by other professionals such as nurses, pharmacists, or librarians to a clinical team (Giuse *et al.* 1998: 412).

Online health information, its access and use, has become both a concern and expectation of medical practitioners and, hence, many healthcare institutions are now considering EBM as a priority for professional medical practice. These changing scenarios have resulted in challenges as well as opportunities for health science librarians to support medical practitioners in EBMP (McKibbon and Bayley 2004: 50; Kronenfeld *et al.* 2007: 394). Developing countries, in particular, have challenges practicing EBM since it requires skills, time, and resources (Gavgani and Mohan 2008: 1). The list of developing countries is available online (International Monetary Fund, 2015: Table D). Libraries and librarians can support and enhance EBMP by providing evidence-based information, knowledge of health information resources, and information search and retrieval expertise to medical practitioners and other health practitioners (Perry and Kronenfeld 2005: 1).

The literature must be searched, selected, and reviewed in order to use current best evidence; hence, the clinical medical librarianship (CML) method was initiated by a librarian to better understand clinical information (Scherrer and Dorsch, 1999: 322). CML librarians serve as a link between medical education and the library by attending the clinical team meetings, including ward rounds to identify information needs, and running searches for information. Cimpl (1985: 21), in the review of the literature for clinical medical librarianship CML, noted that CML services were offered "to provide information quickly to physicians and other members of the healthcare team; to influence the information seeking behaviour of clinicians and improve their library skills; and to establish the medical librarian's role as a valid member of the healthcare team". In CML, librarians were trained sufficiently to become familiar with medical terminology to be able to understand conversations on rounds carefully, as mentioned in a study of the "attitudes of medical school library directors and clinical department heads toward a CML program" (Demas and Ludwig 1991: 17). The responses by medical personnel to a CML programme were favourable. They said, "the librarian has the expertise to access the body of knowledge; however, the final judgment of relevancy should be reserved for the clinician alone" (Kuller *et al.* 1993: 38). A study conducted at the University of Pittsburgh showed that health science librarians recognise and select articles as effectively as medical practitioners, although the two groups stressed different reasons for selection by using the article title, abstract and journal title. The librarians focused more on medical subject headings and medical practitioners stressed clinical applicability (Kuller *et al.* 1993: 38).

According to Wieringa et al (2017), "the early EBMP movement had a strong modernist agenda with an aim to "purify" clinical reality into a dichotomy of objective "evidence" from nature and subjective "preferences" from human society and culture but these early aspirations have been compromised by the volume of information available. There is a need for revisiting the idea and a conceptualisation of "situated practice" (Wieringa et al 2017). To overcome the issue of quality filtering, value-added service roles for librarians such as information filtering, should grow (Klein *et al.* 1994: 489) and medical practitioners must be taught how to formulate the components of a clinical question and perform critical appraisals (Michaud *et al.* 1996: 478). Giuse (1997: 437), in an editorial in the *Bulletin of the Medical Library Association*, stated that "clinical librarians should read the full text of the most pertinent articles retrieved by their searches, identify and extract the information relevant to the clinical question at hand, and write brief essays describing their findings". The health science librarians have arrived at

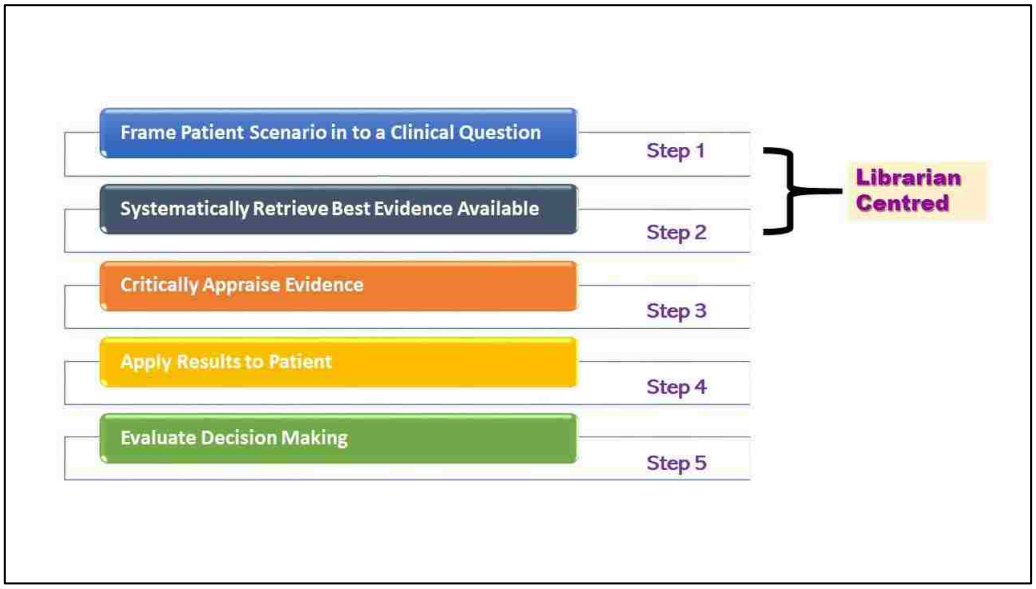
their current position through flexibility and the ability to adapt to change, an ability facilitated by their educational process (Braude 1997: 1). Thus, the librarians have a responsibility to continue the evolution of their professional education in response to changing conditions, and to commit to lifelong learning. This will help them incorporate their professional knowledge base into that of medical practices so that the best of the new research can be accessible. The libraries and status of librarians should be changed significantly in order to meet the challenges of the ever-changing healthcare environment and new technologies (Nagle 1996: 657). The author stated that "Emphasis is not on finding information but on obtaining the best information available for a given situation, to find answers to many pressing questions, and to winnow out the quality from the quantity of available information" (Nagle 1996: 657). The medical practitioners practicing EBM rely more on evidence found in the literature than on clinical experience and pathophysiology. Health science librarians play a key role in the advancement of EBM by keeping their search skills strong and learning new skills to increase their role as teachers and trainers, and thus, they are in an ideal situation to become stronger partners in the improvement of healthcare (McKibbon 1998: 396). “Lifelong, self-directed learning” is a term used in the definition of EBM by Sackett *et al*. (1996: 71). It can be related to the skills of librarians as they should understand, manipulate, facilitate, evaluate, and create information knowledge platforms. The evolution from library services to decision-support services by health science librarians has established them as collaborative partners with healthcare professionals (Slawson 1998).

As stated above, health science librarians play a role in health-related activities and decision making by enabling access to published evidence. A review (Hill, 2008) by the National Health Service (NHS) health library services in England identified four key purposes of health libraries, namely:

- clinical decision making by patients and carers;
- decision commissioning and health policy-making;
- research; and
- lifelong learning to support health professionals, by health professionals.

Electronic factors like the Internet, delivery of information to the desktop or mobile device, open access publishing, etc., also impact on the health science libraries and are significantly driving health science librarians and libraries in new directions (Kelly, 2009: 12).

Figure 2.2: The five steps of EBMP.



(Data source: HLWIKI International, 2017)

As shown in Table 2.2 above, health science librarians can play a role in the first two steps of EBMP by framing the patient scenario into a clinical question and providing best evidence (HLWIKI International, 2017). McKibbon and Bayley (2004: 50) also stated that health science librarians can play a role in almost every EBMP process, except making clinical decisions.

2.4. International practice of EBMP

There are many studies that have been conducted worldwide on medical practitioners to understand their attitudes and knowledge toward EBMP; the barriers to them using EBMP; as well as ways to overcome these barriers, including through workshops and training. These topics will be explored regarding EBMP at the international level.

2.4.1. Attitudes and knowledge of doctors toward EBMP

The medical practitioners in Bangladesh (Murelli and Arvanitis 2003: 341), India (Gavgani and Mohan 2008: 1), and Croatia (Novak *et al.* 2010: 157) were reported to have a limited knowledge and a low level of awareness of EBMP. They were also reported to have a low level of awareness of EBMP sources and their use. Some studies in Saudi Arabia (Al-Gelban *et al*. 2009: 1) and Norway (Ulvenes et al. 2009) suggested that the attitudes of doctors toward EBMP were generally positive; however, their use of EBM sources, such as the Cochrane Library and application, were generally poor.

The studies conducted in Saudi Arabia (Al-Baghlie and Al-Almaie 2004: 425, Al-Omari and Al-Asmary 2006: 1887), Japan and Indonesia (Risahmawati *et al.* 2012: 374; 2011: 16) reported that the majority of the participants had a positive attitude toward EBMP. Medical practitioners from Halland County of Sweden (Rabe, Holmen and Sjorgen 2007: 113) and the United Kingdom (Hagdrup, Falshaw and Gray 1998: 282; McColl *et al.* 1998: 361) welcomed and showed a positive attitude and understanding toward EBMP. They also agreed that EBMP improves patient care. The practitioners from the United Kingdom were reported to have a low level of awareness of abstracting journals, review publications, and databases; and even if aware, many did not use them. The younger members of the Dutch Orthopaedic Association in the Netherlands had a better knowledge of EBMP than other members and welcomed its application in patients' care (Poolman *et al*. 2007: 206).

The studies conducted to assess the awareness and attitude toward EBMP of primary healthcare physicians (PHCPs) reflected the same results as the above-mentioned studies. The participants from Riyadh Region, Kingdom of Saudi Arabia (Al-Ansary and Khoja 2002: 537) and Kuwait (Ahmad *et al.* 2009: 1125) mainly welcomed EBMP and agreed that its practice improves patient care, but they had a low level of awareness of extracting journals, review publications, and databases. In Malaysia, the majority of primary-care doctors were aware of the term "EBMP" (Chan and Teng, 2005: 130).

Nwagwu (2008: 278) studied levels of awareness of EBM among consultants and dentists in tertiary healthcare institutions in Nigeria. Consultants in the teaching hospitals appeared not to have the high level of EBMP awareness that would be expected of them, although there is an

awareness that EBM will foster ease of access to relevant information and promote equity in healthcare services. These studies concluded that, although doctors have positive attitudes toward EBMP, their knowledge and application of EBMP need much improvement.

Maigeh, E. P. (2003) conducted a study in the Republic of Tanzania to find out the Tanzanian physiotherapists' attitudes, knowledge, engagement, and barriers toward evidence-based practice. Most of the participants were positive about EBMP. They agreed on the usefulness of EBMP in day-to-day clinical decision making and its improvement in the quality of patient care. The majority of participants indicated the availability of the Internet in the workplace but very few of them used the medical-related databases to improve their knowledge.

In Dubai, UAE, a cross-sectional study was conducted by Albarrak, Abbdulrahim and Mohammed (2014) to understand the knowledge, attitudes, and perceptions toward EBM and barriers to EBMP of Primary Health Care Sector medical practitioners. They found that the majority of the participants (70%) who attended the EBM courses were using EBMP. The medical practitioners indicated that the inability to access EBM resources and the lack of time were the main barriers to applying EBMP. Albarrak, Abbdulrahim and Mohammed (2014: 211) concluded that many medical practitioners in Dubai were not practising EBM.

Ghojazadeh *et al*. (2015) conducted a systematic review on the barriers, the facilities, the knowledge, and the attitude toward EBM in Iran. A total of 28 papers were chosen from the period 1990 to 2014. The majority of the studies were on barriers to EBM. Ghojazadeh *et al*. (2015) found that the lack of suitable facilities was mentioned as a most important barrier. Other main barriers mentioned in the literature were lack of confidence in research results, low motivation, negative attitudes toward EBMP, and failure to provide proper training in EBMP.

2.4.2. Barriers to EBMP

Throughout the world, many of the medical practitioners showed awareness and a positive attitude toward EBMP but also encountered some barriers to implementing EBMP. Al-Gelban *et al.* (2009: 1) explored the attitudes of medical practitioners in the general hospitals, and their application of EBM, and sought to identify the barriers that hinder its use in Saudi Arabia. The major barriers to the practice of EBM were "lack of facilities" and "lack of time", while the

barrier least mentioned was the "lack of interest". Al-Ansary and Khoja (2002: 537), in the Riyadh Region, Kingdom of Saudi Arabia (KSA), reported that the major perceived barriers to EBMP were patient overload and lack of personal time.

The medical practitioners in the Philippines (Dans and Dans 2000: 11) were reported to have a lack of time to attend workshops, and a lack of role models for EBMP: these were the major barriers. Indian participants showed a lack of time to search, appraise, and apply EBM in their daily practice (Gavgani and Mohan 2008: 1). The major barriers to EBM in Canada were lack of knowledge and lack of familiarity with the basic skills (McAlister *et al.* 1999: 236), while other practitioners (Bhandari *et al.* 2003: 1183) cited lack of education, time constraints, lack of priority, fear of staff disapproval, and lack of ready access to EBMP resources. Like the Canadian participants, the physicians in Bahrain (Amin, Fedorowicz and Montgomery 2006: 1394) and in the Gulf region, among Saudi dentists (Fedorowicz, Almas and Keenan 2004: 470), indicated that "no time" and "no ready access to resources or lack of resources" were the most cited barriers to EBMP participants.

Studies in the United States (Jette *et al.* 2003: 786) and in Iran (Mozafarpour *et al.* 2011: 651) reported lack of time as a major barrier to EBMP while only Iranian medical practitioners reported having experienced a lack of EBM training courses in their academic curriculum as a major barrier. Risahmawati *et al.* (2011: 16, 2012: 374) studied a comparative assessment of attitudes, knowledge, and self-perceived barriers to the practice of EBM in Japan and Indonesia. The barriers to implementing EBMP were a lack of time, and a lack of resources in the native language. Ulvenes *et al.* (2009) surveyed to ascertain the Norwegian medical practitioners' knowledge of, and opinions about, EBM. Many participants experienced difficulties in using EBM principles in their clinical practice because of lack of time and difficulties in searching EBM-based literature. Iqbal and Glenny (2002: 587) sought to assess the understanding of, and attitudes toward EBMP of general dental practitioners practicing in the North West of England. Barriers to the use of EBMP included a lack of available time and financial constraints.

Apart from the above studies, other researchers from the Netherlands and Ireland also reported the lack of time as a major barrier and poor availability of evidence as a secondary barrier to EBMP (Rabe, Holmen and Sjorgen 2007: 113; Flynn and McGuinness 2011: 23). Patient overload, limited resources and facilities, and the absence of an effective computer system were

the most commonly reported barriers to the implementation of EBM by the medical practitioners in Jordan. Despite the positive attitude toward EBM, numerous personal, interpersonal, and institutional barriers resulted in a delay in implementing EBM, suggesting the need for prompt action to formulate a national plan to overcome such barriers (Al Omari *et al.* 2009a: 1131; 2009b: 1137). Maigeh (2003) mentioned that a lack of knowledge and skills in research, patient overload, and low salaries were the main barriers among Tanzanian physiotherapists. Most of the studies indicated a lack of time as the major barrier common to all countries.

2.4.3. Recommendations from researchers to overcome barriers to EBMP

Bhandari *et al.* (2003: 1183) concluded that course improvement and surgeon education may help overcome the barriers to EBMP. Iqbal and Glenny (2002: 587) also concluded that it appears to be the right time for an educational programme targeted at General Dental Practitioners to enhance their knowledge and use of EBMP in everyday practice. Al-Gelban *et al.* (2009: 1), in Saudi Arabia, recommended that the necessary arrangement for the application of EBM should be made available to all medical staff. There is a need for special courses; hands-on workshops in general hospitals to address the necessary knowledge and skills of EBM are essential (Al-Gelban *et al.* 2009: 1). The teaching of literature searching and critical appraisal skills by feasible and friendly methods was recommended, as well as that efforts be made toward improving access to evidence-based guidelines and summaries in Saudi Arabia (Al-Ansary and Khoja 2002: 537).

While studying the perceptions, attitudes, and knowledge of evidence-based practice from dietetic practice groups of the American Dietetic Association, the researchers identified a need to integrate the concepts and principles of evidence-based practice into the dietetics curricula so that practitioners could apply research findings routinely to clinical practice (Byham-Gray *et al.* 2005: 1574). Gavgani and Mohan (2008: 1) suggested that every hospital should establish a library to provide resources for evidence-based medical librarians (EBML) trained in medical library and information science and medical terminology, with particular emphasis on EBM. Every department in a hospital should have its own special EBML to help medical practitioners in EBMP.

2.4.4. Workshops and training on EBMP

The medical practitioners in Bahrain (Amin, Fedorowicz and Montgomery 2006: 1394) and dentists of Saudi Arabia (Fedorowicz, Almas and Keenan 2004: 470) claimed to use EBM in their practice, particularly if they had attended an EBM workshop. Al-Gelban *et al.* (2009) recommended that the necessary infrastructure for the application of EBM should be made available for all medical staff. Special courses and hands-on workshops to address the necessary knowledge and skills of EBM in general hospitals are essential.

To overcome the major barrier to EBMP, i.e., the lack of time, the librarians in Canada were given technical training on EBM, including on how to summarise the evidence. Medical practitioners were positive about its impact on their clinical practice and decision making. The project was focused on empowering the librarians to use the tools in EBMP and required answers to clinical questions in 15 minutes or less. The librarians successfully answered the questions within the time frame. The project overcame several barriers using innovative solutions. There are many opportunities to build on this experience for future joint projects of librarians and healthcare providers. The just-in-time librarian consultation service (a workshop) showed that it was possible to provide evidence-based information in time by a librarian for primary-care clinicians and overcome the lack of time barrier (McGowan *et al.* 2010). Gavgani (2009) also suggested developing workshops and training programmes for librarians with new approaches to EBMP to achieve consistent growth in the medical library and information science. Davies (2009: 289) in the UK also concluded that health science librarians could collect data needed by doctors, but this was more successful when the librarian was experienced and an established part of the clinical team.

The literature described above clearly shows that medical practitioners are involved in EBMP, and that they are agreed that EBMP is very useful in their daily practice, but that they are facing some barriers to practicing it. A lack of time is the common problem that medical practitioners are facing worldwide. The literature shows that health science librarians can help medical practitioners in EBMP by providing them with evidence-based information in time (McGowan *et al.* 2010). Therefore, this study undertakes to understand medical practitioners'(in eThekwini district, South Africa) perceptions, use, and needs regarding EBMP and library services in the hospitals in which they are practicing.

2.5. Role of health science librarians in EBMP

The medical practitioners in Birmingham, UK, had limited awareness of the potential benefits of a health science librarian's support during ward rounds, and they were unsure about a librarian's skills in EBMP (Deshpande *et al.* 2003: 86). The study by Deshpande *et al.* (2003: 86) stated that finding barriers may be helpful in developing plans for the implementation of EBMP during the medical practitioner's ward rounds. Holtum (1999: 404) argued that librarians need to be actively engaged in the development and refinement of end-user information tools that incorporate the literature types most appropriate to the practicing medical practitioner and are directly relevant and applicable to patient care. Perry and Kronenfeld (2005: 1) reviewed EBMP trends and proposed roles for health science librarians. They concluded that health science librarians could take on the responsibilities of supporting and enhancing EBMP with their knowledge of health-information resources and their information search and retrieval expertise.

It is reported that health science librarians have carried out various responsibilities and tasks that help to support EBMP and have participated in EBMP initiatives to help improve patient care (McKibbon and Bayley 2004: 50; Verhoeven and Schuling 2004: 27; Ward, Meadows and Nashelsky 2005: 88; Banks *et al*. 2007: 381). They worked with medical school faculty members to create an online EBMP tutorial (Mayer, Schardt and Ladd 2001: 79) and partnered with a hospital department to produce clinical guidelines (Keating *et al.* 2004: 46). According to researchers, health science librarians helped in searching for and evaluating information to promote the effective integration of EBMP into allied health, playing a role in continuing education activities, and educating professors, researchers, and publishers about the need for broader access to EBMP resources (Atlas *et al.* 2003: 1; Schwing and Coldsmith 2005: 29, Kronenfeld *et al.* 2007: 394). Health science librarians were also reported to be supporting partners in EBMP projects who took an active part in curriculum integration. (Kaplan and Whelan 2002: 219; Reid, Ikkos and Hopkins. 2002: 52; Rigby *et al.* 2002: 158; Schwartz and Millam 2006: 6; Bracke *et al.* 2008: 108).

In the United States, Li and Wu (2011:365) sought to examine what EBM-related qualifications and responsibilities have been expected of health science librarians by prospective employers, and how health science librarians have been involved in EBMP-related activities. They concluded that most health science librarians were ready and willing to contribute to EBM-

related projects as situations or opportunities arose; however, they were not proactive enough in supporting EBMP in their daily work (Li and Wu 2011: 365). Progressively, the role of health science librarians is associated with EBMP, whereby access to published evidence that supports different health-related activities and decision making is provided. In this regard, a review of the national health library services in England identified four key purposes of health science libraries: namely, 1) to support clinical decision making by patients and health professionals; 2) to support decision commissioning and health policy-making; 3) to support research; and 4) to support lifelong learning by health professionals (Hill, 2008).

In Ireland, the librarians or information specialists providing resources and services to support teaching and learning, clinical practice, and research activities in academic and health sectors as medical librarians or health science librarians (Kelly, 2009: 12). The study by Gavgani (2009) reflected that a health science library needs subject specialist librarians trained in specific fields of medicine to support new approaches and information needs for EBMP. Despite having a good knowledge of sources of evidence, librarians did not necessarily receive support from the organisation or trained staff to support EBMP. The subject specialist librarian in any field of medicine is necessary to encourage developing subject librarians in health science libraries (Gavgani 2009).

Myers and Rodriguez (2016) conducted a survey to find out how early career health science librarians gained competencies. Data was collected from early career health science librarians (those with less than five years of professional experience). Myers and Rodriguez (2016: 219) concluded that since "health science librarians deal with new and evolving issues regarding scholarly communications, emerging technologies, data management, and other areas of importance to their communities, they must be provided with structured opportunities for development".

Pappas (2008) conducted a cross-sectional survey to study the health science librarians' perceptions related to evidence-based healthcare. The survey monkey tool was used, and the survey link was sent by email to Hospital Libraries Section (HLS) members of the Medical Library Association (MLA). Two hundred and four librarians responded from Spain, Singapore, The United States, Guam, New Zealand, and Canada. The health science librarians indicated that the lack of time, lack of statistics familiarity, lack of training, lack of evidence-based health care (EBHC) knowledge, lack of institutional support, lack of confidence, and

physicians' attitudes were the main barriers to supporting EBHC. Pappas (2008) concluded that the community should take steps to overcome these barriers, so health science librarians can support EBHC and help the health science library users.

Holst et al. (2009) reviewed the literature by using results from a previous study to "describe the current and future roles of hospital librarians". They indicated that "librarians are providing excellent clinical care and promoting clinical learning". Holst et al. (2009) highlighted that the services of a professional librarian increased the satisfaction of patient and family with the hospital and its services, improved staff effectiveness, and improved patient outcomes and patient care. They stated that health science librarians saved patients' lives and hospitals money. Health science librarians are playing critical roles in today's hospital. Holst et al. (2009: 290) suggested that "Because hospital librarians and their services provide an excellent return on investment for the hospital and help the hospital keep its competitive edge, hospital staff should have access to the services of a professional librarian".

Haruna *et al* (2016: 913) in Tanzania conducted a study on the health information practices of users in health science libraries, the health information needs of health science library users, and the required skill levels and entry qualifications for students in a health science training program. The sample of academicians, students, librarians, trainers, patients and families, and healthcare providers were drawn from nationwide, referral, local, health training institutions, district hospitals, and universities from both government and nongovernment entities in Tanzania. The convenience sampling and focus group discussion were used to collect qualitative data. Participants reported a lack of health information literacy skills, a lack of health information search skills, and poor training in professional and medical ethics. Participants mentioned that they faced some challenges in using library services. The books were outdated, there was a shortage of library staff, libraries were small compared to the number of users, there was a low regard for library services, there was misuse of library facilities, there were inadequate learning materials, and there was a lack of e-resources and reliable Internet connectivity. The majority of participants from the training institutions indicated having no trained health science librarians; only generally skilled librarians. Moreover, only one hospital had a library. All participants strongly agreed on the establishment of a health science librarian to assist them to get up-to-date information at the right time and to "cope with rapid changes in the health field" (Haruna *et al* 2016: 920).

Kasalu and Ojiambo (2015: 1) conducted a study to find out which information science schools are offering courses that cover the abilities and skills required by health science librarians; and "which skills are required by health librarians in Kenya in order to be effective in the changing health environment". The data was collected from the selected five health organisations which have hospital libraries, and university libraries offering health science programs. These organisations were selected because of their role in health information delivery and their size. The results of the study indicated that the courses taught in universities to library students were not adequate to impart the skills that would enable health science librarians to be effective and efficient in service delivery. There is a need to review the specialist courses being taught by LIS schools in Kenya. Kasalu and Ojiambo (2015: 9) concluded that health science librarians and other information specialists have a direct impact on health outcomes, patient care, and clinical decision making. Professional skills are very important for health science librarians in order for them to make an effective contribution in supporting EBMP.

Cooper and Crum (2013) conducted a systematic review of the literature to find out the new activities and changing roles of health science librarians. The literature was searched using Library Information Science technology: Abstracts, Library Literature, MEDLINE, web of Science, and Scopus databases. According to Cooper and Crum (2013: 268), new roles identified through the literature search were:

> "embedded librarians (such as clinical informationist, bioinformationist, public health informationist, disaster information specialist); systematic review librarian; emerging technologies librarian; continuing medical education librarian; grants development librarian; and data management librarian. New roles identified through job announcements were digital librarian, metadata librarian, scholarly communication librarian, and translational research librarian. New twists to old roles were also identified: clinical medical librarian, instruction librarian, outreach librarian, and consumer health librarian".

Cooper and Crum (2013: 268) concluded that, although the main purposes of health science librarianship remain the same, but the librarian's daily work is completely different because of the new roles have major new activities at workplace.

An online survey was conducted by Thibodeau and Funk (2009) on hospital librarians and academic health science library directors to find out the trends in hospital librarianship and hospital library services:1989 to 2006. They compared their survey results "to data collected in a 1989 survey of hospital libraries by the American Hospital Association in order to identify any trends in hospital libraries, roles of librarians, and library services". They concluded that the numbers and types of librarian services have improved. Thibodeau and Funk (2009: 279) stated that the "status of hospital librarians and libraries is still unstable due to the dynamic nature of the health care and financial environments". A large number of hospital libraries have expert librarians, but library closures are continuing. Other factors are impacting the status of libraries, including the loss of space and resources, the loss of MLS staff, changing reporting structures, and merging within other hospital departments or libraries.

In the UK, a study was conducted by Petrinic, and Urquhart (2007) to find out "whether and how librarians with a generalist background can transfer to roles demanding more expert knowledge in the health sector". Face to face interviews and convenience sampling were used to collect the data. Sixteen librarians (working in the Thames Valley National Health Service region) took part in the study. The majority of the librarians indicated that their main responsibilities are literature searching, teaching and training, and providing a reference service. Health science librarians indicated that they need some training related to their work. They acknowledged that a lack of time and money are the main barriers to getting training. Petrinic and Urquhart (2007: 167) concluded that there is a need to update school library programmes: they should include research methods, project management skills, advanced search skills, and more practical exercises.

O'Dell and Preston (2013) conducted a mixed-method study in the United Kingdom to find out the "reasons for non-use of a UK hospital library service and under-utilisation by some groups of staff". The majority of the participants indicated that they are aware of the availability of library services at their workplace. But most of the participants also said they have never borrowed a book from the hospital library and never used the inter-library loans service. They do not use the journals collection, the biomedical electronic databases, or the electronic journals. Most of them have never requested a literature search from the librarians. O'Dell and Preston (2013: 123) concluded that the library staff should target those who never or hardly use the library service, mainly those who do not know about the library services or do not know if they can use these services. Library employees should make everybody aware of the

availability of library services. Promotional material should be sent to the hospital staff (who think they have no need of library services) to inform them that the library services can assist them in their careers. The use of library services can be improved by connecting library resources into “Agenda for Change” outcomes.

In Athens, Greece, a study was conducted by Eirini and Eleni (2010) to explore the training needs of health science librarians in Greece. Data was collected in two phases. The entire population of Greek health science librarians took part in the first phase: qualitative data was collected from these librarians. Three librarians were selected purposely to take part in the second phase: “the hospital librarian who was working in a big hospital and had an average work skill, a research librarian with little work experience and an academic librarian with extensive professional experience”. Semi-structured interviews were conducted with these three librarians to collect the data. The study showed that more than half of the librarians in Greece work in hospital libraries and most of them work in large hospitals. Participants indicated that they did not get any specific qualifications in library schools to work as health science librarians. Most of the librarians have not attended any training course in medical librarianship though most of them show a desire for training. Eirini and Eleni (2010: 8) concluded that there is a need to provide specific training (related to health science librarianship) to Greek health science librarians.

Li and Wu (2009) conducted an online study in the The United States to find out the health science librarians’ roles and activities in supporting EBMP. Most of the participants had more than five years’ experience as health science librarians. Most of the librarians indicated that they provided EBM research to library users, so their everyday job required special skills with EBM resources. Li and Wu (2009: 10) concluded that health science librarians in the United States are taking on this new challenge and playing an active role in enhancing and supporting EBMP. Health science librarians who are providing EBMP services to medical practitioners need special training to update their skills. They have to understand what the healthcare professionals need, have knowledge of EBM resources, and have skills in information searching and retrieving. “It should also be important in bringing awareness into the development of library schools’ curricula to prepare future medical librarians to meet the needs of today's EBM practice environment” (Li and Wu 2009: 10).

In Hamedan (Iran), Masuomi and Khoshemehr (2015) a descriptive study was conducted to identify the hospital librarian's roles and to inform the medical practitioners about the librarian's services at Hamedan training and treatment centre. Data was collected from librarians, general practitioners, specialists, and medical assistants. Most of the participants (general practitioners, specialists, and medical assistants) indicated that they use library services at least once a week. Old resources, lack of time, and crowded libraries are the main reasons of less using the library. Doctors who work night shifts cannot use the library because of limited library work hours. Most of the participants indicated that health science librarians are very helpful for them. Out of five hospital librarians, only two had a professional qualification.

Zarghani et al (2016) conducted a cross-sectional study to evaluate the health science librarians' employment status in hospital libraries in Tehran (Iran). Data was collected from all the Tehran hospitals using a questionnaire. It was found that the majority of participants did not have the Library and Information Science (LIS) degree. A very surprising finding of this study was that "Most of the health science librarians were employed based on hiring official process and friends and relative's recommendation". Zarghani et al (2016) concluded that the Tehran hospital libraries have a lack of qualified health science librarians. Librarians who were working in the hospital libraries were not able to do their duties professionally. They were not able to prepare information and help the medical practitioners, so hospital managers had to hire health science librarians to overcome employment barriers.

The literature described above clearly shows that health science librarians play, or want to play, a key role in the academic and medical sector to develop EBMP. Therefore, this study undertakes to determine what health science library services and resources are available in public and private hospitals in the eThekwini district to support EBMP; the role of health science librarians in hospitals; and the barriers faced by health science librarians supporting EBMP in the eThekwini health districts.

2.6. EBMP in South Africa

Although there are plenty of reports available on EBMP worldwide, as mentioned in sections 2.3 and 2.4, there is very little literature available on EBMP in the South African context

(Lalloo 2003: 358; Edwards 2005c; McInerney and Suleman 2010: 90). In an attempt to discover the status of understanding regarding EBMP among academic healthcare practitioners in South Africa, McInerney and Suleman (2010: 90) conducted a survey to determine the extent to which academic healthcare practitioners use "evidence" in their teaching in a South African university and what they perceived as barriers to the use of EBMP. They reported that participants wanted EBMP to be incorporated into teaching. A survey was conducted by Lalloo (2003: 358) on selected South African dental practitioners to ascertain their knowledge and attitudes toward EBMP. More than half the participants knew the correct definition of a systematic review and critical appraisal. Most reported that evidence-based practice was very important in general dental practice and were interested in finding out more about it. However, very few had ever attended an evidence-based practice course.

Edwards (2005a: 117; 2005b: 125; 2005c: 209) recommended, in his study on treating post-traumatic stress disorder (PTSD) in South African contexts, that international treatment manuals previously evaluated in randomised controlled trials (RCTs) be suitably adapted to local cultural contexts and evaluated by means of systematic case studies of the kind summarised above. These would enable the strengths and weaknesses of the different components of treatment to be evaluated in relation to the range of personality and cultural differences encountered in those being treated. This approach allows for interventions to be tailored to individual cases and provides a basis for the development and extension of a grounded clinical theory or case law that is contextually sensitive (Salkovskis 2002: 3; Edwards, Sakasa and van Wyk 2005: 143). The approach would provide the basis for building an appropriate evidence-based practice for the treatment of PTSD in South Africa. One of the identified strategic goals of a South African university can be to produce trained health science librarians who can help healthcare professionals with EBMP, and thereby develop a culture of continuous professional development and improved patient care. Discussions with health practitioners may reveal their level of understanding of the term "EBMP". In order to obtain a baseline of academics' understanding of the term and their use of research and evidence in teaching, a survey needs to be conducted amongst all health practitioners, including those in medicine, nursing, pharmacy, optometry, physiotherapy, occupational therapy, speech-language pathology, audiology, and sports science.

The private general practitioners in the Gauteng province, South Africa, showed a very positive attitude toward the implementation of EBM in their practices. The majority of the private

general physicians agreed that EBM would benefit their patients' care and treatment. The major barriers to EBMP were found to be a lack of training and a lack of time (Wet 2010).

"We need EBMP to achieve effective healthcare in Africa." (Collaboration for evidence-based healthcare in Africa 2018). A collaboration for evidence-based healthcare in Africa was established by the partnership of eight sub-Saharan African countries: South Africa, Uganda, Tanzania, Malawi, Rwanda, Burundi, Zimbabwe and Ethiopia (Forland et al.2013: 204). The aim of this collaboration is to focus on "African health problems, research priorities and needs" (Collaboration for evidence-based healthcare in Africa 2018). The main objectives of this collaboration are access to evidence-based resources and application of this evidence, research, monitoring and evaluation to enhance the uptake of evidence-based healthcare in practice, collaboration for sustainability and networking, capacity building and training and evidence development by using systematic reviews, clinical guideline and adaptation of guidelines to African settings (collaboration for evidence-based healthcare in Africa 2018). In Addis Ababa in 2012, a five-day workshop was arranged for librarians and information specialists on EBM literature searching. Twenty-four librarians from eight countries took part in this workshop. These librarians were trained to help and train doctors and nurses in literature search strategies (Forland et al.2013: 206).

The above literature recommends EBMP to improve healthcare in South Africa. This study will provide a clear picture of EBMP and the supporting services of health science librarians in hospitals.

2.7. Training of health science librarians to work in hospitals and assist with EBMP

Olayemi (2016: 14) stated that "as the role of librarians is evolving from 'source evidence identifier' to 'evidence searcher' as a result of information technology, it behoves health science librarians to know where and how to find the most appropriate evidence and evaluate the validity of the evidence". To provide this type of information, health science librarians need to acquire salient knowledge, by attending special training courses or workshops.

"An eight-week course is offered on EBM for the health science librarians by the School of Information and Library Science, University of North Carolina at Chapel Hill" (University of

North Carolina 2015). The course focuses on understanding the skills medical practitioners need to practice and the roles that librarians can play to support EBMP. The format of the course is a combination of course material, independent readings, reviews, and exercises.
Other places for health science librarians to learn about EBM are shown below:

- McMaster University, in Ontario, conducts a series of workshops every summer. Many health science librarians have attended this annual programme and there are a number of McMaster health science librarians who help to integrate guest librarians into the "How to teach EBMP workshop" (HLWIKI International 2015);
- The Galter Library teaches a related class called evidence-based medicine (EBM) resources (Northwestern University 2015);
- A professional development programme for librarians at the Library of Health Sciences (LHS) at the University of Illinois at Chicago (UIC) is conducted (Scherrer and Dorsch 1999);
- Cochrane Library Centers in different countries also offer coursework for health science librarians to learn EBM. The Cochrane Library is a part of the Cochrane Organisation that is a global independent network of researchers, professionals, patients, carers, and people interested in health. There are 37 000 contributors from more than 130 countries who contribute in the fields of medicine, health policy, research methodology, or consumer advocacy. Their groups are situated in some of the world's most respected academic and medical institutions (Cochrane Library 2015). Cochrane South Africa is part of the global, independent Cochrane network and is one of 14 centres worldwide, and the only one in Africa; it is situated in Tygerberg, Cape Town, South Africa (South African Medical Research Council 2015).
- Texas Woman's University (Denton, The United States), School of Library and Information Studies offers a graduate certificate in evidence-based health science librarianship. This certificate provides the knowledge and skills to librarians to make them able evidence-based librarianship in the health profession. The programme focuses on resources and services that are used in health science librarianship along with the important knowledge of library science. The certificate program is available online. This graduate certificate is for those who want to become "a health science librarian, a manager in a health science or nursing facility, an evidence-based practicing professional in a health science or nursing facility and a faculty member in health science librarianship" (Texas Woman's University 2018).

The literature described above clearly shows that training is available for librarians to work in hospital libraries and assist medical practitioners with EBMP. Therefore, this study undertakes to identify health science librarians' level of training and qualification to support EBMP in eThekwini health districts, South Africa and to determine the extent of training for health science librarians provided by the universities that train librarians in South Africa.

The following section presents the theory of lifelong learning because "the EBMP is a vital approach to lifelong learning" (Shaughnessy, Slawson and Bennett 1994: 489; Sackett *et al.* 1997; Slawson and Shaughnessy 2005: 685).

2.8. Theory of lifelong learning

According to London (2012) "learning is all about change, and changes drive learning". These changes create gaps between past and present conditions. Changes and gaps create opportunities and improve demands (London, 2012). The role of health science librarians is changing; they are facing barriers to supporting medical practitioners with EBMP. To play this new role, health science librarians have to keep learning. Lifelong learning and evidence-based practice describe the continuous process of keeping up-to-date with rapidly changing knowledge (Laal 2011: 470). As the literature above (section 2.3) shows that health science librarians play, or want to play, a key role in the academic and medical sector to develop EBMP, so librarians have to keep learning and keeping up-to-date with EBMP knowledge.

A study (Hill, 2008) by the NHS health library services in England identified four key purposes of health science libraries. One of them is "lifelong learning to support health professionals, by health/ medical librarians". It is important for health science librarians to engage in lifelong learning in order to improve their knowledge and ably support medical practitioners in EBMP.

According to Smith (2001), the lifelong learning concept was first proposed by Basil Yeaxlee in 1929. Lifelong learning has been defined in different ways by different authors. Based on other authors/researchers' definitions of lifelong learning, Kaplan (2016: 45) stated that:

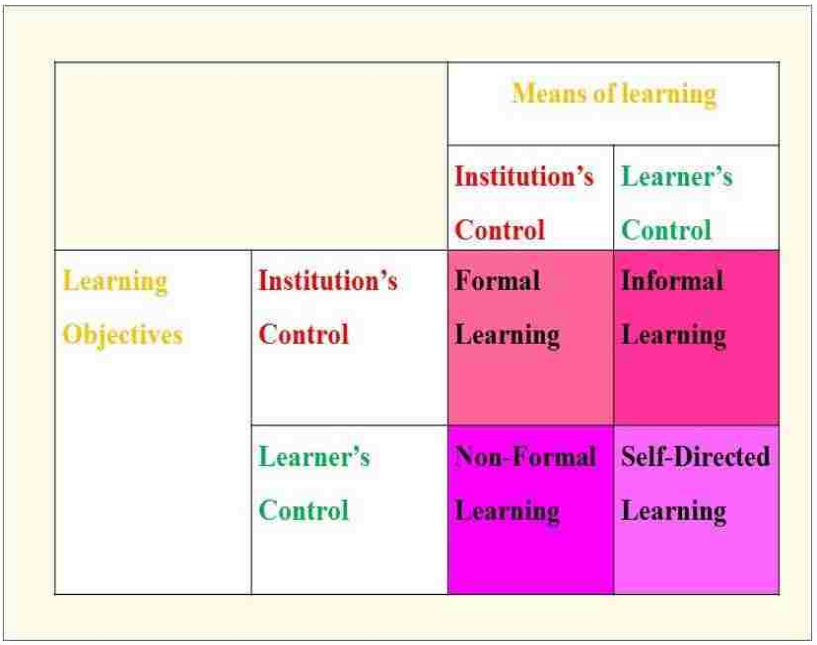
> "Lifelong learning contains all life processes from birth to death, it is based on the personal and occupational needs, interests and earning requirements of individuals.

