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Investigating the knowledge and attitudes of nurses on the benefit of the quality of patient record-keeping in selected hospitals in Burundi

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A mini-thesis submitted in partial fulfilment of the requirements for the Degree of Master in Nursing (Education) in the School of Nursing, Faculty of Community and Health Sciences, University of the Western Cape

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ABBREVIATIONS/ACRONYMS

A1: nurses with higher technical diploma with 3 years training in higher public health institute completed after grade 12

A2: State Nurse Diploma with 4 years training completed after grade 10

A3: Auxiliary Nurse Diploma with 2 years training completed after grade 10

AIDS: Acquired Immunodeficiency Syndrome

BSN: Bachelor of Science in Nursing

CPD: Continuous Professional Development

EMRs: Electronic Medical Records

EN: Enrolled Nurse

ENA: Enrolled Nursing Auxiliary

HIV: Human Immunodeficiency Virus

IOM: Institute of Medicine

LMIC: Low and Middle Income Countries

PBF: Performance Based Funding

PVVCs: Provincial Verification and Validation Committees

RN: Registered Nurse

SANC: South African Nursing Council

SOAP: Subjective, Objective, Assessment and Plan

SOAPIE: Subjective, Objective, Assessment, Plan, Intervention, and Evaluation

UK: United Kingdom

USA: United States of America



ABSTRACT

Background: Complete recording of information is the foundation of continuity of care. However, the quality of patient information recording is a major problem being experienced by health services institutions in many countries. In Burundi there is a lack of accurate information recording and processing of patient information. The quality of patient information recorded is unreliable for decision making and management of healthcare delivery.

Aim: This study investigated the quality of patient information record-keeping among nurses in selected hospitals in Burundi. The objectives were as follows: (a) to describe the knowledge of nurses on the benefits of the quality of patient record-keeping in selected hospitals in Burundi, (b) to describes nurses' attitudes on the benefits of the quality of patient record-keeping in selected hospitals in Burundi, c) to determine the association between sociodemographic characteristics and nurses' knowledge and attitudes on the benefits of the quality of patient record-keeping in selected hospitals, and (d) to identify barriers influencing the quality of record-keeping in selected hospitals in Burundi.

Methodology: The study employed a quantitative research approach using a descriptive survey design. The target population for this study was N=121 nurses; an all-inclusive sampling technique was used to include all 121 qualified nurses who were working in the selected hospitals. A self-administered questionnaire was used to collect the data. The data were analysed using SPSS version 24. Statistical variables such as knowledge, attitudes and barriers were analysed using descriptive statistics to generate frequency, and cross tabulation using chi square test was also adopted to determine the association between sociodemographic characteristics and nurses' knowledge and attitudes on the benefits of the quality of patient record-keeping.

The reliability and validity of the instrument were established and a pre-test was conducted to validate the questions. All ethical principles regarding the study were adhered to. The findings from this study provide relevant information about the benefits of quality of patient record-keeping for the management of the hospitals and all relevant stakeholders in Burundi.

Results: The study identified that about 82.6% (n=100) of the respondents had more knowledge on the benefits of the quality of patient record-keeping, while 17.4% (n=21) had less knowledge on this. Regarding nurses' attitudes to the benefits of the quality of patient record-keeping, 64% (n=78) of the respondents had a positive attitude while 36% (n=43) had a negative attitude. The current study found a statistically significant association between gender and nurses' record-keeping knowledge levels ($X^2=3.582$, $p=.05$), and female nurses were found to have good knowledge levels on the benefits of patient record-keeping compared to male nurses. The study revealed a statistically significant association between years of experience and the nurses' knowledge levels on the benefits of patient record-keeping ($X^2=19.182$, $p=.001$): experienced nurses with more than 6 years of work experience were found to have good knowledge levels on the benefits of patient record-keeping compared to those with less than 6 years of work experience after enrolment. There was also a statistically significant association between educational level of qualification and nurses' attitude on the benefits of patient record-keeping ($X^2=22.674$, $p=.001$): nurses with higher qualification levels were found to have a positive attitude on the benefits of patient record-keeping compared to those with lower qualification levels. Regarding the barriers or challenges contributing to poor quality of patient record-keeping in the selected hospitals, lack of training on record-keeping, excessive burden of work and demotivation, shortage of nursing staff, lack of skills and standardized terminology on patient record-keeping, lack of time to perform quality patient record-keeping, and lack of support by administrative policies on patient record-

keeping was found to be barriers contributing to poor quality of patient record-keeping in the selected hospitals.

Conclusion: Nurses had adequate knowledge on the benefits of the quality of patient record-keeping, even though some had a deficit of knowledge. In the selected hospitals, nurses' attitudes on the benefits of patient record-keeping need to be improved. Lack of training on record-keeping, excessive burden of work and demotivation were found to be the main barriers contributing to poor quality of record-keeping, while lack of time to perform adequate quality record-keeping and lack of a care plan format in the unit were perceived as lesser barriers contributing to poor quality of record-keeping in the selected hospitals

Recommendation: Based on the study findings further research is required to assess more in-depth nurses' attitudes of and barriers to patient record-keeping in selected hospitals. Training via seminars related to record-keeping should be carried out on a regular basis.



KEYWORDS

Attitudes

Barrier

Knowledge

Nurse

Patient information

Record-keeping Quality of patient records



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DECLARATION

I declare that *investigating the quality of patient record-keeping among nurses in selected hospitals in Burundi* is my own work, that it has not been submitted before for any degree or examination in any other university, and that all the sources I have used or quoted have been indicated and acknowledged as complete references.

Edison Bizimana

Signed



This _____ day of _____ 2018

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DEDICATION

I would like to dedicate this Thesis to:

First of all to our almighty God, who gave me strength and knowledge for my everyday life.

My biological Father and Mother, Mr. Bamvuga Dismas and Mrs. Nahimana Angelique who inspired me to be strong despite of many obstacles in life, for their understanding and overwhelming support morally and financially.

My brothers and sisters for their eternal love.

To all nurses working in selected hospitals.



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To **Nicolette Johannes**, thank you for your assistance as the postgraduate administrator.

To the selected hospitals managers, thank you for granting me the permission to conduct this study.

I also acknowledge the support given by all lecturers at the University of Western Cape, master's programme in nursing education and all academics members who contributed to my progress all through this period of study.

I am extremely grateful to **Renvert Irakoze**'s family for his moral and financial support. This journey would not have been completed without your contribution, motivation and show of love.

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Finally, to the rest of my family members, and friends, I pray may God almighty bless you.

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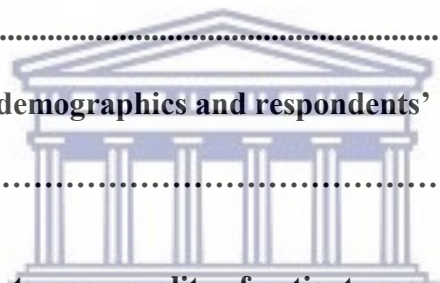
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CHAPTER ONE

ORIENTATION TO THE STUDY

1.1 Introduction

This chapter presents the background of the study related to the context of Burundi and Burundi's health system, and the quality of patient record-keeping. It outlines the problem statement related to the quality of patient record-keeping, and the aim and objectives of the study. It also describes the significance of the study and gives operational definitions of terms. Lastly, an outline of the thesis is presented.

1.2 Background to the study

1.2.1 Histo-geographical context of Burundi

The republic of Burundi was an East African country, and was first colonised by Germany and Belgium after World War I. Burundi achieved its independence on 1 July 1962. A political crisis from 1993 to 2005 contributed to the poor development of the country. According to the Human Development Index for 2013 (Boslaugh, 2013), Burundi was one of the poorest countries of the world, ranked 184 out of 188 countries. Burundi is considered to be part of both East and Central Africa, is a landlocked country and borders with Rwanda to the north, Tanzania to the south and east and the Democratic Republic of Congo to the west. It is 27 834 square kilometres in extent, which includes its territorial waters. It is located at 3^o 22' 34'' South latitude and 29^o 21' 36'' East longitude, with high plateaus in the centre, the long valley of Imbo in the West and Kumoso's depression in the East. Of its lakes Lake Tanganyika is the largest. Burundi is divided into 18 provinces, and in July 2016 was estimated to have a population of 10 424 117 people.

Since 2014 Burundi has had three official languages: Kirundi, French and English, and Kiswahili is also mentioned as a fourth language spoken and taught in the country. The weather is tropical with four seasons: a short rainy season from October to December, a short dry season from January to February, a long rainy season from March to May, and a long dry season from June to September.

1.2.2 Burundi's health system

Burundi's Health Ministry is organised in a hierarchical pyramidal structure (Nsengiyumva & Musango, 2013), which is described below.

Central level: This includes the office of the minister, a general health inspectorate, two general directorates, specific institutions, six departments, nine health programmes and related services. Since 2009 an institution in charge of auditing has been integrated as well as a permanent secretariat, a general directorate of planning, monitoring, and evaluation, and a national integrated programme on HIV and AIDS. The central level is responsible for policy, strategy, coordination, mobilisation, allocation of resources and general oversight (Nsengiyumva & Musango, 2013).

Intermediate level: This level includes 18 provincial health offices, which are responsible for coordinating the health activities of their respective provinces, supporting health districts, and ensuring that sectors' duties are shared with district health bureaux.

Peripheral level: This includes 45 health districts, each covering two to three cities of 100 000 to 150 000 residents each. The district is the operational unit of the health system and includes the community level health centres and district hospitals that serve as the first point of contact.

In addition to the above health system structure, the care network is organised into four levels:

1. Health centres: These serve as the point of entry into the health system, offering a minimum package of services that includes a treatment and prevention consultation service,

laboratory services, pharmacies, health promotion and health education.

2. District hospitals: These serve as the first reference and offer outpatient consultations, emergency services, hospitalisation, specialised techniques, and diagnosis and support services. They offer both the minimum package of services and a supplemental package.
3. Second-reference hospitals: These supplement the package of services by offering certain specialised care such as stomatology, ophthalmology and others. The legal framework for operating these hospitals and their package of care are not yet defined.
4. National reference hospitals: These offer care not provided at the other levels, such as specialised investigations and treatment. They also offer the minimum package of care which is also available at the health centres.

However, aside from this pyramidal structure, as revealed in a report by the Burundi Government in 2011, significant challenges remain in the health sector system (Brenner et al, 2017). There is a high prevalence of communicable diseases such as diarrhoeal diseases, an increasing burden of non-communicable diseases such as diabetes, cancer, hypertension and chronic obstructive pulmonary disease (Sibomana, Reveillon & Belgium, 2015): In addition, social determinants of health such as widespread poverty, lack of infrastructure (e.g. potable water) and lack of food security are significant structural challenges in improving health outcomes (Bonfrer et al, 2014). For instance, there were 3421 deaths due to malaria reported in 2016, which is an increase of 2% compared to 2015, and from January to October 2016, 371 cases of cholera were reported. Food insecurity is one of the most important factors affecting a vulnerable population (mothers and children under 5 years). High-level forums on health summarised the following challenges in the health sector in Burundi (Sibomana, Reveillon & Belgium, 2015):

- Insufficient and poorly trained medical staff, with 80% of medical officers, 50% of clinical

officers and nurses is based in the capital city Bujumbura. As reported by Chi et al. (2015), the density of physicians per 1000 members of the population was estimated at 0.03, with 0.06 of nurses and midwives per 1000 population.

- Poorly motivated staff with high turnover and attrition rates.
- Poor quality of health services.
- Lack of reliable health information.
- Excessive administrative centralisation with weak sector coordination.

1.2.3 Patient record-keeping

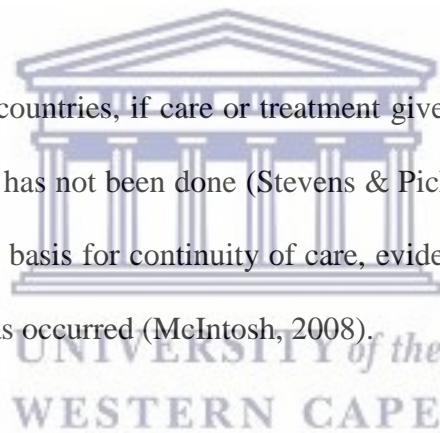
Keeping patient records accurately provides a correct account of the treatment and care given to patients; this allows for good communication between nurses as a team in their daily activities (Stevens & Pickering, 2010). Patients' daily records, including the nursing records, are considered legal documents and must accurately and honestly reflect nursing actions carried out for the patients (Maharaj, 2015). Poor documentation potentially negatively affects patient care, professional accountability, and organisational risk (Blair & Smith, 2012). In addition, future improvement of nursing care depends on precise nursing information in the patient's records; it is thus essential that nursing records be completed comprehensively and accurately. However, many countries across the world are experiencing problems in decision making, planning processes, and performance evaluation of healthcare programmes due to the poor quality of health data recording (Corrao et al., 2009).

The United States Department of Health and Human Services in 2006 reported that the ratio for missing medical records was 1:7 in health services institutions, which means that for every 7 patients one medical file is missing, due to the lack of quality patient record-keeping (Marutha,

2011). Problems of poor-quality health data, a low level of health information use and poor management of health information systems have also been reported in a systematic review of health data quality management and best practices at community and district levels in low- and middle-income countries (LMIC) (Ndabarora, Chipps & Uys, 2014).

Keeping a clear and accurate nursing record for each patient is one of a nurse's day-to-day duties, as this is only one method to support a nurse to remember everything that has been done during a shift, in order to facilitate a clear and complete handover of patient information to the next team of nurses (Stevens & Pickering, 2010).

According to the law in many countries, if care or treatment given to a patient is not accurately recorded, it can be taken that it has not been done (Stevens & Pickering, 2010). Records provide for accountability by offering a basis for continuity of care, evidence of changes in the patient's condition and proof that care has occurred (McIntosh, 2008).

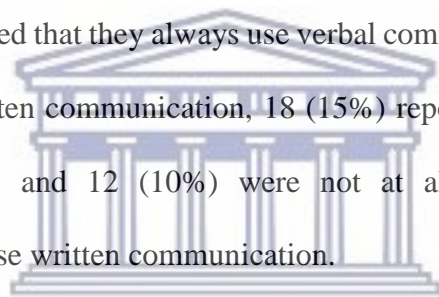


The South African Nursing Council (SANC) states that “the quality of nursing practice is founded on timely, accurate and complete recording of the care provided to patient” (McIntosh, 2008, 3). Furthermore, the South African Nursing Council Act 33 of 2005 indicates that a nurse may be disciplined if found negligent for not recording details of his or her nursing care (Mtsha, 2009).

Evidence in the literature has shown that poor record-keeping leads to failure of the healthcare system to deliver an efficient service (Marutha, 2011). Similarly, a study by Ngoepe (2012) revealed that poor record-keeping is one of the major factors contributing to negative audit reports.

In South Africa studies by Marutha (2011) and Chinyemba (2011) identified that many institutions in public health sectors in Limpopo Province and some other provinces are experiencing the same problems of poor quality of patient record-keeping.

According to Jefferies et al (2010: 113) study, state that traditionally nurses communicate information more verbally about their patients, more so than confirming it in writing. In Tanzania a study conducted by Mamseri (2012, 107) on 'The nursing process as a means of improving patient care' revealed that nurses often use verbal communication rather than written communication while reporting their patients' care and conditions. The study identified that among 120 respondents, 31 (26%) agreed that they always use verbal communication, 59 (49%) indicated that nurses sometimes use written communication, 18 (15%) reported that they rarely take care about written communication, and 12 (10%) were not at all if they always use verbal communication or sometimes use written communication.



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In a study by Olivier (2010), revealed that there is an evidence correlation between the length of time following completion of training and reluctance to keep records. It means that with the more time lapsed, the least likely nurses are to keep adequate records, and this should be the result of the lack of the current knowledge regarding nurse's attitude related to terminology and record-keeping.

According to Saranto and Kinunen (2009: 465) study, standardised terminology is a pre-requisite for consistent communication, therefore certain skills and knowledge are essential to achieve this effective communication among health care providers. The action of record-keeping requires skills and knowledge as information is recorded in line with the steps of the nursing process of

assessment, planning, implementation and evaluation (Mamseri, 2012).

However in Maharaj (2015) study, conducted in three hospitals in the Umgungudlovu District of KwaZulu-Natal, South Africa, confirmed that a shortage of nurses, non-use of support staff per nursing unit, bed occupancy rate and type of unit, including type of hospital, are the greatest barriers hindering the quality of patient information recording and processing. Other major factors are lack of awareness about the proper filing systems, lack of training and of knowledge, and practical skills of nursing staff in patient information record-keeping (Marutha, 2011)

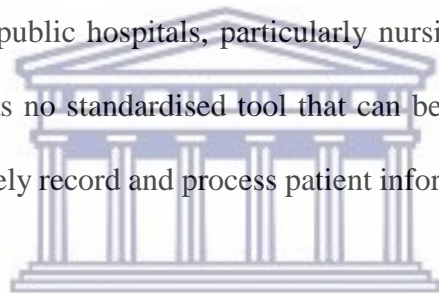
Burundi is experiencing nurses' complaints about workload (Carlsson et al., 2014) and has a continuously decreasing investment in education and research activities (Klopper & Gasanganwa, 2015). There is limited information regarding the quality of patient information recording in clinical settings in Burundi.

