THE UNIVERSITY OF ZAMBIA

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DEPARTMENT OF LIBRARY AND INFORMATION STUDIES

<u>RESEARCH AREAR</u> : **ICTs and HEALTH RECORDS**

<u>RESEARCH TITLE</u> :

         To investigate, the effectiveness of Smart Care Electronic Management System for improved service delivery in Lusaka. A case study of selected Government health facilities, in Lusaka District

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DEDICATION

This Lis 4014 final fourth year report is dedicated to our families, friends, colleagues, and trainers whose unwavering support helped see us through all the thin and thick into having our dream turn into a shaped reality.

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ABSTRACT

Electronic Health Records were created for service delivery in health institutions. They have the advantage over paper-based patient records in that, they are easy to use, retrieve information and have unlimited storage as well solve the problem of storage faced in the paper-based record system. As indicated in most studies, EHRs come with own challenges. Therefore, the main aim of this study was to investigate, the effectiveness of Smart Care Electronic Management System for improved service delivery in Lusaka. This was a case study of selected Government health facilities, in Lusaka District. The specific objectives of the study were; to find out if Smartcare Electronic Management System is delivering its intended purpose at the selected health care facilities in Lusaka; to determine whether the introduction of Smartcare Electronic Management System has helped to reduce on the number of medical errors at these health care facilities; to determine the effectiveness of Smartcare Electronic Management System on management of records at the selected health care facilities and to establish the challenges faced in using Smartcare Electronic Management System at the selected health care facilities.

The study used both quantitative and qualitative method to collect and analyses data. 300 respondents were picked and using simple random sampling and 1 key-informant from each health centre using purposive sampling. The major findings revealed that EHRs are faster to use than paper-based records and saves filing space. Findings also showed that most respondents indicated that EHRs are cost effective in terms of time in that less time is spent by staff to access records and no time is wasted in queues to retrieve records compared to the paper-based. Findings also showed that most of respondents pointed out that the major medical problem reduced was that of loss of patient records and repeating of diagnostic tests. The major challenge pointed was that of electricity power outages which resulted in none usage of the system and it was recommended that back-up measures should be put in place such as procuring power generators. Finally, there is need too for other researchers to consider finding out whether all other institutions use EHRs as the selected health centres do and establish if the benefits and challenges are the same.

LIST OF ABBREVIATION AND ACRONYMS

AIDS   Acquired Immunodeficiency Syndrome

CDC   Centre for Diseases Control and Prevention

CSO   Central Statistical Office

EMR   Electronic Medical Record

EHR   Electronic Health Record

HMIS   Health Management Information Systems

HIV   Human Immunodeficiency Virus

ICTs   Information Communication Technologies

LAN   Local Area Network

UNZA   University of Zambia

MOH   Ministry of Health

SEMS   Smartcare Electronic Management System

SEHRS   Smartcare Electronic Health Record System

WHO   World Health Organization

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CHAPTER ONE

INTRODUCTION

The use of Information and Communication Technologies (ICTs) is concerned with improving the flow of information, through electronic means, to support the delivery of health services and the management of health systems. ICT provides significant benefits not only in achieving health goals, but also in demonstrating what has been attained and at what cost. From the local to the national level, ICT is changing how health care is delivered and how health systems are run. It supports critical functions by improving the ability to gather, analyse, manage and exchange information in all areas of health, from research on molecular genetics to large-scale humanitarian interventions and disaster relief (Battaye 2009).

According to WHO (2005), Information Communication Technology (ICT) is a key area for improving service delivery, promoting easier information exchange, assisting in decision making processes, and improving the effectiveness of operations. Governments and organizations around the world are mainstreaming ICT as a tool in all sectors of activities. In this regard, organizations need to invest a lot of resources to use ICT as a supportive tool for the effective and efficient delivery of services. ICT is a cross cutting area which supports all function and operation areas by facilitating the automation of various processes. This can be observed by how Health institutions globally have recognized the benefits that come along with the use of ICTs (Health Matrix Network, 2006).

The Health Management Information System is a computerized patient tracking and caring system. The term Health Management Information System has sometimes included other systems which keep track of medical information, such as the Smartcare system which supports the electronic medical record. HMIS is an essential technology for health care and a necessary tool for improving patient safety and the quality of care (WHO, 2006).