Lifelong learning contributes to the development of skills and talents of individuals and it is an approach which includes comprehensive components. It has become a compulsory aspect of individuals' lives as a result of changing world conditions and developing technology. Lifelong learning provides equal opportunities to individuals and removes restrictions such as learning, age, socio-economic status and educational level".

Dinevski and Dinevski (2004: 229) also stated that lifelong learning provides equal opportunities to individuals by removing location, time, age, socio-economic status, and education related restrictions. It is the field of adult or continuing education and it observes adults' learning behaviour within work circumstances (London 2012). Lifelong learning is "all learning activity undertaken throughout life, with the aim of improving knowledge, skills and competences within a personal, civic, social and/or employment-related perspective" (European Commission, 2001: 9).

Mocker and Spear (1982: 4) described four types of lifelong learning, as shown in Figure 2.3.

Figure 2.3: Lifelong learning model.



Formal learning - learners have no control over the objectives or means of their learning.

Non-formal learning - learners control the objectives but not the mean.
Informal learning - learners control the means but not the objectives.
Self-directed learning - learners control both the objectives and the means.
(Data source: Mocker and Spear, 1982: 4)

According to Mocker and Spear (1982: 4), formal learning is closely connected to basic and secondary education and other programs offered by schools, colleges and universities. Formal learning is not related to any specific age group. In nonformal learning, the "individual has some responsibility in the decision-making process" of what and how to learn (Mocker and Spear 1982: 6). Wain (1993: 51) described informal learning as a lifelong process of learning where the individual gets "attitudes, values, skills and knowledge from daily experience and the educative influences and resources in his or her environment – from family and neighbours, from work and play, from the marketplace, the library and the mass media". Knowles (1975: 18) described self-directed learning as:

> A process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes.

As the role of health science librarians is changing, librarians have to adopt lifelong learning. The following section presents the theoretical framework.

2.9. Theoretical framework of this study

The literature discussed above in this chapter has described the history and necessity of EBMP and its context in the medical system. EBMP came to the fore in the early 1990s and has become a major driving force for many national healthcare organisations. Some researchers have stated that "The practice of evidence-based medicine (EBMP) is a vital approach to life-long, self-directed learning" (Shaughnessy, Slawson and Bennett 1994: 489; Sackett *et al.* 1997; Slawson and Shaughnessy 2005: 685). A landmark report titled *To err is human: building a safer health system*, from The Institute of Medicine, showed that in the United States alone, about 98 000 deaths annually can be attributed to medical errors (Kohn, Corrigan and Donaldson 2000; McFadden and Thiemann 2009: 423). Ndaba (2018) stated that "John

Hopkins Hospital reported that diagnosis errors cause up to 160 000 deaths annually in South Africa. Making diagnostic errors is one of the most dangerous and expensive mistakes made by South African doctors, estimated to cause between 80 000 and 160 000 deaths every year". Medical mistakes can be very serious. Medical practitioners should be very conscious of this and make sure that the right treatment is given to the right patient at the right time (Gavgani and Mohan 2008: 1). EBMP aims at minimising medical mistakes so "the practice of EBMP should be considered as crucial, and health science librarians should endeavor to render effective and efficient information support services to physicians" (Gavgani and Mohan 2008: 1).

The concept of EBMP is growing, as is the framework of practice among healthcare practitioners (Landry and Sibbald 2001: 1226; Youngblut and Brooten 2001: 468). There are five steps described to conduct EBMP, as mentioned in subsection 2.1.1 (Sackett *et al.* 1996; McKibbon, Eady and Marks 1999). According to Barredo (2005: 1), "The fifth step in the process provides the reflective component in the practice framework, where professionals look back at an experience or situation to analyze what was learned". Reflective practice has been welcomed by educators and practitioners as it is seen as a counterpoint to the technical rationality of EBMP (Taylor 2003: 244). For a practitioner to be able to retrieve, appraise, and apply current best evidence, a very specific body of knowledge and skills is needed (Guyatt *et al.* 2000: 954; Slawson and Shaughnessy 2005: 685; Straus *et al.* 2005). Therefore, health science librarians can play a role in almost every EBMP process, except making clinical decisions (McKibbon and Bayley 2004: 50).

The attitudes and knowledge of various groups of healthcare providers regarding EBMP have been assessed worldwide. Also, the barriers to EBMP have been found to be different in different countries. It has been shown that most medical practitioners lack a basic understanding of the concepts and definitions of EBMP (McColl *et al.* 1998: 361; Beasley and Woolley 2002: 632; Young, Glasziou and Ward 2002: 950; Godwin and Seguin 2003: 10; Oliveri, Gluud and Wille-Jorgensen 2004: 219; O'Donnell 2004: 197; Hadley, Wall and Kahn 2007: 7). Such problems may form barriers to the proper implementation of EBMP (Oliveri, Gluud and Wille-Jorgensen 2004: 219). Medical practitioners cannot be expected always to draw the right conclusions from the results of research (Wulff *et al.* 1987: 3).

There are many barriers to medical practitioners practicing EBM and, hence, health science librarians can play a vital role in supporting EBMP by searching, organising, evaluating, reviewing, and offering evidence to medical practitioners at the time of treatment. Every health

science library is encouraged to appoint a health science librarian who is trained in medical library, information science, and medical terminology, with particular emphasis on EBMP (Gavgani and Mohan 2008: 1; Gavgani 2009). Simultaneously, most of the health science librarians (in the United states) were willing to contribute to EBM-related projects and situation or opportunities arise, but they were not proactive enough in their role to support EBMP in their daily work (Li and Wu 2011: 365).

Medical mistakes may be very serious. Therefore, the medical professionals should be very conscious and make sure that the right treatment is given to the right patient at right time. Most medical practitioners treat patients based on previously gained knowledge and experience but tend to ignore that medical practice is evolving rapidly. Medical practitioners are expected to be lifelong learners and continue to adapt to the changing medical environment (Gavgani and Mohan 2008: 1).

The above-cited studies are conducted throughout the world on physicians, family physicians, primary healthcare practitioners and hospital health practitioners to assess their attitude and awareness of EBMP, barriers to practicing EBM, and how health science librarians are assisting medical practitioners in EBMP. These studies are related to my study and motivated me to carry out these types of studies in the South African hospital environment so that health science librarians can prepare themselves with the necessary skills, tools, and resources to support medical practitioners interested in EBMP.

2.10. Summary

Along with the concept and history of EBMP, this chapter also discusses the role of health science librarians in EBMP. Many studies have been conducted worldwide regarding EBMP. The countries included in this chapter are Australia, Bangladesh, Bahrain, Canada, India, Iran, Ireland, Nigeria, Norway, UAE, Uganda, and the United States. The chapter also considers the practice of EBMP in South Africa, training for librarians to work in hospital libraries and assist with EBMP, international EBM courses offered for health science librarians, as well as the theory of lifelong learning and the theoretical framework of this study.

The next chapter addresses the research methodology used to conduct this study.

METHODOLOGY

3.1. Introduction

The previous chapter discussed literature pertinent to the history of EBMP; the role of health science librarians; the international practice of EBMP; EBMP in South Africa; the training of health science librarians to assist with EBMP; and the theoretical framework underpinning this study. The purpose of this chapter is to delineate the methodology employed in this research. This chapter, therefore, discusses the research design and methodology; study population and sampling; development of the research questionnaire; as well as the research methods utilised. This is followed by discussions regarding ethical considerations, and reliability and validity, as well as an analysis of the data.

3.1.1. Research methodology

Research methodology is a form of data collection, analysis, and interpretation that systematically solves the research problem (Creswell and Creswell 2018:250; Kothari 2009: 8) The formal plan of action for a study is called research design and the research designs are the types of inquiry (Creswell and Creswell 2018:250; LeCompte and Schensul 2010: 87).

3.1.2. Research design

Research designs can be based on qualitative, quantitative, or mixed methods (Creswell 2009: 3; Creswell and Creswell 2018:3). Moreover, a researcher can use one or both methods depending on the nature of the study. The design should be such that it minimises bias and maximises the reliability of the data collection and analysis and provides specific direction for procedures in a research study (Kothari 2009: 14; Creswell and Creswell 2018:250) For this study, a mixed method of qualitative and quantitative methods was adopted to answer the questions validly, objectively, accurately and economically (Kumar 2011: 94). This method

was preferred because it allowed the researcher to gather both qualitative and quantitative data from the participants.

3.1.3. Qualitative and quantitative research

Qualitative research methodology provides a means for exploring and understanding the meaning that individuals or groups ascribe to a social or human problem (Schumacher and McMillan 1997; Creswell 2009: 3; Creswell and Creswell 2018:4;), and it is concerned with the assessment of attitudes, opinions, and behaviour (Kothari 2009: 5). Quantitative research is a means for testing objective theories by examining the relationship among variables. These variables, in turn, can be measured; typically using instruments so that numerical data can be analysed using statistical procedures (Schumacher and McMillan 1997; Creswell 2009; Cohen, Manion and Morrison 2011; Creswell and Creswell 2018:4). The problem space of this study exhibits both qualitative and quantitative dimensions in that it seeks to enumerate the extent of awareness and describes attitudes and opinions related to EBMP. Consequently, a mixed methods approach was adopted.

3.1.4. Mixed methods approach

Following the explanations by Bergman (2007: 102), Onweugbuzi and Turner (2007: 112), Azorin and Cameron (2010: 96), Hesse-Biber (2010: 3), Johnson,), and Creswell and Creswell (2018:14 and 78) regarding a mixed methods approach (combining of qualitative and quantitative), this study integrated one quantitative and one qualitative method that involved data collection and analysis by considering multiple perspectives.

This study was undertaken with the aim of discovering:

- Attitudes and opinions of health science librarians toward EBMP training and qualifications;
- Attitudes and opinions of medical practitioners toward EBMP and toward health science library services; and

- Attitudes and opinions of university academic staff on the preparedness, training, and qualification of health science librarians to support EBMP in public and private hospitals.

As mentioned in chapter one, in order to meet the above aim, the following objectives have been addressed:

- To determine what health science library services and resources are available in public and private hospitals in the eThekwini district to support EBMP;
- To understand medical practitioners' perceptions, use, and needs regarding the library services in the hospitals in which they are practicing;
- To determine the role of health science librarians in the hospitals;
- To identify health science librarians' level of training and qualification to support EBMP;
- To determine the extent of training for health science librarians provided by the universities that train librarians in SA; and
- To identify barriers faced by health science librarians supporting EBMP.

To achieve the aim of the study, a survey was conducted. According to Creswell and Creswell (2018: 251), a survey is used for the assessing of public opinion or individual characteristics using questionnaires, interviews, or focus groups.

Qualitative and quantitative data were gathered via open-ended and closed questions on questionnaires administered to the research participants. Quantitative research was applied to the profiles of medical practitioners, health science librarians, and academic staff to determine their opinions and attitudes toward EBMP, using closed questions. Qualitative research was applied to understand their opinions and attitudes regarding EBMP, using open-ended questions. Qualitative and quantitative data were obtained from medical practitioners and health science librarians in public and private hospitals in the eThekwini district in KwaZulu-Natal, South Africa, and from academic library staff at universities in South Africa. According to Cohen, Manion and Morrison (2007: 100) and Sekaran and Bougie (2016:235) the quality

of successful research depends not only on the appropriateness of methodology and instrumentation but also on the suitability of the sampling strategy that has been adopted.

3.2. Sampling

Sampling is the process of selecting a sufficient number of the right elements (Sekaran and Bougie 2009: 226; Sekaran and Bougie, 2016:235), that is, the right individuals, objects, or events, as representatives for the entire population (Sekaran and Bougie 2013: 240; Sekaran and Bougie 2016:235). Sampling, therefore, begins with precisely defining the target population.

3.2.1. Defining the population

The population refers to the entire group of people, events, or things of interest that the researcher wishes to investigate or that is relevant to a particular study (Burt, Barber and Rigby 2009: 259; Saunders, Lewis and Thornhill 2009; Sekaran and Bougie 2013: 240; Sekaran and Bougie, 2016:236). Sekaran and Bougie, (2016:237) add that the target population must be defined in terms of elements, geographical boundaries, and time.

Therefore, the target population for this study was as follows:

In the eThekwini district

- Medical practitioners (general physicians and specialists)
- Health science librarians based in the libraries of public and private hospitals

In South Africa

- Academic (teaching)staff employed at those higher education institutions in South Africa that offer professional qualifications in Library and Information Science

There are sixteen government and twenty-three private hospitals in the eThekwini district. Of these, there are only six public and semi-public hospitals that have a library. According to report of Arts and Culture department o (2010:100 cited in Rajkoomar, M. 2015: 62), there are

nine universities and one university of technology that offer the qualification in Library and Information Science; they are, the University of: Zululand; Limpopo; Pretoria; Western Cape; Cape Town; South Africa; Fort Hare; Walter Sisulu; KwaZulu-Natal; and the Durban University of Technology.

According to the Library and Information Association of South Africa, LIASA (2018) the "following South African universities offer qualifications in Library and/or Information Science: University of: Zululand; Limpopo; Pretoria; Western Cape; Cape Town; South Africa; Fort Hare; Walter Sisulu; KwaZulu-Natal; Johannesburg and the Durban University of Technology". The researcher contacted the Johannesburg University and found that they do not offer any library qualification (Appendix 15.8) but only courses in Knowledge and Information Management. So currently, there are the same nine universities and one university of technology that offer professional library qualifications.

The location of this study was the eThekwini district in KwaZulu-Natal, South Africa.

3.2.2. Rationale for focusing on the above population

Medical practitioners and health science librarians in all the public and private hospitals within the study location were included so that the researcher could get a full picture of the extent of the usage, the requirements, the needs, and the shortcomings of library services in supporting EBMP.

Academic staff at the nine universities and one university of technology mentioned above were included because health science librarians based at the public and private hospitals in the eThekwini district are likely to have been trained at any one of these universities.

3.2.3. Rationale for focusing on the eThekwini district

The eThekwini district has a large number of hospitals (thirty-nine), thus offering a good base for obtaining a broad perspective on library services in hospitals and, because the researcher resides in the district, it was decided to base the study in this district.

After the population was defined, the next step in the sampling process was to select the sample.

3.2.4. Sampling used in the study

Sampling is the process of selecting a portion of the population to represent the entire population (McGrath, Polit and Beck 2010:208; Sekaran and Bougie, 2016:237). At the beginning of this study, there was no information provided on the websites of the hospitals about their libraries or the staffing thereof. The researcher could also not access any relevant information from the website of the KwaZulu-Natal Department of Health (http://healthweb.kznhealth.gov.za/elib/contacts.htm) because only health department staff can access it. The researcher then requested a list of hospital libraries in the eThekwini health district from the KwaZulu-Natal Department of Health. The list indicated that there were six hospitals, (Addington, R.K. Khan, King Edward VIII, Prince Mshiyeni Memorial, Wentworth, and Inkosi Albert Luthuli Hospital) out of sixteen public and twenty-three private hospitals located in the eThekwini Health District, that had libraries. The researcher then made telephonic or email contact with the hospitals and, where this was unsuccessful, personally visited the hospitals to gather information regarding their librarians.

One university (Walter Sisulu University) did not provide approval for this study. Therefore, data was collected from eight universities and one university of technology (appendices 15 to 15.7). Academic staff lists were available on the website of some universities. Where this information was not available online, the researcher requested that the head of department provide her with a staff list or forward the online questionnaire link to their staff.

Because of the low numbers of health science librarians and academic staff of library and information studies at the universities, the researcher decided not to draw a sample from these populations, but to use a census.

The researcher was aware of the advantages of random probability sampling and intended to do simple random sampling, but it was not possible in the case of medical practitioners because there were no official lists of all the medical practitioners on the websites of the hospitals. The only email address provided was, in each case, that of the Public Relations Officer (PRO). The researcher requested that the PRO provide her with a list of the medical practitioners at each of their hospitals, but the typical response was that they were not allowed to provide the researcher with this information. The researcher then made email contact with the Chief Executive Officers (CEOs) of each of the hospitals. Unfortunately, the CEOs were not prepared to provide the list either; instead, they gave written permission to distribute the questionnaires to the medical practitioners. After exhausting all attempts at obtaining an existing list of medical practitioners, the researcher was left with no alternative but to use non-probability sampling, which was purposive/convenience sampling. Consequently, non-probability sampling was used in this study.

3.2.5. Non-probability sampling

Non-probability sampling was used because the sample was selected from a population the characteristics of which were unknown. According to Gerrish and Lacey (2013: 144), when it is not possible to obtain a comprehensive list of the study population, the researcher is best advised to use non-probability sampling. The researcher collected data according to the convenience and approval from hospital management. As the researcher was allowed by the CEOs of ten hospitals to collect data during their clinical meetings, continuous education meetings and/or clinical audit meetings, she had no idea about the number of doctors who were supposed to attend these meetings. The questionnaire was, therefore, only administered to medical practitioners attending the meeting on the particular day. According to Sekaran and Bougie (2009: 197); Sekaran and Bougie (2016: 143), using a personally-administered questionnaire is a good way to collect data when the survey is confined to a local area, and the

organisation is willing and able to assemble groups of employees to respond to questionnaires at the workplace. The advantages of a personally-administered questionnaire are as follows: the presence of the researcher when the questionnaire is handed out enables the researcher to establish rapport and motivate participants; doubts can be clarified; almost 100% response rate is ensured; and the anonymity of participants is high. The disadvantage of personally-administered questionnaires is that organisations may be reluctant to give up work time for the survey (Sekaran and Bougie 2009: 212; Sekaran and Bougie 2016: 143). The researcher was not allowed to disturb the medical practitioners during their work time. Some hospitals neither allowed the researcher to distribute the questionnaire during meetings nor provided the email addresses of the medical practitioners. Others asked the researcher to email the questionnaires to the hospital manager's secretary who would distribute them to and collect them from the medical practitioners. The researcher, therefore, did not know how many doctors received the questionnaires from the secretary. Some hospitals allowed the researcher to distribute the hard copy of questionnaires to each medical practitioner's secretary and collect the questionnaires from them.

3.3. Data sources

There are two main types of data sources: primary and secondary sources. According to Wilson (2010: 134), primary data is information gathered for the purposes of a researcher's study, and secondary data is the data that has already been published (Wilson 2010: 134; Sekaran and Bougie 2016: 123). Primary data can be collected either through an experiment or a survey (Kothari 2009: 17).

In this study, primary data was collected through a questionnaire survey. Secondary data was collected from journal articles, reviews, Internet sites, and books.

3.3.1. Data collection

Data collection is the precise, systematic gathering of information relevant to the research purpose (Grove, Burns and Gray 2013: 45). The research can be conducted appropriately only if the data collection method has been established correctly. According to Creswell and Creswell (2018:10) "researchers are free to choose the methods, techniques, and procedures of research that best meet their needs and purposes. In the judgement of the researcher, the survey was the most appropriate method to answer the questions of this study. The survey design was chosen because it is economical, in the sense that it allowed the researcher to gather information on a once-off basis in order to describe the nature of existing conditions (Simba, 2006: 52).

3.3.2. Survey methods

A survey is a systematic method for gathering data from a sample of participants (Groves, Fowler, Couper, Lepkowski, and Singer2011: 2). There are four methods of gathering data from participants: personal, telephone, postal, and online (Schmidt and Hollensen 2006: 139; Sekaran and Bougie 2016:143). In this study, data was collected using personal and online methods.

3.3.3. Data collection questionnaires

Questionnaires were used as the main data collection instrument. The questionnaire was personally administered by the researcher in some of the hospitals. Hospital CEOs informed the researcher about the meeting date and venue by email. The researcher addressed the medical practitioners about the study, distributed the questionnaires during their meetings, and collected the completed questionnaires after the meetings. According to Sekaran and Bougie (2009: 197); Sekaran and Bougie (2016:143), a personally-administered questionnaire is a good way to collect data when the survey is confined to a local area, and the organisation is willing and able to assemble groups of employees to respond to the questionnaire at the workplace.

An online questionnaire was used for academic staff of universities, health science librarians, and medical practitioners in some hospitals.

3.3.4. Online questionnaires

An online questionnaire is an increasingly popular data collection tool and a way of conducting surveys (Neill 2004; Gray 2009: 230; Sekaran and Bougie 2016: 143). An online questionnaire collects data from the target audience electronically over the Internet (Bhaskaran and Leclaire 2010: 9; Sekaran and Bougie 2016: 143). An online questionnaire was used for gathering responses from academic staff because the population is spread all over South Africa. Online questionnaires are easy to administer nationally, are very cost-effective and time-saving, and remove geographical and temporal boundaries (Katsirikou and Skiadas 2010; Sekaran and Bougie 2013: 147; Sekaran and Bougie 2016; 143). A 30% response rate to an online questionnaire is considered the acceptable minimum for validity (Sekaran and Bougie 2013: 147; Sekaran and Bougie 2016:143;).

Since some hospitals only allowed the researcher to conduct the survey via email through the secretary of the CEO, the researcher uploaded the questionnaire onto Google Drive and sent the link to each secretary to forward to the medical practitioners. In this way, an online questionnaire was used as a data collection instrument for medical practitioners.

3.3.5. Questionnaire design

The questionnaire is an important part of the research process and a medium of communication between the researcher and the participants (Brace 2018: 5). According to Churchill and Lacobucci (2005: 215); Brace (2018:10), a questionnaire has to be developed very carefully to minimise the possibility of inaccurate answers and response errors. The goal of designing a questionnaire is to meet the research objectives by obtaining valid data from participants who are properly screened and qualified (Azzara 2010:18-19).

3.3.6. Questionnaire layout

This study followed the guidelines for a good questionnaire layout, as suggested by Cohen, Manion and Morrison (2007: 338); Sekaran and Bougie (2016: 146); Brace (2018: 9, 10), The appearance of the questionnaire is vitally important. It must look easy, attractive and interesting rather than complicated, unclear and forbidding. During the designing of the questionnaires, the following points were taken into consideration:

The participant's first impression comes from the covering letter. The covering letter, thus, provides the best chance of persuading the participant to complete the questionnaire. This includes assurances of confidentiality, anonymity, and non-traceability, by indicating that participants need not give their name, that the data will be aggregated, and that they will not be identifiable through the use of categories or details of their location, etc. (Cohen, Manion and Morrison 2007: 339; Sekaran and Bougie 2016:159). Participants who volunteer for a study must also be allowed to discontinue participation (Vanderstoep and Johnston 2008: 14; Oldendick, R. W. 2012:26).

This study gathered data using three questionnaires aimed at three different populations: medical practitioners, health science librarians, and academic staff at the universities. In order to introduce the participants to the purpose of the study and to the researcher, each questionnaire (Appendices 5, 6, 7) had a covering letter (Appendices 11, 12, 13) which explained the purpose of the study and assured the participants of their anonymity and the confidentiality of any information gathered. Letters of informed consent (Appendix 14) and letters of information (Appendices 8, 9, 10) also accompanied the questionnaires, where participants were given details regarding the study; their participation; potential risks; anonymity; confidentiality; contact details of the researcher and the research supervisors; and the participant's rights, so that they could give informed consent to participate in the study. After reading the consent form, the participant was asked to consent to participate in the study by placing a tick in the box at the bottom of the form. For the online questionnaire, participants were also asked to place a tick (✓) in the box (□) provided to indicate that they consented to

participate in the study. Signed information letters, consent forms, and questionnaires were anonymously returned by the participant into an electronic dropbox created by the researcher. Every questionnaire included concise instructions on how to complete the questionnaire, as well as the definition of evidence-based medical practice.

The questionnaire for medical practitioners was designed:

- To determine what medical library services and resources are available in public and private hospitals in the eThekwini district to support EBMP; and
- To understand medical practitioners' perceptions, use, and needs regarding the library services in the hospitals in which they are practicing.

This questionnaire for medical practitioners consisted of eight pages with the following four sections:

A. Biographical data

According to Sekaran and Bougie (2009: 204); Sekaran and Bougie (2016: 149), biographical data includes personal information like age; educational level; marital status; and income. Whether questions seeking personal information should appear at the beginning or at the end of the questionnaire is a matter of choice for the researcher (Sekaran and Bougie 2009: 204; Sekaran and Bougie 2016: 149;). This questionnaire was designed with the biographical data at the beginning as the researcher considered that, once participants have shared some of their personal history, they may psychologically identify themselves with the questionnaire, and may feel a commitment to respond (Sekaran and Bougie 2009: 204; Sekaran and Bougie 2016: 149).

B. Attitudes and opinions on EBMP and understanding of medical practice guidelines

C. Responses toward health science library services

The questionnaire for health science librarians was designed:

- To determine the role of health science librarians in the hospitals;
- To identify librarians' level of training and qualification to support EBMP; and
- To identify barriers faced by health science librarians supporting EBMP.

This questionnaire for health science librarians consisted of eight pages with the following four sections:

A. Biographical data

B. Qualification and training
C. Responses toward EBMP training, attitudes and opinions on research

The questionnaire for academic staff at the universities was designed to determine the extent of training for health science librarians provided by the universities that train librarians in South Africa.

This questionnaire for academic staff at the universities consisted of five pages with the following three sections:
A. Biographical data
B. Attitudes and opinions toward the preparedness, training, and qualification of health science librarians to support evidence-based medical practice (EBMP) in public and private hospitals in the eThekwini district in South Africa

3.4. Types of questions

In this study, the questionnaires were created using both open-ended and closed questions to gather data.

3.4.1. Open-ended questions

A structured questionnaire with both open-ended and closed questions was developed by the researcher. Some questions were based on information available in the literature (McColl et al. 1998; Gavgani and Mohan 2008).

Open-ended questions allow participants to answer in any way they choose (Sekaran and Bougie 2009: 200; Sekaran and Bougie 2016: 146). These questions introduce a topic and then allow participants to answer in their own words, thus, encouraging flexibility and imposing fewer restrictions on the participants (Gravetter and Forzano 2008: 362; Jugenheimer, Kelley, Hudson and Bradley 2014: 150). Open-ended questions are also known as free-response questions where the participant records his or her ideas in his or her own words in the space provided on a questionnaire (Cooper and Schindler, 2008: 340).

3.4.2. Closed questions

A closed question asks the participants to make choices among a set of alternatives given by the researcher (Sekaran and Bougie 2009: 200; Sekaran and Bougie 2016: 389). Closed questions (also called structured or selected responses) are questions for which a participant is provided with a list from which an answer must be selected (Nyaba, 2009: 78; Sekaran and Bougie 2016: 146). Table 3.1 (below), adapted from Cooper and Schindler (2008: 340, 341), presents the question types used on the questionnaire, with an example.

Table 3.1: Question types and examples used on the questionnaire.

Response Formats	Example of Question used in this study
Open-ended Question	What was the reason/s that you did not attend any course/s or training related to EBMP? …….
Dichotomous Question	Does your department offer any courses/training for librarians to support EBMP? □Yes □No
Multiple choice multiple response	If you use print sources, what sub source/s do you use? □ Books □ journals □ thesis/research reports □ atlases □Guidelines □Others……
Multiple choice single response	On average, how many hours per week do you work? □ 1-20 □ 21–30 □ 31–40 □ 41+
Scaled Response Question	The services of librarians are present/ required in hospitals. 1. Agree 2. Disagree 3. Neutral

3.5. Reliability and validity

The following sections describe the reliability and validity of survey tools and the research data.

3.5.1. Reliability and validity of research data

The benefits of mixing qualitative and quantitative research designs are generally for enhancing triangulation, a more robust development of theory and the potential to gain a more comprehensive understanding of the research situation (Anaf and Sheppard 2007). According to Johnson, Onwuegbuzie, and Turner (2007), there are five broad purposes for mixing qualitative and quantitative research, namely: triangulation; complementarity; development; initiation; and expansion.

The guidelines suggested by Sekaran and Bougie (2016: 150) were followed to improve the reliability and quality of the data collection questionnaires: Great care was taken to avoid confusing language; wherever appropriate, multiple choice questions were included for facilitating the process of the user giving responses; questions were designed to be short, clearly worded, and easy for participants to reply to.

Reliability and validity are the two most important aspects in research (Higson-Smith and Kagee 2006: 156; Mohajan 2017: 21; Bless). According to Mohajan (2017: 1), "validity concerns what an instrument measures, and how well it does so" and reliability is the consistency with which a measuring instrument yields a certain result when the entity being measured has not changed (Cohen, Manion and Morrison 2007: 134; Neuman 2011: 377; Cowles and Nelson 2015: 104). The Cronbach's Alpha was applied to relevant questions. According to Sekaran and Bougie (2016: 289), Cronbach's Alpha is a statistic that is calculated to assess the extent to which items are correlated and should be highly correlated to indicate that they all measure the same thing. A value of 0.70 or greater for the Cronbach's Alpha indicates an acceptable level of reliability for the questions analysed (Sekaran and Bougie 2016: 290).

The overall reliability score of section B on medical practitioner's attitudes and opinions on EBMP and understanding of the five medical practice guidelines (Appendix 5 and Appendix 17) and section C on medical practitioner's response toward health science library services (set

of three and seven in total) (Appendix 5 and Appendix 17) was determined and the results are shown in Table 3.2 and Appendix 17. The overall reliability score of 0.735 and 0.759 indicated an acceptable level of reliability. The overall reliability score of 0.905 indicated a good level of reliability.

Table 3.2: Reliability statistics.

Cronbach's Alpha	Number of items
0.735	5
0.759	3
0.905	7

To enhance the validity and reliability of the research, a pilot study was done (Basit, 2010: 71; Bolarinwa 2016). Pilot testing of a survey is especially necessary when using self-completion questionnaires, to ensure that the questions are clearly understood without the participant needing help to fill in the responses (Bryman 2008:89; Lin 2008: 50; Bolarinwa 2016; Ismail, Kinchin and Edwards 2018: 1).

3.5.2. Pilot study

Oppenheim (2005: 48); McMillan and Schumacher (2006: 202) and Blessing and Chakrabarty (2009: 114) advise that it is essential to conduct a pilot study before embarking on the research and before using the questionnaire in the main study. A pilot study tries out the research approach to identify potential problems that may affect the quality and validity of the research (Blessing and Chakrabarty 2009: 114). A pilot study is carried out before a research design is finalised to assist in defining the research question or to test the feasibility, reliability, and validity of the proposed study design. A pilot study was conducted using each of the three questionnaires in this study to refine the instrument before administration to the research sample. Sampling for the pilot study was done in accordance with the main study. The pilot study was undertaken to validate questionnaires. The following participants were chosen for the pilot study:

- Twenty-one medical practitioners from private and public hospitals (questionnaire);
- Six academic staff members from library and information studies (questionnaire); and
- Two librarians employed in hospitals (questionnaire).

The pilot study ensures that challenges are dealt with at this stage to avoid flaws in the main study. A pilot study is not to answer the research question but to prevent the researcher from conducting a study with flaws. The pilot study also evaluates the adequacy of the research method, the appropriateness and quality of the instrument, and identifies confounding variables that need to be controlled (Polit and Beck 2012: 195). The pilot study participants were not asked to participate in the final study.

3.5.3. Findings of the pilot study

The final questionnaires were designed according to the outcome of the pilot study by omitting irrelevant questions from the questionnaires. Some wording was changed in some of the questions. The layout was changed to provide the proper spaces for responses.

The pilot study indicated that, with a few changes, the survey instruments were suitable. After submitting the pilot study report, the ethical committee of Durban University of Technology approved the questionnaires for the final study (Appendix 3.1).

3.5.4. Ethical considerations

"Ethical issues should be considered whenever planning, conducting, beginning a study, interpreting data analysis, storing, sharing and reporting the results of the research" (Cozby 2001, cited in Russell and Purcell 2009: 21; Creswell and Creswell 2018:90). Ethical clearance was approved by the Institutional Research Ethics Committee (IREC) at the Durban University of Technology (Appendix 3). A full ethical clearance for the questionnaires was granted by IREC (Appendix 3.1). An approval was also sought from the eThekwini health district

(Appendix 2), the Health Research and Knowledge Management Component at KwaZulu-Natal Department of Health (Appendix 1), the CEOs of hospitals, and the head offices of healthcare groups (Appendices 4 to 4.14) to conduct the research in hospitals, along with the ethical approval from the eight universities and Durban University of Technology (Appendices 15 to 15.7, 3 and 3.1) to conduct surveys in the institutes. The University of Walter Sisulu did not provide ethical approval for this study. Therefore, the survey was conducted in eight universities and one university of technology.

The principal concern was that a researcher should not do physical or psychological harm and that, where human subjects are involved, the participants should give their fully informed consent before taking part (Wisker 2008; Creswell and Creswell 2018:94). The research did not expose participants to any situation that could be considered harmful, either mentally or physically (Bailey 2011; Creswell and Creswell 2018:94). Participants were only required to answer the questionnaire in this study and no medical or other examination was required. Therefore, this study posed no risk to the participants. Participation in this study was voluntary and participants were informed that they could withdraw from the study at any time without having to give any reasons (Vanderstoep and Johnston 2008: 14). As suggested by Wisker (2008: 90); Dutfield, (2009: 60) and Creswell and Creswell (2018:94), the letters of informed consent (Appendix 14) and letters of information (Appendices 8, 9, 10) were explained to the participants.

Researchers are expected to keep human subject data confidential and either physically secure or on a password-protected computer (Wisker 2008: 90). Participants were assured of their anonymity by the covering letter (Appendices 11, 12, 13) which explained the purpose of the study and assured the participant of their anonymity and confidentiality. Only the researcher and her promoters had access to participants' personal details. The page with personal details was removed to ensure that participants were not identified in any way. Data was kept in a password-protected computer.

3.6. Data analysis

According to Dawson (2009: 114), the data analysing methods depend on the research design. Data gathered from the questionnaires was analysed using Microsoft Excel and Statistical Package for Social Scientists (SPSS) version 23.

3.7. Summary

This chapter discussed the research methodology, the research design and approach that were used to conduct this study. The study site and population, sampling, sampling frame, sample size, data collection, selection of subjects, and the research instruments employed, as well as the ethical considerations of this study, were presented. This research was conducted within a mixed-methods approach. Qualitative as well as quantitative data were gathered using online questionnaires and personally-administered questionnaires.

In the next chapter, the results of the study are presented and discussed.

RESULTS AND DISCUSSION

4.1. Introduction

The previous chapter discussed the methodology and data collection methods used in this study. This chapter presents the results of the study. The use of tables and charts is employed to ensure ease of reference. The presentation is based on analysis of data collected by three type of questionnaires that were used to survey:

- Medical practitioners (general physicians and specialists).
- Health science librarians based in the libraries of public and private hospitals.
- Academic (teaching) staff employed at those higher education institutions in South Africa that offer a professional qualification in Library and Information Science.

4.1.1. Data reliability and validity

Reliability and validity are the two most important aspects of research (Bless, Higson-Smith and Kagee 2006: 156; Cowles and Nelson 2015: 104; Mohajan 2017: 21). According to Cowles and Nelson (2015: 104), "in a survey, reliability refers to the consistency in responses across different participants in the same situation". Validity refers to whether the measurement instrument measures what it is supposed to measure (Leedy and Ormond 2005: 28; Cowles and Nelson 2015: 105).

Inferential statistics in the form of the Chi-square test for association between two variables of interest was used and a p-value < 0.05 was regarded as a significant result. These values are highlighted in yellow (Appendix 18). The Cronbach's Alpha was applied to relevant questions. A value of 0.700 or greater for the Cronbach's Alpha indicates an acceptable level of reliability for the questions analysed (Field 2005:254; Sayeed 2015: 195; Sekaran and Bougie 2016: 290).

Reliability and validity have been discussed in more detail in the previous chapter (Section 3.5.1).

The Chi-square test was performed to determine whether there was a statistically significant relationship between the variables (rows vs columns).

4.1.2. Presentation of findings

The presentations of the findings are based on the survey studies on medical practitioners, health science librarians and academic staff at the universities. The results are presented in the form of graphs and frequency tables for the qualitative and quantitative data collected.

As mentioned in chapter three, three questionnaires were generated, and the following research questions were asked to achieve the objectives of the study: what are the medical practitioners' attitudes and opinions on evidence-based medical practice (EBMP) and their responses toward health science library services; what are the attitudes and opinions of health science librarians toward evidence-based medical training and qualification?; what are the attitudes and opinions of academic staff of library and information science departments on EBMP and their responses toward the preparedness, training, and qualification of health science librarians to support EBMP in public and private hospitals in the eThekwini district in South Africa?.

4.1.3. Presentation of findings from medical practitioners

Questions were asked of medical practitioners via self-administered questionnaire (refer to Appendix 5). As mentioned in the previous chapter (3.2.5), a non-probability sampling approach was used because the sample was selected from an unknown population. A total of 262 questionnaires were completed by medical practitioners. Eleven questionnaires were partially or incorrectly completed. Therefore, only 251 questionnaires were analysed. The data collected from the responses was analysed with SPSS version 23 (IBM Corporation, Armonk, NY, USA). After analysing the data, the figures were plotted in SPSS, Origin 8 Pro (OriginLab,

Northampton, MA, USA) and Microsoft Excel while the tables were prepared in Microsoft Excel.

The findings of the medical practitioners' study are discussed under the following sub-headings:

- Demographic details: age range, gender, qualification and training, years of experience;
- Attitudes and opinions on EBMP and understanding of medical practice guidelines; and
- Medical practitioners' response toward health science librarians and health science library services.

4.1.4. Presentation of findings from health science librarians

The questions were asked of health science librarians via electronic questionnaire (refer to Appendix 6). There are only six hospitals that have established a library on their premises in the eThekwini district, as mentioned in the previous chapter. Out of six, only five health science librarians took part in the main study. One librarian was excluded from the main study because the librarian participated in the pilot study. Data was collected and analysed by Google Drive. Origin 8 Pro and Microsoft Excel were used to plot the figures.

The findings of the study of the health science librarians are discussed under the following sub-headings:

- Demographic details: age range, gender, qualification and training, years of experience;
- Health science librarians' response toward EBMP training; and
- Attitudes and opinions of health science librarians on literature search to support EBMP.

4.1.5. Presentation of findings from academic staff at universities

The Google Drive was used for distributing the questionnaire and collecting the data from the academic staff. The academic staff included in this study are from the eight South African

universities and one university of technology that offer a qualification in Library and Information Science (LIS). In other words, they train librarians in South Africa. As mentioned in chapter three, one university did not provide approval for this study. Therefore, data was collected for eight universities and one university of technology (appendices 15-15.7 and 3, 3.1).

The findings of the study of the academic staff are discussed under the following sub-headings:

- Demographic details: age range, gender, qualification and training, years of experience; and
- Attitudes and opinions of university academic staff toward the preparedness, training, and qualification of health science librarians to support EBMP in public and private hospitals.