1.3 Problem statement

Accurate patient information recording and use among the healthcare team is vital for quality of patient care, and in this way communication is effected through discussion, reports and recording accurate patient information, and additionally it is a valuable source for scientific research, quality of assurance and transparency of the care delivered (Zegers et al, 2011). However, the lack of appropriate nursing records raises various problems, such as difficulty in knowing what care has been provided, ethical and legal problems such as disciplinary action due to lack of evidence on sensitive issues, and difficulty in performing retrospective audits and research activities (Mamseri, 2012). Furthermore, poor documentation potentially negatively affects patients' continuity of care, which leads to a poor decision-making process and patient outcomes and increased organisational risks (Blair & Smith, 2012).

Indeed, inadequate nurse's knowledge and attitude on the benefits , and barriers related to the quality of patient record-keeping lead to poor record-keeping of quality, which might have different effects such as low priority given to records management, lack of awareness of the importance of good record-keeping, lack of information sharing between professional work units, tendency to treat records as personal rather than corporate assets, lack of coordination between paper and electronic information strategies, and the need to maintain confidentiality while legitimately freeing information (Ngao, 2015).

Personal observations have noted the lack of institutional policies regarding the quality of patient information record-keeping in public hospitals, particularly nursing progress notes, in Burundi. Nursing practice in Burundi has no standardised tool that can be used in the clinical setting by nurses to timeously and accurately record and process patient information, and plan the care of the patient (Blair & Smith, 2012).



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There is therefore limited information on the nurse's knowledge and attitudes on the benefits of as well as barrier towards quality of patient record-keeping in hospitals in Burundi. Hence this study was conducted to investigate the nurses's knowledge, attitudes, and barriers of quality of patient record-keeping in the public health hospitals of Burundi.

1.4 Study aim

This study aim was to investigate the quality of patient record-keeping among nurses in selected hospitals in Burundi.

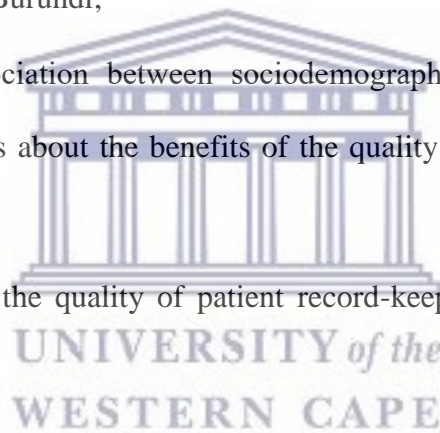
1.4 Study aim

This study aim was to investigate the knowledge and attitudes of nurses on the benefit of the quality of patient record-keeping in selected hospitals in Burundi.

1.5 Study objectives

The objectives of this study were:

- To describe the knowledge of nurses on the benefits of the quality of patient record-keeping in selected hospitals in Burundi;
- To describe the attitudes of nurses on the benefits of the quality of patient record-keeping in selected hospitals in Burundi;
- To determine the association between sociodemographic characteristics and nurses' knowledge and attitudes about the benefits of the quality of record-keeping in selected hospitals; and
- To identify barriers of the quality of patient record-keeping among nurses in selected hospitals in Burundi.



1.6 Significance of the study

The findings of the study has provided an understanding of the current nurse's knowledge, attitudes as well as barriers on the benefits of the quality of patient record-keeping in the selected hospitals in Burundi. It has provided relevant information about the knowledge and attitudes of nurses on the benefits of the quality of patient record-keeping. The findings of the study can be used by relevant stakeholders, such as the management of the hospitals to provide a supporting structure that enhances the quality of patient record-keeping.

1.7 Definition of key terms

Nurse: A person who has completed a programme of basic nursing and general nursing education and is authorised by the appropriate regulatory authority to practice nursing in his/her country (Martin & McFerran, 2017). In this study nurses referred to those who were working in hospitals with a State diploma or Medical Technical A₂ (4 years nursing training completed, enrolled in the program after grade 10 completed), Auxiliary Nursing Diploma A₃ (2 years nursing training completed, enrolled in the program after grade 10 completed), nurses with Nursing Diploma A₁ ((2 or 3 years training completed, enrolled in the program after grade 12 completed), and nurses with a Bachelor of Science in Nursing (4 years training completed, enrolled in the program after grade 12 completed) during the data collection period.

Quality of patient records: The completeness, readability and adequacy of the information timeously and accurately recorded from the patient (Zegers et al., 2011). In this study quality of patient records referred to the accuracy, consistency and timeous nature of patient information recorded manually or electronically.

Patient information: Legal documents which must accurately and honestly reflect the nursing actions carried out for a particular patient, providing proof that nursing care was carried out (Van Niekerk, Mogothlane & Young, 2007). In this study patient information records referred to accurate patient information such as patient identification (name, address, age, etc.), patient case history, physical observations, medical records, and patient progress records (subjective, objective, assessment, planning) kept by nurses.

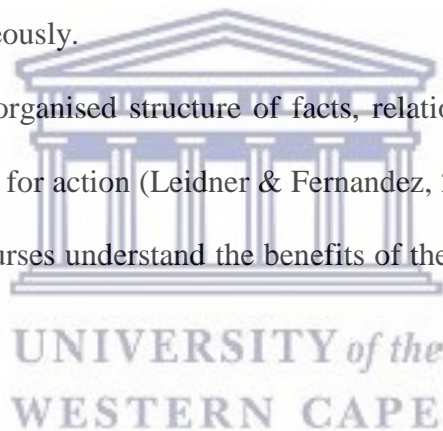
Record-keeping: Involves making and maintaining complete, accurate and reliable evidence of business transactions in the form of recorded information (Ngoepe, 2012). Record-keeping

referred to systems used by nurses to keep information recorded on patients, whether manually or electronically.

Barrier: Something or a situation that makes it difficult or impossible to achieve a certain level of functioning (Ngao, 2015). In this study barrier referred to all personal, social, economic, environmental, technical, political and other barriers that prevent nurses from recording patient information.

Attitudes: Can be defined as acquired tendencies that determine a person's behaviour towards a specific object, subject to the conditions prevailing in the environment (Babu, 2004). In this study attitudes refer to the views or feelings of nurses on the benefits of recording and keeping patient information accurately and timeously.

Knowledge: Is defined as an organised structure of facts, relationships, experience, skills and insights that produce a capacity for action (Leidner & Fernandez, 2008). In this study knowledge refers to the degree to which nurses understand the benefits of the quality of patient information record-keeping.



1.8 Outline of the thesis

Chapter 1: Presents the background to the study, which includes the problem statement, study purpose and objectives, significance of the study, and definition of key terms.

Chapter 2: Present the review of the literature related to nurses' knowledge, attitudes and barriers to record-keeping, record-keeping as an integral part of nursing process, approaches to record-keeping, computer-based methods of record-keeping as well as advantages and barriers associated with record keeping. It also discusses barriers associated with the quality of patient information record-keeping.

Chapter 3: This describes the methodology of the study, which includes study design, setting, and population in association with the data collection process. Validity, reliability and ethical considerations are also described.

Chapter 4: Presents the findings of the study

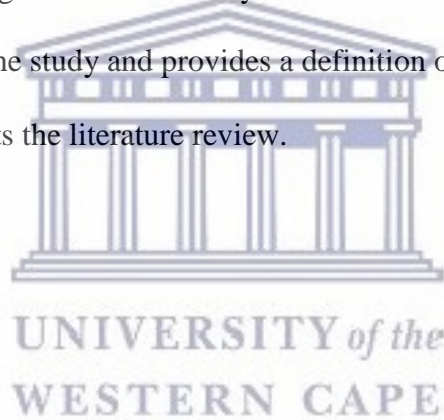
Chapter 5: Discussion of the findings of the study based to the literature.

Chapter 6: This provides the conclusions, implications, recommendations, and limitations of the study.

1.9 Conclusion

This chapter provides the background of the study describes the problem statement, aim, study objectives and significance of the study and provides a definition of terms.

The following chapter highlights the literature review.



CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Chapter two presents a review of literature that has been published around the world on patient record-keeping, nurses' knowledge and attitudes on the benefits of the quality of patient record-keeping, record-keeping as an integral part of the nursing process, approaches to record-keeping, computer-based methods of record-keeping as well as advantages and barriers contributing to poor record-keeping in clinical settings across the world.


2.2. Record-keeping

A record serves as evidence and proves that the institution is working as mandated; for instance, in hospitals cases relating to maternity deaths, operations, child deliveries (assisted delivery and caesareans) and stillbirth usually raise a worrying concern in the citizens when the patient is not fine. Therefore, the hospitals need to convince the citizenry in order to satisfy them as to which steps were taken in diagnosing and prescribing for the patients (Marutha, 2011). This is because records are the evidence for better accountability that can be used to demonstrate compliance with quality standards (Johnson, Jefferies & Langdon, 2010).

The literature enumerates two types of record-keeping: Paper-based records or handwritten medical records and computer-based records or electronic health records (Marutha, 2011). Paper-based records present some disadvantages in that records could be illegible, incomplete, and not well organised and could sacrifice the quality of care (Marutha, 2011). In most clinical settings records are written by hand, typed in narratives, are descriptive or charted in medical terminology, as long as other people will be able to read it and get the message. Electronic medical records

provide several advantages, including minimum paperwork, maximum communication with users, low medical errors, low costs, timely access to information, provision of accurate data and physical efficiency (Marutha & Ngulube, 2012).

Ngoepe (2012) described record-keeping as an enabler; in fact, without it auditing and financial management in an institution will not be possible. Records are used to support institutions' activities of decision making and accounting. According to the National Archives and Records Service of South Africa (Marutha & Ngulube, 2012), a proper record-keeping in clinical settings as well as in other organisations:

- 
- enables an organisation to find the right information easily and comprehensively,
 - enables the health organisation to perform its functions successfully and efficiently and in an accountable manner,
 - supports the business legal accountability requirements of the health organisation,
 - ensures the conduct of healthcare services in an orderly, efficient, and accountable manner,
 - ensures consistent delivery of healthcare services,
 - provides continuity of care in service delivery when staff leave,
 - supports and documents policy formation administration in case of litigation and decision making,
 - protects the interests of the healthcare organisation and the rights of employees, clients and present and future stakeholders,
 - supports and documents the healthcare organisation's activities, developments and achievements (Marutha, 2011).

2.3 Knowledge and attitudes of nurses about the benefits of the quality record-keeping using paper-based and electronic methods in a clinical setting

Paper-based record-keeping is generally seen as structured handwritten documents that are used to record medical information about a patient. However, there are no rules that lead organisation of paper-based records, and they vary in content by specialty (Mostert-Phipps, Pottas & Korpela 2012). In the clinical setting most paper-based records are made up of a combination of notes, laboratory test results and referral letters together in a folder with the identification of the patient on the cover.

In a study conducted by Stevenson et al. (2010) in two hospitals in the United States of America (USA), two from Australia and one from the UK on nurses' perceptions of the impact of electronic health records on work and patients' outcomes, it was found that electronic health records are considered as the best method in the modern healthcare setting. Only two nurses out of a total of 50 respondents did not agree with the statement that electronic recording is the best method. One of the knowledge characteristics reported by the nurses was that electronic health records using computers contribute to increased nursing work through the increased access to patient information, improved organisation and work efficiency. Electronic health records enhance nursing work by increasing access to patient information, and Mostert-Phipps, Pottas and Korpela (2012) assert that electronic recording improves continuity of care through the use of electronic records; nurses reported that using computer-based records increased job performance since they spent less time searching for records and finding the patients' charts. In a study conducted by Stevenson et al. (2010) nurses reported that electronic health records facilitate organisation through establishment of task lists, systematic and prompt charting, and less reliance on the memory or written notes. In terms of work efficiency, nurses' attitude to computer use revealed that electronic

health records improve efficiency through quicker documentation and information retrieval processes, for instance by speeding up the process of giving medication, getting reports to other healthcare members, and speeding up communication with other facilities due to the fact that it is quicker to type or click on the information needed rather than to hand write or search a chart (Stevenson et al. 2010).

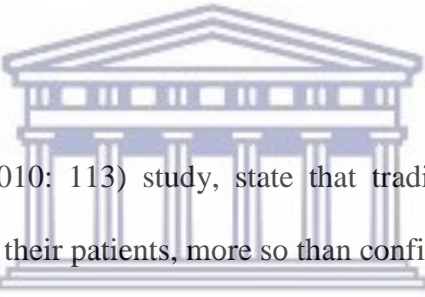
Computer-based records can sometimes affect nursing work by both slowing down and speeding up the charting while investigating the patients' records. One of the unaccepted behaviours or attitudes found in record-keeping using computers is that nurses can be more focused on the computer instead of on the patients' needs; however, electronic health records remain the most adequate method to be considered in the modern clinical setting (Cherry, Ford, Peterson, 2011). The literature showed that most of the time paper-based record-keeping leads to the failure of healthcare providers to facilitate adequate follow-up for the patients, failure to prevent avoidable interactions, and inadequate provision notes for litigation (Mostert-Phipps et al., 2012).

In a study by Olivier (2010), revealed that there is an evidence correlation between the length of time following completion of training and reluctance to keep records. It means that with the more time lapsed, the least likely nurses are to keep adequate records, and this should be the result of the lack of the current knowledge regarding nurse's attitude related to terminology and record-keeping.

According to Saranto and Kinunen (2009: 465) study, standardised terminology is a pre-requisite for consistent communication, therefore certain skills and knowledge are essential to achieve this effective communication among health care providers. The action of record-keeping requires skills

and knowledge as information is recorded in line with the steps of the nursing process of assessment, planning, implementation and evaluation (Mamseri, 2012).

Regarding nurses' attitude towards record-keeping, it has been reported in a study of Mamseri (2012:78) that during the admission phase for elective surgery, out of a total of 120 nurse's respondents, of this, 69% (n= 77) did not accurately and timely record the patients history in a regularly manner, while only 35% (n=43) had performed regularly the record-keeping of the patient history, its means that accurately recording and keeping patient information in a pre-operative assessment will assist a critical pathway which will enable planning a post-operative care to the patient.



According to Jefferies et al (2010: 113) study, state that traditionally nurses communicate information more verbally about their patients, more so than confirming it in writing, and this has also been confirmed in a study of mamseri (2012) while assessing whether nursing actions are communicated verbally, or in writing, almost half of the respondents, 49% (n=59) reported that they sometimes use verbal communication more than written communication, 26% (n=31) noted that nurses always use verbal communication more often than written communication during the care of their patients, 15%(n=18) reported rarely, and 10%(n=12) were not all if they use verbal communication more than written communication. This has a negative impact on the continuity and accuracy of nursing care, as information not recorded is easily forgotten, and this is the case especially so in very busy wards with high patients volume (Mamseri, 2012).

It is a primordial responsibility for nurses to know that recording patient information aimed firstly

to support the delivery of good care, clinical decision making, communication between health care workers and continuity of care, and on other side as valuable source for scientific research, quality assurance and transparency of the delivered care (Zegers et al., 2011).

2.4 Advantages of patient record-keeping in the clinical setting

In a study conducted in LMIC on systematic review of health data quality management and best practices at community and district levels (Ndabarora et al., 2014) revealed that reliable health data are the foundation of credible evidence on the health status of patients, and can assist policy makers in making decisions and plans to improve healthcare service delivery for better health outcomes. According to Ndabarora et al. (2014), there is evidence that in LMIC that data are incomplete, inaccurate, unreliable, and not timeously recorded, which leads to poor quality of data management as impacting on decision-making, planning and utilisation of health data in the clinical setting.

Effective record-keeping describes three major elements: the degree of care the patient has received and results of treatment; it helps to plan and coordinate the care contributed by each professional; and it also provides evidence of the level to which legal responsibility toward the patient has been carried out (Mellish, Oosthuizen & Paton, 2010). Detailed, ongoing record-keeping provides proof that the clinical setting has rendered certain services. The quality of record-keeping must provide valid data for research and healthcare planning, continuing education, case management monitoring, and continuous quality improvement (Ajami & Bagheri-Tadi, 2013).

The assessment, nursing diagnosis, planning, interventions and evaluation of the patient's response to care are critical part of the patient's record (Brown et al., 2015). One of the tools that nurses use to record and process patient information is the nursing care plan (Brown et al., 2015), and these should be considered as records and may be required as evidence in legal matters or complaints.

In his study Mamseri (2012) mentioned that while in a sense recording isn't a step in the nursing process, it is considered as a very special part of it. The quality of recording provides evidence of the care that nurses have provided, justifying the care for which he/she is accountable (Mellish et al., 2010).

In the clinical setting a study conducted by Hector (2010) identified a number of purposes of clinical records and stated that record-keeping helps: to act as working documents for day-to-day recording of patient care, to store a chronological account of the patient's life, illness, its content and who did what and to what effect, to enable clinicians to communicate to each other, to allow continuity of approach in a continuing illness, to record any factors that might render the patient vulnerable to an adverse reaction to management or treatment, to record risk assessments, to protect the patient and others, to record the advice given to general practitioners, other clinicians and other agencies, to record the information received from others (including carers), to store a record to which the patient may have access, to inform clinical audit, governance and accreditation, to inform bodies handling complaints and enquiries, and to inform research and allow contributions to national data-sets, morbidity registers and so on (Hector, 2010).