Smartcare is the e-health record management system in form of software that was developed to improve continuity of care and provide timely data on maternal and child health, HIV/AIDS, tuberculosis and malaria interventions for public health purposes, including Health Management Information System (HMIS) trend reporting and analysis for health officials and clinicians. Smartcare is now also required for

any facility in Zambia desiring accreditation to dispense antiretroviral (ARV) drugs for HIV clients. The software was designed to be simple, intuitive and friendly, even for the large numbers of the population who have limited computer knowledge. A touch screen interface mirrors the already familiar paper card health system. Smartcare interfaces well with "paper-based" clinics. This seamless interaction of data will facilitate the national rollout of the system and a smooth transition, over several years of implementation, from a paper-based system to an electronic one.

According to various researches done in various countries around the globe, the use of Electronic Health Record System (EHRS) has brought about numerous benefits such as; improvements in the quality, efficiency and safety of health care services; demonstrated in terms of reducing health care costs and improving the quality of health care in the primary care ensuring patient safety, data collection, quality management, disease surveillance and many more. Hence; reduction of duplication of patient's records, reduction of loss of patients records, and reduction in time taken to retrieve patients records. Therefore, the purpose of this proposal is to investigate, the effectiveness of Smartcare Electronic Management System for improved service delivery in Lusaka.

1.1 BACKGROUND

This will be a case study of some selected Government health facilities in Lusaka District namely; Chelston clinic, Kalingalinga clinic, N`gombe clinic and Unza clinic. This is in line to the fact that Health systems globally are changing in the way health care delivery is done, which is one of the critical components of basic social services having a direct linkage to the growth and development of any country as well as to the wellbeing of the society. It is the core of responsive health systems as the daily business of health relies on information and communication and, increasingly, on the technologies that enable it, at every level and in every country (WHO, 2012).

Smartcare is an Electronic Health Record System (EHRS) which is a customized card and carries an encrypted copy of a patient's entire health history. It uses a SIM chip, similar to those many uses in cell phones, to store the data. A soft copy of the health record is saved in the Smartcare database of every health facility the patient visits. The Smartcare main purpose is to enable electronic data entry of patient health information so that health facility staff does not have to manually collect and aggregate data.

(Ministry of Health, 2011)

Since 2005, Smartcare has been deployed in more than 550 clinics and hospitals, in all nine provinces and 72 districts in Zambia. Sites include public, private and military health facilities. As the electricity infrastructure develops in more remote areas of the country, Smartcare implementation will follow to strengthen health systems. Today, more than 600 users, support staff, managers and trainers are Smartcare certified. Eventually, all personnel who teach, support or use Smartcare will undergo this rigorous and demanding certification process.

The University of Zambia clinic, Kalingalinga, N`gombe and Chelston are some of the health facilities in Lusaka district that cover a big population in the district. They are non-profit institutions set up by government to provide medical care services to the public.

Like any other institution, the above-mentioned facilities maintain a number of records about their patients created on daily basis and used from time to time for planning and decision making as they endeavour to serve society. To this effect, they have adopted Smartcare system which is a fully integrated electronic health record system that provides continuity of care and proper information management at every level. Other than Chelston which is not a fully-fledged Smartcare facility, the other mentioned facilities have a number of Smartcare Computers in their various service points and use a Local Area Network (LAN) to link these computers.

1.2 STATEMENT OF THE PROBLEM

Smartcare electronic management system was developed to improve continuity of care and provide timely data on maternal and child health, HIV/AIDS, Tuberculosis and malaria interventions for public health purposes. Despite Kalingalinga clinic, N`gombe clinic and Unza clinic Health Centre using Smartcare electronic management system, Patients wait for a long time in queues before being attended to and that sometimes causes delays in attending to emergencies and able patients opting to be attended to at private clinics. Consequently, it is not known whether the intended objective of Smartcare electronic management system has been achieved or not. As such, it is difficult to determine the appreciation of this service at these Health Centres. To this effect, this study sought to investigate, the effectiveness of Smartcare

Electronic Management System for improved service delivery in Lusaka at Kalingalinga clinic, N`gombe clinic and Unza clinic in conjunction with Chelston clinic where the service is not fully flagged.

1.3 GENERAL OBJECTIVES

The general objective of the study is to investigate the effectiveness of Smartcare Electronic Management System for improved service delivery in Lusaka.

1.4 SPECIFIC OBJECTIVES

1.4.1   To find out if Smartcare Electronic Management System is delivering its intended purpose at the selected health care facilities in Lusaka.

1.4.2   To determine whether the introduction of Smartcare Electronic Management System has helped to reduce on the number of medical errors at these health care facilities.