4.2. Findings of data from medical practitioners

The findings from the medical practitioners are presented in detail under this section to determine what health science library services and resources are available in public and private hospitals in the eThekwini district to support EBMP, and to understand medical practitioners' perceptions, use, and needs regarding library services in the hospitals in which they are practicing.

4.2.1. Demographic characteristics of medical practitioners

The findings of the age range, gender, qualification and training, and years of experience of the medical practitioners are presented under this section.

4.2.1.1. Gender, age, experience, and type of hospital of medical practitioners

Tables 4.1 show the gender, age, years of experience, and type of hospital of the medical practitioners who responded to the questionnaires.

Table 4.1: Gender, age, years of experience, and type of hospital of medical practitioners.

Characteristics	Description	Number (%) (n=251)
Gender	Female	86 (34.3)
	Male	165 (65.7)
Age		
	20-30 years	24 (9.6)
	31-40 years	79 (31.5)
	41-50 years	74 (29.5)
	51-60 years	51 (20.3)
	61-70 years	12 (4.8)
	70+	11 (4.4)
Years of experience		
	0-5 years	39 (15.5)
	6-10 years	47 (18.7)
	11-15 years	78 (31.1)
	16-20 years	37 (14.7)
	21+years	50 (19.9)
Type of hospital where participants are currently working		
	Public	139 (55.3)
	Private	111 (44.2)
	Both	1 (0.4)

Table 4.2: Gender * Age Cross tabulation.

Gender of Participants			Please indicate your age group						Total
			20-30	31-40	41-50	51-60	61-70	70+	
	Male	Count	7	46	52	39	10	11	165
		% within gender	4.2%	27.9%	31.5%	23.6%	6.1%	6.7%	100.0%
	Female	Count	17	33	22	12	2	0	86
		% within gender	19.8%	38.4%	25.6%	14.0%	2.3%	0.0%	100.0%
Total			24	79	74	51	12	11	251
			9.6%	31.5%	29.5%	20.3%	4.8%	4.4%	100.0%

Table 4.3: Gender * Years of experience Cross tabulation.

Gender of Participants			Years of experience in medical practice					Total
			0-5 years	6-10 years	11-15 years	16-20 years	21+ years	
	Male	Count	13	29	56	23	44	165
		% within gender	7.9%	17.6%	33.9%	13.9%	26.7	100.0 %
	Female	Count	26	18	22	14	6	86
		% within gender	30.2%	20.9%	25.6%	16.3%	7.0%	100.0 %
Total		Count	39	47	78	37	50	251
		% within gender	15.5%	18.7%	31.1%	14.7%	19.9%	100.0 %

(χ^2= 31.00, df = 4, P-value =< 001)

Table 4.4: Gender * Type of hospital Cross tabulation.

Gender of Participants			Hospital where participants are currently working			Total
			Public	Private	Both	
	Male	Count	77	87	1	165
		% within gender	46.7%	52.7%	.6%	100.0%
	Female	Count	62	24	0	86
		% within gender	72.1%	27.9%	0.0%	100.0%
Total		Count	139	111	1	251
		% within gender	55.4%	44.2%	.4%	100.0%

(χ^2= 14.99, df = 2, P-value = .001 < 0.05)

The results of Chi-Square imply that there is an association between gender and type of hospital.

As shown in Table 4.1, out of the two hundred and fifty-one participants, one hundred and sixty-five (65.6%) participants were male and eighty-six (34.4%) were female. The majority of the participants fall in the age group 31-60. The cross tabulation of gender and age group of participants (Table 4.2) shows that male medical practitioners are working at the age of 70 + but the majority of working female practitioners are below 51 years.

Table 4.1 shows that two-thirds (65.7%) participants have 11 or more years of experience and the remaining have less than 10 years of experience. The findings are almost similar to those of Albarrak, Abbdulrahim and Mohammed (2014:209) where most (64%) of the participant medical practitioners in Dubai, UAE had more than 10 years' experience. The cross tabulation of gender and years of experience (Table 4.3) shows that male medical practitioners are more experienced than females, where the majority (74.5%) of males have more than 11 years' experience but the majority (76.7%) of female practitioners have less than 15 years' experience.

One hundred and thirty-nine (55.3%) participants are working in public hospitals whereas 111 (44.2%) work in private hospitals. About 0.4% (one participant) of participants hold dual appointments (Table 4.1). The cross tabulation of gender and type of hospitals (Table 4.4) shows that the majority (72.1%) of female practitioners are working in public hospitals but the majority of male practitioners are working in private hospitals. This finding reflects that female practitioners would prefer to work on a limited time schedule that is more possible when working in the public sector.

The demographic characteristics of the participants are similar to those in the study by Valizadeh, et al. (2015), where there were more male participants (69%) than female. results are in contrast with Albarrak, Abbdulrahim and Mohammed (2014: 209) findings where the majority of participants (64%) were female. The majority age range of 31-60 years was expected as most practicing medical practitioners are known to fall into this age range.

4.2.1.2. Year of completion of medical practitioners' last degree

The participants were asked to indicate the year in which they completed their last degree. The purpose of the question was to know when the doctors updated their degree. Table 4.5 shows the results from this question.

Table 4.5: Year of completion of medical practitioners' last degree.

The year of completion of the last degree	Frequency	Percent	
1980-1985	19	7.6%	
1986-1990	11	4.4%	
1991-1995	29	11.6%	
1996-2000	32	12.7%	
2001-2005	50	19.9%	
2006-2010	71	28.3%	
2011-2015	36	14.3%	
Total	248	98.8%	
Non-participants	3	1.2%	
Total	251	100.0%	

n=248/251

As shown in Table 4.5, 71 (28.3%) participants completed their last degree between the years 2006 and 2010 as compared to 50 (19.9%) between 2001 and 2005. Only 36 (14.3%) completed their last degree between 2011and 2015 while 32 (12.7%) completed between 1996 and 2000. Twenty-nine (11.6%) completed their last degree between 1991and 1995, 19 (7.6%) between 1980 and 1985, and 11(4.4%) between 1986 and 1990. The results show that about 60% participants obtained their last degree 10 years ago, i.e., before 2006.

Medical practitioners were asked to mention their specialisation or job title and the results are presented in Tables 4.6, 4.7 and 4.8.

Table 4.6: Medical practitioners' specialisation or job title.

		Frequency	Percent
Valid	General surgery, specialist	54	21.5
	Family medicine	39	15.5
	General Physician	30	12.0
	Paediatrics	25	10.0
	Medical officer	21	8.4
	Gynaecologist	16	6.4
	Orthopaedic	11	4.4
	ENT	10	4.0
	Emergency medicine,	8	3.2
	Urologist	4	1.6
	Psychiatrist	4	1.6
	Osteoporosis	3	1.2
	Cardiologist	3	1.2
	Plastic surgeon	3	1.2
	Neurosurgeon	2	0.8
	Dentist	1	0.4
	Speech therapist	1	0.4
	Obstetrics	1	0.4
	Total	236	94.0
	No response	15	6.0
	Total sample population	251	100.0

Table 4.7: Medical practitioners' specialisation or job title * Years of experience Cross tabulation.

Participant's specialisation or job title		Years of experience in medical practice					Total
		0-5 years	6-10 years	11-15 years	16-20 years	21+ years	
General Surgery, Specialist	Count	4	14	19	6	11	54
	% within specialisation and job title	7.4%	25.9%	35.2%	11.1%	20.4%	100.0%
Emergency medicine		5	1	1	1	0	8
		62.5%	12.5%	12.5%	12.5%	0.0%	100.0%
Family medicine		7	11	13	5	3	39
		17.9%	28.2%	33.3%	12.8%	7.7%	100.0%
Medical officer		8	5	3	2	3	21
		38.1%	23.8%	14.3%	9.5%	14.3%	100.0%
General Physician		4	5	11	5	5	30
		13.3%	16.7%	36.7%	16.7%	16.7%	100.0%
Paediatrics		1	3	7	6	8	25
		4.0%	12.0%	28.0%	24.0%	32.0%	100.0%
Osteoporosis		2	0	0	0	1	3
		66.7%	0.0%	0.0%	0.0%	33.3%	100.0%
Neurosurgeon		0	1	0	1	0	2
		0.0%	50.0%	0.0%	50.0%	0.0%	100.0%
Gynaecologist		1	2	3	3	7	16
		6.3%	12.5%	18.8%	18.8%	43.8%	100.0%
Cardiologist		0	0	3	0	0	3
		0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
Orthopaedic		0	1	5	0	5	11
		0.0%	9.1%	45.5%	0.0%	45.5%	100.0%
ENT		0	0	5	5	0	10
		0.0%	0.0%	50.0%	50.0%	0.0%	100.0%
Urologist		0	1	3	0	0	4
		0.0%	25.0%	75.0%	0.0%	0.0%	100.0%
Psychiatrist		0	0	0	1	3	4
		0.0%	0.0%	0.0%	25.0%	75.0%	100.0%
Dentist		1	0	0	0	0	1
		100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Plastic surgeon		1	0	0	0	2	3
		33.3%	0.0%	0.0%	0.0%	66.7%	100.0%
Speech therapist		0	0	1	0	0	1
		0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
Obstetrics		0	0	0	0	1	1
		0.0%	0.0%	0.0%	0.0%	100%	100.0%
Total		34	44	74	35	49	236
		14.4%	18.6%	31.4%	14.8%	20.8%	100.0%

Table 4.8: Medical practitioners' specialisation or job title * Gender Cross tabulation.

Participant's specialisation or job title		Please indicate your gender		Total
		Male	Female	
General Surgery, Specialist	Count	44	10	54
	% within specialisation or job title	81.5%	18.5%	100.0%
Emergency medicine		5	3	8
		62.5%	37.5%	100.0%
Family medicine		20	19	39
		51.3%	48.7%	100.0%
Medical officer		8	13	21
		38.1%	61.9%	100.0%
General Physician		18	12	30
		60.0%	40.0%	100.0%
Paediatrics		17	8	25
		68.0%	32.0%	100.0%
Osteoporosis		2	1	3
		66.7%	33.3%	100.0%
Neurosurgeon		1	1	2
		50.0%	50.0%	100.0%
Gynaecologists		11	5	16
		68.8%	31.3%	100.0%
Cardiologist		3	0	3
		100.0%	0.0%	100.0%
Orthopaedic		9	2	11
		81.8%	18.2%	100.0%
ENT		9	1	10
		90.0%	10.0%	100.0%
Urologist		4	0	4
		100.0%	0.0%	100.0%
Psychiatrist		4	0	4
		100.0%	0.0%	100.0%
Dentist		0	1	1
		0.0%	100.0%	100.0%
Plastic surgeon		2	1	3
		66.7%	33.3%	100.0%
Speech therapist		0	1	1
		0.0%	100.0%	100.0%
Obstetrics		1	0	1
		100.0%	0.0%	100.0%
Total		158	78	236
		66.9%	33.1%	100.0%

4.2.1.3. Medical practitioners' specialisation or job title

Two hundred and thirty-six participants mentioned their job title out of 251. The results show that 54 (21.5%) participants were practicing in general surgery where 19 (35.2%) have 11 to 15 years of experience and 11 (20.4%) have more than 21 years of experience. The majority (81.5%) of general surgeons were male. Thirty-nine (15.5%) were practicing in family medicine, 13 (33.3%) of them having 11 to 15 years of experience. This category is represented equally across gender. There were 30 (12%) general physicians where 11 (36.7%) of them had 11 to 15 years of experience and the majority of them, i.e., 60 (18%) were males. Of the 25 (10%) paediatrics, eight (32%) of them had more than 21 years of experience, and the majority (68%) of them were males. Twenty-one (8.4%) participants were medical officers, eight (38.1%) having only 0 to 5 years of experience and most of them (61.9%) were females. Of the sixteen (6.4) participating gynaecologists, seven (43.8%) of them had more than 21 years of experience and 11 (68.8%) of the gynaecologists were males. Of the 11 (4.4) participants, who were orthopaedic specialists, five (45.5%) of them had 11 to 15 years of experience and five (45.5%) had more than 21 years of experience. Nine (81.8%) orthopaedic specialists were males. Ten (4%) participants were Ear, Nose, and Throat (ENT) specialists. All of them had 11 to 20 years of experience and nine of them were males. Eight (3.2%) participants were in emergency medicine. Five of the heads of department (62.5%) were males and five (62.2%) of them had only 0 to 5 years of experience. Of the four (1.6%) urologists, all of them were male and had 6 to 15 years of experience. Four (1.6%) participants were psychiatrists. All were male and had 16 to 20 years or more than 21 years of experience. Also, there were three participants from the osteoporosis department, and three were male cardiologists with 11 to 16 years of experience. Of the others, three were plastic surgeons, two neurosurgeons, one female dentist with 0 to 5 years of experience, one female speech therapist with 11 to 15 years of experience, and one male obstetrician with more than 21 years of experience. Fifteen medical practitioners did not indicate their specialisation (Tables 4.6, 4.7 and 4.8). Participants' job title and experience findings contrast with Mozafarpour *et al* (2011) where out of 181 medical practitioners 33 (18.2%) were working in the internal specialties group, 33 (18.2%) were in

obstetrics and gynaecology, 25 (13.8%) were in surgical specialties, 26 (14.4%) in paediatrics, and 64 (35.4%) in other specialties. Out of these participants, 56.4% were male.

4.2.1.4. Average hours of weekly practice and number of patients daily examined by medical practitioners

Participants were asked to indicate the average hours they work per week and an average number of patients examined daily. The participants were asked if they experienced any problems with workload or time allocation. Results are presented in Tables 4.9 and 4.10.

Table 4.9: Average hours of weekly practice.

Working Hours per week	Frequency	Percent	Cumulative Percent
1-20	17	6.8	6.8
21-30	10	4.0	10.8
31-40	71	28.3	39.0
41+	153	61.0	100
Total	251	100	

Table 4.10: Average number of patients daily examined.

Patients examined daily	Frequency	Percent	Cumulative percent
1-10	23	9.2	9.2
11-20	68	27.1	36.3
21-30	69	27.5	63.7
31-40	38	15.1	78.9
40+	53	21.1	100.0
Total	251	100.0	

Table 4.11: Average hours of weekly practice * Gender Cross tabulation.

On average, how many hours per week do you work?		Please indicate your gender		Total
		Male	Female	
1-20	Count	9	8	17
	% average hours of weekly practice	52.9%	47.1%	100.0%
21-30		5	5	10
		50.0%	50.0%	100.0%
31-40		45	26	71
		63.4%	36.6%	100.0%
41+		106	47	153
		69.3%	30.7%	100.0%
Total		165	86	251
		65.7%	34.3%	100.0%

(χ^2= 3.36, df = 3, P-value = 0.33 > 0.05)

Table 4.12: Average number of patients daily examined * Gender Cross tabulation.

On average, patients participants examine daily		Please indicate your gender		Total
		Male	Female	
1-10	Count	17	6	23
	On average, what % patients do medical practitioners examine daily?	73.9%	26.1%	100.0%
11-20		49	19	68
		72.1%	27.9%	100.0%
21-30		47	22	69
		68.1%	31.9%	100.0%
31-40		17	21	38
		44.7%	55.3%	100.0%
40+		35	18	53
		66.0%	34.0%	100.0%
Total		165	86	251
		65.7%	34.3%	100.0%

(χ^2= 9.50, df = 4, P-value = 0.01)

Table 4.13: Average hours of weekly practice * Average number of patients daily examined Cross tabulation.

On average, how many hours per week do you work?			On average, how many patients do you examine daily?					Total
			1-10	11-20	21-30	31-40	40+	
	1-20	Count	2	7	7	0	1	17
		% of Total	.8%	2.8%	2.8%	0.0%	.4%	6.8%
	21-30	Count	1	0	3	3	3	10
		% of Total	.4%	0.0%	1.2%	1.2%	1.2%	4.0%
	31-40	Count	6	22	12	15	16	71
		% of Total	2.4%	8.8%	4.8%	6.0%	6.4%	28.3%
	41+	Count	14	39	47	20	33	153
		% of Total	5.6%	15.5%	18.7%	8.0%	13.1%	61.0%
Total		Count	23	68	69	38	53	251
		% of Total	9.2%	27.1%	27.5%	15.1%	21.1%	100.0%

(χ^2= 17.79, df = 12, P-value = 0.12 > 0.05)

As shown in Table 4.9 and 4.11, more than half, i.e., 153 (61%) medical practitioners work over 41 hours per week. The majority (69.3%) of them were male. About one quarter, i.e., 71(28.3%), work 31-40 hours. Here, also, the majority (63.4%) were male. The rest of the participants work less than 30 hours a week. Overall, the results show that the majority of medical practitioners work 31 to more than 41 hours per week and male practitioners work for more hours per week compared to females.

As shown in Table 4.10 and 4.12, just over one-fifth, i.e., 53 (21.1%), medical practitioners examine more than 40 patients per day. These results indicate the heavy workload on the medical practitioners and that some may not have time to search the latest medical literature. Sixty-nine (27.5%) participants examine 2130 patients daily, and the majority (68.1%) of the participants were male. A similar number of doctors, i.e., 68 (27.1%), see 11-20 patients daily. Here, also, male doctors were in the majority (72.1%). Thirty-eight (15.1%) examine 31-40 patients per day. Females were in the majority (55.3%) in this category. Twenty-three (9.2%) examine between one and ten patients every day, and most (73.9%) practitioners were male in

this group.

The data reflected (Table 4.13) that, of those practitioners working more than 41 hours a week, the majority examine more than 21 patients a day. This finding supports the conclusion that medical practitioners may find it difficult to find time for literature searching. These findings are similar to Mozafarpour *et al* (2011: 652) where more than half (58%) of the participants indicated working more than 30 hours a week.

4.2.2. Responses of medical practitioners toward EBMP and understanding of guidelines

The following results explore the attitudes and opinions of medical practitioners toward EBMP along with their understanding of EBMP resources and their views on their usefulness.

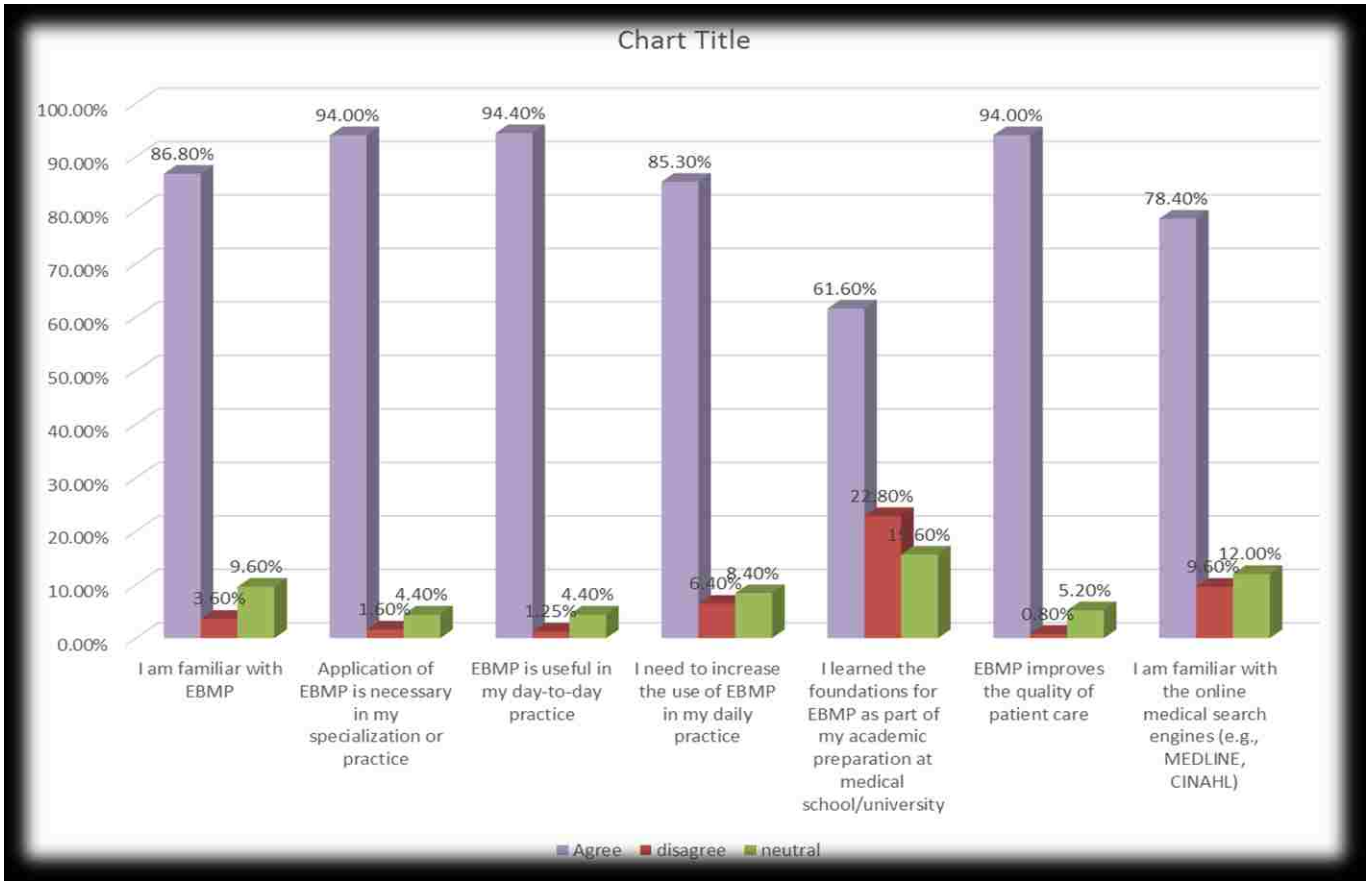
4.2.2.1. Medical practitioners' responses toward EBMP and its use, benefits, and limitations

Seven statements were formulated as being representative of a range of possible views on EBMP. Participants were asked to indicate if they agreed, disagreed or were neutral toward each of the statements. The purpose of the statements was to know about medical practitioners' personal attitudes toward EBMP, its use, perceived benefits, and limitations. The seven statements were as follows:

- I am familiar with EBMP.
- Application of EBMP is necessary for my specialisation or practice.
- EBMP is useful in my day-to-day practice.
- I need to increase the use of EBMP in my daily practice.
- I learned the foundations for EBMP as part of my academic preparation at medical school/university.
- EBMP improves the quality of patient care.
- I am familiar with the online medical search engines (e.g., MEDLINE, CINAHL)

Figure 4.1 shows medical practitioners' responses toward EBMP and its use, benefits, and limitations.

Figure 4.1: Medical practitioners' responses toward EBMP and its use, benefits, and limitations.



Eighty-six percent of medical practitioners agreed that they are familiar with EBMP. Most of the participants (94%) agreed that application of EBMP is necessary and useful in their specialisation and day-to-day practice, and they agreed that EBMP improves the quality of patient care. On the other hand, about 85.3% agreed that they need to increase the use of EBMP in their daily practice. Sixty-one percent of the participants learned the foundations for EBMP as part of their academic preparation at medical school/university and 78.4% agreed that they are familiar with the online medical search engines (e.g., MEDLINE, Cumulative Index to Nursing and Allied Health Literature, CINAHL).

Cross tabulation of data shown in Table 4.14 indicated that senior practitioners are also familiar with EBMP.

Table 4.14: Age * Familiarity with EBMP Cross tabulation.

Participant's Age group		I am familiar with EBMP			Total
		Agree	Disagree	Neutral	
20-30	Count	21	1	2	24
	% of Total	87.5%	4.2%	8.3%	100.0%
31-40		61	6	12	79
		77.2%	7.6%	15.2%	100.0%
41-50		69	2	3	74
		93.2%	2.7%	4.1%	100.0%
51-60		45	0	6	51
		88.2%	0.0%	11.8%	100.0%
61-70		11	0	1	12
		91.7%	0.0%	8.3%	100.0%
70+		11	0	0	11
		100.0%	0.0%	0.0%	100.0%
Total		218	9	24	251
		86.9%	3.6%	9.6%	100.0%

(χ^2= 14.16, df = 10, P-value = 0.16 > 0.05)

Table 4.15: Years experience in medical practice * Familiarity with EBMP Cross tabulation.

Years of experience medical practice		I am familiar with EBMP			Total
		Agree	Disagree	Neutral	
0-5 years	Count	31	2	6	39
	% of Total	79.5%	5.1%	15.4%	100.0%
6-10 years		34	6	7	47
		72.3%	12.8%	14.9%	100.0%
11-15 years		72	1	5	78
		92.3%	1.3%	6.4%	100.0%
16-20 years		36	0	1	37
		97.3%	0.0%	2.7%	100.0%
21+ years		45	0	5	50
		90.0%	0.0%	10.0%	100.0%
Total		218	9	24	251
		86.9%	3.6%	9.6%	100.0%

(χ^2= 23.17, df = 8, P-value = 0.003 < 0.05)

Table 4.15 indicates that the majority of the practitioners who are familiar with EBMP have more than 11 years of experience.

Table 4.16: Type of hospital where medical practitioners work * Familiarity with EBMP Cross tabulation.

Type of hospital where participants are currently working		I am familiar with EBMP			Total
		Agree	Disagree	Neutral	
Public	Count	112	9	18	139
	% of Total	80.6%	6.5%	12.9%	100.0%
Private		105	0	6	111
		94.6%	0.0%	5.4%	100.0%
Both		1	0	0	1
		100.0%	0.0%	0.0%	100.0%
Total		218	9	24	251
		86.9%	3.6%	9.6%	100.0%

(χ^2= 12.43, df = 4, P-value = .014 < 0.05)

According to Table 4.16, medical practitioners from the private hospitals (105, 94.6%) are more familiar with EBMP than the medical practitioners from public hospitals (112, 80.6%).

Table 4.17: Familiarity with EBMP * Familiarity with online medical search engines (e.g., MEDLINE, CINAHL) Cross tabulation.

I am familiar with EBMP		I am familiar with the online medical search engines (e.g., MEDLINE, CINAHL)			Total
		Agree	Disagree	Neutral	
Agree	Count	178	19	21	218
	% of Total	70.9%	7.6%	8.4%	86.9%
Disagree	Count	5	3	1	9
	% of Total	2.0%	1.2%	0.4%	3.6%
Neutral	Count	14	2	8	24
	% of Total	5.6%	0.8%	3.2%	9.6%
Total	Count	197	24	30	251
	% of Total	78.5%	9.6%	12.0%	100.0%

(χ^2= 17.80, df = 4, P-value = .001 < 0.05)

According to Table 4.17, most of the medical practitioners (70.9%) are familiar with both EBMP and online medical search engines whilst 7.6% are familiar with EBMP but not with online medical search engines.

Table 4.18: Familiarity with EBMP * Intention to increase EBMP in daily practice Cross tabulation.

		I need to increase the use of EBMP in my daily practice			
I am familiar with EBMP		Agree	Disagree	Neutral	Total
Agree	Count	190	15	13	218
	% of Total	75.7%	6.0%	5.2%	86.9%
Disagree	Count	6	0	3	9
	% of Total	2.4%	0.0%	1.2%	3.6%
Neutral	Count	18	1	5	24
	% of Total	7.2%	0.4%	2.0%	9.6%
Total	Count	214	16	21	251
	% of Total	85.3%	6.4%	8.4%	100.0%

(χ^2= 14.26, df = 4, P-value = .006 < 0.05)

The findings in Table 4.18, Cross tabulation of Familiarity with EBMP and Intention to increase EBMP in daily practice indicates that the medical practitioners (75.7%), who are familiar with EBMP, also agreed that they need to increase the use of EBMP in their daily practice.

Cross tabulation of Familiarity with EBMP and Recognition that EBMP is necessary for medical practitioner's specialisation or practice (Table 4.19) indicates that 84.5%, who are familiar with EBMP, also agreed that application of EBMP is necessary for their specialisation or practice.

Table 4.19: Familiarity with EBMP * Recognition that EBMP is necessary for specialisation Cross tabulation.

I am familiar with EBMP		Application of EBMP is necessary for specialisation or practice			Total
		Agree	Disagree	Neutral	
Agree	Count	212	1	5	218
	% of Total	84.5%	0.4%	2.0%	86.9%
Disagree	Count	7	0	2	9
	% of Total	2.8%	0.0%	0.8%	3.6%
Neutral	Count	17	3	4	24
	% of Total	6.8%	1.2%	1.6%	9.6%
Total	Count	236	4	11	251
	% of Total	94.0%	1.6%	4.4%	100.0%

(χ^2= 26.77, df = 2, P-value = <0.001)

Table 4.20: Familiarity with EBMP * Recognition that EBMP is useful in day-to-day practice Cross tabulation.

I am familiar with EBMP		EBMP is useful in day-to-day practice			Total
		Agree	Disagree	Neutral	
Agree	Count	216	1	1	218
	% of Total	86.1%	0.4%	0.4%	86.9%
Disagree	Count	4	1	4	9
	% of Total	1.6%	0.4%	1.6%	3.6%
Neutral	Count	17	1	6	24
	% of Total	6.8%	0.4%	2.4%	9.6%
Total	Count	237	3	11	251
	% of Total	94.4%	1.2%	4.4%	100.0%

(χ^2= 78.36, df = 4, P-value = < 0.001)

The cross tabulation of Familiarity with EBMP and Recognition that EBMP is useful in day-to-day practice (Table 4.20) indicates that 86.1%, who are familiar with EBMP, also agreed that it is useful in their day-to-day practice.

Table 4.21: Familiarity with EBMP * Learned foundations for EBMP at medical school/university Cross tabulation.

I am familiar with EBMP		Learned the foundations for EBMP as part academic preparation at medical school/university			
		Agree	Disagree	Neutral	Total
Agree	Count	143	44	31	218
	% of Total	57.0%	17.5%	12.4%	86.9%
Disagree	Count	1	3	5	9
	% of Total	0.4%	1.2%	2.0%	3.6%
Neutral	Count	11	10	3	24
	% of Total	4.4%	4.0%	1.2%	9.6%
Total	Count	155	57	39	251
	% of Total	61.8%	22.7%	15.5%	100.0%

(χ^2= 19.76, df = 4, P-value = .001 < 0.05)

Table 4.21 shows a cross tabulation of Familiarity with EBMP and Learned foundations for EBMP at medical school/university. The data indicates that only 57%, who are familiar with EBMP, learned the foundations for EBMP as part of their academic preparation at medical school/university.

Table 4.22: Familiarity with EBMP * EBMP improves quality of patient care Cross tabulation.

I am familiar with EBMP		EBMP improves the quality of patient care			
		Agree	Disagree	Neutral	Total
Agree	Count	210	2	6	218
	% of Total	83.7%	0.8%	2.4%	86.9%
Disagree	Count	6	0	3	9
	% of Total	2.4%	0.0%	1.2%	3.6%
Neutral	Count	20	0	4	24
	% of Total	8.0%	0.0%	1.6%	9.6%
Total	Count	236	2	13	251
	% of Total	94.0%	0.8%	5.2%	100.0%

(χ^2= 23.80, df = 4, P-value =<.001)

According to Table 4.22, cross tabulation of Familiarity with EBMP and EBMP can improve quality of patient care, 83.7% participants who are familiar with EBMP, also agreed that it improves the quality of patient care.

Table 4.23: Recognition that EBMP is necessary for specialisation * Recognition that EBMP is useful in day-to-day practice Cross tabulation.

Application of EBMP is necessary for specialisation or practice		EBMP is useful in my day-to-day practice			Total
		Agree	Disagree	Neutral	
Agree	Count	232	1	3	236
	% of Total	92.4%	0.4%	1.2%	94.0%
Disagree	Count	0	2	2	4
	% of Total	0.0%	0.8%	0.8%	1.6%
Neutral	Count	5	0	6	11
	% of Total	2.0%	0.0%	2.4%	4.4%
Total	Count	237	3	11	251
	% of Total	94.4%	1.2%	4.4%	100.0%

(χ^2= 175, df = 4, P-value = < .001)

Table 4.23 (Cross tabulation of Recognition that EBMP is necessary for specialisation and Recognition that EBMP is useful in day-to-day practice) indicates that 92.4% agreed that application of EBMP is useful and necessary in their specialisation and day-to-day practice.

Table 4.24: Recognition that EBMP is necessary for specialisation * Intention to increase EBMP in daily practice Cross tabulation.

Application of EBMP is necessary for my specialization or practice		I need to increase the use of EBMP in my daily practice			Total
		Agree	Disagree	Neutral	
Agree	Count	208	13	15	236
	% of Total	82.9%	5.2%	6.0%	94.0%
Disagree	Count	0	2	2	4
	% of Total	0.0%	0.8%	0.8%	1.6%
Neutral	Count	6	1	4	11
	% of Total	2.4%	0.4%	1.6%	4.4%
Total	Count	214	16	21	251
	% of Total	85.3%	6.4%	8.4%	100.0 %

(χ^2= 36.93, df = 4, P-value = < .001)

Table 4.24 (Cross tabulation of Recognition that EBMP is necessary for specialisation and Intention to increase use of EBMP in daily practice) indicates that 82.9% agreed that application of EBMP is necessary for their specialization or practice and they need to increase the use of EBMP in their daily practice.

Table 4.25: Recognition that EBMP is necessary for specialisation * EBMP improves quality of patient care Cross tabulation.

Application of EBMP is necessary for my specialisation or practice		EBMP improves the quality of patient care			
		Agree	Disagree	Neutral	Total
Agree	Count	227	2	7	236
	% of Total	90.4%	0.8%	2.8%	94.0%
Disagree	Count	1	0	3	4
	% of Total	0.4%	0.0%	1.2%	1.6%
Neutral	Count	8	0	3	11
	% of Total	3.2%	0.0%	1.2%	4.4%
Total	Count	236	2	13	251
	% of Total	94.0%	0.8%	5.2%	100.0%

(χ^2= 53.05, df = 4, P-value = < .001)

According to Table 4.25, 90.4% agreed that application of EBMP is necessary for their specialisation or practice and it improves the quality of patient care.

The following summary paragraphs show the comparison of the findings of this study with the available literature:

- This study shows that the majority of medical practitioners, i.e., 217 (86.8%), are familiar with EBMP, 3.6 % are not familiar and 9.6% are neutral. Those participants (3.6%), not familiar with EBMP, were aged between 20 and 50. These findings are similar to the study conducted in India where 79% participants were familiar with EBMP (Gavgani and Mohan 2008:3). The findings are in contrast with the study conducted in Iran (Zarea, 2006: 1) where participants were not well aware of EBMP and contrast with Mozafarpour *et al* (2011: 652) where 57% medical practitioners stated that they had never heard about EBMP. The medical practitioners in Croatia (Novak *et*

al. 2010: 157) and Bangladesh (Murelli and Arvanitis 2003: 341) were reported to have a limited knowledge and low level of awareness of EBMP.The present study has revealed that the majority of medical practitioners in the eThekwini district, South Africa, are familiar with EBMP.

- The majority of medical practitioners, i.e., 236 (94%), agreed that the application of EBMP is necessary for their specialisation or practice. The results are similar to the study conducted in The United States where the majority (90%) of physical therapists, who were members of the American Physical Therapy Association (APTA), agreed that EBP is necessary for their practice (Jette *et al*. 2003: 791).

- More than half of the participants (61.6%) agreed that they learned the foundations for EBMP as part of their academic preparation at medical school/university but 22.8% disagreed. These findings are similar to the study of Gavgani and Mohan (2008: 3) in which 21% medical practitioners were not exposed to EBMP during their education.

- The majority of participants, i.e., 236 (94%), agreed that EBMP improves the quality of patient care. The findings are similar to the studies conducted in the United Kingdom (Hagdrup et al. 1998: 282; McColl et al. 1998: 361) and Halland County of Sweden (Rabe, Holmen and Sjorgen 2007: 113) on medical practitioners. They also reported that the majority of the participants agreed that EBMP improves patient care.

- The majority of participants, i.e., 196 (78.4%), agreed that they are familiar with the online medical search engines. The findings are in contrast with Bangladesh (Murelli and Arvanitis 2003: 341); India (Gavgani and Mohan 2008: 1) and Croatia (Novak et al., 2010: 157) where medical practitioners were reported to have low levels of awareness of EBMP sources (like the Cochrane Library) and their use.

4.2.2.2. Access to databases and Internet at medical practitioners' workplace

Respondents were asked whether they can access relevant databases and the internet at their work place to support EBMP. Out of 251 participants, 238 responded to this question.

Table 4.26: Access to relevant databases and the Internet at work place.

Response	Frequency	Percent
Yes	107	42.6
No	131	52.2
Total	238	94.8
No response	13	5.2
Total sample population	251	100.0

n=238/251

Table 4.27: Hospital where participants are currently working * Access of relevant databases and the Internet at workplace Cross tabulation.

Type of hospital where participants are currently working	Access of relevant databases and the Internet at work place		Total
	Yes	No	
Public	42	87	129
	32.6%	67.4%	100.0%
Private	65	43	108
	60.2%	39.8%	100.0%
Both	0	1	1
	0.0%	100.0%	100.0%
Total	107	131	238
	45.0%	55.0%	100.0%

(χ^2= 18.95, df = 2, P-value = < .001)

Table 4.28: Familiarity with EBMP * Access to relevant databases and the Internet at work place cross tabulation.

Familiar with EBMP	Access of relevant databases and the Internet at work place		Total
	Yes	No	
Agree	95	112	207
	45.9%	54.1%	100.0%
Disagree	1	8	9
	11.1%	88.9%	100.0%
Neutral	11	11	22
	50.0%	50.0%	100.0%
Total	107	131	238
	45.0%	55.0%	100.0%

n=238/251

(χ^2= 4.46, df = 2, P-value = 0.107 >0.05)

Table 4.26, 4.27 and 4.28 shows that out of 238, only 107 (42.6 %) participants have the internet facility at their work place and can access relevant databases. Surprisingly, 131 (52.2 %) do not have the internet facility at their work place and, hence, cannot access the relevant databases. The data (Cross tabulation of hospital where participants are currently working and access of relevant databases and the Internet at workplace, Table 4.27) indicated that the private hospitals are providing better internet facilities to their practitioners than the public hospitals. About half (54.1%) of the practitioners, who were familiar with EBMP, do not have the internet facility at their work place and cannot access the relevant databases (Table 4.28). The results are similar to Mousa et al. (2009b) where more than half (53.7%) of the hospital doctors in Jordan had access to the internet at their office. Ahmad et al. (2009) found that none of the physicians had an internet connection at their work place in Kuwait. The results of this study show that the South African work environment in hospitals is not sufficiently facilitated with the internet, as compared to other countries like Jordan, but is better than Kuwait.

As indicated above, more than half of the medical practitioners do not have access to the relevant databases for EBMP However, as mentioned in 4.2.2.1, they agreed that EBMP is necessary for their specialization to improve the quality of patient care and they want to increase the use of EBMP in their daily practice. Therefore, the librarian must be ready with

these relevant databases to help medical practitioners so that medical practitioners can continue with the EBMP.

4.2.2.3. Medical practitioners' opinion on the necessity of evidence-based practice (EBP) in medicine

The participants were asked for their opinion on the necessity of EBP in medicine and they were asked to explain their answers. Almost all the participants, i.e., 248 (99.6%), think that evidence-based practice is necessary for medicine. They explained that evidence-based practice is necessary to achieve good-quality outcomes. It is a foundation of good medical practice and important to maintain current best practice and the standard of patient care. EBMP allows up-to-date management of the medical conditions of the patient. Medical practitioners can treat patients in accordance with recent accepted guidelines and protocols because they are based on evidence. The participants agreed that EBMP is necessary to keep up-to-date with current research, new developments, new approaches to treatment processes, and other latest medical achievements because medical practice develops and changes rapidly. EBP helps doctors to manage patients better according to the most recent guidelines. In the absence of EBP, practice will rely on text books and other sources which may be outdated, with information which is no longer valid or complete. The majority of the participants (99.6%) expressed opinions similar to those reported by Jette et al. (2003) where physical therapist members of the American Physical Therapy Association (APTA) agreed that the use of evidence in practice is necessary.