(Maharaj, 2015) summarised the functions of the quality of record-keeping in two ways: as primary functions where the records serve to support directly the patient care in communication and as an aide memoire among healthcare members, as well as being medical legal documents, defined as a source of information for clinical audit and research, resource allocation, illness epidemiology, service planning and performance monitoring (Tola et al, 2017). Quality record-keeping is an essential condition for the effectiveness of the nursing process (Al-Harbi, 2011). Further, the

nursing care plans must be formulated timeously, accurately and personally based on patient's needs, as these are legal documents and must meet standards of accuracy and honesty (Shroff et al, 2017). The negligence of nurses is shown by not recording timeously and accurately the nursing care given to patients, which is the evidence that care has not been done (Maharaj, 2015).

To provide more insight into patient care record-keeping as an integral part of nursing process, the process of nursing is discussed in below.

2.5 Patient record-keeping as an integral part of the nursing process

In the clinical setting record-keeping is sometimes not taken into consideration due to the lack of nurses in charge of doing the work (Hector, 2010). This means that if nurses fail to record a task provided or observations made, this can be considered as not having been done. According to Mamseri (2012) the incompleteness of tasks of nurses before ending their shift leads to a legal responsibility across patients and nurses themselves could be accused of an act of negligence.

The records guide the daily management of a patient's problems and are seen as a means of communication. Based on written records of care, patients repose their trust to nurses to ensure their protection; poor recording and inaccuracy of data collected, whether accidentally or purposefully, reduces this trust (Ngao, 2015).

Records provide a basis for continuity of care, as well as evidence of changes in the patient's condition and proof that care has occurred (Ngao, 2015). No matter which system (paper- or computer-based) being used to record patient information in the clinical setting, documentation or record-keeping should reflect the five steps of the nursing process: assessment, nursing diagnosis, planning, implementation and evaluation. Following the nursing process while recording provides

a logical, complete, and well-organised record that will help the caregivers to provide quality of care (Seaback, 2013).

The nursing process is grounded in a problem-solving cycle, which usually includes collecting information and assessing the patient, planning the care and defining the relevant objectives for nursing care, implementing actual interventions, and evaluating the care (Seaback, 2013). It is a cyclical and dynamic patient-centred care approach (Hector, 2010). During the nursing process ongoing assessment of the client is monitored and recorded as physician's orders and nursing interventions are carried out, and nurses are asked to communicate data through verbal reports and written documentation (Seaback, 2013).

The nursing process or scientific approach to nursing is seen as a systematic way of solving problems used in many scientific fields that starts with a careful observation, measurement and information recording. It provides a roadmap to guide the nursing actions, it is a sign that reveals the nurse as accountable for actions that have been carried out for the patients, and actions and decisions made regarding the care are defended based on the strength of the scientific approach (Ngao, 2015).

According Hector, 2010, nurses need to follow these steps in a repeating cycle until the problem is solved:

Assess: Build up a database of information about the patient.

Diagnose: Identify the patient's healthcare needs.

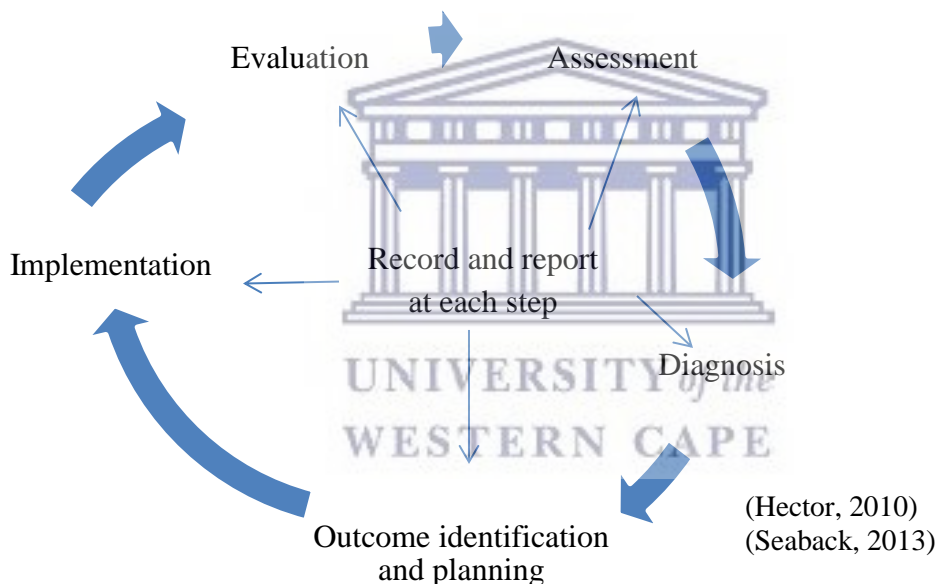
Plan: Decide on the priorities, goals and outcomes of care, and identify suitable nursing interventions to achieve these outcomes.

Implement: Provide nursing interventions to meet the patient's needs

Record and report: Write down all observations and nursing actions, with the time and date, and report any unexpected outcomes.

Evaluate the outcomes: Determine how well the nursing care is achieving its goals.

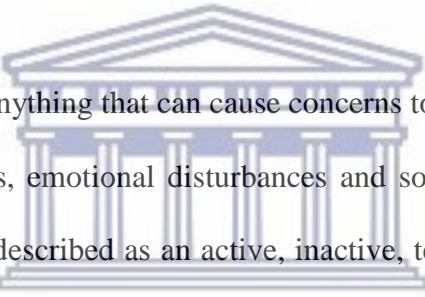
All of the above steps of the nursing process are summarised in the cycle below:



2.6 Approaches to patient record-keeping

A well-organised approach to record-keeping helps to record accurately and quickly. There are two main ways to maintain chart notes from patients (whether on paper and/or electronic records): source-oriented medical records and problem-oriented medical records (Bisbal & Berry, 2011). The source-oriented medical records consist of a chronological set of notes from each visit, beginning with the patient's first visit. The information collected is provided by each member of

the healthcare team and notations are made on separate documents or in a separate area of the chart; this can make it difficult to follow or track a specific patient problem. It requires the leader to take a little bit of time while consulting various parts of the records to gain a complete picture of the patient care. As stated, patient information is recorded by different team members of each health department in a separate section of the medical record – such as doctor’s chart progress notes or nurses’ chart notes (Ngao, 2015). In other words, it groups information according to its source (e.g. from laboratories, examinations, doctor’s notes and nurse’s notes, and consulting notes) (Ngao, 2015). In this case the caregiver must search throughout the record to locate information about a particular patient problem.



In the health field a problem is anything that can cause concerns to the patient or to the caregiver, including physical abnormalities, emotional disturbances and socio-economic problems (Blair, Smith, 2012). It can usually be described as an active, inactive, temporary or potential problem. On the other hand, a problem-oriented medical record is a method that records a list of problems to be assessed, dated, and assigned numbers (Bisbal & Berry, 2011). It is being used extensively today in many clinical setting. It consists of four major components: Database, a problem list, plan of care of each problem, and progress notes (Blair, Smith, 2012).

Baseline data are obtained from all the units involved in patient care by focusing on the patient’s present complaints and illness. It includes the patient’s social and emotional status, medical status, health history, initial assessment findings, and diagnostic test results.

A problem list is built from a database to construct a plan of care.

A plan of care addresses each of the patient's problems. Problems are routinely updated both in the plan of care and in the progress notes. In this system members of the healthcare team use a format known as SOAP, based on Subjective data related to information from patient, Objective data obtained from observation and assessment of the patient, assessment which is the conclusion drawn from the patient's problems based on the subjective and objective data, and Plans that are interventions proposed to resolve the problem. Another extended format is known as SOAPIE with two more components added (Interventions provided to resolve the problem and Evaluation of patient's response) (Blair, Smith, 2012)

The importance of problem-oriented record-keeping facilitates communication among all the disciplines providing care to the patient (Burton & Ludwig, 2015). A list of patient problem is kept at the front of the chart, where it can easily be accessed without thumbing through the entire chart (Bisbal & Berry, 2011).

Progress notes that are kept chronologically by the healthcare team members in the same progress notes section help for quick retrieval of all the entries of the involved disciplines regarding the patient's responses to treatment and therefore all the healthcare providers will work together based on the same database, problem list, plan of care and progress notes (Burton & Ludwig, 2015).

2.7 Computers as a method of patient record-keeping

Recording processes in healthcare practice need to go beyond the traditional bounds of documentation (Mamseri, 2012). Data recorded from patients support and justify evidence-based practice in order to promote the quality assurance of patient information recording to ensure delivery of efficient and effective service (Mamseri, 2012). Studies have shown that most countries in LMIC use paper-based information systems, with poor data quality, and are under-utilised

within health information management (Ndabarora et al., 2014). It is therefore important to strengthen health systems in LMIC with good data management and data availability for better decision making (Hector, 2010).

In order to support patient care and its quality, to enhance productivity of healthcare professionals and to reduce the administrative costs associated with health delivery and financing, to accommodate future development in healthcare technology policy, management and finance, and to ensure confidentiality of patient data at all times, integration of computer-based record-keeping systems, known as electronic health records, must be used to ensure the quality of patient record-keeping in the clinical setting (Bower et al, 2017).

Based on the future utilisation of the data recorded from the patients, users have to be confident in the data, which implies that health personnel in charge of collecting the data reliably and accurately integrate data from all sources whenever necessary (Al-Harbi, 2011).

In practice, healthcare professionals use different type of methods in recording patient information, retrieval and display, both paper and computer-based records, this depends on the type of clinical setting and its patient record-keeping systems (Bani-Issa et al., 2016). However, a study conducted in Ethiopia on knowledge and utilisation of computers among health workers in Addis Ababa hospitals found a lack of knowledge on computer usage in capital city health workers (Mohammed, Andalgie, Mesert & Girma, 2013). This requires the clinical setting particularly managers and policy-makers in the health setting, to facilitate the accessibility to computers and to increase training on the use of computers for workers by investing in information technology (Mohammed et al., 2013). Programmes targetted at promoting knowledge and computer skills must be designed

in order to enhance knowledge and utilisation of computers in the clinical setting in rural African health care (Mohammed et al., 2013).

Advances in information and computer technology in the twentieth century have contributed to better understanding of individual health risk, such as physiology, pathology process and diagnosis, through new imaging and scanning techniques (Cowie et al., 2017). Hence practitioners, managers and policy-makers are required to increase responsibility by setting up guidelines regarding resources; the target is to promote accessibility to computers and health workers' computer skills to promote effective integration from a paper-based patient record system to electronic health records (Cowie, 2017).

According to Broonstra, and Broekhuis (2010) study, in any clinical setting there is a need for health informatics units in charge of development of records standards programmes aimed at improving the quality of clinical information in the hospital setting by: developing standards for recording and communicating information about patients, linking these standards to medical records to improve validity and utility of patient data, and structuring the records so that information can be incorporated into electronic records where it can be shared with other healthcare providers and analysed for performance monitoring with confidence (Urquhart et al., 2009).

2.8 Advantages of electronic health records (computer-based patient record-keeping)

In LMIC with burdens of disease such as HIV/AIDS there is a need for an information system to coordinate care and treatment (Chipps, Ndabarora & Uys, 2014). Studies show that use of EMRs seems to be more efficient and effective than paper-based records in the clinical setting of the twentieth century (Chipps. Ndabarora & Uys, 2014). Studies conducted on the management

systems of HIV/AIDS in South Africa (Kotze & McDonald, 2010), and Rwanda (Amoroso et al., 2010) found an improvement in monitoring systems and evaluation of antiretroviral data and HIV/AIDS treatment through the implementation of computer-based record-keeping. For instance, in Rwanda use of detailed HIV/AIDS and tuberculosis computerised data facilitated patient follow-up, quality of data accessibility and patient care (Kotze & McDonald, 2010). Using computers was found to be better than paper for data collection and data processing, and to facilitate the timely delivery of reports and adherence to data-handling instructions (Bisbal, 2013). Studies done in the USA, United Kingdom (UK), Australia and United Arab Emirates found that the importance of computer-based records includes their positive impact on clinical outcomes in different clinical settings of the above stated countries (Bani-Issa et al., 2016). The most important clinical outcome evaluated in these studies was the positive impact on medication administration (Bani-Issa et al., 2016). Computer-based records have served to decrease medication errors in two private hospitals in Australia, increased medication accuracy rates in community-based hospitals in the USA, and contributed to detection of adverse drug events in the UK and the improvement of medication administration processes in emergency units in the USA (Bani-Issa et al., 2016). Contributions to accessing and viewing workflow efficiencies and time distribution tasks in intensive care units in hospitals in the USA, facilitating improvement in communication among healthcare providers, contributing to time efficiency and better workflow, and improvement in the quality of documentation and enhanced data completion and order tracking were also found to be positive impacts of computer-based record-keeping in the clinical setting (Bani-Issa et al., 2016).

2.9 Barriers to computer-based patient record-keeping in the clinical setting

As suggested by Roger's diffusion of change theory (Greiver et al., 2011), changing from paper-based to EMRs presents challenges. The common documented barriers to electronic health record

acceptance include its perceived lack of value for patients, fear and resistance, additional time spent on recording, related cost of the system, lack of usefulness for patients and providers' autonomy, inadequate computer skills, fear of system failure (hardware or software), lack of formal training, workload and the slowness of system in some units in the clinical setting (Ajami & Bagheri-Tadi, 2013). Studies have shown that implementation of health information technology is hindered by several issues in developing countries, particularly in rural areas. Technical infrastructure, computer knowledge and skills, and attitudes of the users are the issues to be addressed before integrating record-keeping systems by using electronic health record-keeping for patients' information in the rural healthcare setting (Huryk, 2010).

The acceptance of EMRs may be influenced by health workers' interest, knowledge and skills on computer applications (Greiver et al., 2011). In developing countries technical infrastructure is one of the main issues that contribute to unsuccessful adoption of electronic health records systems; this is due to the lack of reliable electricity, and inadequate computer knowledge and skills among healthcare workers (Mohammed et al., 2013). In rural African health facilities inadequate training and support and limited computer access, and the fact that some health workers have never been exposed to computer usage, may all contribute to the lack of its value perceived by health workers while adopting use of computer as a new system of record-keeping for patient information in the clinical setting (Mohammed et al., 2013).

Studies conducted by Chipps, Ndabarora and Uys (2014) found two main problems hindering the quality of data management at district health information systems in LMIC: firstly, issues related to technical infrastructure, among these unreliable electric power, lack of internet connectivity and limited clinicians' skills on computers, and secondly, issues related to the lack of policies and guidelines, among these lack of training of health personnel, of required equipment and of good

communication and networking among all stakeholders, as well as lack of continuous evaluations that could contribute to poor quality of data management in rural areas in LMIC. In a study that includes twenty articles conducted by Broonstra and Broekhuis (2010) in Netherlands, on barriers to the acceptance of electronic medical records by physicians from systematic review to taxonomy and interventions, height main categories of barriers were identified from the study: barriers related to financial, technical, time, psychological, social, legal, and change process were as the most barriers to the acceptance of electronic medical records (Cowie, 2017).

2.10 Barriers to the quality of patient information record-keeping

The quality of patient information record-keeping may be affected by various factors. Maharaj (2015), in a study conducted in three hospitals in the Umgungundlovu District of KwaZulu-Natal, South Africa, confirmed that a shortage of nurses, non-use of support staff per nursing unit, bed occupancy rate and type of unit, including type of hospital, are the greatest barriers hindering the quality of patient information recording and processing. Other major factors are lack of awareness about the proper filing systems, lack of training and of knowledge, and practical skills of nursing staff in patient information record-keeping (Marutha, 2011). A study on the quality of nursing record-keeping found that shortage of nurses; demotivation and higher numbers of patients admitted in hospital are factors that prevent nurses from recording patient information timeously and accurately (Shihundla, Lebesse & Maputle, 2016).

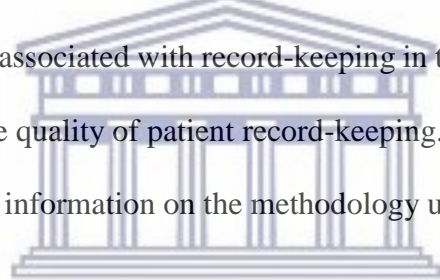
Due to the barriers that have been identified in the above studies, poor record-keeping may lead to different effects (Mutshatshi et al, 2018). The key drivers of poor record- keeping are stated as low priority given to records management, lack of awareness of the importance of good record-keeping, lack of information sharing between professional work units, tendency to treat records as personal rather than corporate assets, lack of coordination between paper and electronic

information strategies, and the need to maintain confidentiality while legitimately freeing information (Tola et al, 2017). Ngao (2015) study mentioned that poor quality of record-keeping leads to a lack of clarity in the planning and coordination of care, inadequate communication between players (whether among health professionals, agencies and/or families), and poor implementation of national statutory obligations and local guidance.