1.4.3   To determine the effectiveness of Smartcare Electronic Management System on management of records at the selected health care facilities.

1.4.4   To establish the challenges faced in using Smartcare Electronic Management System at the selected health care facilities.

1.5 RESEARCH QUESTIONS

1.4.5   What are some of the errors that have been reduced with the introduction of Smartcare Electronic Management System?

1.4.6   What are the benefits of using Smartcare Electronic Management System at these health care facilities?

1.4.7   How effective is Smartcare Electronic Management System at these health care facilities?

1.4.8   What are some of the challenges encountered in using Smartcare Electronic Management System at the health care facilities?

1.6 SIGNIFICANCE OF THE STUDY

The choice of the topic was based on the application of Smartcare Electronic Management System at Kalingalinga clinic, N`gombe clinic and Unza Clinic. Also, in considerations of Chelston Clinic, were the

service is not available. It is hoped that the study would produce important information that may help the policy makers in the government and other stakeholders involved in the management of Smartcare Electronic Management System. This is so there are improvements in the services that will be provided. Consequently, this would assist to adopt suitable interventions in resolving shortfalls in the application of Smartcare. Furthermore, it is hoped that the results of this study may draw the attention of the general public on Smartcare electronic management system and hence more appreciation by all its users. The study would also provide additional knowledge to the already existing in the field of electronic records management.

1.7 ETHICAL CONSIDERATIONS

The study will endeavour to observe the participants' anonymity and confidentiality to avoid exposing participants to mental stress. The research will seek informed consent from the participants before interviews and questionnaires are administered. The information from the respondents will be obtained without cohesion and an appropriate language, of which English will be used as it is assumed that all the target groups in this study understand English.

The results obtained from the study will be reported objectively and honestly. The study will include free participation and the right to withdraw from the study where the respondents feel uncomfortable. Those who refuse will not be forced to change their positions. Respondent's names will not be published in the research findings. Permission will be sought from the Dean of students' before commencing the study.

1.8 DEFINITION OF KEY TERMS

1.8.1 Electronic Health Record: An electronic health record (EHR), or electronic medical record (EMR), is the systematized collection of patient and population electronically-stored health information in a digital format. It designed to store data accurately and to capture the state of a patient across time. It eliminates the need to track down a patient's previous paper medical records and assists in ensuring data is accurate (Van Bemmel J.H., Musen, (1997).

1.8.2 Smartcare: This is an Electronic Health Record management system (EHR) that has been developed and deployed by the Ministry of Health (MoH) Zambia in collaboration with the **MOH** and many other implementing partners (Ministry of Health [MOH], 2012).

1.8.3 Health Centre: A health Centre is, in general, any location where healthcare is provided (The

World Health Report, 2008).

1.8.4 ICTs: This refers to technologies that provide access to information through telecommunications, this includes; computers, internet, wireless networks, cell phones and other communication mediums.

1.8.5 Computers: A computer is a machine mostly electronic that is able to take information input, and process it to make new information output (David, 2007).

1.8.6 The ministry of health (MoH) is responsible for the coordination, management, monitoring and supervision of health care services within the country (Ministry of Health 2012).

1.8.7 Local Area Network (LAN): This is a group of computers and associated devices that share a common communications line or wireless link to a server. Typically, a LAN encompasses computers and peripherals connected to a server within a distinct geographic area such as an office or a commercial establishment. (Federal Ministry for Economic Co-operation and Development, 2013).

1.9 SUMMARY

Information Communication Technology (ICT) is a key area for improving service delivery, promoting easier information exchange, assisting in decision making processes, and improving the effectiveness of operations. Therefore, the general objective of the study is to investigate the effectiveness of Smartcare Electronic Management System for improving health service delivery in Lusaka using an electronic health record (EHR), or electronic medical record (EMR), that is defined as the systematized collection of patient and population electronically-stored health information in a digital format.

Kalingalinga, N`gombe, Unza and Chelstone clinic are one of the Urban Health Centres of Lusaka District in the Lusaka Province of Zambia. These facilities are located in different townships and they offer health services to a huge population in Lusaka. Despite some of them using Smartcare Electronic Management System, there is an observation that patients still wait for a long time in queues before being attended to and that sometimes patients are sent back home without being attended. Hence patients' treatment is delayed in some cases. Therefore, this study will endeavour to investigate the effectiveness of Smartcare Electronic Management System for improving health service delivery in Lusaka, so as to provide solutions to challenges faced in using the system and in long improve service delivery. Consequently, this would assist to adopt suitable interventions in resolving shortfalls in the application of Smartcare Electronic Management System.