4.2.2.4. Sources used by medical practitioners to practice EBM

Medical practitioners were asked to identify the sources used to practice EBM. There were 249 participants out of 251 who responded to the question. The results are shown in Table 4.29.

Table 4.29: Sources used by medical practitioners to practice EBM.

Sources		Frequency	Percent
	Print source	16	6.4
	Online and electronic sources	33	13.1
	Both	196	78.1
	Other	4	1.6
	Total	249	99.2
	No response	2	0.8
Total		251	100.0

As shown in Table 4.29, most of the participants, 196 (78.1%) indicated that they use both print and electronic sources. Thirty-three (13.1 %) use only online and electronic sources while 16 (6.4%) use only print sources.

Table 4.30: Type of hospital where medical practitioners work * Sources used by medical practitioners to practice EBM. Cross tabulation.

Type of hospital where participants are currently working		What sources do you use to practice EBM?				
		Print source	Online and electronic sources	Both	Other	Total
	Public	12	17	107	2	138
		8.7%	12.3%	77.5%	1.4%	100.0%
	Private	3	16	89	2	110
		2.7%	14.5%	80.9%	1.8%	100.0%
	Both	1	0	0	0	1
		100.0%	0.0%	0.0%	0.0%	100.0%
Total		16	33	196	4	249
		6.4%	13.3%	78.7%	1.6%	100.0%

(χ^2= 18.38, df = 6, P-value = 0.005 < 0.05)

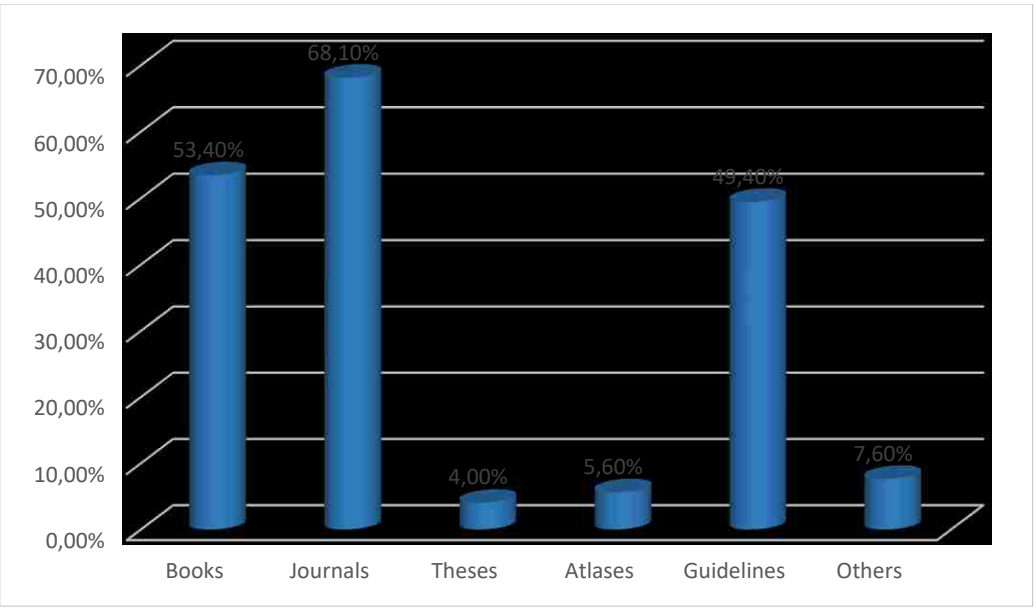
As shown in Table 4.30 (Cross tabulation of Type of hospital where medical practitioners work and Sources used by medical practitioners to practice EBM), those using only print sources were more likely to be working in a public hospital than a private hospital. These findings are similar to those of Gavgani and Mohan (2008) where medical practitioners indicated a high

usage rate of print and electronic sources. South African medical authorities should provide sufficient funds for this purpose.

4.2.2.5. Types of print source used by medical practitioners

Participants were asked to indicate if they use print sources to practice EBM and, if so, what types of print source they use. Participants could choose more than one answer.

Figure 4.2: Types of print source used by medical practitioners.



As shown in Figure 4.2, 171 (68%) participants use journal readings as a sub-source. About half of the participants, i.e., 134 (53.4%), rely on books. A comparable number of participants, i.e., 124 (49.4%), use guidelines as a sub-source to practice EBM. A very small number of participants use theses, i.e., 10 (4%), and atlases, i.e., 14 (5.6%). Some of the participants, i.e., 19 (7.6%), also use other sources like Wikipedia, meetings, and discussions with colleagues.

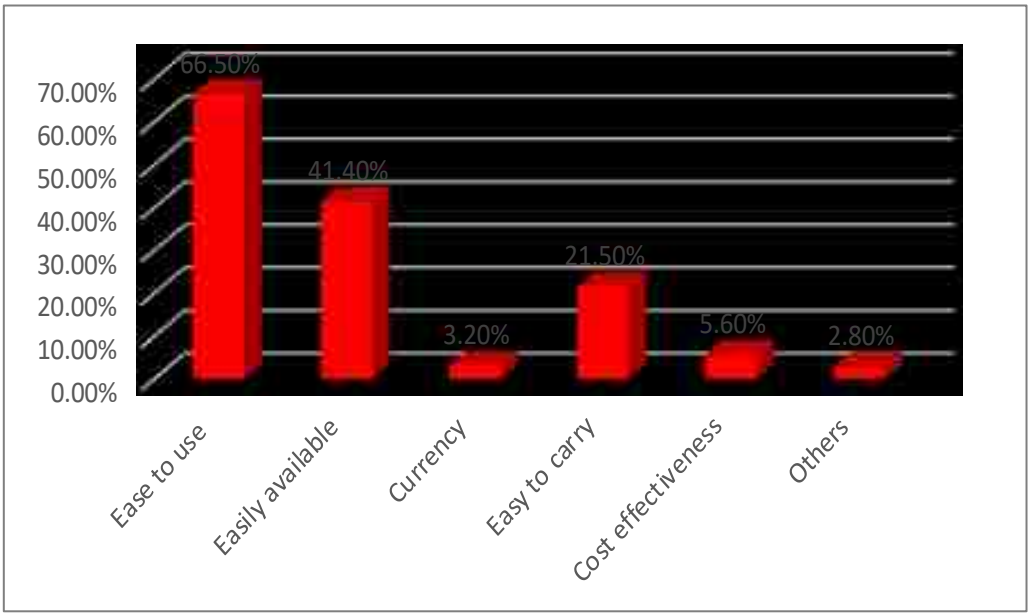
The study conducted in India (Gavgani and Mohan 2008: 5) showed that books were the most commonly used source (100%) as compared to 53.4% in this study. Journals are used less by South African doctors (68%) as compared to Indian doctors (86%). Gavgani and Mohan (2008: 5) reported that guidelines were used quite heavily, and the same is reflected in the present

research. A difference is the extent to which Indian doctors used atlases (25%); they were also heavy users of reports (47%), but this category was not included in the present research.

4.2.2.6. Reasons for print source preferences of medical practitioners

Participants were asked to indicate reasons for their preferences for consulting print sources. Participants were allowed to choose more than one answer.

Figure 4.3: Reasons for print source preferences.



In response to the question of why they prefer to consult print sources, 167 (66.5%) participants use print sources because they find these sources are easy to use, 104 (41.4%) consider them to be easily available and 54 (21.5%) easy to carry. Some of the participants, i.e., 14 (5.6%), indicated that these are cost-effective. A small number, i.e., 7 (2.8%), use print sources but did not mention the reasons for this choice (Figure 4.3).

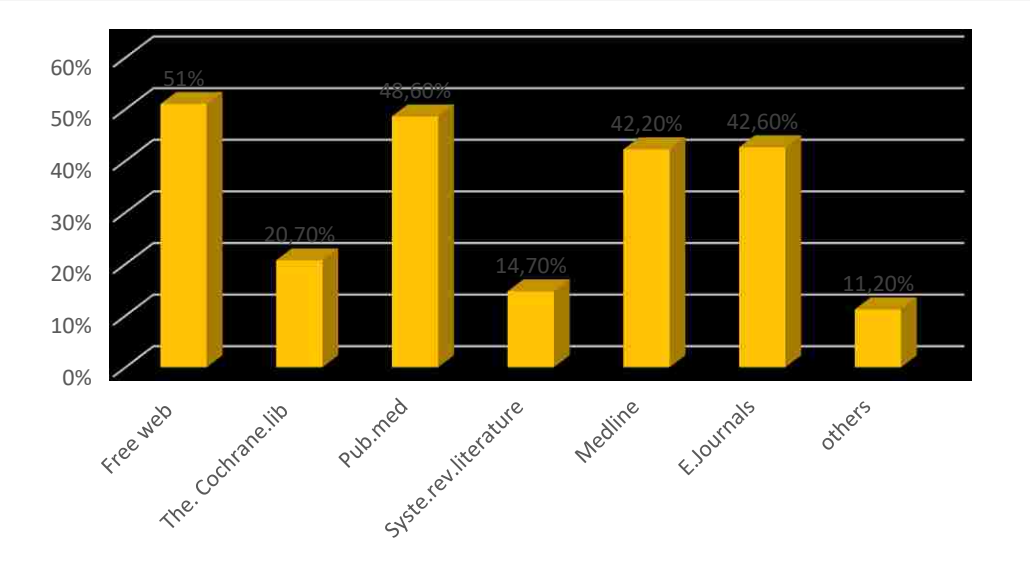
It seems that, in South Africa, print sources are popular because of ease of use. Indian doctors also indicated that they prefer print sources because they are easy to use, and they can be easily

carried and read (Gavgani and Mohan 2008: 5).

4.2.2.7. Online and electronic sub sources used by medical practitioners

Participants were asked to indicate what types of online and electronic sub sources they used. It was a multiple-choice question. As Table 4.30 indicates, most of the participants use both print and electronic sources, and some use only online and electronic sources.

Figure 4.4: Online and electronic sub sources used by medical practitioners.



In relation to electronic and web-based sources of information, results show that more than half of the participants, i.e., 124 (51%), prefer to use the free web. About the same number of participants, i.e., 122 (48.6%), use PubMed. One hundred and six participants (42.2%) use MEDLINE and about the same number of participants, i.e., 107 (42.6%), use e-journals. Fifty-two (20.7%) participants use the Cochrane Library; 37 (14.7%) use systematically reviewed literature; 28 (11.2%) use other sources like the South African medical journal (SAMJ), Google, Google Scholar, Medical Clinics of North America, the American Congress of Obstetricians and Gynaecologists (ACOG), and VuMedi (VuMedi is a website where surgeons can share, view, upload, and discuss surgical videos) (Figure 4.4).

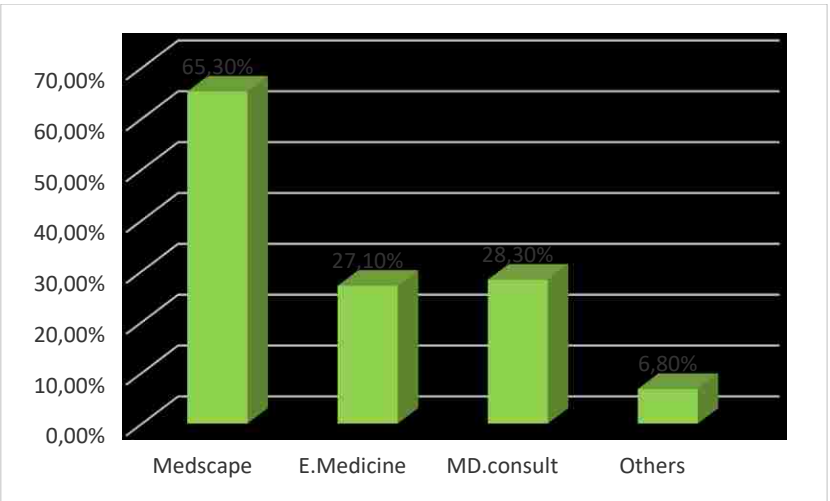
In this study, of those medical practitioners who reported that they prefer online and electronic sources, the major part of the sample population (51%) identified the free web as a source of evidence. "The free Web is not a suitable source of evidence unless one consults specific databases or websites of systematically reviewed articles in general medicine and in specific fields" (Gavgani and Mohan 2008: 8). The above statement may be true as all the information at free web is not correct if not supported by a published research data. The Cochrane Library took the last place after specific websites as a source of evidence. Though the Cochrane Library is an international collaborative involved in the systematic reviewing, appraising, and disseminating of accurate and reliable evidence in all branches of medical science, it is indicated as the least preferred electronic/web -based resource. Only a small portion of participants (20.7%) refer to the Cochrane Library.

The findings are similar to Gavgani and Mohan (2008: 4) who found that 84% Indian medical practitioners preferred to consult the free web, 74.2% PubMed, 64.5% MEDLINE and other relevant databases, 32% e-journals, 29% the Cochrane Library, and 22.5% specific websites, including Medscape, MD Consult, and American Heart Association (AHA).

4.2.2.8. Websites used to practice EBM by medical practitioners

Participants were asked to indicate which website they use to practice EBM. It was a multiple-choice question. The results are shown in Figure 4.5.

Figure 4.5: Websites used to practice EBM by medical practitioners.

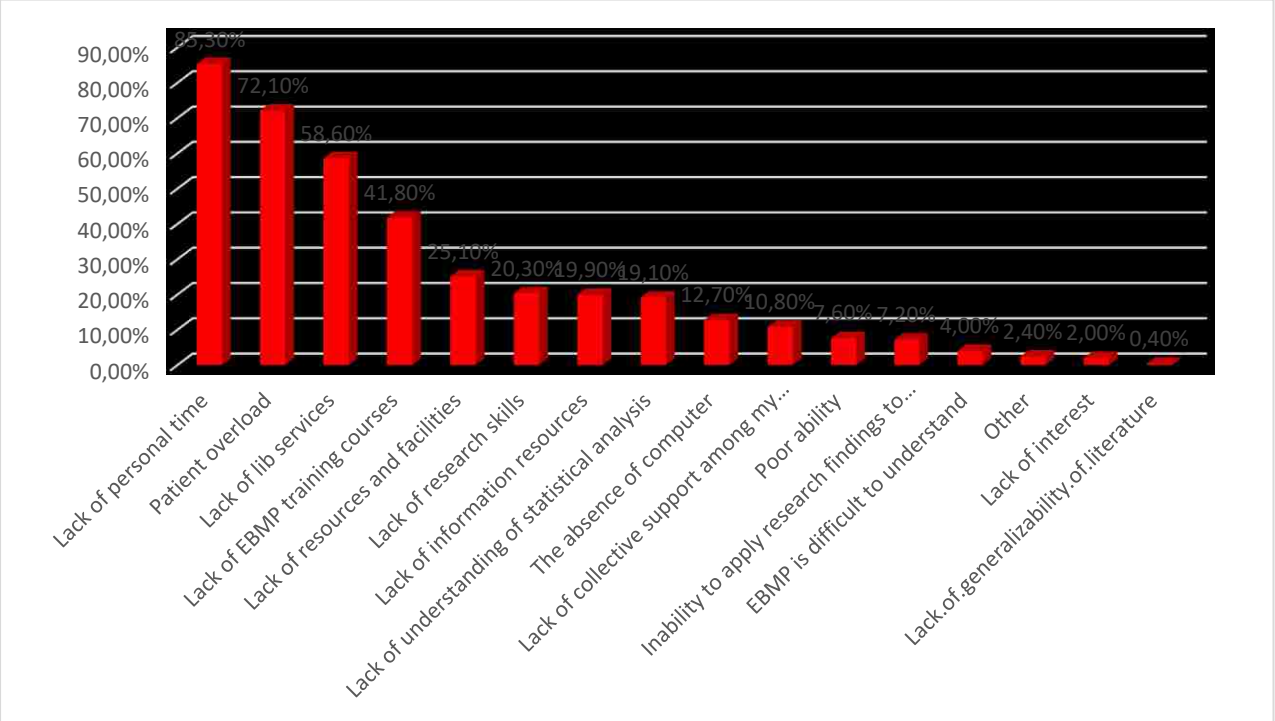


The majority of participants, i.e., 164 (65.3%), indicated the use of the Medscape website. The reason may be that they found it more useful for their practice. Sixty-eight (27.1%) participants use eMedicine and 71 (28.3%) like MD consult. Participants were asked if they use any other websites which were not mentioned in the questionnaire. Seventeen (6.8%) participants indicated the use of specific websites including the *South African Medical Journal* (SAMJ), Google Scholar, Clinic of North America, American Congress of Obstetricians and Gynaecologists (ACOG), URO Today, and VuMedi (Figure 4.5).

4.2.2.9. Barriers faced by medical practitioners in EBMP

Participants were asked to indicate the barriers they have faced in EBMP. They were welcome to choose more than one answer. The intention behind the question was to find solutions to the specific barriers faced by medical practitioners in practicing EBM. Results are shown in Figure 4.6.

Figure 4.6: Barriers faced by medical practitioners in EBMP.



The following factors are the major barriers to EBMP among South African medical practitioners.

a) Lack of personal time (214/251) (85.3%);
b) Patient overload (181/251) (72.1%);
c) Lack of library services (147/251) (58.6%);
d) Lack of EBM training and courses (105/251) (41.8%);
e) Lack of resources and facilities (63/251) (25.1%);
f) Lack of research skills (51/251) (20.3%);
g) Lack of information resources (50/251) (19.9%);
h) Lack of understanding of statistical analysis (48/251) (19.1%);
i) The absence of an effective computer system (32/251) (12.7%);
j) Lack of collective support among participants' colleagues in their facility (27/251) (10.8%);
k) Poor ability to critically appraise the literature (19/251) (7.6%);
l) Inability to apply research findings to individual patients with unique characteristics (18/251) (7.2%);
m) EBM is difficult to understand (10/251) (4%);
n) Other problems in EBMP which are not mentioned here (6/251) (2.4%);
o) Lack of interest (5/251) (2%); and
p) Lack of generalizability of the literature findings to the patient population (1/251) (0.4%).

The findings highlight that lack of personal time and patient overload are the leading barriers to EBMP faced by medical practitioners. The findings are similar to those reported by Al-Ansary and Khoja (2002: 537) in the Riyadh Region, Kingdom of Saudi Arabia (KSA). They reported that the major perceived barriers to EBMP were patient overload and lack of personal time. In Saudi Arabia, the major barriers to the practice of EBMP were "lack of facilities" and "lack of time", while the barrier least mentioned was the "lack of interest" (Al-Gelban *et al.* 2009: 1). The studies in the United States (Jette *et al.* 2003: 786) and in Iran (Mozafarpour *et al.* 2011: 651) also reported lack of time as a major barrier to EBMP. Apart from the above studies, other researchers from the Netherlands and Ireland also reported the lack of time as a major barrier and poor availability of evidence as a secondary barrier to EBMP (Rabe, Holmen and Sjorgen 2007: 113; Flynn and McGuinness 2011: 23).

The medical practitioners in the Philippines (Dans and Dans 2000: 11) were reported to have a lack of time to attend workshops and a lack of role models for EBMP: these were the major

barriers. Indian participants showed a lack of time to search, appraise, and apply EBM in their daily practice (Gavgani and Mohan 2008: 1). The most important barriers to EBM in Canada were lack of knowledge and lack of familiarity with the basic skills (McAlister *et al.* 1999: 236) while other practitioners (Bhandari *et al.* 2003: 1183) cited lack of education, time constraints, lack of priority, fear of staff disapproval, and lack of ready access to EBMP resources. The medical practitioners in Bahrain (Amin, Fedorowicz and Montgomery 2006: 1394) and in the Gulf region, among Saudi dentists (Fedorowicz, Almas and Keenan 2004: 470), indicated that "no time" and "no ready access to resources or lack of resources" were the most common barriers to EBMP, like the Canadian participants. Only Iranian practitioners reported a lack of EBM training courses in their academic curriculum as a major barrier. Risahmawati *et al.* (2011: 16, 2012: 374) reported that the barriers to implementing EBMP in Japan and Indonesia were lack of time, and lack of resources in the native language.

4.2.3. Responses of medical practitioners toward health science library services

Questions were asked of participants to ascertain their views and responses toward health science library services.

4.2.3.1. Library availability in medical practitioners' hospitals

Participants were asked if there is a library in the hospital in which they are practicing. As noted in Chapter 3 (research methodology), within the eThekwini District, only government hospitals have libraries. The majority of the participants, i.e., 154 (61.6%), do not have a library in their hospital. Only 93 (37.2%) have a library in the hospital where they are practicing and four (1.2%) did not know whether the hospital has a library or not. In the United States, the majority of the medical practitioners who participated in the study were aware of the availability of library services at their workplace (O'Dell and Preston 2013: 118). Gavgani and Mohan (2008: 8) mentioned that there are no library and information support services in many hospitals in India.

4.2.3.2. Medical practitioners' satisfaction with the library services at their hospital

Those participants that indicated that they did have access to a library at the hospital in which they practiced were then asked whether they are satisfied with library services at their hospital. Out of 93, only 10 (10.8%) are satisfied with library services provided by their hospital and a majority 83 (89.2%) are not satisfied with library services. These findings are in contrast to O'Dell and Preston (2013: 122) in The United States where 41% of the participants indicated that they were satisfied with their library services.

4.2.3.3. Medical practitioners' suggested improvements to library services

The participants who were not satisfied with the library services in their hospital (83) were asked what actions they would like to see to improve the library services in the hospital. Only 79 participants out of 83 replied for this question. Results are shown in Table 4.31.

Table 4.31: Medical practitioners' suggested improvements to library services

		Frequency	Percent
Valid	Electronic resources, up-to-date journals and books, access to the useful database.	31	37.3
	More computers and books and expert librarians.	38	45.7
	Internet	6	7.2
	Extended hours of library especially after hours.	4	4.8
	No response	4	4.8
Total		83	100.0

n=79/83

As shown in Table 4.31, out of 83, about half of the participants, i.e., 38 (45.7 %), would like additions to the book collection, for effective computers to be installed to facilitate online searching for information, and for the hire of expert librarians to help them in EBMP. Thirty-one (37.3 %) want electronic resources; up-to-date journals and books; a useful database to access medical information; and a subscription to electronic journals. Six (7.2 %) want Internet access and 4 (4.8 %) want to extend library hours after their working hours (Table 4.31). In

Iran, medical practitioners indicated that limited library work hours, old information and reading materials, lack of sources, and lack of connection with other libraries were some of the main reasons for the limited use of library services. It's better to up-to-date the sources, libraries services will be more effective if libraries facilities and sources become rich Masuomi and Khoshemehr (2015: 44).

Table 4.32: Age group * Medical practitioners' suggested improvements to library services Cross tabulation (count % within age group).

Age group		If you are not satisfied with the library services in your hospital, what improvements would you like to see implemented?				Total
		Electronic resources, up-to-date journals and books, access to useful database	More computers, books and expert librarians	Internet	Extended hours of library especially after hours	
20-30	Count	7	1	0	0	8
	% within age group	87.5%	12.5%	0.0%	0.0%	100.0%
31-40		20	15	1	1	37
		54.1%	40.5%	2.7%	2.7%	100.0%
41-50		4	9	0	2	15
		26.7%	60.0%	0.0%	13.3%	100.0%
51-60		0	10	3	1	14
		0.0%	71.4%	21.4%	7.1%	100.0%
61-70		0	1	0	0	1
		0.0%	100.0%	0.0%	0.0%	100.0%
70+		0	2	2	0	4
		0.0%	50.0%	50.0%	0.0%	100.0%
Total		31	38	6	4	79
		39.2%	48.1%	7.6%	5.1%	100.0%

Table 4.33: Age group * Medical practitioners' suggested improvements to library services Cross tabulation (count % of total).

Age group		If you are not satisfied with the library services in your hospital, what improvements would you like to see implemented?				Total
		Electronic resources, up-to-date journals and books, access to the useful database	More computers and books and expert librarians	Internet	Extended hours of library especially after hours	
20-30	Count	7	1	0	0	8
	% of Total	8.9%	1.3%	0.0%	0.0%	10.1%
31-40		20	15	1	1	37
		25.3%	19.0%	1.3%	1.3%	46.8%
41-50		4	9	0	2	15
		5.1%	11.4%	0.0%	2.5%	19.0%
51-60		0	10	3	1	14
		0.0%	12.7%	3.8%	1.3%	17.7%
61-70		0	1	0	0	1
		0.0%	1.3%	0.0%	0.0%	1.3%
70+		0	2	2	0	4
		0.0%	2.5%	2.5%	0.0%	5.1%
Total		31	38	6	4	79
		39.2%	48.1%	7.6%	5.1%	100.0%

As shown in Tables 4.32 and 4.33, in the age group 20-40, most medical practitioners want electronic resources; up-to-date journals and books; a useful database to access medical information; and subscription to electronic journals. Medical practitioners in the age group of an age above 41 want additions to the book collection; effective computers installed to facilitate online searching for information; and the hire of expert librarians to help them in EBMP; whilst 25.3% of the 79 participants who are in the age group 31-40 want expert librarians to help them in EBMP.

4.2.3.4. Medical practitioners assisted by librarians in their practice

Practitioners were asked whether librarians are assisting them in searches for EBMP. Most of

the participants, i.e., 77(82.8 %) out of 93, indicated that they are not assisted by librarians in their practice. Only 16 (17.2%) are assisted by librarians.

4.2.3.5. Dedication of librarians to field of medicine/specialisation of medical practitioners

Participants were asked if their hospital library staff included librarians dedicated to their field of medicine/specialisation. The majority of participants 82 (88.2%) do not have access to a librarian dedicated to their field or do not think that librarians are dedicated to their field. Only 11 (11.8%) indicated that they do have access to such a librarian. In Iran, medical practitioners indicated that having librarians and their assistance at hospital libraries is useful for medical information (Masuomi and Khoshemehr 2015: 45). The medical practitioners in Birmingham, UK, had limited awareness of the potential benefits of a health science librarian's support and they were unsure about a librarian's skills in EBMP (Deshpande *et al*. 2003: 86).

4.2.3.6. Support or services provided by librarians to medical practitioners

Participants were asked to indicate what type of support or services the librarians provide to them. Out of 93 participants, 67 replied to this question (Table 4.34).

Table 4.34: Support or services provided by librarians.

		Frequency	Percent
Valid	Nil, not helpful	44	47.3
	Do not know	1	1.1
	Basic	5	5.4
	Book search	14	15
	Data access	3	3.2
	Total	67	72
	No response	26	28
Total sample population		93	100.0

n=67/93

Table 4.35: Age group * Support or services provided by librarians Cross tabulation.

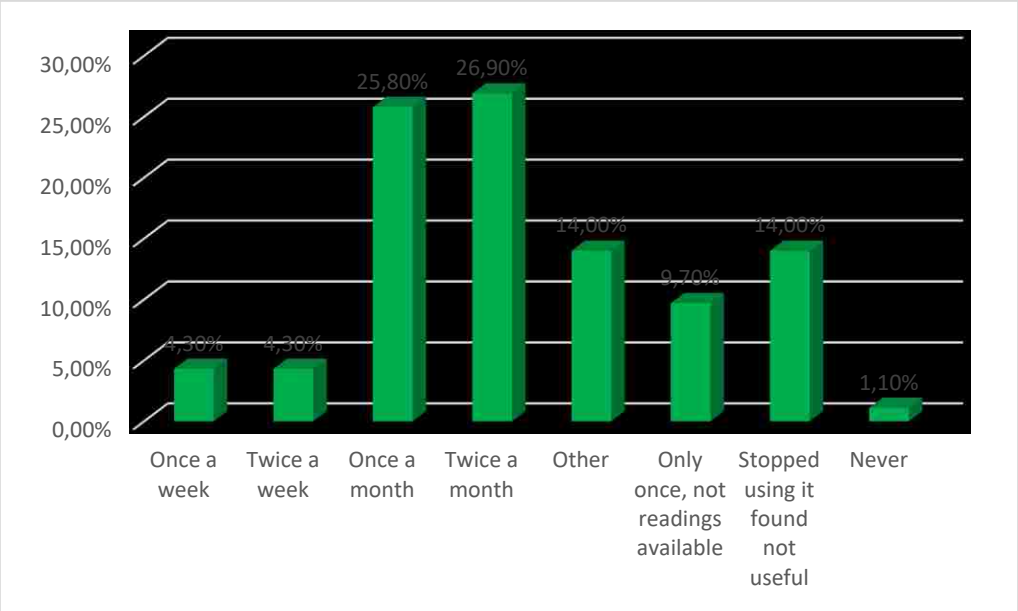
Please indicate your age group		What type of support or services do the librarians provide?					
		nil, not helpful	do not know	basic	book search	data access	Total
20-30	Count	6	0	0	0	0	6
	% of Total	9.0%	0.0%	0.0%	0.0%	0.0%	9.0%
31-40	Count	22	1	1	3	3	30
	% of Total	32.8%	1.5%	1.5%	4.5%	4.5%	44.8%
41-50	Count	10	0	1	4	0	15
	% of Total	14.9%	0.0%	1.5%	6.0%	0.0%	22.4%
51-60	Count	5	0	1	3	0	9
	% of Total	7.5%	0.0%	1.5%	4.5%	0.0%	13.4%
61-70	Count	0	0	1	4	0	5
	% of Total	0.0%	0.0%	1.5%	6.0%	0.0%	7.5%
70+	Count	1	0	1	0	0	2
	% of Total	1.5%	0.0%	1.5%	0.0%	0.0%	3.0%
Total	Count	44	1	5	14	3	67
	% of Total	65.7%	1.5%	7.5%	20.9%	4.5%	100.0%

Tables 4.34 and 4.35 indicate that about half of the participants, i.e., 44 (47.3%), do not find the services provided by the librarians useful. Some of the participants, i.e., 14 (15 %), receive support through book searches, whilst three (3.2 %) receive assistance with access to data. One participant (1.1 %) was unable to specify the support and services that the librarian provides. Twenty-six (28%) did not respond to the question. As shown in Table 4.35, (the data cross tabulation) 32.8% of 67 participants, in the age group 31-40, indicated that librarians are not providing useful services. These findings suggest that the services provided by librarians are not perceived as being useful. These findings contrast with Masuomi and Khoshemehr (2015: 45) in Hamedan (Iran) where most of the participants (general practitioners, specialists and medical assistants) indicated that hospital librarians and library services were very helpful for them. In the United States, medical practitioners indicated the use of computers, books, biomedical electronic databases, and an inter-library loans service (13.7%), journals collections (18%); and 9% participants requested a literature search (O'Dell and Preston 2013: 119-120).

4.2.3.7. Frequency of use of librarian services by medical practitioners

Participants were asked how often they made use of the services provided by librarians.

Figure 4.7: Frequency of use of librarian services.



n=93

As shown in Figure 4.7, twenty-five (26.9 %) participants use the services of librarians twice a month, 24 (25.8%) once a month, 13 (14%) have stopped using it because they found that the services of librarians are not useful for their field, 13 (14%) chose the response of "other" but did not mention what this is. Very few participants, i.e., 4 (4.3%), use the services of librarians once a week, 4 (4.3%) use the services twice a week, and 1 (1.1%) never visits the library. The findings are in contrast with Masuomi and Khoshemehr (2015: 45) in Hamedan (Iran) where most of the participants (general practitioners, specialists, and medical assistants) use library services at least once a week.

Table 4.36: Support or services provided by librarians * Frequency of use of librarian services Cross tabulation.

Type of support or services does the librarians provide		How often do you use the services of librarians?							Total
		Twice a week	Once a month	Twice a month	Other	only once not readings available	stopped using it found not useful	never	
Nil, not helpful	Count	1	6	8	10	8	11	0	44
	% of Total	1.5%	9.0%	11.9%	14.9%	11.9%	16.4%	0.0%	65.7%
Do not know	Count	0	0	0	0	0	0	1	1
	% of Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.5%	1.5%
Basic	Count	0	1	3	1	0	0	0	5
	% of Total	0.0%	1.5%	4.5%	1.5%	0.0%	0.0%	0.0%	7.5%
Book search	Count	3	7	4	0	0	0	0	14
	% of Total	4.5%	10.4%	6.0%	0.0%	0.0%	0.0%	0.0%	20.9%
Data access	Count	0	0	2	1	0	0	0	3
	% of Total	0.0%	0.0%	3.0%	1.5%	0.0%	0.0%	0.0%	4.5%
Total	Count	4	14	17	12	8	11	1	67
	% of Total	6.0%	20.9%	25.4%	17.9%	11.9%	16.4%	1.5%	100.0%

As shown in Table 4.36, 16.4% of 67 participants have stopped using the library and do not find it useful because librarians have not provided them with any services, or services are considered unhelpful.

The results highlight the fact that medical practitioners do not use library services much. This could be due to the perception that librarians are not dedicated to their particular field of medicine/specialisation (4.2.3.5, 4.2.3.6 and 4.2.3.7), or that library services or librarians do not provide any services useful to medical practitioners (Table 4.34 and 4.35). These findings contrast with Masuomi and Khoshemehr (2015: 45) in Hamedan (Iran) where most of the participants indicated that hospital librarians and library services were very helpful for them,

but some of them could not use library services on a regular basis because of being busy in their practice (Masuomi and Khoshemehr 2015: 46). These findings are broadly similar to those of O'Dell and Preston (2013) where 77% participants indicated that they had used library services in the previous 12 months. However, the other 23% said they did not use library services at all. O'Dell and Preston (2013: 123) stated that the "staff who think they have no need of library services should receive promotional material designed to make them realise that the library can assist in career and personal development".

4.2.3.8. Medical practitioners' perception of training of librarians to assist with EBMP

Participants were asked if they thought that the librarians are adequately trained to assist them in their practice.

Table 4.37: Age * Medical practitioners' perception of training of librarians to assist with EBMP Cross tabulation.

Please indicate your age group		Do you think that the librarians are adequately trained to assist you in your practice		Total
		Yes	No	
20-30	Count	1	8	9
	% of Total	1.1%	8.6%	9.7%
31-40	Count	7	32	39
	% of Total	7.5%	34.4%	41.9%
41-50	Count	8	12	20
	% of Total	8.6%	12.9%	21.5%
51-60	Count	5	11	16
	% of Total	5.4%	11.8%	17.2%
61-70	Count	4	1	5
	% of Total	4.3%	1.1%	5.4%
70+	Count	2	2	4
	% of Total	2.2%	2.2%	4.3%
Total	Count	27	66	93
	% of Total	29.0%	71.0%	100.0%

As shown in Table 4.37, the majority of participants, i.e., 66 (71%), think that librarians at their hospital are not adequately trained to assist them in their practice. The results are similar to Zarghani et al (2016) where researchers indicated a lack of qualified medical librarians in Tehran hospitals. Librarians working in the hospitals were not able to do their duties professionally.

The cross tabulation (Table 4.37) of age group of participants and perception that the librarians are adequately trained to assist in practice highlighted that 32 (34.4%) out of 66 participants are in the age group of 31-40. This result may be due to the fact that fewer services are provided by librarians to medical practitioners, as shown in Table 32, so participants had less opportunity to experience such services. Gavgani and Mohan (2008: 8) recommended that medical practitioners need accurate information resources to practice EBMP, so suitable library and information support services should be there for medical practitioners and "libraries must equip themselves with the necessary skills and information resources to meet the EBMP needs of physicians".

4.2.3.9. Medical practitioners' opinions on training of librarians to assist with EBMP

An open-ended question was used to investigate the opinion of medical practitioners on the appropriate training of librarians to assist them with EBMP so that librarians can be trained in EBMP according to the expectations or suggestions of medical practitioners. Results are shown in Table 4.38.

Table 4.38: Medical practitioner' opinions on training of librarians to assist with EBMP.

	Frequency	Percent
They need to be trained to assist in EndNote and electronic journal access.	4	4.3
They need to be made familiar with EBMP, critical appraisal literature reviews, and various services of information	22	23.7
They need to attend courses, workshops and acquire necessary qualifications for EBMP	37	39.8
They need to be trained in Database search	4	4.3
Do not know	2	2.1
Total	69	74.2
No response	24	25.8
Total population who have a library in their hospital	93	100

n=69/93

The data in Table 4.38 shows that, out of 93 (who have a library in their hospital), 69 participants replied to this question. Thirty-seven (39.8%), think that librarians should attend courses and workshops and acquire necessary qualifications for EBMP; 22 (23.7%) think that librarians should become familiar with EBMP and critical appraisal literature reviews and various services of information; 4 (4.3%) think librarians should be trained to assist in EndNote and electronic journal access; whilst 4 (4.3%) suggest that they should be trained in database search and 2 (2.1%) indicated that they do not know how librarians should be trained to help them in EBMP. Kasalu and Ojiambo (2015: 9) concluded that health science librarians and other information specialists have a direct impact on health outcomes, patient care, and clinical decision making. Professional skills are very important for health science librarians, in order for them to make an effective contribution to EBMP. Health science librarians' training should be specific in order for them to fulfil their duties effectively.

4.2.3.10. Medical practitioners' opinions on librarians' qualifications to assist with EBMP

Medical practitioners were asked whether they think that librarians are adequately qualified to assist with EBMP.

Table 4.39: Familiarity with EBMP * Medical practitioners' perception of training of librarians to assist with EBMP Cross tabulation.

I am familiar with EBMP		Do you think that the librarians are suitably qualified to assist with EBMP?			
		Yes	No	do not know	Total
Agree	Count	45	36	3	84
	% of Total	48.4%	38.7%	3.2%	90.3%
Disagree	Count	0	2	0	2
	% of Total	0.0%	2.2%	0.0%	2.2%
Neutral	Count	3	4	0	7
	% of Total	3.2%	4.3%	0.0%	7.5%
Total	Count	48	42	3	93
	% of Total	51.6%	45.2%	3.2%	100.0%

n=93

Table 4.39 shows that half of the medical practitioners, i.e., 48 (51.6%), think that librarians are suitably qualified to assist them with EBMP, and 45 (48.4%) of those are familiar with EBMP.

4.2.3.11. Medical practitioners' requirement of a librarian with expertise in EBMP

Medical practitioners were asked if they required the services of a librarian with expertise in EBMP. They were asked to explain their answers.

Table 4.40: Familiarity with EBMP * Medical practitioners' requirement of a librarian with expertise in EBMP Cross tabulation.

I am familiar with EBMP		Do you require the services of a librarian with expertise in EBMP?		
		Yes	No	Total
Agree	Count	77	5	82
	% of Total	82.8%	5.4%	88.2%
Disagree	Count	2	1	3
	% of Total	2.2%	1.1%	3.2%
Neutral	Count	7	1	8
	% of Total	7.5%	1.1%	8.6%
Total	Count	86	7	93
	% of Total	92.5%	7.5%	100.0%

n=93

(χ^2= 5.94, df = 2, P-value = 0.05 = 0.05)

Table 4.40 shows that the majority of medical practitioners 86 (92.5%) require a librarian expert in EBMP in their hospital library, and 77 (82.8%), who are familiar with EBMP and have a library in their hospital, require expert librarians. They explained that expert librarians will be able to assist them in searching different specialised databases. They confirmed that expert librarians will save their time and can help them in searching specific websites. Such assistance has the potential to facilitate their work. An expert librarian can assist in the latest research and literature searches. Only 7 practitioners (7.5%) indicated that they do not want an expert librarian, and they did not explain their answer. Zarghani et al (2016) concluded that the Tehran hospital libraries lacked expert librarians. Health science librarians were unable to perform their duties professionally. They were unable to prepare information and help the medical practitioners' in hospitals, so hospital managers must hire expert health science librarians to overcome employment barriers. In Tanzania, all participants strongly agreed on the establishment of expert health science librarians because these experts can assist them to get up-to-date information at the right time and "cope with rapid changes in the health field" (Haruna *et al* 2016: 920).