2.10 Conclusion

The literature described in this chapter covers topics on the quality of record-keeping, nurses' knowledge of and attitudes to record-keeping, its advantages, record-keeping as an integral part of the nursing process, approaches to record-keeping, computers as a method of record-keeping, as well as advantages and barriers associated with record-keeping in the clinical setting. It concluded with barriers associated with the quality of patient record-keeping.

The following chapter provides information on the methodology used to conduct the study



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CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

Chapter three presents the research methodology that was used to conduct the study; it includes the research approach, design, and data collection methods. The chapter also provides information on the research setting, study population, sampling strategy, research tool, pilot study, data analysis, validity, reliability and ethical considerations.

3.2 Research approach

A quantitative research approach was employed to conduct the study. Quantitative research enables the researcher to draw conclusions based on the numerical data that emanate from the study, which are quantified and analysed using mathematical methods (Houser, 2016). Therefore a quantitative research approach was employed to investigate the quality of patient record-keeping among nurses in selected hospitals in Burundi using a self-administered questionnaire.

3.3 Research design

The research design is the overall plan for addressing a research question, including specifications for enhancing the study's integrity (Polit & Beck, 2013). The aim of the study was to investigate the nurse's knowledge and attitudes on the benefits and barriers to quality patient information record-keeping among nurses in selected hospitals. Therefore a descriptive survey design was used to collect information and analyse the data. This design was appropriate for this study because it has the advantages of being able to reach a larger group of people in limited time, and providing respondents with some sense of anonymity, with the format of collecting the data being independent of the researcher (Babbie, 2015).

3.4 Setting

The study was conducted at the Mabayi and Cibitoke District Hospitals, both located in Cibitoke Province, which is in the Western Northern Provinces of Burundi. Cibitoke District Hospital has eight clinical departments (emergency room, obstetrics and gynaecology room, HIV/AIDS care unit, operating room, surgical unit, internal medicine, neonatology room, and paediatric unit) and two diagnostic services (radiology and laboratory). Cibitoke Hospital has a bed capacity of 563 and receives patients with unresolved conditions referred from 19 health centres. Mabayi District Hospital has seven clinical departments (emergency room, obstetrics and gynaecology room, operating room, surgical unit, internal medicine unit, paediatric combined with nutrition care unit) and two diagnostic services (radiology and laboratory). Mabayi District Hospital receives patients with unresolved conditions referred from 35 health centres and has a bed capacity of 430. These two hospitals were selected based on the fact that both are the district hospitals, and the number of nurses that they have allowed the researcher to conduct a survey study. Secondly, the geographical locations of the two hospitals also made it easy to get transport for the research assistants to conduct the data collection process.

3.5 Population

The population is the group of subjects, usually people, about whom we want to draw conclusions (Houser, 2016). In this study the accessible population included all nurses working in the two selected district hospitals. In this study, 81 nurses from Cibitoke District Hospital and 40 nurses from Mabayi District Hospital were considered as the potential respondents beside nurses who were on leave and on sick leave. The total population used as respondents in this study was 121 nurses' working day and night shifts in the selected hospitals.

3.6 Sample and sampling strategy

Sample is subset of the population that is selected for a study, and sampling includes selecting groups of people, events, behaviours or other elements to conduct a study (Burns & Grove, 2005). For the survey study, the number of the target population in the selected hospitals were small (N=121) to draw a sample, therefore using an all-inclusive sampling techniques, the entire population n=121 was included in the study. The inclusion criteria for the participants were all available qualified nurses and working in any wards of the selected hospitals during the data collection process.

3.7 Description of the instrument

The instrument is the device that a researcher uses to collect data, such as questionnaires, tests, and observation schedules (Polit & Beck, 2013). The questionnaire used in this study was developed by the researcher based on the literature on record-keeping and also existing questionnaires used by other authors were adopted for this study. Regarding questions related to knowledge (Section B), question 1 to 3 were developed by the researcher based on the current existing literature on record-keeping, questions 4 to 14 of the same section were adapted from the study of Mamseri (2012) in unpublished Doctoral Dissertation on nursing process as means of improving patient care. With regards to nurses 'attitude (Section C), question 15 to 19 were adapted from the study of Olivier (2010) on record-keeping: self –reported attitudes, knowledge and practice behaviours of nurses in selected hospitals in Cape Town, and lastly questions related to barriers (Section D), questions 20-26 were adapted from the study of Ngao (2015) on assessing barriers to implementation of nursing process among nurses working at Machakos level 5 hospital in Nairobi. Permission to use the questionnaires was granted from the original authors. The questionnaire has been structured using the concepts related to knowledge of and attitudes and

barriers to record- keeping of patient information. It consisted of four sections: Section A – questions related to the sociodemographic information, Section B – questions related to knowledge of nurses on the benefits of the quality of record-keeping of patient information and Cronbach’s alpha of this section was 0.810, Section C – questions related to attitudes of nurses on the benefits of the quality of record-keeping and Cronbach’s alpha of this section was 0.710, and Section D – questions related to barriers to the quality of patient record-keeping and also Cronbach’s alpha on this section was 0.760. The overall Cronbach’s alpha of the entire instrument was found at 0.760.

3.8 Pre-test

A pre-test was conducted using a similar study population that met the requirements to answer the questionnaire (Babbie, 2015). Ten nurses working in a public hospital were used to conduct the pre-test, which was carried out to test the instrument for clarity or inaccuracies and ambiguity. The aim of a pre-test is to examine how feasible the study is and to identify possible errors in the instruments (Babbie, 2015). Healthcare professionals who should be able to understand the questions in the current format were included in the target group. In the pre-test all of the instructions were respected and all questionnaires distributed to the 10 respondents were fully completed, and no errors were found in the instruments. Therefore there was no need for adjustment of the questionnaire and all the findings from the pre-test were included in the data analysis of the study.

3.9 Data collection process

Data collection is the precise, systematic gathering of information relevant to the research purpose, or the specific objectives, questions or hypothesis of a study (Burns, Grove & Gray 2012). Before data collection an ethics approval letter was obtained from the Ethics Committee of the University of the Western Cape, and permission to conduct the study was sought from healthcare authorities

of the selected hospitals; a request for ethical clearance was submitted at the same time. The head of the hospital and nursing managers were approached for access to the respondents.

Data were collected by the researcher himself and an experienced research assistant. The researcher and research assistant explained the purpose of the study to the respondents individually or in a group during tea breaks and lunchtimes. Then they asked respondents to sign the consent form attached to the questionnaire before starting to complete the questionnaire. The questionnaires were distributed to each respondent during their tea breaks and lunchtimes. Those who preferred to complete the questionnaire at that time were assisted by the researcher and research assistant. The respondents took 15-20 minutes to complete the questionnaire. Those who preferred to complete the questionnaires later on, in their own time, were given the questionnaires to complete and return within two weeks at an agreed time, date and place. The researcher's cell number was given to them in case they needed some clarification on the questions. A follow-up call and email were sent to them to increase the response rate. The completed questionnaire was collected from each of the participants at the set date and time. The data was collected in March 2018.

3.10 Data analysis

The data are the pieces of information obtained from the data collection process, and analysis is the systematic organisation and synthesis of research (Polit & Beck, 2013). All of the 121 questionnaires which were distributed were returned. The completed questionnaires were checked for completeness, and missing/unanswered questions were considered and analysed based on the number of respondents that provided their answers to those particular questions. There were no irregularities in the answers given and as a result no completed questionnaire was discarded. A code was provided for each questionnaire for data entry and data were prepared for statistical

analysis. Descriptive statistics assist the researcher to convert and reduce large amount of data into a prepared whole that makes it possible for readers of the research report to make sense of it (Polit & Beck, 2013). The data were entered into the Statistical Package for Social Sciences (SPSS) version 24 and were cleaned and re-checked for accuracy in data entry. Analysis was done using descriptive statistics to describe the findings (Polick & Beck, 2013). Frequencies and percentages were used to describe categorical data. The frequency of a particular response, such as age in years, gender, years of working experience and level of qualification, nurses' knowledge and attitudes, and barriers contributing to poor recording of patient information were calculated using frequencies and percentages.

Numerical values were given to the Likert scale (strongly disagree=1, disagree=2, uncertain=3, agree=4, strongly agree=5) next to each variable on the questionnaire to be investigated in order to facilitate the calculation of each statistical value needed in the study. For the purpose of reporting the results, the five-point Likert scale was collapsed into the dichotomous agree and disagree. Strongly disagree, disagree, and uncertain were recoded into disagree with a score of 0 and agree and strongly agree into agree with a score of 1. Bivariate analysis was used in this study to check the relationship between two variables using a cross-tabulation test to determine the association between sociodemographic characteristics (age, gender, and years of work experience and level of qualification) and nurses' knowledge of and attitudes on the benefits towards the quality of record-keeping.

Fourteen items were assessed to describe the knowledge of nurses on the quality of patient record-keeping, and these were grouped into agree with a score of 1 and disagree with a score of 0. After grouping the 14 items into two groups (agree and disagree), a total score was calculated for the 14 items; 0 was considered as minimum and 14 as maximum of the total score. Then the percentage

of the total score was also calculated to determine whether respondents were more or less knowledgeable on the benefits of the quality of patient record-keeping. A cut-off of 80% was used to measure the level of knowledge of the respondents, and this was taken from the study by Olivier (2010). Respondents were considered as more knowledgeable if the percentage of the total score of the respondents on the benefits of the quality of record-keeping was 80% and above, and less knowledgeable if this percentage was less than 80%.

Five items (5) were also assessed to describe nurses' attitude to the quality of patient record-keeping, and these were also grouped into agree with a score of 1 and disagree with a score of 0. After grouping the five items into two groups (agree and disagree) a total score was also calculated, where 0 was considered as minimum and 5 as maximum. Then the percentage of the total score was calculated to determine whether respondents had positive or negative attitudes on the benefits of the quality of patient record-keeping. A cut-off of 80% was used to measure the attitudes of the respondents (Olivier, 2010); they were considered as having positive attitudes if the percentage of the total score of the respondents on the benefits of the quality of record-keeping was 80% and above, and as negative attitudes if the percentage was less than 80% (Olivier, 2010).

The findings have been presented in tables and graphs. The statistical analysis was carried out with the assistance of a statistician.

3.11 Validity

Validity refers to the degree to which an instrument measures what it is supposed to be measuring (Burns, Grove & Gray, 2012). Validity has the following types: content, face, criterion-related and constructed validity (Burns, Grove & Gray, 2012). For this study content and face validity were applied. To ensure face validity, experts in the field of nursing and the supervisor were asked to review the instrument for appropriateness. With regard to content validity, the item validity

pertaining to the selected record-keeping questionnaire was assessed to ensure the validity of the instrument, as indicated in Table 1 below. Table 1 show the content validity of the item related to the objective that it measured.

Table 1: Content validity

Objectives	Questions
To describe the knowledge of nurses on the benefits of the quality of patient information record-keeping in selected hospitals	Section B (Questions 1-14)
To describe the attitudes of nurses on the benefits of the quality of patient information record-keeping in selected hospitals	Section C (Questions 15-19)
To identify barriers to quality patient information record-keeping among nurses in selected hospitals	Section D (Questions 20-26)

3.12 Reliability

Reliability is defined as consistency of the test scores, and is important because the researcher wants to be sure that the data collected are a true indication of the ability of the people tested (Houser,2016). Therefore an instrument used by the researcher should give the same results when measuring the same phenomena in a similar context (Houser, 2016). Therefore pilot testing of the instrument was conducted to ensure the reliability of the study. The internal consistency of the instrument was tested using the Cronbach’s alpha coefficient for the sections where Likert scale questions were used. Internal consistency was computed in the actual study to determine whether the instrument was reliable with the population of the study. Cronbach’s alpha for the instrument shows internal consistency of 0.760. A Cronbach’s alpha of 0.70 and above is acceptable to ensure internal consistency.

3.13 Ethical considerations

Approval of the research proposal was received from the University of the Western Cape Ethics Committee, and permission to conduct the study was obtained from the directors of the selected hospitals.

The following ethical principles were followed in this study:

Beneficence: The respondents were assured that information provided will be treated confidentially and extracts will not be used to punish them.

Respect for the person: The respondents were accorded the right to decide voluntarily whether to participate or not and also had the right to withdraw from participating at any stage of the study without any consequences.

Informed consent was obtained after a summary of the study information regarding its purpose was given to the respondents, so that they could make an informed decision to participate or not.

Right to anonymity: The questionnaires had code numbers and respondents did not have to provide their names. The respondents were assured that their identity and information provided will remain anonymous throughout the study period and during dissemination and publication of the results of the study. The completed questionnaires will be kept under lock and key and only the researcher and research supervisor will have access to the data. Once the data were entered into a computer, they were password protected. All hard copies of the data will be destroyed after five years and the data in the computer will be deleted.

In the case of any unexpected circumstances, such as any psychological disturbances during participation in the study, respondents would be assisted by a pre-arranged counselling service.

3.14. Conclusion

This chapter described the methodology used to investigate the knowledge, attitudes and barriers of quality of record-keeping among nurses at selected hospitals in Burundi in 2017, highlighting the research approach, research design, research setting, population, sampling, research tool, pilot study, data collection, data analysis, validity, reliability, and ethical considerations.

The following chapter presents the results of the study



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CHAPTER FOUR

RESULTS

4.1 Introduction

Chapter four presents the findings of the study based on the study objectives: (a) to describe nurses' knowledge on the benefits of the quality of patient record-keeping in selected hospitals in Burundi, (b) to describe nurses' attitudes on the benefits of the quality of patient record-keeping in selected hospitals in Burundi, (c) to determine the association between sociodemographic characteristics and nurses' knowledge and attitudes about the benefits of the quality of patient record-keeping, and (d) to identify barriers influencing the quality of record-keeping in selected hospitals in Burundi.

The findings are presented in four sections: section I presents the sociodemographic information on the respondents; section II presents the analysis of nurses' record-keeping knowledge levels, and it includes the statistical description of nurses' knowledge on the benefits of the quality of patient record-keeping, classification of the respondents in terms of level of knowledge on the benefits of the quality of patient record-keeping, and the association between sociodemographic information and nurses' knowledge on the benefits of the quality of patient record-keeping; section III presents the analysis of nurses' attitudes on the benefits of the quality of patient record-keeping, and includes the statistical description of the nurses' attitudes, classification of nurses in terms of their attitudes on the benefits of the quality of patient record-keeping, and the association between sociodemographic information and nurses' attitudes on the benefits of the quality of patient record-keeping; and lastly section IV presents barriers contributing to poor quality of record-keeping in

selected hospitals in Burundi. The results are shown in tables and graphs in association with descriptions and deductions for easy understanding.

4.2 Response rate

In this study it was expected that 121 nurses working day and night shifts at the two selected hospitals would be considered as respondents to collect the data. All of the questionnaires distributed to the 121 respondents were completed and returned, giving a response rate of 100%. The completed questionnaires were checked for completeness, and consistency and a total of 121 completed questionnaires were used to conduct the analysis.

4.3 Section I: Sociodemographic characteristics of the respondents

The sociodemographic data provided the sociodemographic characteristics of the study population. The researcher examined the following variables from the respondents: age, gender, years of work experience, and level of qualification. The age of the majority (73.6%, n=74) was in the range between 31–40 years, while 14.8% (n=18) were 20–30 years old, 8.3% (n=10) 41–50 years old, and 3.3% (n=4) above 51 years of age.

Table 2 shows that most of the respondents (61.2%, n=89) were female and 38.80% (n=47) were male. In assessing the duration of respondents' work experience, 41.3% (n=50) of the respondents had been in their current position for 6–10 years, 38.8% (n=47) for 1–5 years, 11.6% (n=14) for 11–15 years, 5.8% (n=7) between 0 and 1 year, and 2.5% (n=3) for longer than 15 years.

Regarding the level of qualification, 38% (n=46) of the respondents had an A3 (Auxiliary Nurse Diploma with 2 years' training completed after Grade 10), 34.7% (n=42) had a BSN (Bachelor of Science in Nursing), 23.1% (n=28) had an A2 (State diploma nurse with 4 years' training completed after Grade 10), and 4.2% (n=5) were in possession of other qualifications (an A1 or

higher technical diploma with 3 years' training in higher public health institute completed after Grade 12) (Table 2).

Table 2: Age, gender, years of work experience and level of qualification

Demographic information		N	Percentage
Gender	Female	74	61.2
	Male	47	38.8
Age (years)	20-30	18	14.8
	31-40	89	73.6
	41-50	10	8.3
	51-60	4	3.3
Years of experience	0- 1	7	5.8
	1-5	47	38.8
	6-10	50	41.3
	11-15	14	11.6
	more than 15 years	3	2.5
Level of qualification	A2 (State Nurse Diploma with 4 years completed after grade 10)	28	23.1
	A3 (Auxiliary Nurse Diploma with 2 years completed grade after 10)	46	38.0
	BSN (Bachelor of Science in Nursing)	42	34.7
	Other (A1 or nurses with higher technical diploma with 3 years' training in higher public health institute completed after grade 12)	5	4.2
Total		121	100.0

4.4 Section II. Analysis of nurses' record-keeping knowledge levels

4.4.1 Statistical description of nurses' knowledge on the benefits of the quality of patient record-keeping

In assessing nurses' knowledge on the benefits of the quality of patient record-keeping, they were requested to agree or disagree with the knowledge questions. In examining the knowledge questions on record-keeping, 14 items were assessed to describe the nurse's knowledge on the benefits of the quality of patient record-keeping.