4.2.3.12. Medical practitioners' opinions on establishment of library services in their hospital

Medical practitioners (158, who do not have a library in their hospital) were asked whether library services should be established in their hospitals. They were asked to explain their answer. The majority of participants, i.e., 131 (82.9%), mentioned that library services should be established in their hospitals. According to these participants, it is a good idea as a library in a hospital is a positive asset. They explained that a library is one common place to house resources, to study, to update their knowledge, and to refresh their ideas. They added that library services should be established at each hospital to help medical practitioners to update their current medical knowledge and improve the body of knowledge available. They mentioned that, if there were a library in their hospitals, access to key journals should be made available, including access to free online journals. In the United States 89% librarians indicated that they provide EBM research to medical practitioners (Li and Wu 2009: 4). As mentioned in chapters one and three, there are no libraries in private hospitals within the eThekwini district. The participants agreed that they needed a fully functional medical library with computer specialists in their private hospitals as well. Some participants from private hospitals mentioned that, being in a private hospital, it would be important to keep practitioners up-to-date with knowledge and standard of care. A hospital library would provide textbooks, abstracts, and the best medical information to them, as well as access to key journals, literature for references and protocols. The participants also conveyed the need for the assistance of a librarian in their research, which will improve patient care. They mentioned that a central area to access research would make obtaining information easier. They also mentioned that it will be a good idea for the library to subscribe to electronic journals so that all doctors could use them. All of them mentioned that librarians will be helpful in saving their time to search medical related literature. Perry and Kronenfeld (2005: 1) stated that libraries and librarians can support and enhance EBMP by providing evidence-based information, knowledge of health information resources, and information search and retrieval expertise to medical and other health practitioners.

Twenty-three participants (14.6%) think that there is no need to establish a library in their

hospitals because there is a computer at every work station. Moreover, they think that there is no need to visit the library as they do not have time for it. They can search medical information on Google by using free online journals. Some were not sure that library provision would be sustainable for a private hospital. They think that too many devices will be needed to equip a hospital library and are unsure who would pay for it in a private hospital. Only 4 (2.5%) had no opinion as to whether a library should or should not be in a hospital.

4.2.3.13. Medical practitioners' other information sources for enhance patient care without the use of services of a librarian

Through an open-ended question, participants were asked by what means they gain access to information for enhanced patient care if they do not use the services of a librarian. One hundred and twenty-nine out of 158 participants (who do not have a library in their hospital) replied to this question.

Table 4.41: Medical practitioners' other information sources for patient care

Participant's statement		Frequency	Percent
Valid	"By myself on my computer, Internet search, Google, online free journals, and Wikipedia"	97	61.4
	"Old notes of patients"	5	3.2
	"University libraries or medical school libraries"	12	7.6
	"Spend my own money on books"	7	4.4
	"Other hospital"	2	1.2
	"Meetings, conference, discuss with colleagues"	6	3.8
No	response	29	18.4
Total		158	100.0

n=129/158 (who do not have a library in their hospital)

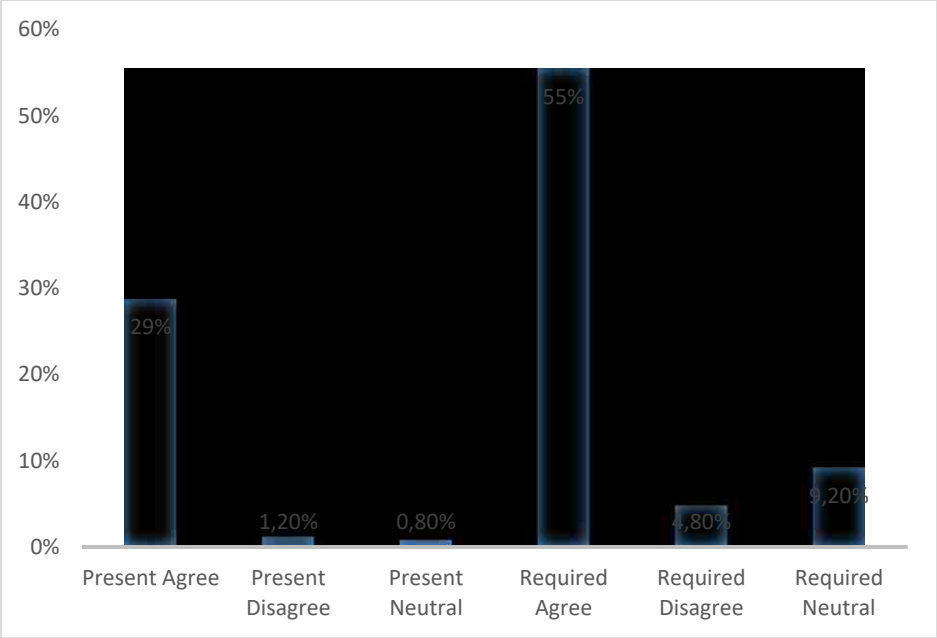
Table 4.41 shows that the majority of the participants, i.e., 97 (61.4%), access medical information on their private computers by searching online free journals on Google, Wikipedia, and other Internet search portals. Twelve (7.6%) use university or medical school libraries, 7 (4.4%) use books and they mentioned that they spend their own money to buy these books, 6 (3.8%) attend meetings and conferences and discuss their patients with colleagues to enhance

patient care. Five (3.2 %) access information from the old notes of patients, and only 2 (1.2 %) go to other hospital libraries to get useful information. The majority of the participants had access to online information, although more had access on their private computers than at work. In Tanzania, the majority (66.3%) of medical practitioners have access to the Internet at their workplace but very few use databases to improve their EBMP knowledge (Maigeh 2003: 45).

4.2.3.14. Expert librarians present or required in medical practitioners' hospitals

The participants were asked if the services of expert librarians are already present in hospitals or if they require such services to support EBMP in hospitals.

Figure 4.8: Expert librarians present or required in hospitals.



n=251

As shown in Figure 4.8, more than half of the participants, i.e., 139 (55%), agreed that they require the services of expert librarians in their hospitals to support them in EBMP, 12 (4.8%) disagreed and 23 (9.2%) were neutral about the requirement of expert librarians. Seventy-two (29%) participants mentioned that the services of librarians are present in their hospitals to support medical practitioners in EBMP, 3 (1.2%) disagreed and 2 (0.8%) were neutral.

4.2.3.15. Statements of medical practitioners about librarians

Practitioners were asked to indicate the strength of their agreement on a set of statements. Results are shown in Table 4.42.

Table 4.42: Statements of medical practitioners about librarians.

STATEMENT In each of the statements below, circle the option (from the words in bold) that apply to the hospital in which you practice.	Can assist agree (%)	Can assist disagree (%)	Can assist neutral (%)	Do assist agree (%)	Do assist disagree (%)	Do assist neutral (%)
1. Librarians can / do assist medical practitioners especially in complicated cases.	84.9	2.0	9.6	1.2	1.2	1.2
2. Librarians can / do assist medical practitioners with research/literature in cases where little is known about a disease or illness.	90.4	1.6	5.2	0.4	1.2	1.2
3. Librarians can / do assist medical practitioners with literature especially in the case of infectious diseases.	88	2.4	6.8	0.4	1.2	1.2
4. Librarians can / do assist medical practitioners to keep up-to-date with research/literature in their field.	88.8	2.4	6.0	0.4	1.2	1.2
5. Librarians can / do play a critical role in providing relevant information for individual cases to medical practitioners.	88.8	2.8	6.0	0.8	1.2	1.2
6. Librarians can / do save medical practitioners time by assisting them with their research,	91.6	0.8	4.0	0.8	1.2	1.6

1. The findings on Table 4.42 show that most of the participants, i.e., 212 (84.9%), agree that librarians can assist medical practitioners, especially in complicated cases, 24 (9.6%) are neutral about it, and five (2%) disagree about the assistance of librarians, especially in complicated cases. Only three (1.2%) agree that librarians do assist them in complicated cases, three (1.2%) disagree, and three (1.2%) are neutral.

2. Most participants, i.e., 227 (90.4%), agree that librarians can assist medical practitioners with research/literature in cases where little is known about a disease or illness, four (1.6%) disagree, and 13 (5.2%) are neutral about it. Only one participant (0.4%) agrees that librarians assist with research literature in cases where little is known about a disease or illness, three (1.2%) disagree, and three (1.2%) are neutral.

3. Most participants, i.e., 221 (88%), agree that librarians can assist medical practitioners with literature, especially in the case of infectious diseases, six (2.4%) disagree, and 17 (6.8%) are neutral. Only one participant (0.4%) agrees that librarians assist with literature, especially in the case of infectious diseases, three (1.2%) disagree and three (1.2%) are neutral.

4. Most participants, i.e., 223 (88.8%), agree that librarians can assist medical practitioners to keep up-to-date with research literature in their field, six (2.4%) disagree and 15 (6%) are neutral. Only one (0.4%) agrees that librarians can assist medical practitioners to keep up-to-date with research/literature in their field, three (1.2%) disagree and three (1.2%) are neutral.

5. Most of the participants, i.e., 221 (88%), agree that librarians can play a critical role in providing relevant information for individual cases to medical practitioners, seven (2.8%) disagree, and 15 (6%) are neutral about it. Only two (0.8%) agree that librarians do play a critical role in providing relevant information for individual cases to medical practitioners, three (1.2%) disagree and three (1.2%) are neutral.

6. Two hundred and thirty (91.6%) participants agree that librarians can save medical practitioners time by assisting them with their research, two (0.8%) disagree, and ten (4%) are

neutral. Only two (0.8%) participants agree that librarians are saving medical practitioners time by assisting them with their research, while three (1.2%) disagree and four (1.6%) are neutral.

There is a latent demand for assistance and a willingness to accept it and work with librarians but little actual provision at present. Holst et al. (2009) also suggested that "Because hospital librarians and their services provide an excellent return on investment for the hospital and help the hospital keep its competitive edge, hospital staff should have access to the services of a professional librarian". Perry and Kronenfeld (2005: 1) reviewed EBMP trends and proposed roles for health-science librarians. They concluded that health-science librarians can take on the responsibility of supporting and enhancing EBMP with their knowledge of health-information resources and their information search and retrieval expertise.

4.2.3.16. Other comments of medical practitioners regarding hospital library services

Participants were asked if they would like to make any specific positive or negative comment regarding library services in the hospitals. Participants made very useful and positive comments. Some participants commented that a library is an important tool in a hospital setting and helpful in terms of keeping their knowledge and clinic information up-to-date. They mentioned that it is a great idea to have a library in every hospital and such provision will help to improve healthcare.

Some suggested that librarians need more support to improve their services. About half of the participants said they need trained librarians in the medical field and EBMP, more computer facilities, and sponsorships to access global medical network sites in the library. Others commented that they used the hospital library when they were in public sector institutions but, now, they read mostly the free, online journals. Even though some hospitals have libraries established, their services are considered very poor in terms of assisting medical practitioners. The librarians are generally not available in the library and, whenever they are available, their working hours are limited. Therefore, there is a need for more expert librarians which might go some way to changing this perception. In Tanzania also, all participants were strongly

agreed on the establishment of a health science librarian because health information specialists can assist them to get up-to-date information at the right time and "cope with rapid changes in the health field" Haruna *et al* (2016: 920).

4.3. Findings of data from health science librarians

In this section, the results of data collected from the health science librarians based in the hospital libraries in the eThekwini district, is presented. Out of the sixteen government and twenty-three private hospitals (Appendix 16) in the eThekwini district, only six government hospitals (Addington, R.K. Khan, King Edward VIII, Prince Mshiyeni, memorial, Wentworth, and Inkosi Albert Luthuli hospital) have a library (as mentioned in chapters one section 1.7 and three section 3.2.1). Only five librarians took part in the main study; the sixth was excluded because of having participated in the pilot study. Data was collected to identify librarians' level of training and qualification to support EBMP, to determine the role of health science librarians in the hospitals, and to identify barriers faced by librarians supporting EBMP.

4.3.1 Demographic characteristics of health science librarians

The demographic characteristics represent the gender, age range, qualification, training, and work experience of the librarians. The following sub-sections explore the data collected via the questionnaires.

4.3.1.1 Gender, age, work experience, and job title of health science librarians

The purpose of the questions was to establish the gender, age, work experience, and job title of health science librarians. The results are shown in Figure 4.43.

Table 4.43: Gender, age, experience, and job title of health science librarians.

Characteristics	Description	Number (%) (n=5)
Gender	Female	4 (80)
	Male	1(20)
Age		
	20-30 years	0
	31-40 years	2 (40)
	41-50 years	3 (60)
	51-60 years	0
	61-70 years	0
	70+	0
Years of work experience		
	0-5 years	0
	6-10 years	3 (60)
	11-15 years	2 (40)
	16-20 years	0
	21+years	0
Job title of health science librarians		
	Assistant librarian	3 (60)
	Librarian	2 (40)

Out of the five librarians, one (20%) was male and four (80%) were female. The majority were female, three (60%) being in the age group 41-50. All librarians were from public hospitals as there are no libraries in private hospitals (Table 4.43).

4.3.1.2. Work experience and job title of health science librarians

The health science librarians were asked to mention their job title and how long they had been a librarian in the hospital. Three (60%) participants are working as assistant librarians and two (40%) are working as librarians. More than half, three (60%) health science librarians have been practicing for 6 to 10 years and 2 (40%) have been practicing for 11 to 15 years. The results indicate that all the librarians are well established as they have more than five years' experience and may be helpful in providing better services to doctors (Table 4.43). These findings are similar to the study conducted in the United States where 75% health science librarians had over five years' experience (Li and Wu 2011: 370). The findings are also similar

to those of Pappas (2008: 236) where most (97.7%) librarians had more than five years' experience.

4.3.1.3. Health science librarians' work requirement of specialised knowledge of EBMP

Health science librarians were asked whether their work requires them to have specialised knowledge of EBMP. Three (60%) participants mentioned their work does not require them to have specialised knowledge of EBMP, and two (40%) indicated that knowledge of EBMP is required for their work as health science librarians. These findings contrast with Li and Wu (2011: 365) where 91% librarians indicated that their work required expertise with EBMP resources. Kasalu and Ojiambo (2015: 9) in Kenya also concluded that professional skills are very important for health science librarians to make an effective contribution in supporting EBMP.

4.3.1.4. Year of last degree obtained by health science librarians

The participants were asked to indicate the year in which they completed their last degree. Only four out of five participants mentioned the year of completion of their last degree. Three participants completed their last degree in 2005 and one completed their degree in 1995. None of them have updated their qualifications since 2005.

4.3.1.5. Highest qualification of health science librarians

Health science librarians were asked to state their highest qualification and the discipline in which they attained this qualification. Three participants out of five stated that the national diploma in LIS is their highest qualification, one stated B.Tech in LIS as his/her highest qualification, and one did not reply to this question. The majority of health science librarians have a diploma as their highest qualification. These findings contrast with the study conducted by Pappas (2008: 236) where 89.7% librarians held a Masters of Library Science; also

contrasted with Zarghani *et al* (2016) where 51% health science librarians in Tehran (Iran) indicated not to have any Library and Information Science qualification.

4.3.1.6. Requirements of health science librarians' present job

Health science librarians were asked to describe the requirements of their present job in terms of qualification, experience, specialisation, and training. Table 4.44 shows the results.

Table 4.44: Requirements of librarians' present job.

Job title	**Librarian**	**Assistant librarian**
Qualification	Diploma in LIS	Diploma in LIS
Experience	2-3 years	None
Specialisation	Classification and cataloguing	None
Training	Customer care, cataloguing	Library system, MS Office (1), None (2)

The librarians mentioned that the qualification required for their jobs was a diploma in LIS, and the experience required was from two to three years. The specialisation required was classification and cataloguing. The required training was customer care and cataloguing.

Assistant librarians mentioned that the required qualification for their jobs was also a diploma in LIS and there was no experience and specialisation required for it. Only one participant explained that training in library systems and MS office was required for that job while two participants mentioned that there was no training required for their job.

The results clearly indicate that there was no medical-related qualification, training, or experience required for being a health-science librarian in the eThekwini district. Most of the librarians in the United States stated that they need to have a knowledge of EBMP resources in their work (Li and Wu 2009: 10).

4.3.1.7. Main functions of health science librarians' job

Health science librarians were asked to describe their main job functions. All of them (five) mentioned that they help medical practitioners by searching books and other reading materials, subscribing to the newspaper, cataloguing, classifying, managing, marketing, and providing library services.

4.3.1.8. Universities where health science librarians completed their LIS qualification

The participants were asked from which university they obtained their LIS qualification. Only four participants out of five replied to this question. Three participants obtained their diploma from the Durban University of Technology, one participant obtained B.Tech. from the University of KwaZulu-Natal, and one did not mention the university name.

4.3.1.9. Health science librarians' specialisation in supporting EBMP

The participants were asked if they have an option to specialise in supporting EBMP. None indicated that they have this as an option.

4.3.1.10. Information about fieldwork as part of health science librarians' qualification

The following questions were asked of the participants about their in-service qualification:

1. Did you do any in-service learning at a hospital or medical facility as part of your qualification?
2. What was the nature of your in-service learning?
3. Where did you do the above? Who placed you /assisted you to get the above?
4. What was the duration of the above?
5. Did you benefit from the experience?

Only 4 out of 5 participants replied to these questions. Three (75%) did not undergo any in-service learning at a hospital or medical facility as part of their qualification.

Only one (25%) did 2 months' practical work under the aegis of the Diakonia Council of Churches. This is a special library, similar to a hospital in terms of the patrons and the arrangement of the material, and user needs. The Durban University of Technology assisted the participant in finding this placement.

4.3.2. Responses of health science librarians toward EBMP training

The following sub-sections will cover the health science librarians' views and opinions on the training in EBMP.

4.3.2.1. Health science librarian qualification adequacy to support EBMP and become a health science librarian

Health science librarians were asked if their qualification prepared them adequately to support EBMP or become a health science librarian. Participants were requested to explain their answer.

All four participants replied that their qualification did not prepare them adequately to support EBMP or to become a health science librarian. One explained that this programme (EBMP) is not used in South Africa, and another mentioned that he/she qualified many years ago and the diploma offered at that time did not include the EBMP option. Kasalu and Ojiambo (2015: 9) concluded that professional skills are very important for health science librarians to make an effective contribution in supporting EBMP. The librarians' training should be specific. These special skills and knowledge will help librarians to do their duties effectively.

4.3.2.2. Courses or training related to EBMP and health science librarians

The following questions were asked of health science librarians about EBMP and health science librarian courses or training:

1. Have you attended any courses or training (other than your formal library qualification) related to EBMP/health librarian?
2. What was the nature of the courses or training you attended?
3. What was the name of the course/training?
4. Where did you attend the above?
5. What was the duration of the courses or training?
6. What were the entrance requirements for the above?
7. How did the course/training benefit you for your current position?
8. What was the reason/s that you attended the above?

All five (100%) mentioned that they did not attend any courses or training (other than their formal library qualification) related to EBMP and health science librarian. The findings are similar to Eirini and Eleni (2010: 5) where most of the librarians in Greece indicated that they did not attend any special training in health science librarianship. Librarians in Iran were also not trained to support EBMP but 41.8% indicated that they have specific services in the hospital library to support EBM (Gavgani 2009).

4.3.2.3. Reasons for health science librarians not attending courses or training related to EBMP

Participants were asked an open-ended question for the reason/s that they did not attend any courses or training related to EBMP. There was a mixed opinion as indicated below:

- They did not know about it;
- They did not get any opportunity;
- There was no budget in the library for it, over the years; and
- These courses were not available until recently and the employers were not always willing to pay for them.

4.3.2.4. Health science librarians' plan to attend any courses or training related to EBMP in the near future

Health science librarians were asked if they plan to attend any courses or training related to EBMP in the near future and were asked to explain why. It was an open-ended question.

All five (100%) participants indicated that they would like to attend courses or training related to EBMP. The findings are similar to those of Eirini and Eleni (2010: 5) where librarians (in Greece) indicated that they wanted to attend the training related to medical librarianship.

Participants in this study explained that they want to attend training if the chance is given and if there is a budget and a training venue available. They would attend the training to learn more in order to help the medical practitioners. They believe it would help them to be more effective in their job and in improving library services in the hospitals.

The findings indicated that health science librarians are very positive and interested in courses or training related to EBMP. These findings are similar to the study conducted in the United States where most of the librarians were ready and willing to contribute to EBM-related projects (Li and Wu 2011: 365). In Athens (Greece), most of the librarians had not attended any training courses in health science librarianship though most of them showed a desire for training (Eirini and Eleni 2010: 5). Eirini and Eleni (2010: 8) also concluded that there is a need to provide specific training (related to health science librarianship) to health science librarians.

4.3.2.5. Health science librarians' work with medical practitioners

Health science librarians were asked whether they work with medical practitioners. Only one health science librarian indicated that he/she works with nurses every day and provides them with needed information but has no interaction with EBMP. Four (80%) indicated that they do not work with medical practitioners.

The participants mentioned that they provide services to everyone who comes to the library, like medical doctors, nurses, medical students, and other hospital staff.

All five (100%) participants provide general services like literature searches and medical book searches to all medical practitioners in the hospital. These findings are contrast to the study conducted in the United States where 89% health science librarians indicated that they provide EBM research to library users (Li and Wu 2011: 370).

4.3.3. Responses of health science librarians toward research on EBMP resources

The attitudes and opinions of health science librarians toward the research of EBMP resources are presented in this section.

4.3.3.1. Health science librarians' expertise with EBMP resources

Health science librarians were asked if their job responsibility requires expertise with EBMP resources (e.g., MEDLINE, EBM Reviews or the Cochrane Library Collection) and whether they have the requisite expertise to deal with these resources.

Table 4.45: Health science librarians' expertise with EBMP resources.

Question	Yes	No
Does your job responsibility require expertise with EBMP resources (e.g., MEDLINE, EBM Reviews or the Cochrane Library Collection)?	3	2
Do you have the requisite expertise to deal with these resources?	3	2

Table 4.45 shows that three (60%) participants agreed that their job responsibility requires expertise with EBMP resources, and that they have the requisite expertise to deal with these resources; while two (40%) indicated that it is not required, and that they do not have the requisite expertise. These findings are similar to the study conducted in the United States where most (91%) health science librarians indicated that their job responsibilities required expertise with EBMP resources (Li and Wu 2011: 370).

4.3.3.2. Training received by health science librarians on EBMP resources

Health science librarians who indicated EBMP expertise in the above Table (4.45) were asked where they received their training. One out of three received training from the Embassy of the United States of America in South Africa, one received training from the previous librarian, and one received training from their supervisors.

4.3.3.3. Health science librarians' preferred places of training on EBMP resources

Those participants who were not experts in EBMP resources were asked where they would like to receive training in this regard. None of them responded to the question. It is possible that they do not know which institutions provide such training.

4.3.3.4. Adequate resources in health science librarians' libraries to support EBMP

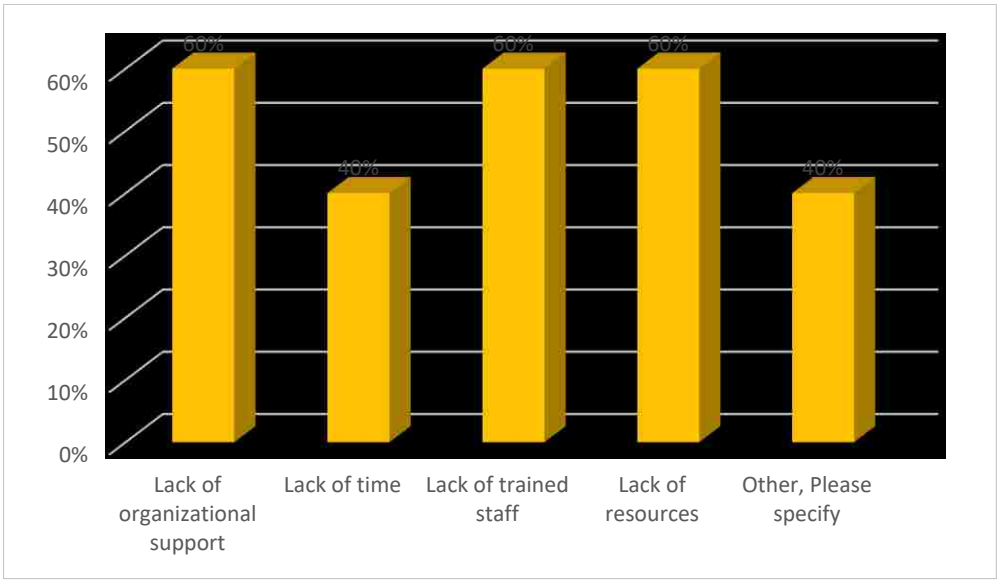
Health science librarians were asked if they have adequate resources in their library to support EBMP. Two responded that they have adequate resources to support EBMP. Three out of five replied that they do not have adequate resources to support EBMP and explained that there are no current subscriptions to MEDLINE and Cochrane Library reviews, etc., because of a lack of funds.

The results indicate that a lack of funds is the major barrier to getting training in EBMP or providing EBMP resources to medical practitioners. Findings are similar to those of Petrinic and Urquhart (2007) where health science librarians indicated that time and money are the main barriers to getting training.

4.3.3.5. Barriers faced by health science librarians in offering EBM services

Health science librarians identified the challenges they face in offering EBM services. Participants were invited to choose more than one option and, through an open-ended question, could also supply others. The results are shown in Figure 4.9.

Figure 4.9: Barriers faced by health science librarians in offering EBM services.



As shown in Figure 4.9, three (60%) participants indicated that their major barriers are lack of organisational support, lack of trained staff, and lack of resources. Two (40%) mentioned that lack of time is the major barrier to offering EBM services. They also specified that there is no budget for EBMP resources. These findings are similar to the findings of Pappas (2008) where 42.7% librarians indicated that their main barriers were lack of time, lack of statistics familiarity (32.5%), lack of training (19.4%), lack of institutional support (16.9%), lack of confidence (12.6%), and physicians' and nurses' attitudes (14.5%). In Iran, most of the health science librarians indicated that their main barriers were lack of organisational support and lack of trained staff; 58% indicated lack of time, and 37.2% indicated lack of resources in providing EBMP support services (Gavgani 2009). Librarians from the United States indicated that their barriers were lack of library staff, lack of necessary skills, and lack of time to provide EBM services (Li and Wu 2011: 374).

4.3.3.6. Other comments of health science librarians related to supporting EBMP

Health science librarians were requested to give their comments (positive or negative), other than those mentioned above, regarding their responsibilities, roles, qualifications, training, or job functions related to supporting EBMP.

The participants' responses were:

- "Wish local educational institutions would offer specialised training in EBMP"; and
- "It will be good if hospital/health department sends them for training".

4.3.3.7. Health science librarians' comments regarding library services for EBMP

Participants were asked to provide their comments (positive or negative) regarding library services for EBMP.

The participant's comments were:

- "Library service provision is not a priority for Dept. of Health, so it is a daily struggle to acquire resources to support EBMP"; and
- "Nothing new and no improvement since long in this library".

The comments show that health science librarians are not getting departmental help to improve their services.

4.4. Findings of data from academic staff of universities

In this section, the results are presented from the data collected from the academic staff in South African universities and a university of technology that offer a qualification in LIS. As mentioned in chapter three, one university did not provide approval for this study. Therefore, data was collected for eight universities and one university of technology to determine the extent of training for health science librarians provided by the universities that train librarians in South Africa.

4.4.1. Demographic characteristics of academic staff

The demographic characteristics represent the gender, age range, and qualification of the academic staff of universities.

4.4.1.1. Gender and age of academic staff

The academic staff were asked to indicate their gender and age. The purpose of the question was to establish the gender and age profile of academic staff members. Out of 24 participants, only 22 stated their gender.

Table 4.46: Gender and age of academic staff.

Characteristics	Description	Number (%) (n=24)
Gender	Female	11 (45.8)
	Male	11 (45.8)
	No response	2 (8.4)
Age		
	20-30 years	1 (4.2)
	31-40 years	7 (29.2)
	41-50 years	4 (16.6)
	51-60 years	9 (37.5)
	61-70 years	3 (12.5)
	70+	0

Out of 24, 11 (45.8%) participants were male, 11 (45.8%) were female, and 2 participants did not mention their gender. Nine (37.5%) participants belonged to the age group 51-60, seven (29.2%) belonged to the age group 31-40, four (16.6%) belonged to the age group 41-50 years, three (12.5%) belonged to the age group 61-70, and one (4.2%) belonged to the age group 20-30 years (Table 4.46).

4.4.1.2 Highest qualification and discipline in which academic staff attained qualification

Academic staff were asked to state their highest qualification and the discipline in which they attained this qualification. Twenty-one participants out of 24 provided information about their

qualification. Eleven (45.8 %) participants out of 24 indicated that they did a PhD in LIS or Information Science (IS). Six (25%) participants completed their Masters: five participants out of these six completed a Master's degree in LIS or IS, and one completed a Master's degree in Creative Writing. Of the rest, one participant studied Habilitation in Linguistics, one completed an MPhil in LIS, and one obtained a Master's degree in Business Administration.

4.4.1.3. Names of departments and universities of academic staff

Academic staff were asked to name the department and the university where they were employed. The purpose of the question was to discover the name of the department of every university where a qualification in LIS is currently offered. Participants of six out of nine universities provided this information:

- Department of Library and Information Science, University of Fort Hare;
- Department of Information Science, University of South Africa (UNISA);
- Library and Information Studies, Durban University of Technology (DUT);
- Library and Information Studies Centre, University of Cape Town;
- Department of Information Studies, University of Zululand; and
- Information Studies, University of KwaZulu-Natal (UKZN).

4.4.2. Responses of academic staff toward EBMP

In this section, results are presented from the data collected from academic staff about their attitudes and opinions toward EBMP. As discussed in chapter two, it is very important to know the opinions of academic staff toward EBMP, as the academic staff play a major role in training the health science librarians. EBMP can then be implemented effectively in health science libraries with the help of trained health science librarians.

4.4.2.1. Awareness of EBM or EBMP among academic staff

Academic staff were asked if they had heard about EBM or EBMP. Most of the participants, i.e., 18 (75%), had heard about EBM or EBMP and, surprisingly, six (25%) had never heard about it.

Results indicate that most of the academic staff surveyed are aware of EBM or EBMP.

4.4.2.2. Courses or training in the library department for librarians to support EBMP

Academic staff were asked if their departments offer any courses or training for librarians to support EBMP. All 24 participants mentioned that their departments do not offer this type of course. The results are similar to those of Haruna *et al* (2016: 913) where there were no academic library science programs offered for medical librarianship in Tanzania. Kasalu and Ojiambo (2015: 4) indicated that "universities training information professionals in Kenya don't have adequate specialised courses in health information. But this is done as a general LIS degree course".

4.4.2.3. Plans to offer courses or training in EBMP in the near future

Academic staff were asked if their department plans to offer the courses or training in EBMP in the near future. Most of the participants, i.e., 19 (79.2 %) out of 24, said that there are no such plans, only three (12.5%) mentioned that their departments want to offer courses or training in EBMP in the near future, and two participants did not reply to this question.

4.4.2.4. Enquiries by students about EBMP courses or training

Academic staff were asked if students have enquired about EBMP courses or training for librarians. It was an open-ended question and participants were requested to explain their answers.

Out of 21, only 10 participants answered this question. Eight participants indicated that they are unaware of students requesting such courses, and only two said that students asked about courses or training related to EBMP.

4.4.2.5. Enquiries by medical practitioners or the health sector about EBMP courses or training

Some questions were asked of the academic staff relating to enquiries by medical practitioners about the provision of courses or training to support EBMP. Furthermore, they were asked if there are members from the health sector on their departmental advisory boards and whether these representatives have ever requested that the department offer library training to support EBMP.

All participants said that neither the medical practitioners nor the health sector have enquired about such training.

All participants indicated that they are either unaware of, or they do not have, an advisory board in their department.

Only one participant provided the following information: A student employed as an information officer in hospitals enquired about training or courses related to EBMP. The participant responded that the department had planned to introduce a health-related module in the year 2000 with the help of the medical practitioners who offer public health services. However, unfortunately, due to a poor response to the programme, this initiative had been abandoned.

4.4.2.6. Specialisation in library services to support EBMP

Academic staff were asked whether students are allowed to specialise in EBMP library services in their department. Most of the participants, i.e., 21 (87.5 %), indicated that students are not

allowed to specialise in EBMP library services. Only two (8.3 %) universities allow students to specialise in EBMP library services, and one participant did not reply to this question.

4.4.2.7. Theoretical and practical training for librarians to support EBMP

Academic staff were asked about the theoretical and practical training for librarians working with EBMP. The purpose of this question was to know if library students and librarians are allowed to specialise in EBMP library services and what type of theoretical or practical training is provided. There was no useful response. All of them said they do not provide any theoretical and practical training. They only provide basic librarian skills, not specific to EBMP, and students receive general LIS training in undergraduate years. The findings are similar to those of Haruna *at al* (2016: 913) who stated that some universities in Tanzania do offer library information management and information science diploma, degree and master programs, but they only cover basic LIS concepts. Kasalu and Ojiambo (2015: 9) also found that the courses taught in universities to library students were not adequate to impart skills that would enable health science librarians to be effective and efficient in service delivery. According to Kasalu and Ojiambo (2015: 9), there is a need to review the specialist courses being taught by LIS schools in Kenya.

4.4.2.8. Requirement of fieldwork at a hospital or medical facility library

The participants were asked if the students were required to do any fieldwork learning at a hospital or medical facility library. They were requested to explain their answer. Out of 24 participants, 22 responded to this question. Only three (8.3 %) indicated that students are required to do fieldwork. Their responses were as follows:

1. “Students are required to undertake fieldwork placements, and these could be in medical-related information services”; and

2. “The students do their fieldwork in libraries not specifically in hospitals or medical facility library.”

Most of the participants, i.e., 19 (79.2 %), mentioned that fieldwork is not required. Some of the responses were as follows:

1. “Students have not chosen a medical library for fieldwork. Perhaps in future students should be encouraged to do their practical fieldwork in such libraries”;
2. “Not for EBMP”; and
3. “It is optional”.

4.4.2.9. Placement of students for fieldwork

Three participants (who mentioned above that students are required to do fieldwork) were asked who places these students and which hospitals/medical facilities they usually use? Two participants indicated that a lecturer in the department places the students to do fieldwork. One participant responded that the fieldwork coordinator places the students to do fieldwork. The students were sent to UCT Health Sciences Library and the Red Cross War Memorial Children’s Hospital.

4.4.2.10. The academic staff comments regarding preparedness, training, and qualification of health science librarians

The academic staff members were asked to provide any positive or negative comments regarding the preparedness, training, and qualification for health science librarians supporting EBMP. Their comments are quoted below:

1. “I think the idea of training the librarians in EBMP will be useful in the context of South Africa regarding health practices”;
2. “I think EBMP is very important. We, however, do not have sufficient undergraduate students interested in studying librarianship as such. Therefore, no focus on EBMP. Perhaps it might be good as a post-grad qualification e.g. diploma”;
3. “This is potentially an important development within South Africa but best pursued in collaboration with the Health Science Faculty”;

4. “The department as far as I know does not offer a module in this aspect. Perhaps something for the department to consider in future”;
5. “Yes, complaining about not being well conversant with terminologies and how they needed health-related background”;
6. “I cannot provide comment as our students have not been exposed to EBMP and have not completed fieldwork at medical libraries. I do, however, think that our students may gain from being exposed to EBMP”;
7. “It won’t be easy for the university to tailor-make modules for each area, especially if the enrolment might be low. However, at UNISA, we do offer short learning programs. If there is a need for EBMP training, short courses can supplement the general training for librarians in this regard. Questions 10 and 13 are limiting as we don’t have modules specifically for EBMP library services. However, some students do research at masters and doctoral level on this topic”; and
8. “You should also find out if qualified medical doctors, nurses, public health professionals are interested in the programs at postgraduate levels”.

4.5. Summary

This chapter focused on the results and discussion of the study. The data was collected using three types of questionnaires that were used to survey: (1) medical practitioners; (2) health science librarians; and (3) academic staff of LIS departments at universities. A total of 251 questionnaires from medical practitioners, five from health science librarians and 22 from academic staff were analysed using SPSS and Microsoft Excel. This chapter presented the demographic details of participants; attitudes and opinions of medical practitioners on EBMP and understanding of medical practice guidelines; medical practitioners’ responses towards health science library services; health science librarians’ responses toward EBMP training; attitudes and opinions of health science librarians toward research; and attitudes and opinions of academic staff on EBMP training for librarians.

The present study revealed that the majority of medical practitioners in the eThekwini district, South Africa, are familiar with EBMP and they agree that the application of EBMP is necessary

and useful for their specialisation or practice; it improves the quality of patient care, and they need to increase the use of EBMP in their daily practice. Medical practitioners are familiar with the online medical search engines (e.g., MEDLINE, CINAHL) but more than half of them do not have access to the relevant databases for EBMP.

Almost all the participants think that evidence-based practice is necessary for medicine. They explain that it is a foundation of good medical practice and important to maintain current best practice and standard of patient care. EBMP helps doctors to manage patients better using recent guidelines, and it improves patient healthcare. In the absence of EBMP, practice will rely on textbooks and other sources which may be outdated or incomplete. The majority of medical practitioners are facing heavy work loads, and they mentioned that lack of personal time and patient overload are the leading barriers to EBMP.

Although many participants indicated that they do have access to a library at the hospital in which they practice, they are not satisfied with library services. Medical practitioners do not use library services much. This could be due to the perception that librarians are not dedicated to their particular field of medicine or specialisation, or that librarians do not provide any services useful to medical practitioners.

The majority of participants who do not have a library in their hospital mentioned that library services should be established in their hospitals and that they require the services of expert librarians to support them in EBMP. According to these participants, it is a good idea to have a library in hospitals, and it is a positive asset.

Most of the medical practitioners agreed that librarians can save medical practitioners time and can assist them to keep up-to-date with research or literature in their field. Librarians can play a critical role in providing relevant information for individual cases, cases of infectious diseases, and cases where little is known about a disease or illness. Medical practitioners require the services of expert librarians in their hospitals to support them in EBMP.

There is no medical-related qualification, training, or experience required for being a health science librarian in the eThekwini district, South Africa. The librarians did not attend any courses or training (other than their formal library qualification) related to EBMP or health science librarianship. Their qualifications did not prepare them adequately to support EBMP or to become health science librarians. All health science librarians were very positive and indicated that they would like to attend courses or training related to EBMP. They also specified that there is no budget for EBMP resources.

South African universities and universities of technology that offer a qualification in LIS only provide students with general LIS training in their undergraduate years, not skills specific to EBMP. The academic staff of LIS welcome the idea of training librarians in EBMP. They said that such training will be useful in the context of South Africa regarding health practices.

The final chapter addresses the conclusion and recommendations of the study.

CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

The previous chapter presented the results of the studies conducted on medical practitioners, health science librarians based in the libraries of public and private hospitals in the eThekwini district, and academic staff at higher education institutions in South Africa that offer professional qualifications in Library and Information Science. This chapter discusses the results of the study in the context of the objectives of the study as well as in the context of the reviewed literature. Based on the results and discussions, the researcher draws the following conclusions and recommendations.

The following objectives have been addressed:

- To determine what medical library services and resources are available in public and private hospitals in the eThekwini district to support EBMP;
- To understand medical practitioners' perceptions, use, and needs regarding the library services in the hospitals in which they are practicing;
- To determine the role of health science librarians in the hospitals;
- To identify librarians' level of training and qualification to support EBMP;
- To determine the extent of training for health science librarians provided by the universities that train librarians in SA; and
- To identify barriers faced by librarians supporting EBMP.

Three questionnaires were generated, and the following research questions were asked in terms of the objectives of the study:

- What are the medical practitioners' attitudes and opinions on EBMP and their responses toward health science library services? Twenty-nine questions were completed by medical practitioners (Appendix 5);

- What are the attitudes and opinions of health science librarians toward EBMP training and qualification? Twenty-nine questions were completed by health science librarians (Appendix 6);
- What are the attitudes and opinions of the academic staff of Library and Information Science (LIS) departments on EBMP and their responses toward the preparedness, training, and qualification of health science librarians to support EBMP in public and private hospitals in the eThekwini district in South Africa? Twenty questions were completed by university academic staff (Appendix 7).

5.2. Conclusions

This section presents the conclusions drawn from the results as presented in chapter four.

5.2.1. Health science library services and resources in the public and private hospitals, eThekwini district that support EBMP

The findings in chapter 4, section 4.2.3.1 show that, out of sixteen public and twenty-six private hospitals, only six public hospitals have a library, as mention in chapter 3, section 3.2.1. Private hospitals in the eThekwini district do not have libraries. The following findings relate to the services and resources available in public hospital libraries:

1. As shown in section 4.3.1.7, health science librarians assist medical practitioners in searching books and other reading materials, doing subscriptions of newspapers, cataloguing, classifying, managing, marketing, and providing library services.

2. As shown in section 4.2.3.6, about 47% medical practitioners indicated that health science librarians do not provide any services or if they do, they do not find these services useful. Others indicated that health science librarians support them in conducting book searches, providing basic information from the library, and giving data access. The findings suggest that health science librarians are not providing a useful range of services to help medical practitioners in their EBMP.

3. Only two out of the five health science librarians who responded indicated that they have adequate resources to support EBMP. Three replied that they do not have adequate resources to support EBMP and explained that there are no current subscriptions to Medline and Cochrane Library reviews, etc., because of lack of funds (shown in 4.3.3.4.).

The findings suggest that health science librarians in the eThekwini district are not providing medical practitioners with useful services to support EBMP. They are only providing basic services. These results are in contrast with the results shown in the previous studies (reviewed in chapter 2, section 2.5) where health science librarians helped in searching and evaluating information to promote the effective integration of EBMP into allied health, and played a role in continuing education activities, by educating professors, researchers, and publishers about the need for broader access to EBMP resources (Atlas et al. 2003: 1; Schwing and Coldsmith 2005: 29, Kronenfeld et al. 2007: 394).

5.2.2. Medical practitioners' perceptions and use of library services in their hospitals

1. The analysis in chapter 4, section 4.2.3.2, indicates that the majority of the medical practitioners (89.2%) are not satisfied with library services.

2. As shown in 4.2.3.3, about half of the medical practitioners would like to have more books added to the library stock; to install effective computers to search online information; and to hire expert librarians to help them with EBMP. About one-quarter of the medical practitioners would like to have electronic resources; up-to-date journals and books; a useful database to access medical information; and subscriptions to electronic journals. Some want Internet access facilities whilst others want to extend the library hours beyond their working hours.

3. The analysis in sections 4.2.3.7 and 4.2.3.8 indicates that the majority of medical practitioners think that health science librarians in their hospital libraries are not adequately trained to assist them in their practice or field. Results also show that medical practitioners do not use the library much because health science librarians are not dedicated to their field of medicine or specialisation. The libraries and health

science librarians do not provide medical practitioners with a range of services suitable to their needs.

4. More than half of the medical practitioners think that health science librarians should attend courses and workshops and should obtain the necessary LIS qualifications appropriate for EBMP. Others suggested that health science librarians should be made familiar with EBMP, critical appraisal literature reviews, and various services of information. The health science librarians should be trained to assist in using EndNote (reference manager software) and accessing the electronic journals. Some suggested that they should be trained in database search to help them in EBMP (4.2.3.9).

5. Results in section 4.2.3.10 show that half of the medical practitioners think that the health science librarians in their hospital libraries are suitably qualified to assist them with EBMP but about half think that librarians are not suitably qualified to assist with EBMP (4.2.3.10).

6. As shown in Table 4.40, section 4.2.3.11, the majority of medical practitioners require a librarian expert in EBMP in their hospital libraries. They explained that expert librarians will be able to assist them in searching different specialised databases. Medical practitioners need health science librarians to help them by providing some guidance and verification about the use of EBMP. They confirmed that expert health science librarians will save them time and can help them in searching specific websites. Librarians will make things much easier and quicker for them. An expert health science librarian can assist in locating the current sources of research results and conducting literature searches.

7. The majority of the medical practitioners mentioned that library services should be established in their hospitals. Results in section 4.2.3.12 show the perception of medical practitioners about the importance of libraries in hospitals.

8. The results described in section 4.2.3.12 show that there are no libraries in private hospitals in the eThekwini district. The majority of medical practitioners of private hospitals indicated that they need fully functional hospital libraries with computer specialists in private hospitals as well. They explained the reasons and the importance

of libraries in hospitals.

9. Some think that there is no need to establish a library in their hospitals because there is a computer at every work station. Also, they think that there is no need to visit the library because they do not have time for it. They can search medical information on Google by using free online journals. Some were not sure whether it will be sustainable for private hospitals to maintain and staff a library. They think that too many devices will be needed for a hospital library to function and there will be budget constraints in the private hospitals.

10. As shown in section 4.2.3.14, more than half of the medical practitioners agreed that they require the services of expert health science librarians in their hospitals to support them with EBMP.

11. According to the findings explained in section 4.2.3.15 (Table 4.42), the majority of the medical practitioners agreed that health science librarians can assist medical practitioners in the following circumstances:

- especially in complicated cases;
- with research/literature in cases where little is known about a disease or illness;
- with literature, especially in the case of infectious diseases;
- to keep up-to-date with research/literature in their field;
- in providing relevant information for individual cases; and
- to save medical practitioners time by assisting them with their research.

The findings from subsections of section 4.2 highlight that:

- medical practitioners of government and private hospitals from eThekwini hospitals require libraries in their hospitals with expert librarians in EBMP. These results are similar to the study conducted in India (Gavgani and Mohan 2008: 1), as discussed in chapter 2, section 2.3 where it was stated that every hospital should establish a library to provide evidence-based medical librarians (EBML) trained in medical library, information science and medical terminology, with particular emphasis on EBMP;
- lack of personal time is the major barrier to EBMP for medical practitioners, as shown in the results and discussion in section 4.2.2.9 (Figure 4.6). These results support the

statements, mentioned in chapter 2, section 2.4.2, by Dans and Dans (2000: 11); Bhandari et al. (2003: 1183); Jette et al. (2003: 786); Al-Gelban et al. (2009: 1); and Mozafarpour et al. (2011: 651) that lack of time is one of the main problems in EBMP faced by medical practitioners;

- medical practitioners agree that health science librarians can save them time by assisting them with their research. These results support the study by McGowan et al. (2010), as shown in chapter 2, section 2.4.4, that it is possible for librarians to provide evidence-based information to medical practitioners timeously and overcome the "lack of time" barrier;
- medical practitioners agree that health science librarians can assist them by providing relevant information for individual cases, especially in complicated cases, where little is known about a disease or illness, and in the case of infectious diseases, It is shown in chapter 2, section 2.5 that the health science librarians have been carrying out various responsibilities and tasks that help to support EBMP and have participated in EBMP initiatives to help improve patient care (McKibbon and Bayley 2004: 50; Verhoeven and Schuling 2004: 27; Ward, Meadows and Nashelsky 2005: 88; Banks et al. 2007: 381).

5.2.3. The role of health science librarians in hospitals

All health science librarians in the eThekwini district mentioned that they are helping doctors in searching books and other reading materials, subscribing to newspapers, cataloguing, classifying, marketing, and providing library services (section 4.3.1.7). Most health science librarians responded, as mentioned in section 4.3.2.5, that they do not work with specialist medical practitioners.

5.2.4. Health science librarians' level of training and qualification to support EBMP

As shown in 4.3.1.6, the majority of health science librarians in the eThekwini district are qualified with the National Diploma in Library and Information Science. According to results in section 4.3.2.1, their qualification did not prepare them adequately to support EBMP or to become a health science librarian, and they did not participate in any fieldwork at a hospital or medical facility as part of their qualification (4.3.1.10). According to the results in section

4.3.2.2, health science librarians did not attend any courses or training (other than their formal LIS qualification) related to EBMP/health science librarianship. However, all health science librarians would like to attend courses or training related to EBMP, as shown in results in section 4.3.2.4.

Section 4.3.2.3 outlines the following reasons why health science librarians did not attend any courses or training related to EBMP:

- They did not know about it;
- They did not get any opportunity;
- There was no budget in the library for it, over the years; and
- These courses were not available until recently and the employers were not always willing to pay for them.

Overall findings indicated that health science librarians were very positive and interested in courses or training related to EBMP. They would like to obtain expertise in EBMP and help medical practitioners. These results support the statement of Li and Wu (2011: 365), mentioned in chapter 2, section 2.5, that most health science librarians in the United States were ready and willing to contribute to EBM-related projects as situations or opportunities arose, though they were not proactive enough in their role of supporting EBMP in their daily work (Li and Wu 2011: 365).

5.2.5. Training for health science librarians provided by universities that train librarians in South Africa

As shown in sections 4.4.2.2 and 4.4.2.3, all academic staff from all the universities mentioned that their departments do not offer courses for librarians to support EBMP. Most of the academic staff (79.2%) responded that they are not planning to start such courses, though some of them (12.5%) mentioned that they would like to offer the courses or training in EBMP in the near future.

The majority of the academic staff (87.5 %) indicated that students have no opportunity to specialise in the management of EBMP library services (section 4.4.2.6). All academic staff from all the universities indicated that they do not provide any theoretical and practical training

regarding EBMP. They only provide basic library skills, not specific to EBMP, and students receive general LIS training in undergraduate years.

The results in chapter 4, section 4.4.2.10, show that academic staff mentioned that EBMP is very important and the idea of training the librarians in EMBP will be useful in the context of South Africa, regarding health practices. This is potentially an important development within South Africa but best pursued in collaboration with the health science faculties. Some academics indicated that the students are not focused on EBMP. Perhaps, it may be considered in future and might be good as a post-graduate qualification. Academics also suggested that the researcher should find out if qualified medical doctors, nurses, and public health professionals are interested in the programmes related to EBMP information services at postgraduate levels.

These findings show that, although the departments of LIS at universities in South Africa are not training the librarians to help medical practitioners in EBMP, academic staff members of universities welcome the idea of training the librarians in EBMP. They agree that it is a good idea and may be considered in future. Kasalu and Ojiambo (2015:9) in Kenya also suggested that there is need to review the specialist courses being taught by LIS to library students.

5.2.6. Barriers to health science librarians supporting EBMP

As shown in section 4.3.3.5, major barriers to health science librarians in supporting EBMP are the lack of:

- organisational support;
- trained staff;
- resources;
- time; and
- budget for EBMP resources in hospital libraries.

Results in section 4.3.3.7 highlight the fact that health science library service provision is not a priority for the Department of Health in the eThekwini health district. Therefore, it is a daily struggle to acquire resources to support EBM and, hence, no improvement in library services is likely in the near future.

5.3. Recommendations

Based on the discussion and conclusions, the study makes the following recommendations:

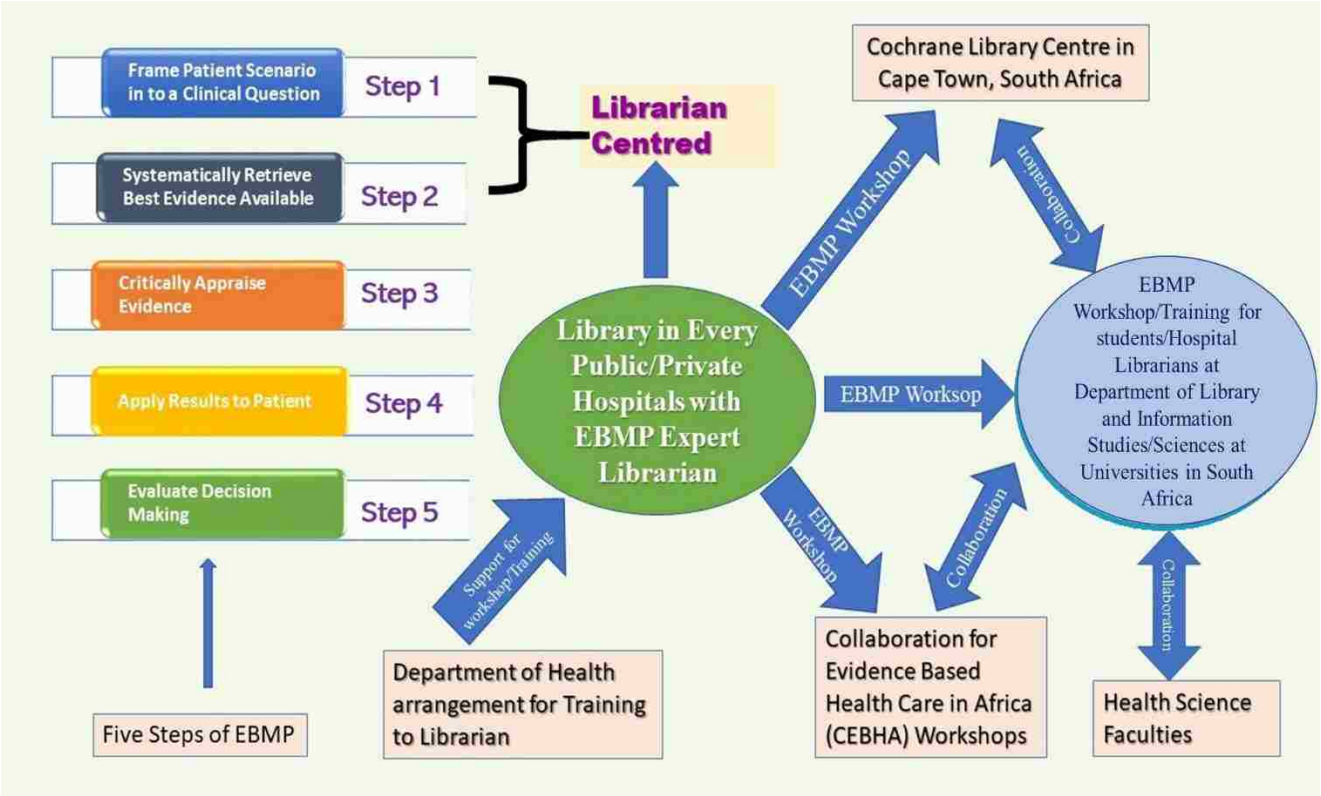
1. Library services should be established in every public and private hospital with a librarian expert in EBMP. This recommendation arises from the results in chapter 4, sections 4.2.3.12 and 4.2.3.14, as the majority of the medical practitioners (private hospitals) wanted to establish a library in their hospitals. More than half of the medical practitioners (both public and private hospitals) require the services of expert librarians in their hospitals to support them in EBMP. Gavgani and Mohan (2008: 9) also recommended that every hospital should have a library and every hospital library should be provided with evidence-based medical librarians. Holst et al. (2009) also suggested that "Because hospital librarians and their services provide an excellent return on investment for the hospital and help the hospital keep its competitive edge, hospital staff should have access to the services of a professional librarian".

2. The courses or training related to EBMP should be provided to health science librarians. The Health department should make arrangements for such a provision. This recommendation supports the results in chapter 4, sections 4.3.2.4 and 4.3.3.6, where all librarians indicated that they would like to attend courses or training related to EBMP and wish for their hospital/health departments to send them for training. Eirini and Eleni (2010: 8) also concluded that there is a need to provide specific training (related to health science librarianship) to health science librarians.

3. Departments of LIS should collaborate with the health science faculty at the universities and the Cochrane library centre in South Africa and offer specialised training in EBMP to library students (who want to become health science librarians) and librarians. This recommendation supports the results discussed in chapter 4, section 4.4.2.10, where academic staff of all universities welcomed the idea of providing the courses and training related to EBMP for library science students. Haruna *et al* (2016: 913) also recommended that "a specialized curriculum in health science librarianship is needed to prepare information professionals who can deliver health information services that can make a difference in health care services and clinical research." Kasalu and

Ojiambo (2015: 9) in Kenya concluded that the librarians' training should be specific. These special skills and knowledge will help librarians to do their duties effectively. Gavgani (2009) also suggested developing workshops and training programmes for librarians in new approaches in EBMP to achieve a consistent growth in medical library and information science.

Figure 5.1: Recommended EBMP model for health science services in public and private hospitals in South African context based upon data discussion, conclusion and literature



5.4. Limitations

Though the study was completed in the stipulated time, the researcher faced the following difficulties:

- Securing the ethical approval from the eThekwini Health District (appendix 2) and the Health Research and Knowledge Management Component at KwaZulu-Natal Department of Health (Appendix 1) was a very lengthy and tedious process. The CEOs/managers of hospitals never replied to emails. Therefore, the researcher had to make personal visits to get ethical approval from every hospital (Appendix 4). There

was no information on universities' websites about ethical committees. Therefore, the researcher had no guidance about whom to approach to get the ethical approval from the universities to conduct a survey on the academic staff of LIS departments;

- The medical practitioners are very busy in their practices. Therefore, they do not have the time to complete questionnaires. The researcher collected data according to the practitioners' convenience and approval from hospital management. The researcher was allowed by the CEOs of hospitals to collect data during their clinical meetings, continuous education meetings, and/or clinical audit meetings, but the researcher was not allowed to disturb the doctors during their working time. Some hospitals neither allowed the researcher to distribute the questionnaire during meetings nor did they provide the email addresses of the doctors. Others asked the researcher to email the questionnaire to the hospital managers' secretaries who, in turn, would distribute them to and collect them from the doctors. Some hospitals allowed the researcher to distribute the hard copies of questionnaires to each doctor's secretary and collect them from the secretaries. The whole process was time consuming and was a limitation for the study.

5.5. Future work

The future work should include studies on the library science students/researchers about whether they would like to pursue a career as a health science librarian, as suggested by some of the academics at the universities and some medical practitioners. The surveys may be conducted on the medical students to ascertain if they want the librarians to be trained in EBMP so that they can help them at a later stage. Further, it may be a good idea to conduct survey studies on medical students to find out if they want to include EBMP in their curriculum.

5.6. Final words

The medical practitioners from eThekwini district showed a positive attitude toward EBMP and agreed that health science librarians can support them in EBMP. However, at present, the health science librarians are not providing any services regarding EBMP because of their lack of knowledge about it. The medical practitioners have a time barrier and they need the help of health science librarians as their time can be saved in searching the literature regarding the new

research in medical science to provide better patient care. The universities in South Africa showed a positive attitude toward EBMP and are considering including the training and courses in library and information science in the students' curriculum. As a researcher, I hope that the findings of this study will lead to some recommendations to the Health Professions Council of South Africa (HPCSA) regarding EBMP. The study will contribute to the improvement of health services and will provide new opportunities for librarians to serve the medical practitioners in South Africa as health science librarians. The study shows the importance of EBMP and it is hoped that it will draw the attention of government, medical industries, as well as funding agencies toward evidence-based medical libraries in public and private hospitals. This study will make a significant contribution to literature regarding health science librarians in EBMP.

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APPENDICES

Appendix 1: Approval from Health Research and Knowledge Management Component at KwaZulu-Natal Department of Health.

health
Department:
Health
PROVINCE OF KWAZULU-NATAL

Health Research & Knowledge Management sub-component
10 – 103 Natalia Building, 330 Langalibalele Street
Private Bag x9051
Pietermaritzburg
3200
Tel.: 033 – 3953189
Fax.: 033 – 394 3782
Email.: hrkm@kznhealth.gov.za
www.kznhealth.gov.za

Reference : HRKM 128/13
Enquiries : Mr X Xaba
Tel : 033 – 395 2805

Dear Mrs S. Bala

Subject: Approval of a Research Proposal

1. The research proposal titled **'Toward evidence based medical practice (EBMP) model for health science library services in public and private hospitals within a South African context'** was reviewed by the KwaZulu-Natal Department of Health.

   The proposal is hereby **approved** for research to be undertaken at hospitals in eThekwini district

2. You are requested to take note of the following:
   a. Make the necessary arrangement with the identified facility before commencing with your research project.
   b. Provide an interim progress report and final report (electronic and hard copies) when your research is complete.

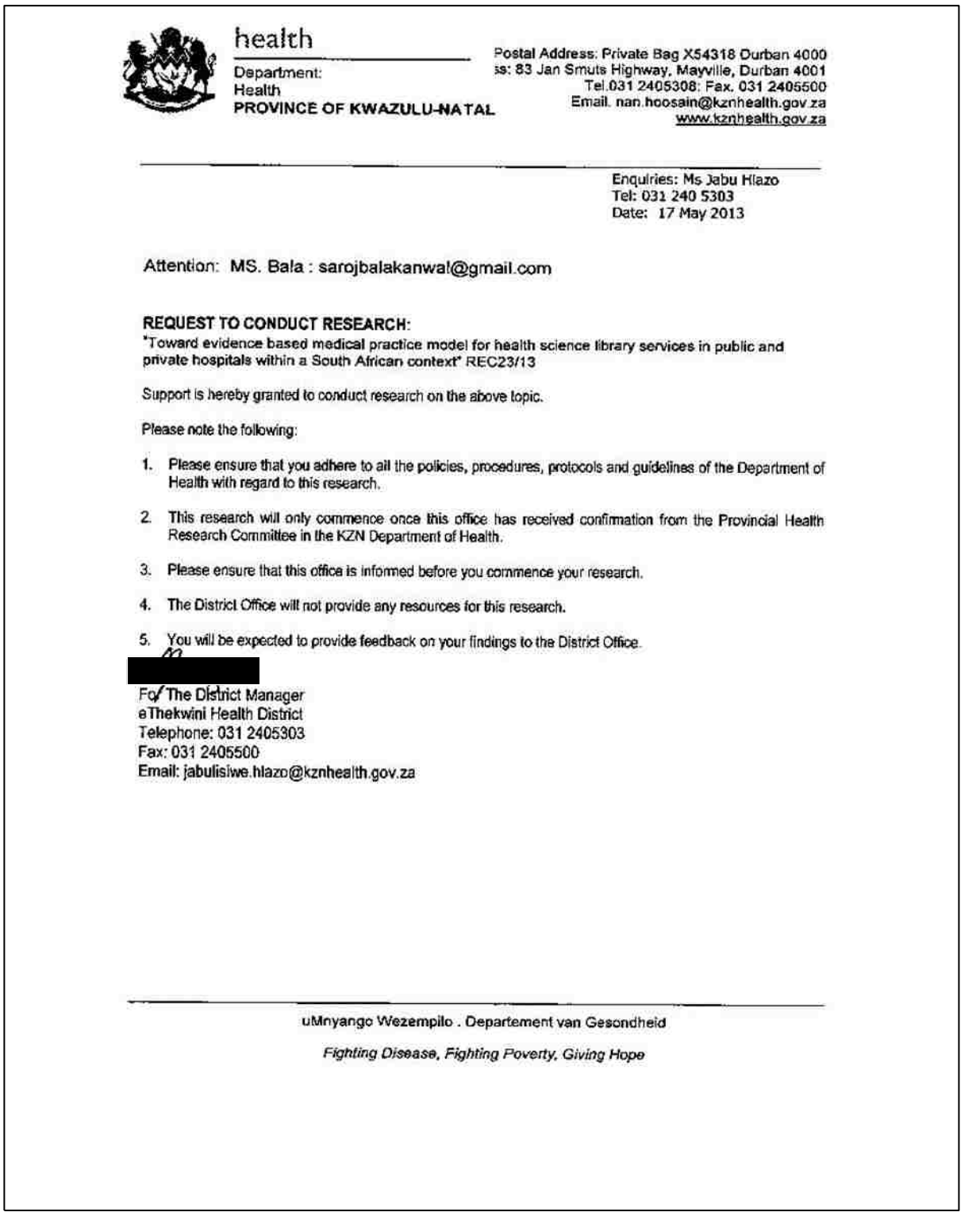
3. Your final report must be posted to **HEALTH RESEARCH AND KNOWLEDGE MANAGEMENT, 10-102, PRIVATE BAG X9051, PIETERMARITZBURG, 3200** and e-mail an electronic copy to hrkm@kznhealth.gov.za

For any additional information please contact Mr X. Xaba on 033-395 2805.

Yours Sincerely

[redacted]
Dr E Lutge
Chairperson, Health Research Committee
Date: 31/05/2013

Appendix 2: Approval from eThekwini health district.



health

Department:
Health
PROVINCE OF KWAZULU-NATAL

Postal Address: Private Bag X54318 Durban 4000
ss: 83 Jan Smuts Highway, Mayville, Durban 4001
Tel.031 2405308: Fax. 031 2405500
Email. nan.hoosain@kznhealth.gov.za
www.kznhealth.gov.za

Enquiries: Ms Jabu Hlazo
Tel: 031 240 5303
Date: 17 May 2013

Attention: MS. Bala : sarojbalakanwal@gmail.com

REQUEST TO CONDUCT RESEARCH:
"Toward evidence based medical practice model for health science library services in public and private hospitals within a South African context" REC23/13

Support is hereby granted to conduct research on the above topic.

Please note the following:

1. Please ensure that you adhere to all the policies, procedures, protocols and guidelines of the Department of Health with regard to this research.
2. This research will only commence once this office has received confirmation from the Provincial Health Research Committee in the KZN Department of Health.
3. Please ensure that this office is informed before you commence your research.
4. The District Office will not provide any resources for this research.
5. You will be expected to provide feedback on your findings to the District Office.

[redacted]
Fo/ The District Manager
eThekwini Health District
Telephone: 031 2405303
Fax: 031 2405500
Email: jabulisiwe.hlazo@kznhealth.gov.za

uMnyango Wezempilo . Departement van Gesondheid

Fighting Disease, Fighting Poverty, Giving Hope

Appendix 3: Approval for research from Institutional Research Ethics Committee (IREC) at Durban University of Technology.

DURBAN UNIVERSITY of TECHNOLOGY

INSTITUTIONAL RESEARCH ETHICS COMMITTEE (IREC)

10 May 2013

IREC Reference Number: **REC 23/13**

Mrs S Bala
17 Corlo Court
18 Heswall Road
Berea
4001

Dear Mrs Bala

Toward evidence based medical practice model for health science library services in public and private hospitals within a South African context

I am pleased to inform you that Full Approval has been granted to your proposal REC 23/13.

The Proposal has been allocated the following Ethical Clearance number IREC 036/13. Please use this number in all communication with this office.

Approval has been granted for a period of one year, before the expiry of which you are required to apply for safety monitoring and annual recertification. Please use the Safety Monitoring and Annual Recertification Report form which can be found in the Standard Operating Procedures [SOP's] of the IREC. This form must be submitted to the IREC at least 3 months before the ethics approval for the study expires.

Any adverse events [serious or minor] which occur in connection with this study and/or which may alter its ethical consideration must be reported to the IREC according to the IREC SOP's. In addition, you will be responsible to ensure gatekeeper permission.

Please note that any deviations from the approved proposal require the approval of the IREC as outlined in the IREC SOP's.

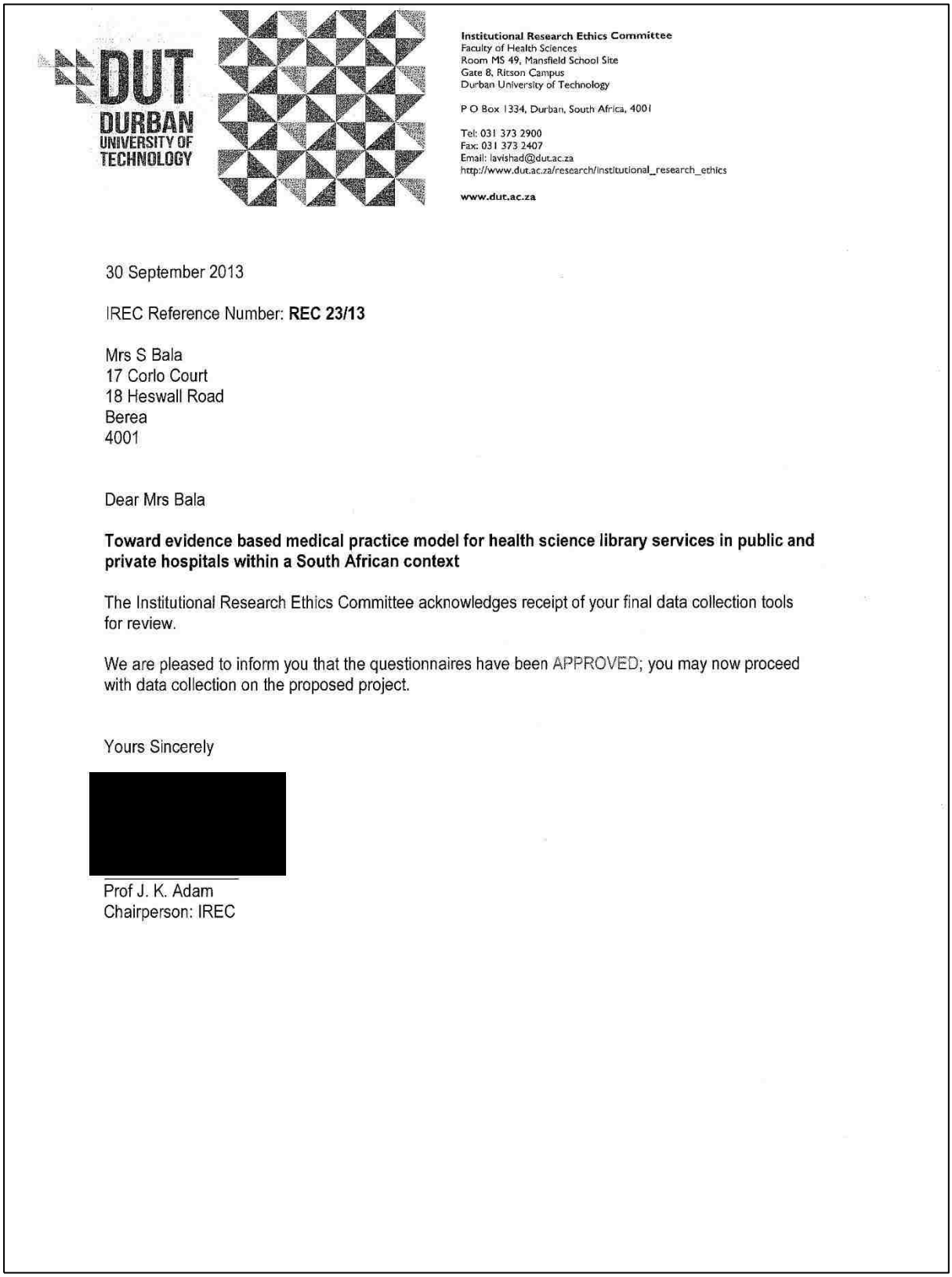
Please note that you may continue with validity testing and piloting of the questionnaire. Research on the proposed project may not proceed until IREC reviews and approves the final questionnaire.

Yours Sincerely

[redacted]

Dr D F Naude
Chairperson: IREC

Appendix 3.1: Ethical clearance for final data tools from Institutional Research Ethics Committee (IREC) at Durban University of Technology.



Institutional Research Ethics Committee
Faculty of Health Sciences
Room MS 49, Mansfield School Site
Gate 8, Ritson Campus
Durban University of Technology

P O Box 1334, Durban, South Africa, 4001

Tel: 031 373 2900
Fax: 031 373 2407
Email: lavishad@dut.ac.za
http://www.dut.ac.za/research/institutional_research_ethics

www.dut.ac.za

30 September 2013

IREC Reference Number: **REC 23/13**

Mrs S Bala
17 Corlo Court
18 Heswall Road
Berea
4001

Dear Mrs Bala

Toward evidence based medical practice model for health science library services in public and private hospitals within a South African context

The Institutional Research Ethics Committee acknowledges receipt of your final data collection tools for review.

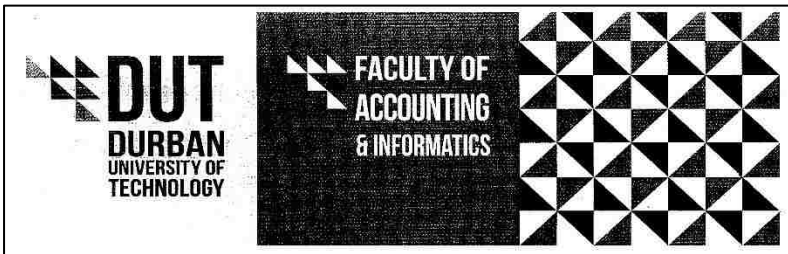
We are pleased to inform you that the questionnaires have been APPROVED; you may now proceed with data collection on the proposed project.

Yours Sincerely

[redacted]

Prof J. K. Adam
Chairperson: IREC

Appendix 3.2: Proposal approval by faculty research committee.



Faculty Office: Accounting & Informatics
Faculty of Accounting & Informatics
Durban University of Technology
DD3025, Block D Ritson Campus,
DURBAN, 4001

P O Box 1334, DURBAN, 4000
South Africa

Tel: (031) 373 5152/5826
Fax: (031) 373 5495

www.dut.ac.za

25 June 2013

Proposal approval: S. BALA Student number 21329985

Dear Ms Bala

DOCTORAL DEGREE OF TECHNOLOGY: LIBRARY AND INFORMATION STUDIES

This serves to confirm the approval of your research proposal by the Faculty Research Committee, at its meeting held on 14 February 2013, as follows:

1. Research proposal and dissertation title:

   TOWARD EVIDENCE BASED MEDICAL PRACTICE MODEL FOR HEALTH SCIENCE LIBRARY SERVICES IN PUBLIC AND PRIVATE HOSPITALS WITHIN A SOUTH AFRICAN CONTEXT

   Supervisor: Prof P. Singh
   Co-supervisor: Prof PG Underwood

   Please note that any proposed changes in the dissertation title require the approval of your supervisor/s, the Faculty Research Committee, as well as ratification thereof by the Higher Degrees Committee.

2. A research budget to the amount of **R15 000.00** has been approved for your study. You may now access this budget.

   Please note that this funding is not a scholarship or bursary and is therefore not paid directly to you, but is controlled by your supervisor. Any proposed changes to use this funding allocation require the approval of your supervisor.

Please note that you are required to re-register each year.

Should you experience any problems relating to your research, your supervisor must be informed of the matter as soon as possible. If the difficulties persist, you should then approach your Head of Department, Faculty Research office or Executive Dean of the Faculty.

Please refer to the 2012 General Rule Book concerning the rules relating to postgraduate studies, which include *inter alia* acceptable minimum and maximum timeframes, submission of thesis/dissertations, etc. You are also advised to read the Postgraduate Students' Guide which is available on the DUT website http://research.dut.ac.za.

Please do not hesitate to contact the Faculty Research office for any assistance. We wish you success in your studies.

Regards,

[redacted]

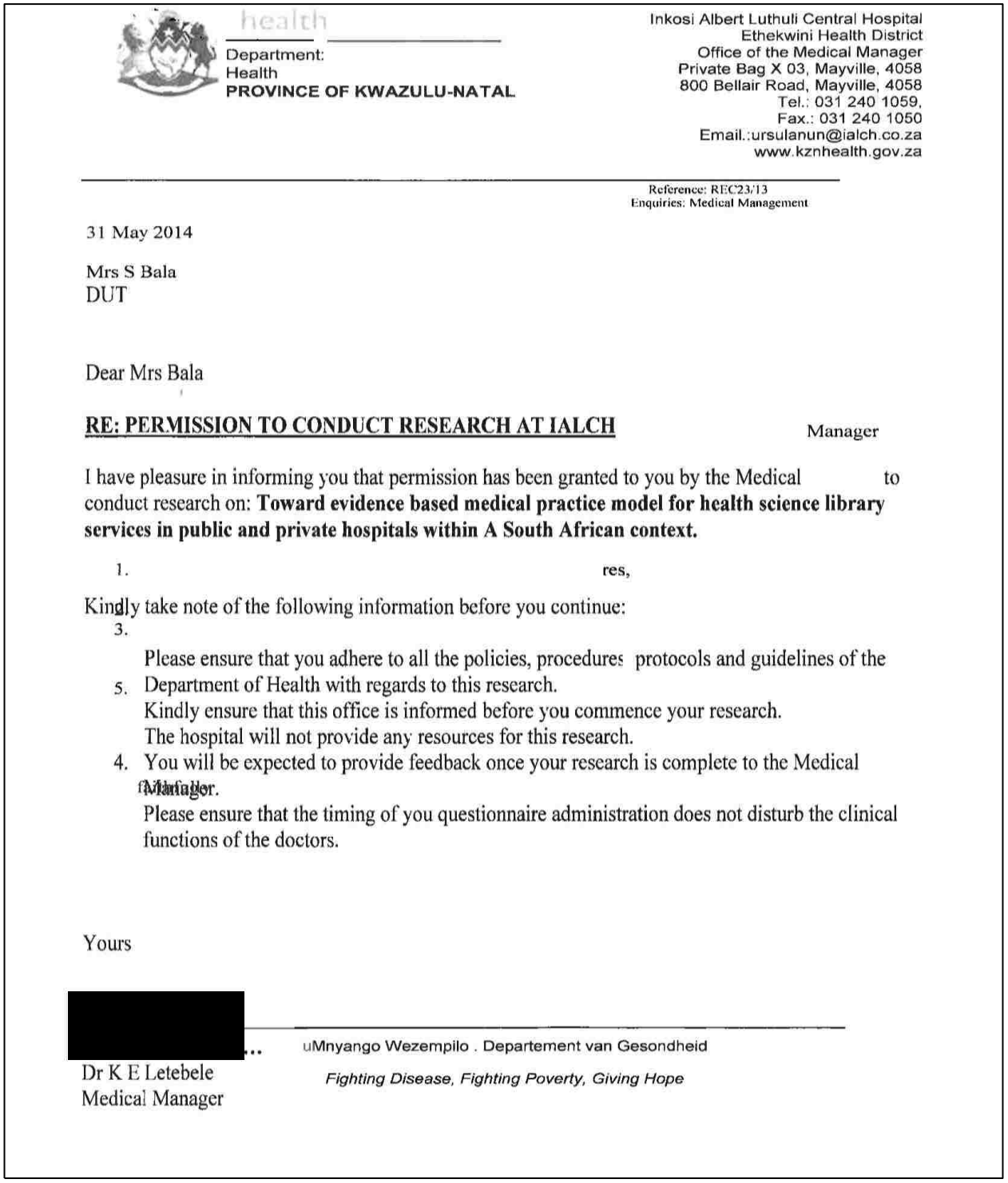
[redacted]

Prof T Nepal
Executive Dean: Accounting and Informatics

Mr M Ngibe
Faculty Research Assistant

Cc Faculty Officer: Mrs N Singh-Sakichand
Head of Department: Dr Sentoo
Supervisor: Prof P. Singh

Appendix 4: Approval from Inkosi Albert Luthuli Central Hospital.



health

Department:
Health
PROVINCE OF KWAZULU-NATAL

Inkosi Albert Luthuli Central Hospital
Ethekwini Health District
Office of the Medical Manager
Private Bag X 03, Mayville, 4058
800 Bellair Road, Mayville, 4058
Tel.: 031 240 1059,
Fax.: 031 240 1050
Email.:ursulanun@ialch.co.za
www.kznhealth.gov.za

Reference: REC23/13
Enquiries: Medical Management

31 May 2014

Mrs S Bala
DUT

Dear Mrs Bala

RE: PERMISSION TO CONDUCT RESEARCH AT IALCH

Manager

I have pleasure in informing you that permission has been granted to you by the Medical to conduct research on: **Toward evidence based medical practice model for health science library services in public and private hospitals within A South African context.**

1. res,

Kindly take note of the following information before you continue:

3. Please ensure that you adhere to all the policies, procedures protocols and guidelines of the
5. Department of Health with regards to this research.
   Kindly ensure that this office is informed before you commence your research.
   The hospital will not provide any resources for this research.
4. You will be expected to provide feedback once your research is complete to the Medical Manager.
   Please ensure that the timing of you questionnaire administration does not disturb the clinical functions of the doctors.