Most of the respondents (99.2%, n=120) agreed and only 1 (n=0.8%) disagreed that record-keeping helps access to information and improves the ability to make good patient care decisions. In response to the statement that the quality of record-keeping should improve communication between physicians and hospital staff, 95.9% (n=116) of the respondents reported agreed, while 4.1% (n=5) disagreed. About 81% (n=98) agreed that record-keeping minimises the amount of times staff forget to provide patients' needed care, while 19% (n=23) disagreed; 85.1% (n=103) reported agreed that record-keeping facilitates the ability to involve patients and families in the care plan process, while 14.9% (n=18) disagreed.

The findings indicate that 88.4% (n=107) of the respondents reported that record-keeping facilitates the ability to share important information with patients and family, while 11.6% (n=14) disagreed, and 91.7% (n=111) reported that record-keeping improves the ability to implement research findings in patient care practices (Table 3), while 8.3% (n=10) disagreed.

Table 3: Nurses' knowledge on the benefits of the quality of patient record-keeping in selected hospitals

Question: The quality of record-keeping	Agree, n (%)	Disagree n, (%)
Helps to access information and improves my ability to make good patient care decisions	120 (99.2)	1 (0.8)
Improves my ability to learn about and improve our patient care process	115 (95.0)	6 (5.0)
Consistency of patient data recorded improves my ability to make good patient care decisions	115 (95.0)	6 (5.0)
The accuracy and validity of patient care data being recorded increase safety of patient care	114 (94.2)	7 (5.8)
Will minimise the number of times staff forget to provide needed care.	98 (81.0)	23 (19.0)
Improves the ability to implement research findings in patient care practices	111 (91.7)	10 (8.3)
Increases the legibility and clarity of patient orders	112 (92.6)	9 (7.4)
Facilitates the ability to share important information with patients and family	107 (88.4)	14 (11.6)
Facilitates the ability to involve patients and families in the care plan process	103 (85.1)	18 (14.9)
Improves the communication between physicians and hospital staff	116 (95.9)	5 (4.1)
Minimises the frequency that verbal orders will be made in my unit	107 (88.4)	14 (11.6)
It will improve communication when patients are readmitted or receive follow-up patient care.	113 (93.4)	8 (6.6)
It improves/facilitates communication during shift handover	112 (92.6)	9 (7.4)
It will improve communication when patients transfer to different units within the hospital	114 (94.2)	7 (5.8)

4.4.2 Classification of respondents in terms of level of knowledge on the benefits of the quality of patient record-keeping

As stated in methodology, 14 items (Table 3) were assessed to describe the knowledge of nurses on the benefits of the quality of patient record-keeping, and these were grouped into agree with a

score of 1 and disagree with a score of 0. After grouping the 14 items into two groups (agree and disagree), a total score was calculated for the 14 items, with 0 was considered as minimum and 14 as maximum of the total score. The percentage of the total score was also calculated to determine whether respondents were more or less knowledgeable on the benefits of the quality of patient record-keeping. This study used Olivier's knowledge measurement method where a cut-off of 80% was used to measure the level of knowledge of the respondents (Olivier, 2010). Therefore respondents were considered as more knowledgeable if the percentage of the total score of the respondents on the benefits of the quality of patient record-keeping was equal to 80% or above, and less knowledgeable if it was less than 80% (Olivier, 2010).

As shown on Figure 1, respondents were classified into two groups (more knowledgeable and less knowledgeable on the benefits of quality of patient record-keeping). Most of the respondents (82.6%, n=100) were found to have more knowledge, while 17.4% (n=21) were found to have less knowledge on the benefits of the quality of patient record-keeping.



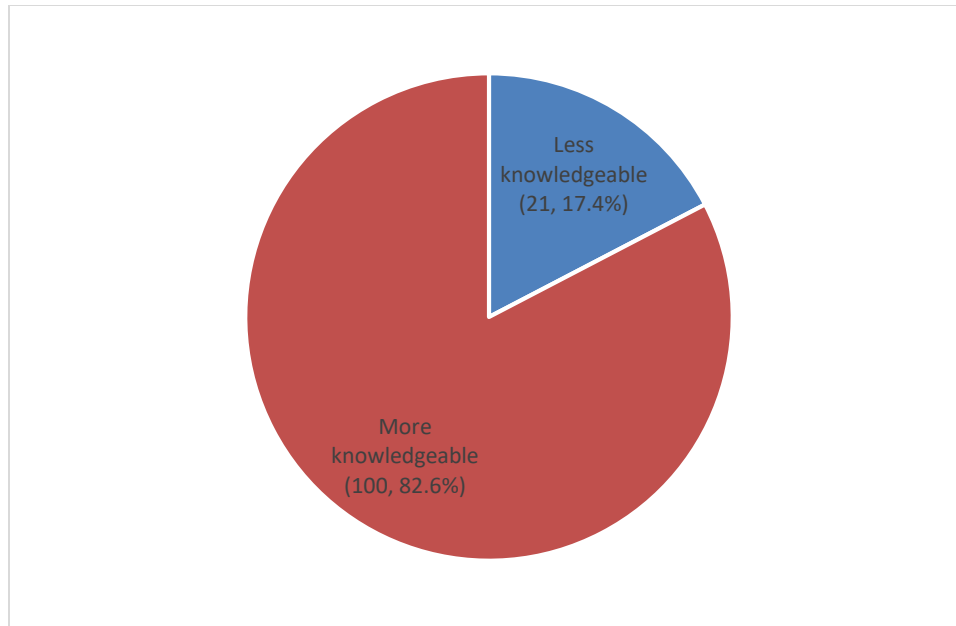


Figure 1: Classification of the respondents in terms of the level of knowledge.

4.4.3 Association between sociodemographic information and nurses' knowledge on the benefits of the quality of patient record-keeping

Cross-tabulation using the Chi-square test was used to assess the association between demographic data and nurses' knowledge on the benefits of the quality of patient record-keeping (Table 4). In terms of gender, females were found to have more knowledge on the benefits of the quality of patient record-keeping as compared with males. Findings indicated that of the 74 female respondents, 87.8% (n=65) scored more than 80%, while 12.2% (n=9) scored less than 80%. Of the 47 male respondents, 35.5% (n=17) scored more than 80%, while only 25.5% (n=12) scored less than 80%. The Chi-square test revealed that respondents' gender was significantly associated with their knowledge on the benefits of the quality of patient record-keeping ($X^2=3.582$, $p=.0511$).

With regard to respondents' age, findings revealed that of the 100 respondents (Figure 1) who scored more than 80%, 89 were in the age category 31–40 years, of this, 85.4% (n=76) scored

more than 80%. Conversely, amongst the 21 respondents (Figure 1) who scored less than 80%, 14.5% (n=13) were found to be in the same age category of 31–40 years; 33.3% (n=6) of respondents who scored less than 80% were in the age category 20–30 years. There was no statistical significance ($X^2= 4.561$, $p= .200$) between respondents' age categories and their knowledge on the benefits of the quality of patient record-keeping.

In terms of years of experience, findings revealed that of the 100 respondents (Figure 1) who scored more than 80%, 92% (n=46) had been in their current position for 6–10 years, 83% (n=39) had been in their current position for 1–5 years, and there were only 3 respondents who had more than 15 years of work experience and all 3 had scored more than 80%. Of the 21 respondents (Figure 1) who scored less than 80%, 17% (n=8) had been in their current position for 1–5 years, and 71.4% (n=5) for a period between 0 and 1 year. The findings revealed a statistically significant association ($X^2=19.182$, $p=.001$) between years of experience and respondents' knowledge on the benefits of the quality of record-keeping.

The association between level of education and respondents' knowledge on the benefits of the quality of patient record-keeping was also assessed. Findings revealed that of the 100 respondents (Figure 1) with more knowledge on the benefits of the quality of record-keeping who scored more than 80%, 89.1% (n=41) had an A3 Auxiliary Nurse Diploma, 81% (n=34) had a BSN, and 78.6% (n=22) had an A2 State nurse diploma. The findings indicated that of the 21 respondents (Figure 1) with less knowledge on the benefits of quality of patient record-keeping who scored less than 80%, 19% (n=8) had a BSN, 21.4% (n=6) an A2 diploma, 10.9% (n=5) an A3 diploma, and 40% (n=2) had other qualification (A1 or higher technical diploma with 3 years' training completed after grade 12 in higher public health institute). There was no statistically

significant association ($X^2= 3.544$, $p= .315$ between level of qualification and knowledge on the benefits of the quality of patient record-keeping (Table 4).

Table 4: Association between demographic data and respondents' knowledge on the benefits of the quality of record-keeping

			Knowledge		Chi square	
			Number of the respondents who scored less than 80% (17.6, n=21)	Number of the respondents scored more than 80% (82.6%, n=100)	Test value	P value
Gender	Female	N	9	65	3.582	.051
		%	12.2%	87.8%		
	Male	N	12	35		
		%	25.5%	74.5%		
Age (years)	20-30	N	6	12	4.561	.200
		%	33.3%	66.7%		
	31-40	N	13	76		
		%	14.6%	85.4%		
	41-50	N	2	8		
		%	20.0%	80.0%		
	51-60	N	0	4		
		%	0.0%	100.0%		
Years of experience	0-1	N	5	2	19.182	0.000724
		%	71.4%	28.6%		
	1-5	N	8	39		
		%	17.0%	83.0%		
	6-10	N	4	46		
		%	8.0%	92.0%		
	11-15	N	4	10		
		%	28.6%	71.4%		
	More than 15	N	0	3		
		%	0.0%	100.0%		
Level of qualification	A2 (State Nurse Diploma with 4 years completed after grade 10)	N	6	22	3.544	0.315
		%	21.4%	78.6%		
	A3 (Auxiliary Nurse Diploma with 2 years completed after grade 10)	N	5	41		
		%	10.9%	89.1%		
	BSN	N	8	34		
		%	19.0%	81.0%		
	Other (A1 or higher technical diploma with 3 years' training)	N	2	3		
		%	40.0%	60.0%		

4.5. Section III. Analysis of nurses' attitudes to record-keeping

4.5.1 Statistical description of nurses' attitudes on the benefits of the quality of patient record-keeping in selected hospitals

Five items were used to assess nurses' attitude on the benefits of the quality of patient record-keeping. It was found that most of the respondents (95.9%, n=116) agreed while only 4.1% (n=5) disagreed that record-keeping improves patient outcomes; 68.6% (n=83) of the respondents reported disagreed, while 31.4% (n=38) agreed that the amount of time spent in documenting records decreased the performance of their core activity. Regarding whether quality of record-keeping could improve the professional satisfaction that nurses get out of their job, 91.7% (n=111) agreed, while 8.3% (n=10) disagreed with the statement. The findings indicated that 73.6% (n=89) of the respondents disagreed while 26.4% (n=32) agreed that the amount of time spent in recording patient diagnosis and symptoms decreased their performance. As shown in Table 5, 43% (n=52) of the respondents disagreed while 57% (n=69) agreed that record-keeping minimises the amount of time they spend directly on patient care (Table 5).

Table 5: Nurses' attitudes on the benefits of the quality of patient record-keeping in selected hospitals

Question: Attitudes	Agree, n (%)	Disagree, n (%)
I feel that the amount of time spend in documenting records decreases the performance of my core activity	38 (31.4)	83 (68.6)
The amount of time I spend in recording patient diagnosis and symptoms decreases my performance	32 (26.4)	89 (73.6)
Record-keeping improves the professional satisfaction I get out of my job	111 (91.7)	10 (8.3)
I believe it will improve patient outcomes	116 (95.9)	5 (4.1)
I feel that record-keeping minimises the amount of time I spend directly on patient care	69 (57.0)	52 (43.0)

4.5.2 Classification of respondents in terms of nature of attitude on the benefits of the quality of patient record-keeping

As stated in the methodology, five items were assessed to describe nurses' attitudes on the benefits of the quality of patient record-keeping, and these were grouped into agree with a score of 1 and disagree with a score of 0. After grouping the five items into two groups (agree and disagree) a total score was calculated, where 0 was considered as minimum and 5 as maximum. The percentages of the total score were also calculated to determine whether respondents had positive or negative attitudes on the benefits of the quality of patient record-keeping. A cut-off of 80% was also used to measure the attitudes of the respondents on the benefits of the quality of patient record-keeping (Olivier, 2010). Therefore respondents were considered as having positive attitudes if the percentage of the total score on the benefits of the quality of patient record-keeping was 80% and above, and as having a negative attitude if it was less than 80% (Olivier, 2010).

As shown in Figure 2, respondents were classified into two groups, those with a positive attitude and those with a negative attitude on the benefits of the quality of patient record-keeping. The findings indicated that 64% (n=78) of the respondents had a positive attitude while 36% (n=43) had a negative attitude on the benefits of the quality of record-keeping.

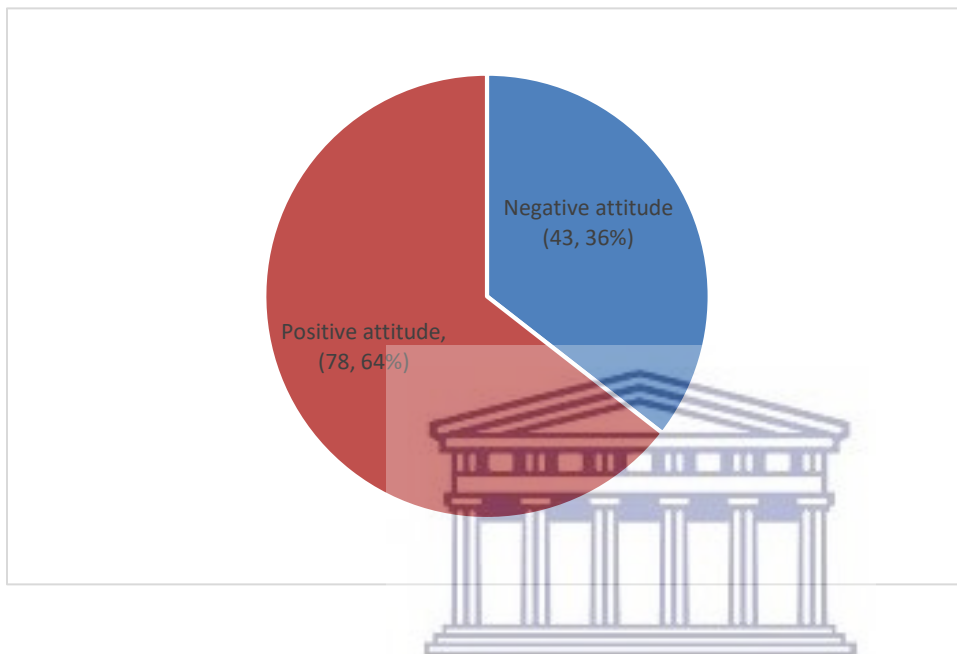


Figure 2: Classification of the respondents in terms of the nature of their attitudes.

4.5.3 Association between sociodemographic information and nurses' attitudes on the benefits of the quality of patient record-keeping

Cross-tabulation using the Chi-square test was also used to assess the association between sociodemographic data and respondents' attitudes on the benefits of the quality of record-keeping. In terms of gender, findings revealed that of the 78 respondents (Figure 2) reporting a positive attitude or scoring more than 80%, 66.2% (n=49) were female while 33.8% (n=29) were male. Similarly, of the 43 respondents (Figure 2) scored less than 80%, 38.3% (n=18) were male while 61.7% (n=25) were female. Contrary to respondents' knowledge on the benefits of the quality of

patient record-keeping, there was no statistically significance association ($X^2= 0.256$, $p= .613$) found between gender and respondents' attitude on the benefits of the quality of record-keeping.

With regard to the respondents' age, of the 78 respondents (Figure 2) reporting a positive attitude to record-keeping, most (68.5%, $n=61$) were in age category 31–40 years. Similarly, amongst the 43 respondents (Figure 2) reporting a negative attitude, most (31.5%, $n=28$) were aged 31–40 years, followed by 55.6% ($n=10$) who were aged 20–30 years. There was no statistical significance ($X^2= 4.293$, $p= .231$) between age category and respondents' attitude on the benefits of the quality of patient record-keeping.

In terms of years of experience, the findings revealed that of the 78 respondents (Figure 2) reporting a positive attitude or scoring more than 80%, those with 6–10 years of work experience were in the majority (72%, $n=46$), followed by those with 1–5 years of experience (63.8%, $n=30$). Conversely, of the 43 respondents (Figure 2) reporting a negative attitude on benefits of the quality patient record-keeping or scoring less than 80%, 36.2% ($n=17$) had 1–5 years of work experience, 28% ($n=10$) had 6–10 years of work experience, 50% ($n=7$) had 11–15 years of work experience, and 66.7% ($n=2$) had more than 15 years of work experience. Contrary to the case with nurses' knowledge on benefits of quality of patient record-keeping, there was no statistically significant association ($X^2=3.959$, $p=.411$) between years of experience and respondents' attitude on the benefits of the quality of patient record-keeping.

The association between level of education and respondents' attitude on the benefits of the quality of patient record-keeping was also assessed. Findings indicated that of the 78 respondents (Figure 2) reporting a positive attitude or scoring more than 80, 78.6% ($n=33$) had a BSN, followed by 69.6% ($n=32$) with an A3 Auxiliary Nurse Diploma two years training completed after grade 10, and 28.6% ($n=8$) had an A2 State Nurse Diploma, and there were only 5 respondents who had

other qualifications (A1 or higher technical diploma, 3 years training completed in higher public health institute after grade 12) and all 5 had scored more than 80%. Of the 43 respondents (Figure 2) reporting a negative attitude and scoring less than 80%, 71.4 % (n=20) had an A2 State Nurse Diploma and 30.4% (n=14) had an A3 Auxiliary Nurse Diploma.

In contrast to the situation with respondents' knowledge, the Chi-square test revealed that level of education was significantly associated with respondents' attitude on the benefits of the quality of record-keeping. There was a statistically significant difference ($X^2= 22.674$, $p= .001$) between level of education and respondents' attitude on the benefits to the quality of record-keeping (Table 6).



Table 6: Association between demographics and respondents' attitude on the benefits of the quality of patient record-keeping

			Attitude		Chi square				
			Number of the respondents that scored less than 80% (negative attitude) - 36% (n=43)	Number of the respondents that scored more than 80% (positive attitude) - 64% (n=78)	Test value	P value			
Gender	Female	N	25	49	0.256	.613			
		%	33.8%	66.2%					
	Male	N	18	29					
		%	38.3%	61.7%					
Age (years)	20-30	N	10	8	4.293	.231			
		%	55.6%	44.4%					
	31-40	N	28	61					
		%	31.5%	68.5%					
	41-50	N	3	7					
		%	30.0%	70.0%					
	51-60	N	2	2					
		%	50.0%	50.0%					
Years of experience	0-1	N	3	4	3.959	.411			
		%	42.9%	57.1%					
	1-5	N	17	30					
		%	36.2%	63.8%					
	6-10	N	14	46					
		%	28.0%	72.0%					
	11-15	N	7	7					
		%	50.0%	50.0%					
	More than 15	N	2	1					
		%	66.7%	33.3%					
	Level of qualification	A2 (State Nurse Diploma with 4 years training completed after grade 10)	N	20			8	22.674	.001
			%	71.4%			28.6%		
A3 (Auxiliary Nurse Diploma with 2 years training completed after grade 10)		N	14	32					
		%	30.4%	69.6%					
BSN		N	9	33					
		%	21.4%	78.6%					
Other (A1 or higher technical diploma, 3 years training completed in higher public health institute after grade 12)		N	0	5					
		%	0.0%	100.0%					

4.6 Section IV: Identification of barriers contributing to poor quality of patient information record-keeping in selected hospitals

A number of barriers contributing to record-keeping were assessed. Seven items were used to assess barriers contributing to poor quality of record-keeping in selected hospitals, namely: lack of any additional training on record-keeping, lack of care plan format in the units, lack of knowledge, skills and standardized terminology regarding record-keeping, lack of support and enforcement by administrative policies, lack of time to perform the nursing process, a shortage of nursing staff, excessive burdens of work and demotivation.

In assessing the barriers, 81.8% (n=99) of the respondents reported that they agreed while 18.2% (n=22) disagreed that both lack of additional training on record-keeping and excessive burdens of work and demotivation contribute to poor quality of patient record-keeping in the selected hospitals. The findings indicate that 74.4% (n=90) of the respondents agreed while 25.6% (n=31) disagreed that a shortage of nursing staff contributed to poor quality of record-keeping. Regarding the lack of knowledge, skills and standardised terminology related to record-keeping, 69.4% (n=84) of the respondents agreed while 30.6% (n=37) disagreed that these challenges existed.

Of the respondents 38% (n=46) agreed while 62% (n=75) disagreed that lack of time contributes to poor quality of record-keeping, and 44.6% (n=54) of the respondents agreed and 55.4% (n=67) disagreed that the lack of support by administrative policies regarding patient record-keeping were barriers that contribute to poor quality of record-keeping in the selected hospitals (Table 7).

Table 7: Barriers contributing to poor quality of patient record-keeping

Challenges/Barriers	Agree, n (%)	Disagree, n (%)
Lack of receiving additional training related to record-keeping of patient information in my unit	99 (81.8)	22 (18.2)
Lack of care plans format in my unit	78 (64.5)	43 (35.5)
Lack of knowledge, skills, standardised terminology regarding record-keeping of patient information in my unit	84 (69.4)	37 (30.6)
Lack of support by administrative policies regarding recording and keeping the quality of patient information	67 (55.4)	54 (44.6)
Lack of time to perform quality record-keeping	46 (38.0)	75 (62.0)
A shortage of nursing staff	90 (74.4)	31 (25.6)
Excessive burdens of work and demotivation.	99 (81.8)	22 (18.2)

4.6 Conclusion

This chapter reported on the findings of the study in detail as guided by the study objectives. It described the key results that are discussed further in the next chapter.

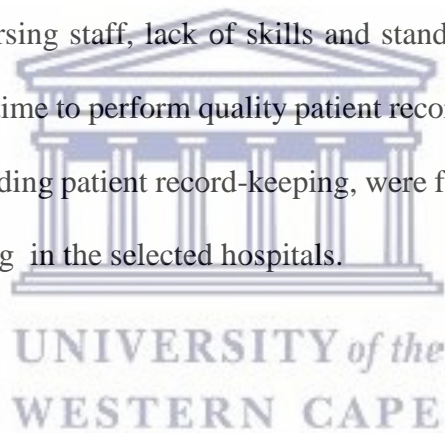
The study identified that about 82.6% (n=100) of the respondents were found to have more knowledge on the benefits of the quality of patient record-keeping, while 17.4% (n=21) had less knowledge on the benefits of quality of patient record-keeping. With regard to nurses' attitudes on the benefits of the quality of patient record-keeping, 64% (n=78) of the respondents had a positive attitude on the benefits of the quality of patient record-keeping while 36% (n=43) had a negative attitude.

In terms of the association between sociodemographic characteristics and nurses' record-keeping knowledge levels, the current study found a statistically significant association between gender and nurses' record-keeping knowledge levels ($X^2=3.582$, $p=.051$); female nurses were found to have better knowledge on the benefits of patient record-keeping than males nurses. The results also found a statistically significant association between years of work experience and nurses'

record-keeping knowledge levels ($X^2=19.182$, $p=.001$). Experienced nurses with more than 6 years of work experience were found to have good knowledge levels on benefits of patient record-keeping compared to those with less work experience.

In terms of attitude, the study found a statistically significant association between nurses' attitude on the benefits of the quality record-keeping and educational level of qualification ($X^2=22.674$, $p=.001$). Nurses with higher qualification levels were found to have a more positive attitude on benefits of patient record-keeping compared to those with lower levels of education.

Regarding the barriers or challenges contributing to poor quality of patient record-keeping in the selected hospitals, lack of any training on record-keeping, excessive burdens of work and demotivation, a shortage of nursing staff, lack of skills and standardised terminology regarding patient record-keeping, lack of time to perform quality patient record-keeping, and lack of support by administrative policies regarding patient record-keeping, were found to be contributing to poor quality of patient record-keeping in the selected hospitals.



CHAPTER FIVE

DISCUSSION OF THE RESULTS

5.1 Introduction

This chapter offers a discussion of the results in line with the objectives of the study. The study investigated nurses' knowledge of and attitudes on the benefits of the quality of record-keeping as well as barriers contributing to poor quality of record-keeping in selected hospitals.

5.2 Biographical information

5.2.1 Gender and Age

As indicated in Table 2 related to sociodemographic characteristics of the respondents, the majority of the respondents were female (61.2%, n=74) while 38.8%. Nursing is a female-dominated profession (Olivier, 2010), and the current study findings reflect this, with the current survey revealing that there are still low numbers of men entering nursing profession. Strategies need to be put in place to recruit and retain men to actively address their representation, as well as to boost the number of female nurses, so that dealing with barriers such as shortage of nursing staff, and numbers of patients admitted to wards, that contribute to poor quality of record-keeping as perceived by the respondents in the current study, could be better managed.

The findings showed that the majority of the 121 respondents (73.6%, n=89) were in the age range of 31–40 years. This is similar to the findings of Mtsha's (2009) study on documentation of nursing care in a teaching hospital in Saudi Arabia, that found that 50% (n=40) of the total of 100 respondents were in the age range of 30–39 years, and it should be expected that they might have the most up-to-date knowledge and attitudes on the quality of record-keeping (Mtsha, 2009). The current findings show that there is a need to recruit sufficient numbers of young nurses to the

nursing population in Burundi, as most of the nurses in the selected hospitals were adults aged 31-40 years. The population of this study was consistent with nursing population in Burundi.

5.2.2 Years of work experience

In terms of years of experience, findings revealed that 41.3% (n=50) of respondents had been in their current position for 6–10 years, followed by 38.89% (n=47) who had been in their current position for 1–5 years, 11.6% (n=14) for 11–15 years, 5.8 % (n=7) for 0–1 year, and 2.5% (n= 3) for more than 15 years. Similar findings were found by Olivier (2010), with the majority of respondents in his study having been in their current position for more than 12 months This should be of advantage regarding knowledge, policies and procedures regarding the benefits of the quality of patient record-keeping; however, while having more experienced nurses in the current selected hospitals was found to be an advantage in terms of knowledge, this also shows a lack of management in terms of recruitment of health workers, especially in the nursing profession, due to the fact that years of work experience goes together with greater age and the approaching retirement phase. There is a need to revise recruitment systems so that numbers of nurses working in the selected hospitals should be maintained in all the categories of nurses in terms of years of experience.

5.2.3 Level of qualification

Results indicated that of the 121 respondents, 38% (n=46) were in possession of an A3 (Auxiliary Nurse Diploma with 2 years training completed after grade 10), 34.7% (n=42) had a BSN degree, 23.1% (n=28) an A2 (State Nurse Diploma with 4 years training completed after grade 10), and 4.1% (n=5) had other qualifications (A1 or higher technical diploma after 3 years training in a higher public health institute completed after grade 12).

The literature describes or recommends the university level of qualification for nurses, with the BSN as the preferred minimum educational requirement for professional nursing practice (Alexander et al., 2016). However, in the current study 65.5% (n=79) of nurses had diplomas, which may have an impact on the benefits of the quality of record-keeping. The current study didn't investigate whether nurses with a BSN had received specific training on the quality of record-keeping compared with those with diplomas.

5.3 Nurses' knowledge on the benefits of the quality of patient record-keeping

Findings from the analysis showed that most respondents had an adequate knowledge on the benefits of the quality of patient record-keeping: 82.6% (n=100) out of a total of 121 respondents were found to be more knowledgeable, while 17.4% (n=21) were found to be less knowledgeable on this. The findings of this study are comparable with those of Olivier (2010), who examined record-keeping using self-reported attitudes, knowledge and practice behaviours of nurses in selected hospitals in Cape Town. He reported that the majority of the respondents (137 out of 183 or 74.86% had an adequate record-keeping knowledge level. However, the knowledge of nurses should not in itself determine the quality of record-keeping, as practically on the ground nurses reported that there is a poor quality of record-keeping associated with different challenges. These challenges include excessive burden of work and demotivation, high numbers of patients admitted and shortage of nursing staff, which may contribute to poor quality of record-keeping, even though theoretically the current study found an adequate record-keeping knowledge levels. Moreover, poor management in terms of upgrading nurses' skills, knowledge on how to record accurately patient information, lack of accountability towards record-keeping among nurses, and use of paper-based record-keeping instead of moving forward to use of computers, could also be attributed to the lack of health reliable data.

Table 3 indicated that 19% (n=23) of the respondents disagree that record-keeping minimises the number of times staff forget to provide needed care, while 81% (n=98) agreed with the statement. Hence, if records are well kept, sharing patient information among healthcare team members is fast, it facilitates quick retrieval of information from one caregiver to another, reduces time staff spend on searching for patient information on what care has been carried out, why it was carried out and who was in charge of giving it. It should also contribute to the reduction of medication errors that can take caregivers to court for litigation. Caregivers should have knowledge of the benefits of record-keeping related to saving time. In this study 23 respondents disagreed that record-keeping minimises the number of times staff forget to provide needed care; this is not in agreement with the findings of Marutha and Ngulube (2012) that record-keeping using electronic health records contributes greatly to the reduction of patient waiting times for healthcare services and to patient administration, with ineffective record management systems usually leading to long patient waiting times. In the clinical setting health workers sometimes end up not rendering certain services because the health history of the patient is not contained in the medical file. It is therefore the accountability of health workers, especially the hospital management, to enhance policy, systems and modalities that can facilitate the quality of record-keeping among health workers.

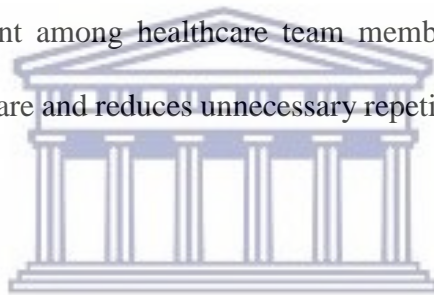
It is also evident from the findings that the majority of the respondents (91.7%, n=111) agreed that record-keeping improves the ability to implement research findings in terms of patient care practices. According to Ajami and Baghetri-Tadi (2013), quality record-keeping must provide data for research and healthcare planning. This is consistent with the findings of Maharaj (2015) study that record-keeping serves as a medical legal document defined as a source of information for

clinical audit, research, resource allocation, illness epidemiology, service planning and performance.

However, the current study also found that 14.4% (n=18) of the respondents disagreed that record-keeping facilitates the ability to involve patients and families in the care plan process, (Table 3). Nurses need to be taught about record-keeping and its benefits related to decision-making. If nurses proceed to treat without enough information about the patient's health background, he/she may end up rendering poor healthcare that might be risky to the patients' well-being. Therefore involving patients and families in the care plan process is one of the duties, accountabilities, skills and knowledge that health workers should be in possession of, which benefits from quality of record-keeping. This finding is not in agreement with Garrick, Kligger, and Stefanchik (2012) study which revealed that with good record-keeping, when patients and families are involved in their care decisions and management their outcomes are improved compared to patients who are not. Patients who are involved in decision making about their care have higher functional status, better outcomes and lower costs; hence due to ongoing contact between nurses, patients and their families, nurses are in a pivotal position to both inform and incorporate the observations and concerns of these individuals to create a safe care environment (Coulter et al., 2015). In doing so nurses must consider all information conveyed to them by patients and family members and encourage communication through the quality of the record-keeping (Kamppainen, Tossavainen & Turunen, 2013). The Institute of Medicine (Coulter et al., 2015) recommends that clinicians partner with patients (and the patients' family and friends, when appropriate) to inform, share decision making, improve patient knowledge, and inform self-management skills and preventive behaviours through communication. Moreover, patients seek care from competent and

knowledgeable health professionals to meet their physical and emotional needs through clinicians' recommendations, preferences, knowledge, and beliefs and, when possible, the patient's ability to act on the information provided through record-keeping (Garrick, Kligger & Stefanchik, 2012).

This study demonstrated that most nurses understand that benefits of the quality of record-keeping helps access to information and improves the ability to make good patient care decision making, with 99.2% (n=120) of respondents agreeing with this statement. The findings of this study were consistent with those of Mamseri (2012), who stated that good patient record-keeping facilitates the retrieval of information in the form of different data and statistics which will promote continuity of care of the patient among healthcare team members; it also increases effective decision making about patient care and reduces unnecessary repetition of detailed past history and some tests.



Moreover, 95.6% (n=116) of the respondents agreed that record-keeping improves communication between physicians and hospital staff. This finding is similar to that of Olivier (2010), that 96.77% (n=180) out of 183 respondents agreed that nursing records facilitate communication between nursing personnel in the ward or department. According to Stevens and Pickering (2010) the benefits of quality of record-keeping improves communication during shift handover, and between physicians and hospital staff. A clear and accurate nursing record for each patient is one of a nurse's day-to-day duties, and is a way to support the nurse in remembering everything that has been carried out for the patient. This finding was also supported by the study by Jefferies, Johnson and Griffiths (2010), which found that clinical note-taking and record-keeping in a clinical setting plays an important role for all healthcare professionals, including nurses, and moreover that clear,


reliable and accurate communication between health professionals is essential to patient safety and for efficient operations. Therefore, the purpose of nursing record-keeping is to provide effective communication among healthcare team workers, to provide for a person's effective continuing care, and enable evaluation of a person's progress and healthcare outcomes so that integrity can be retained over time (Jefferies et al., 2010). Saranto and Kinnunen (2009) stated that the fundamental importance of record-keeping is that it assists in and assures the continuity of patient care and one of the main benefits is that facilitates more structured and more focused communication between caregivers.

The current study found that 95% (n=115) of the respondents agreed that record-keeping improves the ability to learn about and improve patient care, and the same amount of respondents agreed that consistency of patient data that are recorded improves the ability to make good patient care decisions. These findings are consistent with those of Saranto and Kinnunen (2009), who found that inadequate and inaccurate nursing record-keeping presents a risk to patient safety and well-being, as well as to the continuity of the care, and that nursing record-keeping should be clear, precise and specific to ensure good quality, and must provide nursing with a much greater repository of knowledge and enable the nurses to consider a far greater number of options when making decisions about their patients' conditions.