Yours

[redacted]...

Dr K E Letebele
Medical Manager

Appendix 4.1: Approval from King Edward VIII Regional Hospital.

health

Department:
Health
PROVINCE OF KWAZULU-NATAL

OFFICE OF THE HOSPITAL CEO

KING EDWARD VIII REGIONAL HOSPITAL
Private Bag X02, CONGELLA, 4013
Corner of Rick Turner & Sydney Road
Tel.031-3603853/3015; Fax.031-2061457:
Email.rejoice.khuzwayo@kznhealth.gov.za:
www.kznhealth.gov.za

Ref.: KE 2/7/1/ (37/2013)
Enq.: Mrs. R. Sibiya
Research Programming

6 August 2013

Mrs. S. Bala
17 Corlo Court
18 Heswall Road
BEREA

Dear Ms. Bala

Protocol: "Toward evidence based medical practice (EBMP) model for health science library services in public and private hospitals within a South African context"

Your request to conduct research at King Edward VIII Hospital has been approved.

Please ensure the following:

- That King Edward VIII Hospital receives full acknowledgment in the study on all publications and reports and also kindly present a copy of the publication or report on completion.

- Before commencement:

* Discuss your research project with our relevant Directorate Managers
* Sign an indemnity form at Room8, CEO's Complex, Admin. Block.

Yours faithfully

[redacted]

SUPPORTED/~~NOT SUPPORTED~~

7/8/2013

DR. H. GOSNELL
CHIEF EXECUTIVE OFFICER

DATE

Appendix 4.2: Approval from King Dinuzulu Hospital.

Appendix 4.2

HEALTH
KwaZulu-Natal

KING DINUZULU HOSPITAL COMPLEX
OFFICE OF THE HOSPITAL MANAGER
PO DORMERTON, 4015
67 R.D. NAIDU DRIVE, SYDENHAM, DURBAN
Tel: 031 242 6242: Fax: 031 2099586
http://www.kznhealth.gov.za/kinggeorgevhospital.htm
shamin.maharaj@kznhealth.gov.za

Enquiries: Dr S.B. Maharaj
Research Programming

Date: 10/10/2013

Ms S. Bala
17 Corlo Court
18 Heswall Road
BEREA

Dear Ms Bala

Protocol: towards evidence based medical practice (EBMP) model for health science libraray Service in public and private hospitals within a South Africa context

Your request to conduct research at King Dinuzulu Hospital Complex has been approved.

Please ensure the following:

- That King Dinuzulu Hospital receives full acknowledgement in the study on all publications and reports and also kindly present a copy of the publication or report on completion.

[redacted]

DR S.B. MAHARAJ
MEDICAL MANAGER

Appendix 4.3: Approval from Prince Mshiyeni Memorial Hospital.

Prince Mshiyeni Memorial Hospital
Private bag X 07, MOBENI 4060
Mangosuthu Highway
Dr. M Aung: Senior Manager: Medical
Tel: 031-907 8304/8317, Fax: 031-9061044
Email: myint.aung@kznhealth.gov.za

Enquires : Dr. M Aung
Ref No. : 36/RECSH/13
Date: 03.10.2013

TO: MS S Bala

RE: LETTER OF APPROVAL TO CONDUCT RESEARCH AT PMMH

Dear Researcher;

I have pleasure to inform you that PMMH has approved your application to conduct research on **"Toward evidence based medical practice model for health science library services in public and private hospitals within a South African context"** in our institution.

Please note the following:

1. Please ensure that you adhere to all the policies, procedures, protocols and guidelines of the Department of Health with regards to this research.
2. Please ensure this office is informed before you commence your research.
3. The institution will not provide any resources for this research.
4. You will be expected to provide feedback on you finding to the institution.

Thank you.

Regards;

[redacted]

Dr. M Aung
Senior Manager: Medical & Specialist in Family Medicine
MBBS(Rgn), PGDip in HIV (Natal), DO(SA)
M.Med.Fam.Med (Natal)

uMnyago Wezempilo. Department of Health
Fighting Disease, Fighting Poverty, Giving Hope

Appendix 4.4: Approval from Wentworth Hospital.

Appendix 4.4

health

Department:
Health
PROVINCE OF KWAZULU-NATAL

WENTWORTH HOSPITAL
Private Bag, Jacobs 4026
1 Boston Road, Jacobs 4026
Tel.: 031-460 5000, Fax.: 031-4689654
Email.:
www.kznhealth.gov.za

Reference : Research Protocol
Your Ref : Research
Enquiries : Dr. S.B. Kader
Telephone : 031-460 5001
E Mail : Suriya.kader@kznhealth.gov.za
Date : 18th September 2013

MS. SAROJ BALA
sarojbalakanwal@gmail.com

Dear Dr. Naidoo,

RE: **PERMISSION TO CONDUCT RESEARCH AT WENTWORTH HOSPITAL. "TOWARD EVIDENCE BASED MEDICAL PRACTICE (EBMP) MODEL FOR HEALTH SCIENCE LIBRARY SERVICES IN PUBLIC AND PRIVATE HOSPITALS WITHIN A SOUTH AFRICAN CONTEXT.**

I have a pleasure in informing you that permission has been granted to you to conduct research entitled : TOWARD EVIDENCE BASED MEDICAL PRACTICE (EBMP) MODEL FOR HEALTH SCIENCE LIBRARY SERVICES IN PUBLIC AND PRIVATE HOSPITALS WITHIN A SOUTH AFRICAN CONTEXT"

Kindly take note of the following information before you continue:-

1. Please adhere to all the policies, procedures, protocols and guidelines of the Department of Health with regards to this research.
2. This research will only commence once this office has received confirmation from the Provincial Health Research Committee in the KwaZulu Natal Department of Health.
3. Kindly ensure that this office is informed before you commence your research.
4. The hospital will not provide any resources for this research.
5. You will be expected to provide feedback once your research is complete to the Chief Executive Officer.

Yours faithfully

[redacted]

DR. S.B. KADER
HOSPITAL MANAGER

Appendix 4.5: Approval from St Augustine's Hospital.

Appendix 4.5

Netcare St Augustine's Hospital

Tel: +27 (0) 31 268 5000
Fax: +27 (0) 31 201 4598
107 J.B Marks Road, Durban, 4001, South Africa
PO Box 30105, Mayville, 4058, South Africa
www.netcare.co.za

LETTER CONFIRMING KNOWLEDGE OF NON-TRIAL RESEARCH TO BE CONDUCTED IN THIS NETCARE FACILITY

Dear Mrs. SAROJ BALA,

Re: Toward evidence based medical practice model for health science library services in public and private hospitals within a South African context.

We hereby confirm knowledge of the above named research application to be made to the Netcare Research Operational Committee and in principle agree to the research application for Netcare St Augustine's Hospital/site/division, subject to the following:

1. That the data collection may not commence prior to receipt of FINAL APPROVAL from the Sustainability Committee of Netcare (Research Operational Committee).
2. A copy of the research report will be provided to Netcare Research Operational Committee once it is finally approved by the tertiary institution, or once complete.
3. Netcare has the right to implement any Best Practice recommendations from the research.
4. That the Hospital/Site/Division Management reserves the right to withdraw the approval for research at any time during the process, should the research prove to be detrimental to the subjects/Netcare or should the researcher not comply with the conditions of approval.

We wish you success in your research.

Yours faithfully

[redacted]

AUGUSTA DORNING
General Manager

Netcare Hospitals (Pty) Ltd T/A Netcare St Augustine's Hospital
Directors: J du Plessis, R H Friedland, K N Gibson
Company Secretary: L Bagwandeen
Reg. No. 1996/006591/07

Appendix 4.6: Approval from Life Health Head Office.

Life HEALTH CARE Group

Life Healthcare Head Office
Oxford Manor, 21 Chaplin Road, Illovo 2196
Private Bag X13, Northlands 2116, South Africa
Telephone: +27 11 219 0000
Telefax: +27 11 219 0001
www.lifehealthcare.co.za

13 August 2013

ATTENTION: S Bala

APPROVAL FOR RESEARCH STUDY
TITLE: Towards evidence based medical practice model for health science library services in public and private hospitals within a South African context.

Our previous correspondence refers.

The Research Committee of the Life Healthcare College of Learning has granted permission for your study.

We look forward to seeing the results of your research once it is completed.

Yours sincerely

[redacted]

Anne Roodt
Nursing Education Specialist

Life College of Learning

Appendix 4.7: Approval from Life Chatsmed Garden Hospital.

Dear Ms. Bala

The next IPA meeting will only be in the new year. As a result they have indicated that you can contact them directly. Unfortunately I am not able to provide you with e-mail address. If possible, please refer to our website (www.lifehealthcare.co.za) under the "our Hospitals" tab select Chatsmed for a list of our specialists and their phone numbers.

Regards
Riaan

Riaan Croucamp
Hospital Manager
Life Chatsmed Garden Hospital

80 Woodhurst Drive, Woodhurst, Chatsworth 4092
PO Box 56602, Chatsworth 4030
Tel: +27 31 459 8036
Cell: +27 82 567 8018
Fax: +27 86 686 2606
Email: riaan.croucamp@lifehealthcare.co.za
Website: www.lifehealthcare.co.za

In the interest of the environment – think before you print!

From: Saroj Bala [mailto:sarojbalakanwal@gmail.com]
Sent: 08 October 2013 01:08 PM
To: Croucamp,Riaan
Subject: Request to conduct research (approved by Life healthcare Head office)

Appendix 4.8: Approval from Life Entabeni Hospital.

Swale,Greg Greg.Swale@lifehealthcare.co.za 10/7/13

to me

Images are not displayed. Display images below - Always display images from Greg.Swale@lifehealthcare.co.za

English
Hindi

Translate message

Turn off for: English

Dear Saroj,

Our Dr's are independent practitioners thus I cannot request them to participate in the study. I am happy for you to contact the individual Dr rooms and request participation. I have attached the link to Life Entabeni Website with the Dr's contact details listed.

I wish you the best of luck.

http://www.lifehealthcare.co.za/Hospitals/DisplayHospital.aspx?nHospitalId=EETnQQYLyoysfx6ei7FTmjbae8SosQuUMTuXCuAjJAqSsSvu05qOGY3cgt1Rk1pJE5WR9j0F%2fozLOWMstj1cxd7LKppY7izGxX5zZt3OYqET0ZakCHx5axtihoZjAgTipqBF1RRgYPbc0ZAQiwhXTdSqdEdeNMWzxMVXnqMs3eLP

Regards

Greg Swale
Hospital Manager
Life Entabeni Hospital

148 Mazisi Kunene Road, Durban 4001
PO Box 2230, Durban 4000
Tel: +27 31 204 1301
Cell: +27 84 5111 289
Fax: +27 86 6834 799
Email: greg.swale@lifehealthcare.co.za
Website: www.lifehealthcare.co.za

From: Saroj Bala [mailto:sarojbalakanwal@gmail.com]
Sent: 07 October 2013 12:24 PM
To: Swale,Greg
Subject: Request to conduct research (approved by Life healthcare Head office)

Appendix 4.9: Approval from Life Mount Edgecombe Hospital.

Greyling,Japie Japie.Greyling@lifehealthcare.co.za 10/7/13

to me

Images are not displayed. Display images below - Always display images from Japie.Greyling@lifehealthcare.co.za

English
Hindi

Translate message

Turn off for: English

Dear Saroj,

I am doing well thank you and I hope you are doing well?

Great news. You may indeed come and visit us at the hospital.

Regards

Japie Greyling
Hospital Manager
Life Mount Edgecombe Hospital

Physical Address:	163 - 179 Redberry Road, Rockford, Phoenix, 4068
Postal Address:	P.O. Box 204, Mount Edgecombe, 4300
Tel:	+27 31 537 4200
Cell:	+27 84 820 4442
Fax:	+27 86 500 3604
Email:	Japie.Greyling@lifehealthcare.co.za
Website:	www.lifehealthcare.co.za

In the interest of the environment – think before you print!

From: Saroj Bala [mailto:sarojbalakanwal@gmail.com]
Sent: 07 October 2013 12:53 PM

Appendix 4.10: Approval from Life Westville Hospital.

Hi Saroj

You have been granted approval for this research.

Regards

Abdool Amod
Hospital Manager
Life Westville Hospital

7 Spine Road, Westville, 3630
PO Box 467, Westville, 3630
Tel: +27 31 251 6809
Fax: +27 86 651 8340
Mobile: +27 83 578 6525
Email: abdool.amod@lifehealthcare.co.za
Website: www.lifehealthcare.co.za

From: Saroj Bala [mailto:sarojbalakanwal@gmail.com]
Sent: 07 October 2013 01:40 PM
To: Amod,Abdool
Subject: Re: Request to conduct research (approved by Life healthcare Head office)

Appendix 4.10: Approval from McCord Hospital.

health
Department:
Health
PROVINCE OF KWAZULU-NATAL

McCord Hospital
28 McCord Road
Overport
Tel: 031 2685813
Fax: 031 2685927
Email address :jay.mannie@kznhealth.gov.za
www.kznhealth.gov.za

Mrs S Bala
17 Corlo Court
18 Heswall Road
Berea

20 June 2014

Dear Ms Bala

PROTOCOL : "TOWARD EVIDENCE BASED MEDICAL PRACTICE (EBMP) MODEL FOR HEALTH SCIENCE LIBRARY SERVICES IN PUBLIC AND PRIVATE HOSPITALS WITHIN A SOUTH AFRICAN CONTEXT"

Your request to conduct research at McCord Hospital has been approved.

Please ensure the following :-

- That McCord Hospital receives full acknowledgement in the study on all publications and reports.
- Please present a copy of the publication or report on completion.
- Sign an indemnity and a confidentiality form at the HR office

Yours faithfully

[redacted]

Dr Jay Mannie
Acting CEO , McCord Hospital
KZN Department of Health
jay.mannie@kznhealth.gov.za
Cell 0836414382/0312685700 (Office)

uMnyango Wezempilo. Departement van Gesondheid
Fighting Disease, Fighting Poverty, Giving Hope

Appendix 4.11: Approval from Netcare Management Limited.

Netcare Management (Pty) Limited

Tel: + 27 (0)11 301 0000
Fax: Corporate +27 (0)11 301 0499
76 Maude Street, Corner West Street, Sandton, South Africa
Private Bag X34, Benmore, 2010, South Africa

RESEARCH OPERATIONAL COMMITTEE FINAL APPROVAL OF RESEARCH

Approval number: UNIV-2014-0019

Ms Saroj Bala

E mail: sarojbalakanwal@gmail.com

Dear Ms Bala

RE: TOWARD EVIDENCE BASED MEDICAL PRACTICE MODEL FOR HEALTH SCIENCE LIBRARY SERVICES IN PUBLIC AND PRIVATE HOSPITALS WITHIN A SOUTH AFRICAN CONTEXT

The above-mentioned research was reviewed by the Research Operational Committee's delegated members and it is with pleasure that we inform you that your application to conduct this research at Netcare Park Lands & St Augustine's Hospital, has been approved, subject to the following:

i) Research may now commence with this FINAL APPROVAL from the Sustainability Committee of Netcare (Research Operational Committee).

ii) All information with regards to Netcare will be treated as confidential.

iii) Netcare's name will not be mentioned without written consent from the Sustainability Committee of Netcare (Research Operational Committee).

iv) All legal requirements with regards to patient rights and confidentiality will be complied with.

v) Insurance will be provided and maintained for the duration of the research. This cover provided to the researcher must also protect both the staff and the hospital facility from potential liability

vi) In accordance with MCC approval, that medicine will be administered by or under direction of the authorised Trialist

vii) The research will be conducted in compliance with the GUIDELINES FOR GOOD PRACTICE IN THE CONDUCT OF CLINICAL TRIALS IN HUMAN PARTICIPANTS IN SOUTH AFRICA (2000)

viii) Netcare must be furnished with a STATUS REPORT on the progress of the study at least annually on 30th September irrespective of the date of approval from

Sustainability Committee of Netcare (Research Operational Committee) as well as a FINAL REPORT with reference to intention to publish and probable journals for publication, on completion of the study.

ix) A copy of the research report will be provided to Netcare (Research Operational Committee) once it is finally approved by the tertiary institution, or once complete.

x) Netcare has the right to implement any Best Practice recommendations from the research.

xi) Netcare reserves the right to withdraw the approval for research at any time during the process, should the research prove to be detrimental to the subjects/Netcare or should the researcher not comply with the conditions of approval.

xii) APPROVAL IS VALID FOR A PERIOD OF 36 MONTHS FROM DATE OF THIS LETTER.

We wish you success in your research.

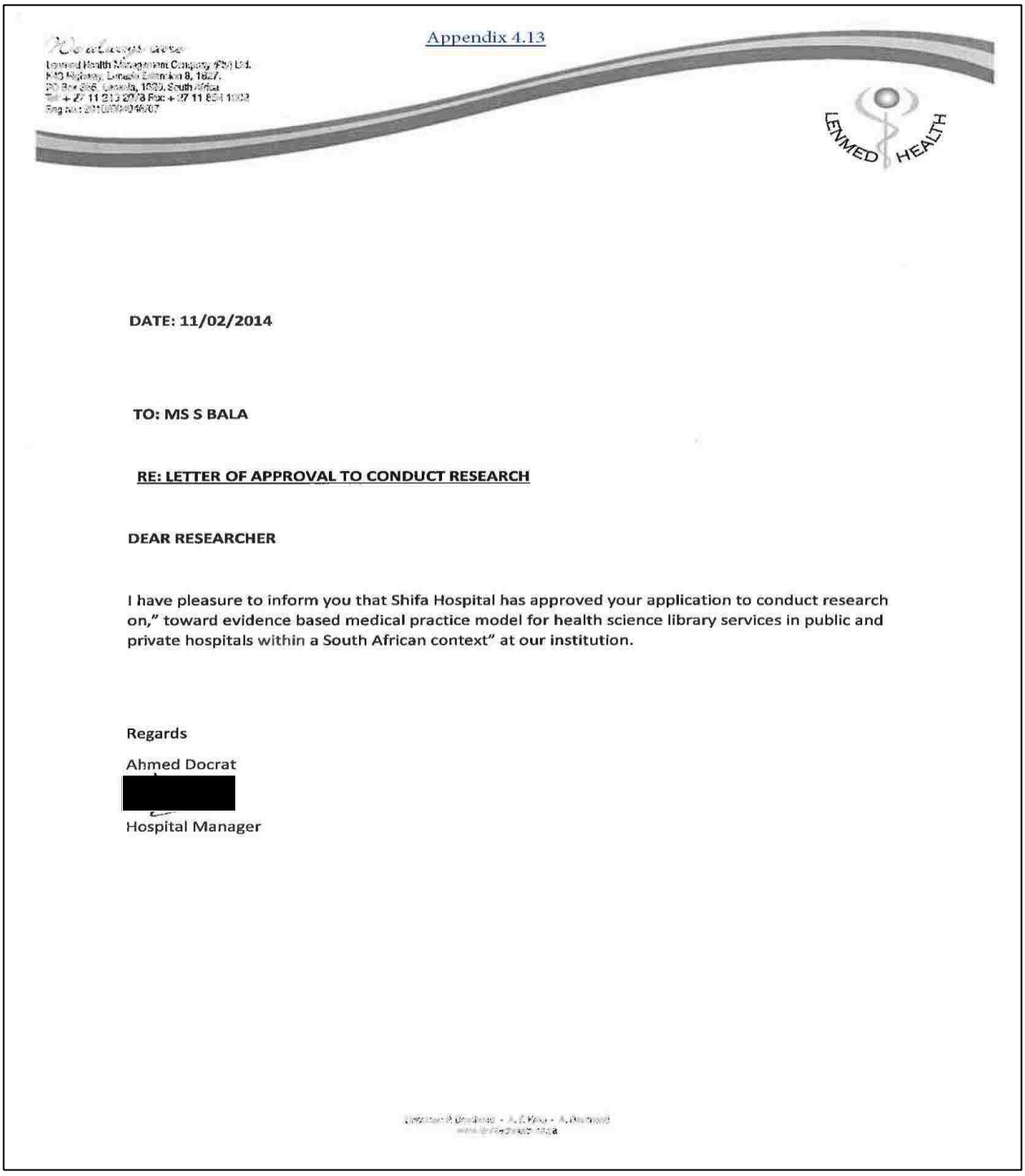
Yours faithfully [redacted]

Prof Dion du Plessis
Full member: Research Operational Committee & Medical Practitioner evaluating research applications as per Management and Governance Policy

[redacted]
Shannon Nell
Chairperson: Research Operational Committee
Network Healthcare Holdings Limited (Netcare)
Date: 15/01/2014

[redacted]

Appendix 4.12: Approval from Shifa Hospital.



Appendix 4.13

Lenmed Health Management Company (Pty) Ltd.
M3 Highway, Lenasia Extension 8, 1827.
PO Box 265, Lenasia, 1820, South Africa
Tel: + 27 11 213 2078 Fax: + 27 11 854 1003
Reg no: 2011/009046/07

LENMED HEALTH

DATE: 11/02/2014

TO: MS S BALA

RE: LETTER OF APPROVAL TO CONDUCT RESEARCH

DEAR RESEARCHER

I have pleasure to inform you that Shifa Hospital has approved your application to conduct research on," toward evidence based medical practice model for health science library services in public and private hospitals within a South African context" at our institution.

Regards

Ahmed Docrat

[redacted]

Hospital Manager

Appendix 4.13: Approval from Parklands Hospital.

Appendix 4.14

Netcare Parklands Hospital
Tel: +27 (0) 31 242 4000
Fax: +27 (0) 31 207 5463
75 Hopelands Road, Overport, South Africa
PO Box 37014, Overport, 4067, South Africa
www.netcare.co.za

LETTER CONFIRMING KNOWLEDGE OF NON-TRIAL RESEARCH TO BE CONDUCTED IN THIS NETCARE FACILITY

Dear Mrs. SAROJ BALA,

Re: Toward evidence based medical practice model for health science library services in public and private hospitals within a South African context.

We hereby confirm knowledge of the above named research application to be made to the Netcare Research Operational Committee and in principle agree to the research application for Netcare Parklands Hospital/site/division, subject to the following:

1. That the data collection may not commence prior to receipt of FINAL APPROVAL from the Sustainability Committee of Netcare (Research Operational Committee).
2. A copy of the research report will be provided to Netcare Research Operational Committee once it is finally approved by the tertiary institution, or once complete.
3. Netcare has the right to implement any Best Practice recommendations from the research.
4. That the Hospital/Site/Division Management reserves the right to withdraw the approval for research at any time during the process, should the research prove to be detrimental to the subjects / Netcare or should the researcher not comply with the conditions of approval.

We wish you success in your research.

Yours faithfully

[redacted]

Signed by Hospital/Site/Division Management

4 March 2014

Date

Hospital Manager

(Specify designation)

Appendix 5: Questionnaire for Medical Practitioners.

QUESTIONNAIRE FOR MEDICAL PRACTITIONERS

The purpose of this questionnaire is to collect data for my DTech: Library and Information Studies research titled: Toward evidence based medical practice model for health science library services in public and private hospitals within a South African context.

Evidence based medical practice (EBMP) is the conscientious, explicit and judicious use of current best evidence/research in making decisions regarding the care of individual patients

PLEASE ANSWER THIS QUESTIONNAIRE BY PLACING A CROSS [X] IN THE CHECKBOX NEXT TO THE OPTION/S THAT APPLY IN EACH CASE. WHERE YOU SELECT 'OTHER', PLEASE EXPLAIN IN THE SPACE PROVIDED.

SECTION A: BIOGRAPHICAL DATA

1. Please indicate your gender

☐ Male

☐ Female

2. Please indicate age group

☐ 20-30
☐ 31-40
☐ 41-50
☐ 51-60
☐ 61-70
☐ 70+

3. Please indicate in which year you completed your last degree

4. Please state your highest qualification and the discipline in which you attained this qualification

5. Please indicate your hospital where you are currently working

- ☐ Public
- ☐ Private
- ☐ Semi-private

6. For how many years have you been in medical practice?

- ☐ 0-5 yrs.
- ☐ 6-10 yrs.
- ☐ 11-15 yrs.
- ☐ 16-20 yrs.
- ☐ 21+ yrs.

7. Your specialization or discipline and job title?

8. On average, how many hours per week do you work?

- ☐ 1-20
- ☐ 21-30
- ☐ 31-40
- ☐ 41+

9. On average, how many patients do you see daily?

- ☐ 1-10
- ☐ 11-20
- ☐ 21-30
- ☐ 31-40
- ☐ 41+

SECTION B: ATTITUDES AND OPINIONS ON EBMP AND UNDERSTANDING OF MEDICAL PRACTICE GUIDELINES:

This section of the questionnaire inquires about personal attitudes toward, use of, and perceived benefits and limitations of EBMP.

For the following items, place a mark **X** in the appropriate box that indicates your response. In items referring to your "facility," consider the practice setting in which you do the majority of your clinical care.

	STATEMENT	AGREE	DISAGREE	NEUTRAL
10.	I am familiar with EBMP			
11.	Application of EBMP is necessary in my specialization or practice			
12.	EBMP is useful in my day-to-day practice			
13.	I need to increase the use of EBMP in my daily practice			
14.	I learned the foundations for EBMP as part of my academic preparation at medical school/university			
15.	EBMP improves the quality of patient care			

16.	I am familiar with the online medical search engines (e.g., MEDLINE, CINAHL)			

If you would like to add any information on the above questions, please explain

_____

_____

_____

17. I can access relevant databases and the Internet at my facility

- ☐ Yes
- ☐ No
- ☐ Do not know

18. Do you think that evidence-based practice is necessary in medicine?

- ☐ Yes
- ☐ No

Please explain

_____

_____

_____

_____

19. What sources do you use to practice EBM?

- ☐ Print source
- ☐ Online and electronic sources
- ☐ Other_____

_____

20. If you use print sources, what sub source/s do you use?

- ☐ Books
- ☐ Journals

- ☐ Thesis/research reports
- ☐ Atlases
- ☐ Guidelines
- ☐ Others (please mention)

_____

_____

_____

21. If you use online and electronic sources, what sub source/s do you use?

- ☐ Free web
- ☐ The Cochrane library
- ☐ PubMed
- ☐ Systematically reviewed literature
- ☐ Medline
- ☐ E-Journals
- ☐ Others (please mention)

_____

_____

_____

22. Which website do you use in your practice of EBM?

- ☐ Medscape
- ☐ E-Medicine
- ☐ MD consult
- ☐ Others (please specify)

_____

_____

_____

23. What are the reasons for your preferences for the use of print sources?

- ☐ Ease to use
- ☐ Easily available
- ☐ Currency
- ☐ Easy to carry
- ☐ Cost effectiveness

☐ Others (please mention)

_____

_____

_____

24. What barriers/problems have you faced in EBMP? You may choose more than one answer

☐ Lack of personal time
☐ Patient overload
☐ EBM is difficult to understand
☐ Lack of interest
☐ Lack of library services
☐ Poor ability to critically appraise the literature
☐ Lack of information resources
☐ the absence of an effective computer system
☐ Lack of research skills
☐ Lack of understanding of statistical analysis
☐ Lack of EBM training courses
☐ Lack of resources and facilities
☐ Lack of collective support among my colleagues in my facility
☐ Inability to apply research findings to individual patients with unique characteristics
☐ Lack of generalizability of the literature findings to my patient population
☐ Other (please specify)

_____

_____

_____

SECTION C: MEDICAL PRACTITIONER'S RESPONSE TOWARDS MEDICAL/HOSPITAL LIBRARY SERVICES:

25. Is there a library in the hospital in which you are practicing?

☐ Yes
☐ No

26. If you answered "YES" to question 25, please answer the following questions. If you answered "No" Please proceed to question 27. Explain your answer in each case.

26.1 Are you satisfied with the library services in your hospital?

☐ Yes
☐ No

26.2 If you are not satisfied with the library services in your hospital, what improvements would you like to see implemented?

_____

_____

_____

_____

26.3 Are you assisted by a librarian/s in term of your practice?

- ☐ Yes
- ☐ No

26.4 Are there librarians dedicated to your field of medicine/specialization?

- ☐ Yes
- ☐ No

26.5 What type of support or services do the librarians provide?

_____

_____

_____

_____

26.6 How often do you use the services of the librarians?

- ☐ Everyday
- ☐ Once a week
- ☐ Twice a week
- ☐ Once a month
- ☐ Twice a month
- ☐ Others (please specify)

_____

_____

26.7 Do you think that the librarians are adequately trained to assist you in your practice?

- ☐ Yes
- ☐ No

26.8 How do you think librarians should be trained to assist with EBMP?

_____

_____

_____

_____

26.9 Do you think that the librarians are suitably qualified to assist with EBMP?

- ☐ Yes
- ☐ No

26.10 Do you require the services of a librarian with expertise/knowledge of EBMP?

- ☐ Yes
- ☐ No

Please explain your answer

_____

_____

_____

27. If you answered "NO" to question 25, please answer the following questions. Please explain your answer in each case

27.1. Do you think that library services should be established in your hospital?

- ☐ Yes
- ☐ No

Please explain your answer

_____

_____

_____

27.2. If you do not use the services of a librarian, how do you access information for enhanced patient care?

_____

_____

_____

28. Please indicate your response to each the questions in the table below

	STATEMENT In each of the statements below, **circle the option** (**from the words in bold**) that apply to the hospital in which you practice	AGREE	DISAGREE	NEUTRAL
28.1	The services of librarians are **present** / **required** to support EBMP in hospitals			
28.2	Librarians **can / do** assist medical practitioners especially in complicated cases			
28.3	Librarians **can / do** assist medical practitioners with research/literature in cases where little is known about a disease or illness			
28.4	Librarians **can / do** assist medical practitioners with literature especially in the case of infectious diseases			
28.5	Librarians **can / do** assist medical practitioners to keep up to date with research/literature in their field			
28.6	Librarians **can / do** play a critical role in providing relevant information for individual cases to medical practitioners			
28.7	Librarians **can / do** save medical practitioners time by assisting them with their research			

29. Any comment positive or negative that you would like to make regarding library services in the hospitals

_____

_____

_____

_____

Thank you very much for your valuable opinions, patience and participating in the survey.

Appendix 6: Questionnaire for Health Science Librarians.

QUESTIONNAIRE FOR HEALTH LIBRARIANS

The purpose of this questionnaire is to collect data for my D. Tech: Library and Information Studies research titled: **Toward evidence based medical practice model for health science library services in public and private hospitals within a South African context.**

Evidence based medical practice (EBMP) is the conscientious, explicit and judicious use of current best evidence/research in making decisions regarding the care of individual patients

PLEASE ANSWER THIS QUESTIONNAIRE BY PLACING A CROSS [X] IN THE CHECKBOX NEXT TO THE OPTION/S THAT APPLY IN EACH CASE. WHERE YOU SELECT 'OTHER', PLEASE EXPLAIN IN THE SPACE PROVIDED.

SECTION A: BIOGRAPHIGAL DATA

1. Please indicate your gender

- ☐ Male
- ☐ Female

2. Please indicate your age group

- ☐ 20-30
- ☐ 31-40
- ☐ 41-50
- ☐ 51-60
- ☐ 61-70
- ☐ 70+

3. Please indicate your hospital where you are currently working

- ☐ Public
- ☐ Private
- ☐ Semi-private

4. How long have you been a librarian in hospital?

- ☐ 0-5 yrs.
- ☐ 6-10 yrs.
- ☐ 11-15 yrs.
- ☐ 16-20 yrs.
- ☐ 21+ yrs.

5. What is your job title?

_____

_____

6. What were the requirements of your present job in terms of your:

Qualification

_____

Experience

_____

Specialization

_____

Training

_____

7. Please describe your main job functions.

_____

_____

8. Does your work require you to have specialised knowledge of EBMP?

☐ Yes

☐ No

Please explain,

_____

_____

SECTION B: QUALIFICATION AND TRAINING

9. Please indicate in which year you completed your last degree

☐

10. Please state your highest qualification and the discipline in which you attained this qualification .

_____

_____

11. Where /from which University did you graduate?

☐ Zululand ☐ Limpopo ☐ Pretoria ☐ Western Cape

☐ Cape Town ☐ South Africa ☐ Fort Hare ☐ Walter Sisulu

☐ KwaZulu-Natal ☐ Durban University of Technology

☐ Other,

please pecify_____

_____

12. Did you have an option to specialise in supporting EBMP?

☐ Yes

☐ No

Please explain,

_____

_____

13. Did you do any in-service/practical work/work integrated learning at a hospital or medical facility as part of your qualification?

☐ Yes

☐ No

14. If you answered "YES" to 13 above, please answer the following questions if your answer "NO" please proceeds to question 15.

14.1 What was the nature of your in-service/practical work/work integrated?

_____

_____

14.2 Where did you do the above?

_____

_____

14.3 Who placed you /assisted you to get the above?

_____

_____

14.4 What was the duration of the above?

_____

_____

14.5 Did you benefit from the experience?

☐ Yes

☐ No

Please explain,

_____

_____

SECTION C: HEALTH SCIENCE LIBRARIAN'S RESPONSE TOWARD EBMP TRAINING

15. Do you think that your qualification prepared you adequately to support EBMP/become a health librarian?

☐ Yes

☐ No

Please explain,

_____

_____

_____

16. Have you attended any course/s or training (other than your formal Library qualification) related to EBMP/health librarian?

☐ Yes

☐ No

Please provide detail,

_____

_____

_____

17. If you answered "YES" to 16 above, please answer the following questions if you answer "NO" please proceed to question 18.1

17.1. What was the nature of the course/s or training you attended?

_____

_____

17.2. What was the name/title of the course/training?

_____

_____

17.3. Where did you attend the above?

_____

_____

17.4. What was the duration of the course/s or training?

_____

_____

17.5. What were the entrance requirements for the above?

_____

_____

17.6. How did the course/training benefit you for your current position?

_____

_____

_____

17.7. What was the reason/s that you attended the above?

_____

_____

_____

18. *If you answered “NO” to 16 above, please answer the following questions*

18.1. What was the reason/s that you did not attend any course/s or training related to EBMP?

_____

_____

_____

18.2. Do you plan to attend any course/s or training related to EBMP in the near future? Please explain why

_____

_____

19. Do you work with specialist medical practitioners?

☐ Yes
☐ No

20. *If you answered “YES” to 19, please answer the following questions if you answer “NO” please proceed to question 21.1*

20.1. Which specialists do you work with?

_____

_____

20.2. How often do you work with them?

☐ Everyday ☐ Once a week ☐ Twice a week
☐ Once a month ☐ twice a month

20.3. What service/s do you provide?

_____

_____

_____

20.4. What is your involvement with EBMP?

_____

_____

_____

21. *If you answered NO to 19, please answer the following question*

21.1. To whom do you provide library services?

_____

_____

_____

21.2. Do you provide a general service to all medical practitioners in the hospital?

☐ Yes
☐ No

Please explain,

_____
_____
_____

SECTION D: ATTITUDES AND OPINIONS ON RESEARCH

22. Does your job responsibility require expertise with EBMP resources (e.g., MEDLINE, EBM Reviews or the Cochrane collection)?

☐ Yes
☐ No

23. Do you have the requisite expertise to deal with these resources?

☐ Yes
☐ No

24. If you answered "YES" to question 22, where did you receive training?

_____
_____
_____

25. If you answered "NO" to question 22, from where would you like to receive training in this regard?

_____
_____

26. Do you have adequate resources in your library to support EBMP?

☐ Yes

☐ No

If no, please specify,

_____

_____

27. What challenges or problems do you face in offering EBM services?

☐ Lack of organizational support ☐ Lack of trained staff

☐ Lack of time ☐ Lack of resources

☐ Other,

Please specify

_____

_____

28. Any other comments (positive or negative) that you would like to make regarding librarian's responsibilities, roles, qualification, training or job functions related to supporting EBMP.

_____

_____

_____

29. Any comment (positive or negative) that you would like to make regarding library services for EBMP.

_____

_____

Thank you very much for your valuable opinions, patience and participating in the survey.

Appendix 7: Questionnaire for Academic Staff at the University.

Questionnaire for Academic Staff at the University

The purpose of this questionnaire is to collect data for my DTech: Library and Information Studies research titled: **Toward evidence based medical practice model for health science library services in public and private hospitals within a South African context.**

Evidence based medical practice (EBMP) is the conscientious, explicit and judicious use of current best evidence/research in making decisions regarding the care of individual patients

PLEASE ANSWER THIS QUESTIONNAIRE BY PLACING A CROSS [X] IN THE CHECKBOX NEXT TO THE OPTION/S THAT APPLY IN EACH CASE. WHERE YOU SELECT 'OTHER', PLEASE EXPLAIN IN THE SPACE PROVIDED.

SECTION A: BIOGRAPHICAL DATA

1. Please indicate your gender

☐ Male

☐ Female

2. Please indicate your age group

☐ 20-30

☐ 31-40

☐ 41-50

☐ 51-60

☐ 61-70

☐ 70+

3. Please indicate in which year you completed your last degree

_____

_____

4. Please state your highest qualification and the discipline in which you attained this qualification

_____

_____

_____

5. Please state the name of your department and the university where you are currently working

_____

_____

6. How long have you been working in this department/programme?

- ☐ 0-5 yrs.
- ☐ 6-10 yrs.
- ☐ 11-15 yrs.
- ☐ 16-20 yrs.
- ☐ 21+ yrs.

7. What is your job title?

_____

_____

8. Where /from which University did you graduate?

☐ Zululand ☐ Limpopo ☐ Pretoria ☐ Western Cape

☐ Cape Town ☐ South Africa ☐ Fort Hare ☐ Walter Sisulu

☐ KwaZulu-Natal ☐ Durban University of Technology

☐ Other,

please specify

_____

_____

SECTION B: ATTITUDES AND OPINIONS ON EBMP

9. Have you heard about evidence based medicine (EBM) or evidence based medical practice (EBMP)?

- ☐ Yes
- ☐ No

10. Does you department offer any courses/training for librarians to support EBMP?

- ☐ Yes
- ☐ No

11. If you answered "yes" to question 10, please answer the following questions if your answer "NO" please proceeds to question 12.1

11.1 What is the nature of the course/s or training offered?

_____

_____

_____

11.2 What is the name/title of the course/training?

_____

_____

11.3 What is the duration of the course/s or training?

_____

_____

11.4 What are the entrance requirements for the above?

_____

_____

11.5 What are students taught in the above?

_____

_____

11.6 Is there a big demand for the above from students? Please explain.

_____

_____

11.7 Is there a big demand for the above from medical practitioners/hospitals, etc? Please explain.

_____

_____

11.8 How many students are currently enrolled for the above?

_____

_____

11.9 How many students have completed the above?

_____

_____

11.10 Do you have staff members that are qualified or specifically trained to teach library support for EBMP?

_____

_____

12. If you answered "no" to question 10, please answer the following questions <u>Please substantiate your answer in EACH case:</u>

12.1 Does your department plan to offer the course/s or training in the near future?

_____

_____

_____

12.2 Have students ever enquired about the above?

_____

_____

_____

12.3 Have medical practitioners or the health sector ever enquired about the above?

- ☐ Yes
- ☐ No

12.4 Do you have any member/s from the medical fraternity on your Advisory Board? Have they ever requested that you offer library training to support EBMP?