5.3.1 Association between respondents' demographic characteristics and knowledge on the benefits of the quality of patient record-keeping

This discussion will focus on four independent variables: gender, age, years of experience, and level of education, that were assessed to see if they have a significant association with respondents' knowledge on the benefits of patient record-keeping.

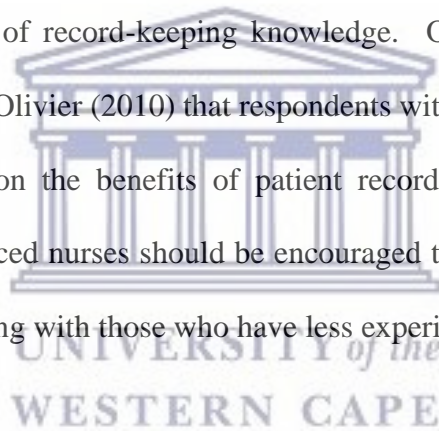
In terms of the association between gender and nurses' knowledge on the benefits of patient record-keeping, the current study revealed that there was a statistically significant association between gender and record-keeping knowledge levels ($X^2= 3.582$, $p=.051$). Females were found to have more knowledge (87.8%, $n=65$) on the benefits of quality of patient record-keeping compared with males (74.5%, $n=35$). This is in contrast with the finding of Olivier (2010) of no statistically significant difference between gender and record-keeping knowledge level. However, the current study didn't investigate whether some training and seminars related to the benefits of quality of patient record-keeping had been received in terms of gender in the selected hospitals, and owing to the small sample size for male nurses this result should not be generalized.



This study revealed that adult respondents older than 30 years of age had more knowledge on the benefits of patient record-keeping; there were 89 respondents aged 31–40 years (Table 4); of these 85.4% ($n=76$) scored more than 80%. Conversely, amongst the 21 respondents (Figure 1) who scored less than 80%, most (14.5%, $n=13$) were in the same age category of 31-40 years, while (33.3%, $n=6$) were between 20 and 30 years old. However, the current study didn't find a relationship between nurses' age range and the benefits of quality of record-keeping knowledge levels ($X^2=4.561$, $p=.200$), but it is known that respondents in this age group are mature in terms of critical thinking, with more responsibility than those of other ages, and therefore they might have an adequate knowledge on the benefits of good patient record-keeping policies compared with those other age groups. However, the small number of respondents ($n=12/121$) in the age category 20–30 years precludes generalisation of these findings. These findings oppose those of Blair and

Smith (2012) study which found that younger respondents have adequate knowledge levels on the benefits of patient record-keeping.

As indicated by Table 4, experienced respondents with more than 6 years of work experience were found to have more knowledge compared to those with less than 6 years of work experience after enrolment in a clinical setting. In the current study a statistically significant association was found between years of experience after enrolment and knowledge level on the benefits of patient record-keeping ($X^2=19.182$, $p=.001$). However, these findings are inconsistent with those of Blair and Smith (2012), who found an association between time elapsed after completion of training (that is years of experience) and lack of record-keeping knowledge. On the other hand, they are in agreement with the findings of Olivier (2010) that respondents with more experience had a higher ratio of adequate knowledge on the benefits of patient record-keeping than those with less experience. Therefore experienced nurses should be encouraged to share their knowledge on the benefits of patient record-keeping with those who have less experience.



In terms of level of qualification and benefits of patient record-keeping knowledge level, no statistically significant association was found between respondents' level of education and benefits of patient record-keeping knowledge level ($X^2=3.544$, $p= .315$) in this study. An unexpected finding was that respondents with low educational qualifications scored higher on knowledge of the benefits of patient record-keeping than those with higher qualifications (Table 4); however, the small sample size of those with higher qualifications means this could not be generalised. The findings of current study were in contrast to those of Olivier (2010) on record-keeping, where he found that level of knowledge on benefits of patient record-keeping varied across the categories of

nurses. Olivier (2010) found that Registered Nurses (RNs) (comparable to nurses with a BSN in the current study), were found to have an adequate knowledge on the benefits of patient record-keeping, followed by Enrolled Nurses (ENs), and then Enrolled Nurse Auxiliaries (ENAs) last. However, a higher ratio of unacceptable practice behaviour was reported by RNs (39.66%, n=23/58) compared to ENs (34.48%, n=20/58) (Olivier, 2010); therefore the findings of this current study found that there is a lack of record-keeping management in terms of nurses' knowledge on its benefits across nursing categories, although there is a need for effective records management to upgrade the record-keeping systems in the selected hospitals. Perhaps the Nursing Council should be in charge of reminding the nurses of accountability with regard to record-keeping across the country, according to their level of education (categories of nurses). This should be an advantage, particularly in the nursing profession in Burundi compared with other countries across the world, where nurses' daily activities are defined and described in line with the regulations of their Nursing Council.

5.4 Discussion of nurses' attitudes on the benefits of the quality of patient record-keeping in selected hospitals

Evidence from the analysis (Figure 2) is that 36% (n=43) of the respondents had shown a negative attitude, while 64% (n =78) were found to have a positive attitude on the benefits of the quality of patient record-keeping. Having 43 respondents with a negative attitude towards record-keeping is a major concern for the safety of patient care in selected hospitals. Although there is no reason to expect that the same problems that they encountered are not widespread in other hospitals throughout the country, respondents' attitude on the benefits towards record-keeping needs to be addressed and improved in the selected hospitals.

As reviewed in the literature, a main concern for the safety of the patient lies in the fact that effective record-keeping serves as the record of the degree of care that the patient has received and the results of the treatment, as well as evidence of the degree to which legal responsibility toward the patient has been carried out (Mellish et al., 2010). The findings of the current study were not in agreement with those of Olivier (2010), who found a predominantly positive attitude amongst the respondents (71.74% or n=132 out of a total of 184) towards record-keeping. They were also in contrast with the findings of Blair and Smith (2012) study which found that the majority of respondents demonstrated a positive attitude on the benefits of the quality of record-keeping.

In Table 4, 43% (n=52) of the respondents disagreed that record-keeping minimises the amount of time spent directly on patient care, while 57% (n=69) agreed with the statement. These findings were in contrast with those of Bisbal and Berry (2011) study, which found that good record-keeping reduced the amount of time that a healthcare team member spends searching up what care is needed and what care has already been carried out for the patient. As revealed by Bisbal and Berry (2011), effective record-keeping serves to save time when processing patient information among healthcare workers and for proceeding with the patient's treatment; record-keeping on nurses' notes that are kept chronologically by healthcare team members help quick retrieval of all of the entries of the caregivers involved regarding the patient's responses to treatment. Similarly, Ngao (2015) found that patient data which are immediately recorded help the next team of nurses or other caregivers to carry out an appropriate intervention for the patient, and help them to make sure whether that care was already done or not, without spending time searching for what to do during the next follow-up of the care. Thus, based on the current findings nurses in selected hospitals need to be taught about the importance of patient record-keeping and saving time related

to good record-keeping. Hence, according to Stevens and Pickering's (2010) study, record-keeping minimises the time nurses spend directly on patients; it also facilitates clear and complete handover of patient information to the next healthcare team members.

The results in Table 4 showed that 31.4% (n=38) of the respondents reported that they agreed with the statement that "the amount of time spent in documenting records decreases the performance of core activity", while 68.6% (n=83) disagreed with the statement. These findings were in contrast with those of Mostert-Phipps et al. (2012), who found that record-keeping increases job performance since staff spend less time searching the patient information. These findings were also not in agreement with those of Mellish et al. (2010), who found that effective record-keeping increases job performance of health professionals, as it explains the degree of care the patient has received and the results of treatment, and will assist the caregivers to plan and coordinate care and determine the legal responsibility towards the plan that has been carried out. Based on these findings, nurses need to be taught about the relationship between record-keeping timing and job performance. Conversely, it increases nurses' or caregivers' performance as it's seen as a communication tool for the exchange of information that is stored in records between nurses and other caregivers (Urquhart et al., 2009).

The performance of the nurse is based on good record-keeping, which serves as evidence of care being carried out and proving that the institution is working as mandated. For instance, in the case of maternal death or other matters relating to patients, hospitals through record-keeping need to convince the concerned harm investigator in order to satisfy them as to what steps were taken in diagnosing and prescribing for the patients (Marutha, 2011).

Table 4 showed that 91.7% (n=111) of the respondents agreed that record-keeping improves the professional satisfaction that nurses get out of their job, and 95.9% (n=111) also agreed that record-keeping improves the patients' outcomes. These findings were also supported by the study by Maharaj (2015), which found that nurses can be considered as negligent if he/she is found not to be recording timeously and accurately the nursing care given to the patient, or in inaccurate and incomplete documents that are evidence of care that has not been carried out. It improves professional satisfaction through providing evidence of the care that nurses or other caregivers had provided; in fact record-keeping justifies the care for which a nurse or other caregiver is accountable (Mellish et al., 2010). This current finding was also inconsistent with those of Hector (2010), who showed that record-keeping improves patients' outcomes and allows continuity of care in a continuing of illness. Thus, through record-keeping any factors that might render the patients vulnerable to any adverse reaction to the management, treatment or any risks are recorded as reliable health data, and will assist policy makers in making decisions and plans to improve healthcare service delivery for better patient well-being (Ndabarora, Chipps & Uys et al., 2013).

Moreover, similar to Ajami and Bagheri-Tadi's (2013) study findings, record-keeping improves professional satisfaction among healthcare team member, as they are known to provide proof that the clinical setting has rendered certain services. This was also supported by Nsengiyumva and Musango's (2013) study conducted in Burundi on 'The simultaneous introduction of the district health system and the performance-based funding (PBF)', which found that subsidising of services were in respect of the referred and counter-referral systems, which were only applied on the services recorded on the basis of PBF principles. Moreover, if the provincial verification and

validation committees (PVVCs) found in their quantitatively (care production) and qualitatively (various aspects of quality service) evaluation on the basis of the PPVCs' indicators that some services were not rendered and recorded in line with the PBF principles, and healthcare delivery points (health centres and hospitals) could not be refunded due to the lack of reliable information (Nsengiyumva & Musango, 2013).

5.4.1 Association between respondents' demographic characteristics and attitudes on the benefits of the quality of patient record-keeping

As in the case of respondents' knowledge, this discussion will also focus on four independent variables: gender, age, years of experience, and level of education, that were or were not significantly associated with respondents' attitude on the benefits of patient record-keeping.

Conversely to respondents' knowledge levels on the benefits of patient record-keeping, there was no statistically significant association ($X^2=0.256$, $p=.613$) between gender and respondents' attitudes towards the benefits of patient record-keeping in the current study. Similar to respondents' benefits of patient record-keeping knowledge levels, findings revealed that of the 78 respondents (Figure 2) reporting a positive attitude or scoring more than 80%, 49 or 66.2% were females, while 29 or 61.7% were males. Similarly, of the 43 respondents (Figure 2) scoring less than 80%, 38.3% ($n=18$) were males while 33.8% ($n=25$) were females. Female respondents were found to have a more positive attitude on patient record-keeping compared to male respondents, but these results should not be generalised due to the predominance of female respondents. Similar to Olivier's (2010) study findings, nursing is a female-dominated profession (Table 6).

In terms of nurses' age there was no statistically significant association ($X^2=4.293$, $p=.231$) (Table 6) between respondents' age and their attitude towards the benefits of patient record-keeping. As shown in Table 6, of 78 respondents (Figure 2) who reported a positive attitude to record-keeping,

the majority (68.5%, n=61) who scored more than 80% were in the 31–40 years age category. Similarly, of the 43 respondents (Figure 2) reporting a negative attitude or who scored less than 80%, most (31.5%, n=28) were 31–40 years old, while (55.6%, n=10) were aged 20–30 years. This study revealed that more adult respondents aged 31–40 years had a positive attitude on the benefits of patient record-keeping compared to younger respondents of 20–30 years, although the latter should have the most up-to-date, positive attitude on the benefits of patient record-keeping (Mtsha, 2009). These findings were not in agreement with those of Blair and Smith (2012) study which found that younger respondents had a positive attitude on the benefits of patient record-keeping compared to other age groups.

With regard to respondent' years of experience, there was no statistically significant association ($X^2=3.959$, $p=0.411$) (Table 6) between this and their attitude towards the benefits of patient record-keeping. Findings showed that of the 78 respondents (Figure 2) reporting a positive attitude or scoring more than 80%, those with 6–10 years of work experience were in the majority (72%, n=36), followed by those with 1–5 years of work experience (63.8%, n=30). Of the 43 respondents (Figure 2) reporting a negative attitude or scoring less than 80% on record-keeping, 36.2% (n=17) had been in their current position for 1–5 years, while 28% (n=10) had 6–10 years of work experience, 50% (n=7) had 11–15 years and 66.7% (n=2) more than 15 years of work experience. Contrary to what was found in terms of nurses' knowledge levels, the findings showed that nurses with less than 10 years of experience had a positive attitude compared to those with above 11 or more years of work experience. These results are inconsistent with the findings of Olivier's (2010) study, which found that nurses with less than 1 year of experience scored the highest ratio of positive attitude on benefits of patient record-keeping compared to other respondents with more years of work experience after the enrolment.

Lastly, the association between nurses' level of education and their attitude on the benefits of patient record-keeping was also assessed. Findings indicated that of the 78 respondents (Figure 2) reporting a positive attitude or scoring more than 80%, of this, 78.6% (n=33) had a BSN, 100% (n=5) had an A1, 69.6% (n=32) had an A3 auxiliary diploma and 28.6% (n=8) had an A2 (State Nurse Diploma). Findings also revealed that of the 43 respondents (Figure 2) reporting a negative attitude and scored less than 80%, 71.4% (n=20) had an A2 and 30.4% (n=14) had an A3 auxiliary diploma. Nurses with a BSN were found to have a positive attitude on the benefits of patient record-keeping compared to those with other qualifications. In contrast to the case with respondents' knowledge, the Chi-square test revealed that level of education was significantly associated with the respondents' attitude on the benefits of the quality of record-keeping ($X^2=22.674$, $p=.001$). Alarming, 71.8% (n=20) of nurses with an A2 diploma (considered as having a higher level qualification than A3) were found to have a negative attitude, while 30.4% (n=14) with an A3 had a negative attitude. Due to the small sample of nurses with an A2 (n=28), this finding could not be generalised to the rest of the study population.

These findings are inconsistent with those of Olivier (2010), which revealed that ENs had the least positive attitude ratio compared with ENAs. ENs having the least positive attitude ratio on benefits of patient record-keeping is an issue for the safety of patients, as they are working under the direct and indirect supervision of the RNs according to the scope of practice described by the South African Nursing Council. In Burundi the fact that the nurses with a higher qualification (A2) were less positive to record-keeping than those with an A3 is also an issue for the safety of the patient, and could show a lack of record-keeping management systems, and lack of scope of practice regarding nurses' accountability towards record-keeping. There is a need for proper record-keeping management systems, skilled nurses who are trained and up to date on patient record-

keeping; this could be attributed to the lack of a nursing council in charge of nurses' scope of practice, including reminding nurses of their accountability to record-keeping, particularly in Burundi.

5.5 Barriers contributing to poor quality of patient record-keeping in selected hospitals

The results (Table 7) of this study have demonstrated that most of the respondents (81.8%, n=99) reported that lack any additional training related to record-keeping, excessive burden of work and demotivation were the greatest barriers contributing to poor record-keeping in the selected hospitals. Similar findings were found in Marutha's (2011) study, which was conducted in Limpopo Province hospitals in South Africa and found that 70% of respondents reported that lack of training on record-keeping among the staff nurses contributed to poor record management. Excessive burden of work and demotivation due to the high number of patients admitted to wards and bed occupancy rate were also reported by Maharaj (2015) and Shihundla et al. (2016) as factors that prevented nurses from recording patient information timeously and accurately in the clinical setting. This finding of the current study was in agreement with Sibomana et al. (2015), who found that Burundi's health system experienced poorly motivated staff with high turnover and attrition rates, associated with poorly trained nursing staff, and could contribute to poor quality of record-keeping in selected hospitals.

Table 7 shows that 74.4% (n=90) of the respondents reported that a shortage of nursing staff contributed to poor record-keeping in selected hospitals. As reviewed in the literature, this finding was also supported by Shihundla et al. (2016), and Maharaj's (2015) study conducted in three hospitals in the Umugungundlovu District of KwaZulu-Natal found a shortage of nurses to be one of the barriers hindering the quality of patient information record-keeping. Similarly, Chi et al.'s

(2015) study found that in Burundi 50% of clinical officers and nurses are based in the capital city. Marutha (2011) found that 100% of respondents reported shortage of staff nurses to be one of the most serious administrative problems for record management in the hospitals.

As shown in Table 7, 69.4% (n=84) of the respondents reported that a lack of knowledge, skills and standardised terminology regarding recording-keeping also contribute to poor record-keeping in selected hospitals. These findings are similar to those of Marutha (2011), who found that a lack of knowledge, skills and standardised terminology were the main causes of the poor state of record management in Hospitals in Limpopo province, South Africa. Marutha's (2011) study revealed that 91% of respondents reported that staff who are unskilled in record-keeping contributed to poor management of health records in the hospitals.