_____

_____

_____

13. Are students allowed to specialise in EBMP library services?

- ☐ Yes
- ☐ No

14. What theoretical training is provided for librarians working with EBMP?

_____

_____

_____

15. What practical training is provided for librarians working with medical practitioners/ EBMP?

_____

_____

16. Is there a specialised module on EBMP support?

_____

_____

17. What is the duration of this module?

_____

_____

18. What aspects/sections are covered in this module please explain very briefly.

_____

_____

19. Are students required to do any in-service/practical work/work integrated learning at a hospital or medical facility library? Please specify.

- ☐ Yes
- ☐ No

_____

_____

_____

19.1 Who places these students?

_____

_____

19.2. Which hospitals/medical facilities do they usually go to?

_____

_____

20. Any comment positive or negative that you would like to make regarding the preparedness, training or qualifications for health librarians supporting EBMP

_____

_____

Thank you for taking the time to complete this questionnaire

Appendix 8: Letter of Information for Medical Practitioners.

LETTER OF INFORMATION

Medical Practitioners

Title of the Research Study:

Toward evidence based medical practice model for health science library services in public and private hospitals within a South African context

Principal Investigator/s/researcher: Saroj Bala, M. Tech.: LIS

Promoter: Prof. P. Singh, PhD

Co-Promoters: Prof P Underwood, PhD

Brief Introduction and Purpose of the Study: Evidence based medical practice (EBMP) is the medical practice that aims at minimizing medical mistakes and eliminating or reducing uncertainty in medical practice. The purpose of this study is to determine: medical practitioners' perceptions use and needs regarding the library services in the hospitals in which they are practicing; what medical library services and resources are available in public and private hospitals in the eThekwini district to support EBMP; and the role of health librarians in supporting EBMP.

Outline of the Procedures:

As a participant, you will be required to fully complete the questionnaire as honestly as possible as this will enable the analysis to be efficient and accurate based on the responses. This questionnaire will take about 10 minutes to complete. Should you agree to a follow up interview, please complete section D of the questionnaire. This page will be removed before the questionnaire is sent for analysis to ensure the confidentiality of your personal details and to assure your anonymity. Interviews will only be scheduled where more detailed information is required and if you are willing to participate. The interviews should take 15 minutes of your

time; a mutually agreeable time and venue will be arranged. These interviews will be conducted face-to-face or telephonically according your convenience.

You were selected as a participant using an appropriate method of sampling from the target population list as provided by CEO of your hospital (with prior permission gained from the KwaZulu-Natal Department of Health). The primary target population for this study is the full time medical practitioners at all the 39 public and private hospitals in Durban.

The questionnaire consists of 6 pages in total (including interview consent) and an explanation of how to complete it is indicated on the first page. The responses to the questionnaires will be analysed using the version 21 of the SPSS software. The follow-up interviews (where conducted) will be transcribed verbatim and analysed using the latest version of NVIVO software.

Risks or Discomforts to the Participant:

There are no known or anticipated risks or discomfort to you as a participant in this study.

Benefits:

It is envisaged that this study will: make recommendations to the Health Professions Council of South Africa (HPCSA) regarding EBMP; contribute in improving the health services; and provide new opportunities for librarians as health librarians to serve the medical practitioners; will draw the attention of government, higher education institutions, medical industries as well as funding agencies towards evidence based medical library services in public and private hospitals; and will make a significant contribution to literature regarding health librarians in EBMP. Benefit to the researcher will be research publications in accredited journals, conference papers and a D. Tech. qualification in Library and Information Studies.

Reason/s why the Participant May Be Withdrawn from the Study:

A participant may decide to withdraw from this study at any time without any negative or adverse consequences by advising the researcher that s/he no longer wishes to participate.

Costs of the Study:

As a participant, you will not be liable for any costs for this study nor will you receive any monetary compensation or any other remuneration.

Confidentiality:

All information you provide is completely confidential. Your name will not appear in any thesis or report resulting from this study; however, with your permission, anonymous quotations may be used. Only my supervisor, statistician and I will have access to the data you provide.

Persons to Contact in the Event of Any Problems or Queries:

Please contact the researcher on: 0837856235 or my supervisor: Prof P. Singh, on 031 373 5599 or the Institutional Research Ethics administrator on 031 373 2900. Complaints can be reported to the DVC: TIP, Prof. F.A. Otieno on 031 373 2382 or dvctip@dut.ac.za.

General:

Participation in this study is voluntary. Further, you may withdraw from this study at any time without any negative consequences by advising the researcher. I would like to assure you that this study has been reviewed and received ethics clearance from the Institutional Research Ethics Committee (IREC) at DUT. However, the final decision regarding participation is yours. If you have any question regarding this study, or you would like additional information to assist you in reaching a decision about participation, please contact me on 0837856235 or by email at sarojbalakanwal@gmail.com. You can also contact my supervisor, Professor Penny Singh on extension 5599 or email her at pennysin@dut.ac.za. A copy of this letter will be provided to you.

Appendix 9: Letter of Information for Health Science Librarians.

LETTER OF INFORMATION
HEALTH SCIENCE LIBRARIANS

Title of the Research Study:
Toward evidence based medical practice model for health science library services in public and private hospitals within a South African context

Principal Investigator/s/researcher: Saroj Bala, MTech: LIS
Promoter: Prof. P. Singh, PhD
Co-Promoters: Prof P Underwood, PhD

Brief Introduction and Purpose of the Study: Evidence based medical practice (EBMP) is the medical practice that aims at minimizing medical mistakes and eliminating or reducing uncertainty in medical practice. Health librarians can play a role in almost every EBMP process except making clinical decisions. The purpose of this study is to determine: what medical library services and resources are available in public and private hospitals in the eThekwini district to support EBMP; the barriers faced by librarians supporting EBMP, the role of health librarians in the hospitals; and librarians' level of qualifications and training to support EBMP.

Outline of the Procedures:
As a participant, you will be required to fully complete the questionnaire as honestly as possible as this will enable the analysis to be efficient and accurate based on the responses. This questionnaire will take about 10 minutes to complete. Should you agree to a follow up interview, please complete section D of the questionnaire. This page will be removed before the questionnaire is sent for analysis to ensure the confidentiality of your personal details and to assure your anonymity. Interviews will only be scheduled where more detailed information is required and if you are willing to participate. The interviews should take 15 minutes of your time; a mutually agreeable time and venue will be arranged. These interviews will be conducted face-to-face or telephonically according your convenience. You were selected as a participant

using an appropriate method of sampling from the target population list as provided by CEO of your hospital (with prior permission gained from the KwaZulu-Natal Department of Health). The primary target population for this study is the full-time health/hospital librarians at all the 39 public and private hospitals in Durban.

The questionnaire consists of 6 pages in total (including interview consent) and an explanation of how to complete it is indicated on the first page.The responses to the questionnaires will be analysed using the version 21 of the SPSS software. The follow-up interviews (where conducted) will be transcribed verbatim and analysed using the latest version of NVIVO software.

Reason/s why the Participant May Be Withdrawn from the Study:

A participant may decide to withdraw from this study at any time without any negative or adverse consequences by advising the researcher that s/he no longer wishes to participate.

Costs of the Study:

As a participant, you will not be liable for any costs for this study nor will you receive any monetary compensation or any other remuneration.

Confidentiality:

All information you provide is completely confidential. Your name will not appear in any thesis or report resulting from this study; however, with your permission, anonymous quotations may be used. Only my supervisor, statistician and I will have access to the data you provide.

Persons to Contact in the Event of Any Problems or Queries:

Please contact the researcher on: 0837856235 or my supervisor: Prof P. Singh, on 031 373 5599 or the Institutional Research Ethics administrator on 031 373 2900. Complaints can be reported to the DVC: TIP, Prof. F.A. Otieno on 031 373 2382 or dvctip@dut.ac.za.

General:

Participation in this study is voluntary. Further, you may withdraw from this study at any time without any negative consequences by advising the researcher. I would like to assure you that this study has been reviewed and received ethics clearance from the Institutional Research Ethics Committee (IREC) at DUT. However, the final decision regarding participation is yours. If you have any question regarding this study, or you would like additional information to assist

you in reaching a decision about participation, please contact me on 0837856235 or by email at sarojbalakanwal@gmail.com. You can also contact my supervisor, Professor Penny Singh on extension 5599 or email her at pennysin@dut.ac.za. A copy of this letter will be provided to you.

Appendix 10: Letter of Information for Academic Staff at the University.

LETTER OF INFORMATION

Academic Staff at the University

Title of the Research Study:

Toward evidence based medical practice model for health science library services in public and private hospitals within a South African context

Principal Investigator/s/researcher: Saroj Bala, MTech: LIS

Promoter: Prof. P. Singh, PhD

Co-Promoters: Prof P Underwood, PhD

Brief Introduction and Purpose of the Study:

Evidence based medical practice (EBMP) is the medical practice that aims at minimizing medical mistakes and eliminating or reducing uncertainty in medical practice. Health librarians can play a role in almost every EBMP process except making clinical decisions. The purpose of this study is to determine: training, curriculum content, and qualifications for health librarians provided by the universities that train librarians in SA.

Outline of the Procedures:

As a participant, you will be required to fully complete the questionnaire as honestly as possible as this will enable the analysis to be efficient and accurate based on the responses. This questionnaire will take about 10 minutes to complete. Should you agree to a follow up interview, please complete section D of the questionnaire. This page will be removed before the questionnaire is sent for analysis to ensure the confidentiality of your personal details and to assure your anonymity. Interviews will only be scheduled where more detailed information is required and if you are willing to participate. The interviews should take 15 minutes of your time; a mutually agreeable time and venue will be arranged. These interviews will be conducted face-to-face or telephonically according your convenience. You were selected as a participant using an appropriate method of sampling from the target population list as provided by HOD of your department (with prior permission gained from). The primary target population for this

study is the full time academic staff at all the 9 universities (, University of Zululand; Limpopo; Pretoria; Western Cape; Cape Town; South Africa; Fort Hare; Walter Sisulu; KwaZulu-Natal; and the Durban University of Technology).

The questionnaire consists of 4 pages in total (including interview consent) and an explanation of how to complete it is indicated on the first page. The responses to the questionnaires will be analysed using the version 21 of the SPSS software. The follow-up interviews (where conducted) will be transcribed verbatim and analysed using the latest version of NVIVO software.

The questionnaire consists of 6 pages in total (including interview consent) and an explanation of how to complete it is indicated on the first page. The responses to the questionnaires will be analysed using the version 21 of the SPSS software. The follow-up interviews (where conducted) will be transcribed verbatim and analysed using the latest version of NVIVO software.

Risks or Discomforts to the Participant:

There are no known or anticipated risks or discomfort to you as a participant in this study.

Benefits:

It is envisaged that this study will: make recommendations to the Health Professions Council of South Africa (HPCSA) regarding EBMP; contribute in improving the health services; and provide new opportunities for librarians as health librarians to serve the medical practitioners; will draw the attention of government, higher education institutions, medical industries as well as funding agencies towards evidence based medical library services in public and private hospitals; and will make a significant contribution to literature regarding health librarians in EBMP. Benefit to the researcher will be research publications in accredited journals, conference papers and a DTech qualification in Library and Information Studies.

Reason/s why the Participant May Be Withdrawn from the Study:

A participant may decide to withdraw from this study at any time without any negative or adverse consequences by advising the researcher that s/he no longer wishes to participate.

Costs of the Study:

As a participant, you will not be liable for any costs for this study nor will you receive any monetary compensation or any other remuneration.

Confidentiality:

All information you provide is completely confidential. Your name will not appear in any thesis or report resulting from this study; however, with your permission, anonymous quotations may be used. Only my supervisor, statistician and I will have access to the data you provide.

Persons to Contact in the Event of Any Problems or Queries:

Please contact the researcher on: 0837856235 or my supervisor: Prof P. Singh, on 031 373 5599 or the Institutional Research Ethics administrator on 031 373 2900. Complaints can be reported to the DVC: TIP, Prof. F.A. Otieno on 031 373 2382 or dvctip@dut.ac.za.

General:

Participation in this study is voluntary. Further, you may withdraw from this study at any time without any negative consequences by advising the researcher. I would like to assure you that this study has been reviewed and received ethics clearance from the Institutional Research Ethics Committee (IREC) at DUT. However, the final decision regarding participation is yours. If you have any question regarding this study, or you would like additional information to assist you in reaching a decision about participation, please contact me on 0837856235 or by email at sarojbalakanwal@gmail.com. You can also contact my supervisor, Professor Penny Singh on extension 5599 or email her at pennysin@dut.ac.za. A copy of this letter will be provided to you.

Appendix 11: Cover Letter for Medical Practitioners.

Faculty of Accounting and Informatics

Department of Information and Corporate Management

Cover letter for medical practitioners

Dear Participant

I am studying towards a DTech Degree in Library and Information Studies, in the faculty of Accounting and Informatics at the Durban University of Technology. The title of my research is: **Toward evidence based medical practice model for health science library services in public and private hospitals within a South African context.**

Please complete the attached questionnaire to enable me to gather data for my research. This questionnaire is designed to gather data on **medical practitioner's attitude and opinion on evidence based medical practice and response towards health/hospital library services.** The information you provide will be kept strictly confidential. Only my research supervisor and I will have access to the completed questionnaires. Your contact details page will be removed before the questionnaire is sent for analysis to ensure the confidentiality of your personal details and to assure you anonymity. Please be assured that you will remain completely anonymous throughout the research process and in any reporting or write-ups related to my research.

Please read and sign the attached Consent Form. Please return the Consent Form and completed questionnaire to your hospital CEO or post it to Mrs. Saroj Bala with the provided envelope.

Thank you very much.

Ms. Saroj Bala
Student number: 21329985
Telephone: 0837856235
Email: sarojbalakanwal@gmail.com

Promoter: Prof P Singh
Tel: 0313735599
Email: pennysin@dut.ac.za

Co-promoters: Prof PG Underwood

Tel: 0216503094 Email: Peter.Underwood@uct.ac.za

Appendix 12: Cover Letter for Health Science Librarians.

Faculty of Accounting and Informatics

Department of Information and Corporate Management

Cover letter for health science/hospital librarians

Dear Participant

I am studying towards a DTech Degree in Library and Information Studies, in the faculty of Accounting and Informatics at the Durban University of Technology. The title of my research is: **Toward evidence based medical practice model for health science library services in public and private hospitals within a South African context.**

Please complete the attached questionnaire to enable me to gather data for my research. This questionnaire is designed to gather data on **attitude and opinion of health science/hospital librarians towards evidence based medical training and qualification.** The information you provide will be kept strictly confidential. Only my research supervisor and I will have access to the completed questionnaires. Your contact details page will be removed before the questionnaire is sent for analysis to ensure the confidentiality of your personal details and to assure you anonymity. Please be assured that you will remain completely anonymous throughout the research process and in any reporting or write-ups related to my research.

Please read and sign the attached Consent Form. Please return the Consent Form and completed questionnaire to your hospital CEO or post it to Mrs. Saroj Bala with the provided envelope.

Thank you very much.

_____

Ms. Saroj Bala
Student number: 21329985
Telephone: 0837856235
Email: sarojbalakanwal@gmail.com

Promoter: Prof P Singh
Tel: 0313735599
Email: pennysin@dut.ac.za

Co-promoters: Prof PG Underwood

Tel: 0216503094 Email: Peter.Underwood@uct.ac.za

Appendix 13: Cover Letter for University Academic Staff.

Faculty of Accounting and Informatics

Department of Information and Corporate Management

Cover letter for academic staff

Dear Participant

I am studying towards a DTech Degree in Library and Information Studies, in the faculty of Accounting and Informatics at the Durban University of Technology. The title of my research is: **Toward evidence based medical practice model for health science library services in public and private hospitals within a South African context.**

Please complete the attached questionnaire to enable me to gather data for my research. This questionnaire is designed to gather data on **attitude and opinion of university academic staff on evidence based medical practice and response towards the preparedness, training and qualification of health librarians to support evidence based medical practice in public and private hospitals.** The information you provide will be kept strictly confidential. Only my research supervisor and I will have access to the completed questionnaires. Your contact details page will be removed before the questionnaire is sent for analysis to ensure the confidentiality of your personal details and to assure you anonymity. Please be assured that you will remain completely anonymous throughout the research process and in any reporting or write-ups related to my research.

Please read and sign the attached Consent Form. Please return the Consent Form and completed questionnaire to your HoD or post it to Mrs. Saroj Bala with the provided envelope.

Thank you very much.

_____

Ms. Saroj Bala
Student number: 21329985
Telephone: 0837856235
Email: sarojbalakanwal@gmail.com

Promoter: Prof P Singh
Tel: 0313735599 Email: pennysin@dut.ac.za

Co-promoters: Prof PG Underwood

Tel: 0216503094 Email: Peter.Underwood@uct.ac.za

Appendix 14: Letter of Consent to Participate in the Study.

CONSENT

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, Mrs. Saroj Bala, about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: REC 23/13.
- I have also received, read and understood the above written information (Participant Letter of Information) regarding the study.
- I am aware that the results of the study, including any personal details will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

Please tick the box below to indicate your consent

I HAVE READ THE CONSENT FORM AND HEREBY AGREE TO PARTICIPATE IN THIS STUDY

□ _____

Signature

I, Saroj Bala herewith confirm that the above participant has been fully informed about the nature and conduct of the above study.

Saroj Bala _____ _____

Full Name of Researcher **Date** **Signature**

Appendix 15: Ethical Approval from University of South Africa.

Appendix 15

PROF L LABUSCHAGNE
EXECUTIVE DIRECTOR: RESEARCH DEPARTMENT
Tel: *+27 12 429 6368 / 2446* ***Fax***: *+27 12 429 6960*
Email: *llabus@unisa.ac.za*
Address: *Theo van Wijk Building, 10th Floor, Office no. 50 (TvW 10-50)*

22 April 2014

Ms Saroj Bala
Department of Information and Corporate Management
Durban University of Technology

Dear Ms Bala

PERMISSION TO DO RESEARCH INVOLVING UNISA STAFF, STUDENTS OR DATA

A study into "Towards evidence-based medical practice model for health science library services in public and private hospitals within a South African context"

Your application regarding permission to conduct research involving Unisa staff, students or data in respect of the above study has been received and was considered by the Unisa Senate Research and Innovation and Higher Degrees Committee (SRIHDC) on 17 April 2014.

It is my pleasure to inform you that permission has been granted for this study as set out in your application.

We would like to wish you well in your research undertaking.

Kind regards

[redacted]

PROF L LABUSCHAGNE
EXECUTIVE DIRECTOR: RESEARCH

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsmile: +27 429 12 429 4150
www.unisa.ac.za

Appendix 15.1: Ethical Approval from University of Zululand.

DEPUTY VICE-CHANCELLOR,
RESEARCH AND INNOVATION

UNIVERSITY OF ZULULAND
Website: http://www.uzulu.ac.za

Private Bag X1001
KwaDlangezwa 3886

Tel: 035 902 6634
Fax: 035 902 6222
Email: nbhengu@pan.uzulu.ac.za

Ms S Bala
Durban University of Technology

Per email: sarojbalakanwal@gmail.com

16 November 2013

Dear Ms Bala

REQUEST FOR PERMISSION TO CONDUCT RESEARCH AT UNIZULU: "TOWARDS EVIDENE-BASED MEDICAL PRACTICE MODEL FOR HEALTH SCIENCE LIBRARY SERVICES IN PUBLIC AND PRIVATE HOSPITALS WITHIN A SOUTH AFRICAN CONTEXT"

The email dated 7 November 2013 from Prof Underwood to Professor Ocholla (which includes your earlier email dated 2 October) and the attached documents refer.

I hereby grant approval for you to conduct part of your research at UNIZULU, as per the methodologies stated in the documentation presented to me.

I note that your University has issued an ethical clearance certificate (IREC Reference Number REC 23/13) which suffices for our purposes.

I wish you well in your research.

Yours sincerely

[redacted]

Professor Rob Midgley
Deputy Vice-Chancellor, Research and Innovation

"Restructured for Relevance"

Appendix 15.2: Ethical Approval from University of Cape Town.

LIBRARY & INFORMATION STUDIES CENTRE

Room 6.02 | Chancellor Oppenheimer Library

Web: http://www.lib.uct.ac.za/lisc
Email: lisc@uct.ac.za
Telephone: +27 (0)21 650 4546
Fax: +27 (0)21 650 5497

4 November 2013

Ethical Clearance: Request for research cooperation by Ms Saroj Bala; by Em./Prof Peter Underwood 29 May 2013

The Ethics Committee of the UCT Library and Information Studies Centre (LISC) met this morning to discuss the application from the Durban University of Technology for ethical clearance to survey academic staff who teach library and information science at UCT. We have scrutinised the documents submitted by DUT and took particular note of the consent forms and the questionnaire that will be used for the academic staff in LIS. We have noted that the Institutional Research Committee of DUT, the institution where the dissertation has been registered, has approved the project. In our opinion, the ethical issues associated with this part of the investigation have been adequately addressed and that there will be no risk involved for the participants. We therefore recommend that ethical clearance be given to the project.

[redacted]

Em/A/Prof Karin de Jager
Chair
LISC Ethics Committee

Appendix 15.3: Ethical Approval from University of Limpopo.

University of Limpopo
Medunsa Research Ethics Committee (MREC)
Prof GA Ogunbanjo: Chairperson MREC
P.O Box 163, Medunsa, 0204, South Africa
Tel: +27 12 521 5617/3359 Fax: +27 12 521 3749, Email: lorato.phiri@ul.ac.za

Mrs S Bala
Durban University of Technology
Durban, South Africa

Dear Mrs Bala

RE: REQUEST FOR ETHICAL APPROVAL AND PERMISSION TO GATHER DATA

Researcher:	Mrs S Bala
University:	Durban University of Technology
Faculty:	Faculty of Accounting and Informatics, Department of Information Corporate and Management
Qualification	D Tech Degree in Library and Information Studies
Promoter:	Prof P Singh
REC:	23/2013
IREC:	**036/2013**
Approval date:	10 May 2012

Title: Towards evidence based medical practice model for health science library service in public and private hospitals within a South African context

MREC **NOTED** your letter dated 19 July 2013 requesting approval and permission to gather data at Medunsa Campus.

MREC **APPROVED** and **GRANTED** you a permission to conduct the research at the Medunsa Campus.

Yours Sincerely,

[redacted]

PROF GA OGUNBANJO
CHAIRPERSON MREC

01 August 2013

UNIVERSITY OF LIMPOPO
Medunsa Campus
2013 -08- 01
MEDUNSA RESEARCH ETHICS COMMITTEE
MREC CHAIRPERSON

Finding solutions for Africa

Appendix 15.4: Ethical Approval from University of Western Cape.

Dear Ms Bala

I note the letter from Prof Underwood and i note the ethics clearance by DUT.

By power delegated to me I hereby grant you permission to conduct the research at UWC.

yours sincerely

Renfrew Christie

Professor Renfrew Christie, B Com Hons (Econ) (SA), BA Hons , MA (Cape Town), D Phil (Oxon),

Fellow of the Royal Society of South Africa,

Member of the Academy of Science of South Africa,

Dean of Research, University of the Western Cape

Private Bag X17, Bellville 7535, South Africa

E-Mail: rchristie@uwc.ac.za

Phone : 27.21.9592949 (w), Fax : 27.21.9593170 (w)

Mobile : 27.82.457.9186

Home : 2 Glade Road, Rondebosch 7700, South Africa

Phone : 27.21.6864722 [h]

>>> Saroj Bala <sarojbalakanwal@gmail.com> 2013/06/06 11:53 AM >>>

Appendix 15.5: Ethical Approval from University of KwaZulu -Natal.

Appendix 15.5

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

19 July 2013

Ms Saroj Bala
Faculty of Accounting and Informatics
Durban University of Technology
Email: sarojbalakanwal@gmail.com

Dear Ms Bala

RE: PERMISSION TO CONDUCT RESEARCH

Gatekeeper's permission is hereby granted for you to conduct research at the University of KwaZulu-Natal towards your postgraduate studies, provided Ethical clearance has been obtained. We note the title of your research project is:

"Toward evidence based medical practice model for health science library services in public and private hospitals within a South African context".

It is noted that you will be constituting your sample by randomly handing out questionnaires to academic staff in departments of library and information science on all campuses.

Data collected must be treated with due confidentiality and anonymity.

Yours sincerely

[redacted]

Professor J J Meyerowitz
REGISTRAR

Office of the Registrar
Postal Address: Private Bag X54001, Durban, South Africa
Telephone: +27 (0) 31 260 8005/2206 **Facsimile:** +27 (0) 31 260 7824/2204 **Email:** registrar@ukzn.ac.za
Website: www.ukzn.ac.za

Appendix 15.6: Ethical Approval from University of Fort Hare.

Appendix 15.6

University of Fort Hare
OFFICE OF UNIVERSITY REGISTRAR
Alice (main) Campus:
Private Bag X1314, King William's Town Road, Alice, 5700, RSA
Tel: +27 (0) 40 602 - 2501 • Fax: +27 (0) 40 602 - 2577
Email: nmabindisa@ufh.ac.za

University of Fort Hare
Together in Excellence

July 24, 2013

Ms. S Bala
17 Corlo Court
18 Heswall Road
Berea
4001

Dear Ms. Bala

Approval from the Registrar's Office to Conduct Research

Having consulted the Chairperson of the Research Ethics Committee, I hereby grant permission for Ms. S Bala to conduct research relating to her thesis "Towards evidence - based medical practise model for health science library services in public and private hospitals within a South African context".

We look forward to reading the research report.

Kind regards

[redacted]

N Mrwetyana (PhD)
REGISTRAR

Bhisho Campus: P. O Box 1153, KWT 5600, Independence Avenue , Bhisho, 5600, RSA
Tel: +27 (0) 40 608 - 3407 • Fax: +27 (0) 40 608 - 3408

East London Campus: Private Bag X9083, EL 5200, 50 Church Street, East London, 5201, RSA
Tel: +27 (0) 43 704 - 7000 • Fax: +27 (0) 43 704 - 7095
V/C Dial Up: +27 (0) 43 704 - 7143/ 7144

together in excellence

www.ufh.ac.za

Appendix 15.7: Information about University of Pretoria.

Appendix 15.7

Gmail

Saroj Bala <sarojbalakanwal@gmail.com>

request to conduct research

Theo Bothma <theo.bothma@up.ac.za> Thu, Jun 6, 2013 at 3:57 PM
To: Saroj Bala <sarojbalakanwal@gmail.com>
Cc: Ina Fourie <ina.fourie@up.ac.za>

Dear Ms Bala

I have followed up with the Chair of the Faculty Research Ethics Committee. According to him you will need ethics clearance from our Faculty Research Ethics Committee. Please see http://web.up.ac.za/default.asp?ipkCategoryID=4294&subid=4294&ipklookid=7 for the relevant forms, submission dates, etc. You will, in addition, need permission from our Dean, Prof R Sandenbergh (roelf.sandenbergh@up.ac.za), as you are not a member of staff of the University of Pretoria.

I will then wait until I receive the clearance letter of UP from you and then send you the contact details of my colleagues.

I do, however, have to point out that we don't currently offer a conventional library science degree anymore, and neither do we make provision at all in our programmes for health librarians. I therefore tend to doubt that we will be able to provide you with any useful information. The only person in the Department that does research in this field, is Prof Ina Fourie. It might be more worth your while to follow up with her directly in her personal capacity (for which you won't need any ethics clearance ☺). I copy Prof Fourie on this e-mail.

Regards

Theo Bothma

From: Saroj Bala [mailto:sarojbalakanwal@gmail.com]
Sent: 31 May 2013 12:10 PM
To: theo.bothma@up.ac.za
Subject: request to conduct research

Dear Prof. Bothma

" I" Saroj Bala, am registered for a Doctoral degree in Library and Information Science at the Durban University of Technology under the supervision of Professor Prenitha Sing (Research Co-ordinator: Accounting and informatics DUT) and Prof. Peter G Underwood (Library and Information Studies Center, University of Cape Town). The topic and provisional title of my thesis is "Towards evidence-based medical practice model for health

Appendix 15.8: Information about University of Johannesburg.

science library services in public and private hospitals within a South African context".

As part of my research plan, I intends to survey academic staff in departments of library and information Science in South Africa. Potential participants will be assured that participation is voluntary and that their identities will be preserved throughout the research process, in the text of the thesis and in any publication arising from the study. Durban University of Technology has considered the research plan and its Ethical Clearance Committee has granted me permission to proceed with the research; I understand that ethical approval may also be needed from your institution before I can proceed.

I hope that you will be able to assist me in obtaining clearance, should it be necessary, and in contacting your departmental staff by providing their contact details, that is, names and e-mail addresses.

Should you need any additional information, in the first instance please contact me: contact details are given in the letters attached and also ethical approval letter from DUT attached herewith.

Thanking you very much in advance and hope here from you soon.

With best regards.

Saroj

Gmail

Saroj Bala <sarojbalakanwal@gmail.com>

ethical approval (request to conduct research)

Janse van Vuren, Anette <anettej@uj.ac.za> Thu, Oct 3, 2013 at 2:17 PM
To: "sarojbalakanwal@gmail.com" <sarojbalakanwal@gmail.com>

UNIVERSITY OF JOHANNESBURG

Dear ms Bala

Your request for ethical clearance for research at the University of Johannesburg reached us through Prof Shireen Motala. Please note that UJ does not have a Department of Library and Information Science. There is a Department of Knowledge Management and the current head of the department is Prof Tanya du Plessis. Her email is tduplessis@uj.ac.za

Kind regards,
Anette

www.uj.ac.za

Dr ANETTE J VAN VUREN
Director: Shared and Support Services
Library and Information Centre
Tel +27 11 559 2624
Fax +27 11 726 7723

Gmail

Saroj Bala <sarojbalakanwal@gmail.com>

ethical approval (request to conduct research)

Du Plessis, Tanya <tduplessis@uj.ac.za> Wed, Oct 9, 2013 at 5:46 PM
To: Saroj Bala <sarojbalakanwal@gmail.com>

Dear Saroj

(what a beautiful name!)

This is not the response you were looking for: I am unfortunately not in the position to participate in the research.

It does, however, sound like an interesting study.

Have you asked Dr Marlene Wiggill (although she is also no longer involved in Library and Information Science): Marlene.Wiggill@nwu.ac.za

Kind regards,

Tanya

Prof T du Plessis

Department of Information and Knowledge Management

Faculty of Management | University of Johannesburg | PO Box 524 | Auckland Park | 2006

A Ring BRIDGE 508 | tduplessis@uj.ac.za

+27 11 559 3836

+27 11 559 2183

+27 11 559 2822 (f)

From: Saroj Bala [mailto:sarojbalakanwal@gmail.com]
Sent: 03 October 2013 02:50 PM
To: Du Plessis, Tanya
Subject: Re: ethical approval (request to conduct research)

Good morning Prof.Tanya du Plessis,

" I" Saroj Bala, am registered for a Doctoral degree in Library and Information Science at the Durban University of Technology under the supervision of Professor Prenitha Sing (Research Co-ordinator: Accounting and informatics DUT) and Prof. Peter G Underwood (Library and Information Studies Center, University of Cape Town). The topic and provisional title of my thesis is "Towards evidence-based medical practice model for health science library services in public and private hospitals within a South African context".

As part of my research plan, I intends to survey academic staff of library and information Science in South Africa. Potential participants will be assured that participation is voluntary and that their identities will be preserved throughout the research process, in the text of the thesis and in any publication arising from the study. Durban University of Technology has considered the research plan and its Ethical Clearance Committee has granted me permission to proceed with the research; I understand that your ethical approval (your permission) may also be needed from your institution before I can proceed.

I hope that you will be able to assist me in obtaining permission . Should you need any additional information, in the first instance please contact me. Ethical approval letter from DUT and PHRC approval,letter of information,cover letter,concent form,Questionnaire attached herewith.letter from Mr P.G. Underwood.

Thanking you very much in advance and hope here from you soon.

With best regards.

Ms. Saroj Bala

Student number: 21329985

Telephone: 0837856235

Email: sarojbalakanwal@gmail.com

Gmail

Saroj Bala <sarojbalakanwal@gmail.com>

ethical approval (request to conduct research)

Marlene Wiggill <Marlene.Wiggill@nwu.ac.za> Thu, Oct 10, 2013 at 8:38 AM
To: sarojbalakanwal@gmail.com, Elsa Esterhuizen <Elsa.Esterhuizen@nwu.ac.za>, Tanya Du Plessis <tduplessis@uj.ac.za>

Dear Saroj
I also think that your study sounds very interesting. As Prof Du Plessis mentioned, I am no longer involved in Library and Information Science, but perhaps you can contact Elsa Esterhuizen, Director of the Ferdinand Postma Library at the North-West University, in this regard.
Kind regards
Marléne

Dr MN Wiggill
School of Communication Studies
Subject Convener: Communication Management
Potchefstroom Campus, North-West University
Marlene.Wiggill@nwu.ac.za
Tel: +27 18 299 1641
Fax: +27 18 299 1651

>>> "Du Plessis, Tanya" <tduplessis@uj.ac.za> 2013/10/09 05:46 PM >>>
[Quoted text hidden]

Appendix 16: List of Public and Private Hospitals in eThekwini.

Provincial Hospitals in eThekwini (Durban)(online) available on

http://www.kznhealth.gov.za/ethekwini.htm

Addington hospital
Clairwood hospital
Charles James hospital
Don McKenzie hospital
Ekuhlengeni Psychiatric hospital
Hillcrest hospital
Inkosi Albert Luthuli Central hospital
King Edward VIII hospital
King George V hospital
Mahatma Gandhi hospital
McCord Eye Hospital Osindisweni hospital
Prince Mshiyeni hospital
RK Khan hospital
St Aidan's hospital
St Mary's hospital
Wentworth hospital

Private Hospitals - eThekwini (online) available on
http://www.kzntransport.gov.za/rd_traffic/rti/hospitals/private/durban.htm

- Arena Park Hospital
- Bluff Medical & Dental Centre Hospital
- Chatsmed Garden Hospital
- City Health Hospital
- Dayanand Garden Home Hospital
- Durdoc Division Hospital
- Entabeni Hospital
- Isipingo Medical Towers Hospital
- Kingsway Hospital
- Kynoch Hospital
- Lancet Clinic Hospital
- Malvern Medical and Dental Centre Hospital
- Maxwell Hospital
- Mount Edgecombe Hospital
- Nu Shifa Hospital
- Parklands Hospital
- Phoenix Hospital
- St Aidans Mission Hospital
- St Augustines Hospital
- The Crompton Hospital

- Umhlanga Hospital
- Victoria Hospital
- Westville Hospital

Appendix 17: Cronbach's Alpha Results.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.709	.735	5

Item Statistics

	Mean	Std. Deviation	N
I am familiar with EBMP	1.2271	.60681	251
Application of EBMP is necessary in my specialization or practice	1.1036	.42571	251
EBMP is useful in my day-to-day practice	1.0996	.42195	251
I need to increase the use of EBMP in my daily practice	1.2311	.58855	251
EBMP improves the quality of patient care	1.1116	.45112	251

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.755	.759	3

Item Statistics

	Mean	Std. Deviation	N
are you satified with your library services at your hospital	1.8901	.31449	91
Are you assisted by a librarian/s in term of your practice?	1.8242	.38278	91
Are there librarians dedicated to your field of medicine/specialization?	1.8791	.32779	91

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.813	.905	7

Item Statistics

	Mean	Std. Deviation	N
The services of librarians are present / required to support EBMP in hospitals	3.3065	1.60302	248
Librarians can / do assist medical practitioners especially in complicated cases	1.2984	.78940	248
Librarians can / do assist medical practitioners with research/literature in cases where little is known about a disease or illness	1.1815	.65148	248

Librarians can / do assist medical practitioners with literature especially in the case of infectious diseases	1.2218	.69353	248
Librarians can / do assist medical practitioners to keep up to date with research/literature in their field	1.2056	.67492	248
Librarians can / do play a critical role in providing relevant information for individual cases to medical practitioners	1.2218	.69934	248
Librarians can / do save medical practitioners time by assisting them with their research	1.1815	.71092	248

Appendix 18: Chi-square Test Results.

	Experience	Type of hospital	Working hours per week	Patients see every day	Familiarity with EBMP	Familiarity with online search engines	Need to increase the use of EBMP	EBMP is necessary for medical practice	EBMP is useful in day to day practice	Learn EBMP foundation in medical school	EBMP can improve the quality of patients care
Gender	<.001	.001	0.33	0.05	.077	.516	.006	.009	.053	.004	.566
Experience			.480	<.001		.686	.136	.136	.148	.009	.573
Age	<.001		<.001	<.001	0.16	.072	.342	.124	.618	.029	.005
Type of hospitals	<.001		.898	<.001	.014	.076	.008	.205	.211	.008	.999
Familiar with EBMP	.003	.014	.678	.045		.001	.006	<.001	<.001	.001	<.001
Application of EBMP is necessary in practice	.136	.205	.409	.187	<.001	.753	<.001		<.001	.218	<.001
Access of relevant databases and Internet	<.001	<.001	.789	<.001	0.107	.002	.643	.475	.770	.315	.567
Sources used to practice EBMP	.746	.005	.153	.230	.484	.028	.501	.696	.637	.143	<.001
Requirement of a librarian with expertise in EBMP	.742	.205	.600	.633	0.05	.016	.008	.008	<.001	.042	.005

The p-values for Experience by gender, age and type of hospitals is <.001 and by familiarity with EBMP, access of relevant databases and Internet and learn EBMP foundation in medical school are .003, <.001 and .004 respectively. The *p*-value for gender by type of hospital, need to increase the use of EBMP, EBMP is necessary for medical practice and learn EBMP foundation in medical school are .001, .006, .009 and .004. The *p*-values for age by experience, working hours per week, patients see per day is <.001 and by EBMP can improve the quality of patient's care is .005. The p-values for type of hospital by experience and patients see every day is <.001, by familiarity with EBMP is .014 and by need to increase the use of EBMP and learn EBMP foundation in medical school is .008. The *p*-values for familiarity with EBMP by experience is .003, by type of hospital .014, by familiarity with online search engines and learn

EBMP foundation in medical school is .001 and by EBMP is necessary for medical practice, EBMP is useful in day to day practice and EBMP improve the quality of patient's care is <.001. The *p*-values for application of EBMP is necessary in practice by familiarity with EBMP, need to increase the use of EBMP, EBMP useful in day to practice and EBMP can improve the quality of patient's care is <.001. The *p*-values for access of relevant databases and Internet by experience, type of hospital and patients see every day is <.001 by familiarity with online search engines is .002. The p-values for sources used to practice EBMP by type of hospital, familiarity with online search engines and EBMP can improve the quality of patient's care are .005, .028 and <.001. The *p*-values for requirement of a librarian with expertise in EBMP by familiarity with online search engines, need to increase the use of EBMP, EBMP is necessary for medical practice, EBMP is useful in day to day practice, learn EBMP foundation in medical school and EBMP improve the quality of patient's care are .016, .008, .008. <.001, .042 and .005. The results of are discussed in more detail in chapter 4 with the Cross tabulation tables.