According to Ndenje-Sichalwe (2011), a proper record-keeping management is guided by policies, rules and procedures to ensure an environment conducive to proper record management; however, the current survey (Table 7) found that 55.4% (n=67) of the respondents had reported that lack of support by administrative policies regarding recording and keeping patient information in the selected hospitals contributed to poor quality of patient information record-keeping. It is a concern and cause for alarm for the safety of the patient that 38% (n=46) and 64.5% (n=78) of the respondents respectively reported that lack of time to perform quality record-keeping and lack of a care plan format in their unit contributed to poor quality of record-keeping. According to Koziar et al. (2012) a nurse who is responsible for the patient care must ensure that nursing activities are implemented according to quality record-keeping. Nursing care plans forms are part of the process and serve as the roadmap that guides the entire cohort of staff nurses in the care of patients (Mamseri, 2012). The findings of the current study were also consistent with those of Mamseri's

(2012) study, where it revealed that 71% (n=81) of respondents correctly agreed that quality record-keeping was not implemented due to time constraints of the staff nurses.

From the findings it can be deduced that there was a lack of quality record-keeping policies in the management of nursing care in the selected hospitals, which has a negative impact on the quality of record-keeping should be a cause for alarm.

5.5 Conclusion

This chapter discussed the findings of the study with reference to the literature. The study findings indicated that respondents predominantly have adequate knowledge on the benefits of patient record-keeping, while their attitude to record-keeping needs to be improved in the selected hospitals. Associations between independent and dependent variables were also discussed with reference to the literature.

The findings revealed that lack of training on record-keeping, excessive burden of work and demotivation were the greatest barriers that contribute to poor quality of record-keeping in the selected hospitals, while lack of time to perform quality record-keeping and lack of a care plan format in the unit were lesser barriers.

The next chapter concludes the study, suggests implications and makes recommendations based upon the findings.

CHAPTER SIX

CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

6.1 Introduction

The preceding chapters presented the background to the study, study objectives, and literature reviewed as well as the methodology and data analysis used to address the objectives of the study. The quantitative data collected were analysed and findings were presented, and these were discussed, framed by the literature that was reviewed.

This chapter presents a summary of the key findings, implications and recommendations of the study. The study aimed at investigating the quality of patient record-keeping in selected hospitals in Burundi with the following objectives: (1) to describe nurses' knowledge on the benefits of the quality of patient record-keeping, (2) to describe nurse's attitudes on the benefits of the quality of patient record-keeping, (3) to determine the association between sociodemographic characteristics and nurses' knowledge of and attitude on the benefits of the quality of patient record-keeping, and (4) to identify barriers contributing to poor quality of patient record-keeping among nurses in selected hospitals in Burundi.

6.2 Key findings

6.2.1 Objective 1: Nurses' knowledge on the benefits of quality of patient record-keeping

The primary aim of this study was to investigate the quality of patient record-keeping in selected hospitals in Burundi, guided by the first objective: to describe nurses' knowledge on the benefits of the quality of patient record-keeping. In responding to the objective, nurses predominantly reported adequate knowledge on the benefits of patient record-keeping. The current study found that 82.6% (n=100) of the respondents were found to have more knowledge, while 17.4% (n=21) were found to have less knowledge on the benefits of the quality of record-keeping. As discussed,

knowledge of nurses on the benefits of record-keeping should not in itself determine the quality of record-keeping, as practically, on the ground nurses reported that poor quality of record-keeping could be associated with different challenges, such as excessive burdens of work and demotivation, high number of patients admitted and shortage of nursing staff. All of these challenges may contribute to poor quality of record-keeping, even though theoretically the current study found adequate knowledge of nurses on the benefits on patient record-keeping.

6.2.2 Objective 2: Nurses' attitude on the benefits of the quality of record-keeping

Regarding the second objective: to describe nurses' attitude on the benefits of the quality of patient record-keeping, nurses' attitudes need to be improved in selected hospitals. As revealed in this research, 36% (n=43) of the respondents were found to have a negative attitude, while 64% (n=78) were found to have a positive attitude towards the benefits of quality of patient record-keeping. As discussed in Chapter five, the finding that 43 out of 121 respondents had a negative attitude towards the benefits of patient record-keeping is a major concern, especially in terms of impact on the safety of the patient. There is no reason to suspect that the same negative attitude of nurses on the benefits of the quality of patient record-keeping encountered in the respondents of the selected hospitals is not widespread among other hospitals throughout the country.

6.2.3 Objective 3: Association between sociodemographic characteristics and nurses' knowledge and attitudes about the benefits of the quality of patient record-keeping

With regard to the third objective: to determine the association between the selected variables (gender, years of work experience, and level of educational qualification) and nurses' knowledge of and attitude on the benefits of record-keeping, the nurses' knowledge was significantly associated with gender ($X^2=3.582$, $p=.051$). Female nurses were found to have adequate knowledge on the benefits of patient record-keeping compared to male nurses, and nurses'

knowledge was also significantly associated with years of work experience ($X^2=19.182$, $p=.001$). The current study showed that experienced nurses had more knowledge on the benefits of quality of patient record-keeping than nurses with fewer years of work experience.

A negative attitude of nurses on the benefits of the quality of patient record-keeping was significantly associated with nurses' level of education ($X^2= 22.674$, $p= .001$), and the current study found that nurses with a bachelor degree in Science of Nursing were found to have a positive attitude on the benefits of patient record-keeping compared to other categories of nurses in terms of education level.

6.3 Limitations of the study

Describing the limitations of the study from the researcher's perspective aims to highlight possible weaknesses that could have an impact on the study, while providing preventative strategies for other researchers. In this study the two hospitals were purposively selected, and were both located in a rural area of the country, which therefore limits the representativeness of the study setting and generalisability of the findings to other similar settings.

In terms of the objective that sought an association between demographic characteristics and nurses' knowledge of and attitudes on the benefits of patient record-keeping, a small sample size distribution found in the fourth variables (gender, age, years of work experience, and level of education) could contribute to a risk of impacting on the significance of the statistical tests, and therefore might limit the generalizability of the study findings.

6.4 Recommendations to improve the quality of patient record-keeping

- The management of hospitals must provide regular in-service training for nurses to improve the nurses' attitude on the benefits quality of the patient record-keeping.

- Curricula for nursing school, from high school to higher education level, should incorporate nursing information systems to develop competencies and confidence in patient record-keeping and reporting.
- For the Ministry of Public Health in Burundi, to develop continuous professional development (CPD) programmes for health professionals on patient information systems to improve the quality of patient record-keeping.

6.5 Recommendations related to barriers contributing to poor quality of patient record-keeping

- The development of standardised nursing record-keeping terminology tools, including the care plans format, to enhance nursing skills and attitudes at provincial and national level.
- Development of record-keeping administrative policies to guide practice and to be used as a guiding tool or, if already in existence, to be revised regularly to reflect the current information on nurses' attitude.
- The findings of the current study should inform the hospitals' management, policy makers and authorities to develop innovative strategies to improve nurses' attitudes on the benefits of the quality of patient record-keeping in selected hospitals.

6.6 Implications for research

Based on the study findings, it could be deduced that the negative nurses' attitudes on the benefits of patient record-keeping as well as barriers related to record-keeping contribute to poor quality of record-keeping in the selected hospitals. No study at a larger scale has been conducted to investigate the quality of patient record-keeping in Burundi. Therefore it is recommended that a larger-scale study be conducted to influence decision making and policy formulation on patient-record keeping, and also to explore computer-based record-keeping systems used extensively in

developed countries, as this is likely to be the future of record-keeping systems, particularly in the context of dealing with issues related to the lack of nursing staff, excessive burdens of work and demotivation, lack of care plans format, and lack of time to perform quality record-keeping, as revealed in this study.

6.7 Areas recommended for further research

- Further study is required on exploring nurses' inadequate attitudes towards the benefits the quality of patient record-keeping associated with demographic characteristics, as revealed in this report, including knowledge differences towards the benefit of the quality of patient record-keeping between female and male nurses, factors associated with the statistically significant association between nurses' years of work experience and patient record-keeping knowledge levels, and implications for patient safety of the latter significant association between nurses' level of education and attitude towards the attitudes of patient record-keeping.
- Further research needs to be conducted regarding nurses' attitudes on the benefits of and barriers related to record-keeping, such a qualitative research methods to gain a deeper understanding of the phenomena.

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APPENDICES

APPENDICE A: DATA COLLECTION TOOL

Dear Respondent, I am Edison Bizimana, student in Nursing education at the University of the Western Cape. I am pursuing a Master's degree in nursing Education and I am carrying out this research for academic purposes. The study is investigating the quality of patient record- keeping among nurses working in selected hospitals. Anything you respond is confidential. Nothing you answer from the questions will be personally affected to you in any reports that result from this research. All of our reports will be written in a manner that no individual response can be attributed to a particular person. Please do not write your name on the questionnaire.

SECTION A. SOCIO- DEMOGRAPHIC INFORMATION

1. Indicate your current age. Fill by (X) next to the correct answer

	Response
20-30 years	
31-40 years	
41-50 years	
51-60 years and above 60	

2. Indicate your gender. Fill by (X) next to the correct answer

	Response
Female	
Male	

3. Indicate how many years you have been in function in your current position in this hospital. Fill by (X) next to the correct answer

	Response
0-1 year	
1-5 years	
6-10 years	
11-15 years	
More than 15 years	

4. Indicate your highest professional and academics qualifications in nursing. Fill by (X) next to the correct answer

	Response
State diploma nurse or Medical diploma technical A ₂ (Four years nursing training after completed grade 10),	
Auxiliary diploma A ₃ (2 years nursing training after completed grade 10),	
Bachelor of Science in nursing (Four years training).	
Other qualification (A1 or nurses with higher technical diploma with 3 years training in higher public health Institute after completed grade 12)	

SECTION B. QUESTIONS RELATED TO THE KNOWLEDGE OF NURSES ON THE BENEFITS OF THE QUALITY OF PATIENT INFORMATION RECORD-KEEPING IN SELECTED HOSPITALS.

Key rating: strongly agree=5, agree=4, uncertain=3, disagree=2, strongly disagree=1

KNOWLEDGE QUESTIONS:

The quality of record-keeping:

		Strongly disagree	Disagree	Uncertain	Agree	Strongly agree
1	Help to access to information and improved my ability to make good patient care decision					
2	Improve my ability to learn about and improve out patient care process					
3	The consistency with patient data that are recorded improve my ability to make good patient care decision					
4	The accuracy and validity of patient care data being recorded increased safety of patient care					
5	Will minimize the number of time staff forgets to provide needed care.					
6	Improves the ability to implement research findings to patient care practices					
7	Increase the legibility and clarity of patient order					
8	Facility the ability to share important information with patient and family					

9	Facility the ability to involve patient and families in the care plan process					
10	Improves the communication between physicians and hospital staff					
11	It minimizes the frequency that verbal orders will be made in my unit					
12	It will improve communication when patients are readmitted or receiving follow up patient care.					
13	It improve /facility communication during shift handover.					
14	It will improve communication when patient transfers to different units within the hospital.					

SECTION C. QUESTIONS RELATED TO ATTITUDES OF NURSES ON THE BENEFITS OF THE QUALITY OF PATIENT INFORMATION RECORD-KEEPING IN SELECTED HOSPITALS

Key rating: strongly agree=5, agree=4, uncertain=3, disagree=2, strongly disagree=1

ATTITUDES QUESTIONS:

		Strongly disagree	Disagree	Uncertain	Agree	Strongly agree
15	I feel the amount of time spend in documenting records decreases the performance of my core activity					
16	The amount of time I spend in recording patient diagnosis and symptoms decrease my performance.					
17	Improve the professional satisfaction I get out of my Job					
18	I believe it will improve patient outcomes					
19	I feel that record-keeping minimize the amount of time I spend directly to patient care					

SECTION D: QUESTIONS RELATED TO BARRIERS CONTRIBUTING TO POOR PATIENT INFORMATION RECORD-KEEPING IN SELECTED HOSPITALS

Key rating: strongly agree=5, agree=4, uncertain=3, disagree=2, strongly disagree=1

1. In actual practice, record- keeping of patient information is influenced by:

		Strongly disagree	Disagree	Uncertain	Agree	Strongly agree
20	Lack of sessions or lack of receiving any additional training related to record-keeping of patient information in my unit.					
21	Lack of care plans format in my unit					
22	Lack of knowledge, skills, standardized terminology regarding record-keeping of patient information in my unit.					
23	Lack of support and enforcement by administrative policies regarding recording and keeping the quality of patient information					
24	Lack of time to perform the nursing process					
25	A shortage number of nursing staff					
26	Excessive burdens and demotivation.					

UNIVERSITY of the
THANK YOU FOR YOUR PARTICIPATION!!!
WESTERN CAPE

APPENDICE B: ETHICS CLEARANCE CERTIFICATE FROM (UWC)



OFFICE OF THE DIRECTOR: RESEARCH RESEARCH AND INNOVATION DIVISION

Private Bag X17, Bellville 7535
South Africa
T: +27 21 959 2988/2948
F: +27 21 959 3170
E: research-ethics@uwc.ac.za
www.uwc.ac.za

26 October 2017

Mr E Bizimana
School of Nursing
Faculty of Community and Health Sciences

Ethics Reference Number: BM17/8/9

Project Title: Investigating the quality of patient record-keeping among nurses in selected hospitals in Burundi.

Approval Period: 19 October 2017 – 19 October 2018

I hereby certify that the Biomedical Science Research Ethics Committee of the University of the Western Cape approved the scientific methodology and ethics of the above mentioned research project.

Any amendments, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval.

Please remember to submit a progress report in good time for annual renewal.

The permission letter from facilities/health authority must be submitted for record-keeping.

The Committee must be informed of any serious adverse event and/or termination of the study.

A handwritten signature in blue ink, appearing to read 'Josias'.

Ms Patricia Josias
Research Ethics Committee Officer
University of the Western Cape

PROVISIONAL REC NUMBER -130416-050

APPENDICE C: CONSENT FROM THE SELECTED HOSPITALS

REPUBLIC OF BURUNDI

December 14th, 2017



MINISTRY OF PUBLIC HEALTH AND FIGHT AGAINST OF HIV/AIDS
CIBITOKÉ DISTRICT HOSPITAL
Ref Nr633036/Hosp; cib/2017
Tel: +25769056994

To

Mr. Edison BIZIMANA
UNIVERSITY OF THE WESTERN CAPE,
CAPE TOWN, SOUS AFRICA



RE: Request for permission to conduct research study

Dear Mr. BIZIMANA,

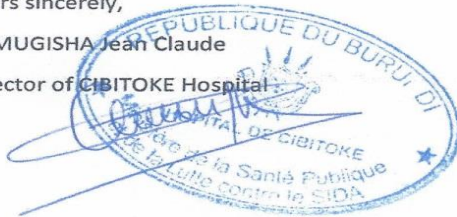
Referring to your letter dated 23rd November 2017, related to the heading above, I have the honor to inform you that permission has been approved for you to conduct a research study, on investigating the quality of patient record-keeping among nurses in selected hospitals in BURUNDI.

We take this occasion as Director Representative of CIBITOKÉ hospital to wish you all the best in your research so that you can achieve your study objectives.

Yours sincerely,

Dr MUGISHA Jean Claude

Director of CIBITOKÉ Hospital



REPUBLIC OF BURUNDI

Mabayi, December 16th, 2017



MINISTRY OF PUBLIC HEALTH
AND FIGHT AGAINST OF HIV/AIDS
PROVINCIAL HEALTH OFFICE OF CIBITOKÉ
MABAYI HEALTH DISTRICT
districtsanitaire.mabayi@gmail.com

To

Mr Edison BIZIMANA
UNIVERSITY OF THE WESTERN CAPE
CAPE TOWN, SOUTH AFRICA

Re: Request for the permission to conduct a research study

Dear Mr. Edison,

Referring to your correspondence dated November 23rd, 2017 related to heading above, I am honor to inform you that your permission has been approved.

Then, you have to begin to your research until you read me in this correspondence.

Best regards.

Health Manager of Health District of Mabayi

Dr. Norbert MUGABO



APPENDICE D: PROOF OF LANGUAGE EDITOR

Leverne Gething, t/a WHIZZ@WORDS
PO Box 1155, Milnerton 7435; tel. 021 552 1515; cell 072 212 5417
e-mail: leverne@eject.co.za

30 October 2018

Declaration of language editing of thesis:

Master's in Nursing Education: Investigating the quality of patient record-keeping among nurses in selected hospitals in Burundi

By Edison Bizimana

I hereby declare that I carried out language editing of the above thesis on behalf of the author.

I am a professional writer and editor with many years of experience (e.g. 5 years on *SA Medical Journal*, 10 years heading the corporate communication division at the South African Medical Research Council), who specialises in Science and Technology editing - but am adept at editing in many different subject areas.

I am a full member of the South African Freelancers' Association as well as of the Professional Editors' Association.

Yours sincerely

LEVERNE GETHING
leverne@eject.co.za

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