In the study ethical considerations will be considered i.e. to observe the participants' anonymity and

confidentiality to avoid exposing participants to mental stress. The research will seek informed consent from the participants before interviews and questionnaires are administered. In the research, a number of terms will be encountered among them is, an electronic health record (EHR), or electronic medical record (EMR), which in this case has been defined already.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

A comprehensive search of the literature a researcher enables to avoid the duplication of research work and broadens the understanding of the research problem. It provides a framework for establishing the importance of the study as well as a benchmark for comparing the results with other findings. Therefore this literature review will focus on the following research themes; To find out the optimal benefits utilization of Smartcare Electronic Management System at the health care facilities ; To determine whether the introduction of Smartcare at health care facilities has reduced on the number of medical errors ; To determine the cost effectiveness Smartcare Electronic Management System at health care facility ; To establish the challenges faced in using Smartcare Electronic Management System at these health care facilities.

2.2 The Benefits and Utilization of Smartcare Electronic Management System in Health Care Centres

Several publications have documented benefits of the use of SEMs in Africa including greater data accuracy, improved timeliness and availability of routine reports. A review by Foster et al (2008) however showed that more effort is still required to optimize the benefits of SEMs in developing countries. SEMs allow medical professionals a seamless approach for coordinating and managing their patient records. They can help reduce paperwork, eliminate duplicate tests, and facilitate code assignment for billing. However, it should be noted that recent reports indicate physicians are concerned about system interoperability, documentation overload, and untested billing systems (Friedberg et al, 2013). WHO (2006) argues that the benefits of computerized Information Systems for the information needs of the healthcare system are countless, particularly in developing countries. Implementing SEMs in developing countries showed significant improvement in ability to track patients, monitor adherence of patients to the treatment regime, and keep track of those who do not follow up their treatments and appointments.

Aminpour et el. (2014) conducted a study on the utilization of open source Smartcare Electronic Management System (SEMs) systems in different countries all over the world. The result showed that open source SEMs had the following advantages and benefits for various stakeholders. For the hospital ,recording is done systematically as compared to a paper based record system, that is no chance of misfiling ,it brings about efficiency in service delivery, meaning correct diagnosis and management of patients ,easy follow ups with patients. Easy collection of patient data to be used for further research ,reporting to the next level of health care and patient data sharing between or among health facilities. It was also discovered that there was a cost reduction in terms of having paper based medical stationary used in the day to day clerking of patients.

For a patient it means convenience of checking records and carrying their own wherever they going ,drug safety and reduction of duplication of medical tests and records since the record stores and show what medical test where undertaken by the patient unlike in a paper based system evidence of a medical test might have fallen of the patient's record. For a Physician benefits include ; convenient of accessing patient's or client's records since they are the system and also carried in an electronic card ,easy monitoring of any drug side effects and any other changes when treating a patient. It also saves time, in that medical tests on a patient reflect as soon as it is done (laboratory or radiological test). Easy communication when consulting with Physicians and sharing of data is easily facilitated.

Menachemi and Collum (2011) carried a study by reviewing and summarizing the literature on the benefits and drawbacks of Smartcare Electronic Management System (SEMs) systems in the United States of America (USA).The results of the study describes the potential benefits of SEMs that include clinical outcomes such as (improved quality, reduced medical errors), organizational outcomes such as (financial and operational benefits), and societal outcomes such as (improved ability to conduct research, improved population health, reduced costs). However, regardless of these benefits, the study highlighted drawbacks associated with SEMs, which include the high upfront acquisition costs, on-going maintenance costs, and disruptions to workflows that contribute to temporary losses in productivity that are the result of learning a new system. In conclusion, the study noted that, SEMs are associated with potential perceived privacy concerns among patients, which are further addressed legislatively in the Health Information Technology for Economic and Clinical Health (HITECH) Act. Therefore, the study recommended that experts and

policy makers should implement policies that optimize the benefits to patients, professionals and society when SEMs are widely adopted.

Mweebo (2014) carried a study on the security issues related to the operationalization of Smartcare Electronic Management System (SEMs) used to manage Human Immunodeficiency Virus (HIV) health information in Zambia. The study found some of benefits of Smartcare program include: supporting quick access to patient records, which saves physicians time; sharing of patient HIV records is made easier through integrated national databases and updated patient smart cards; and the presence of national, provincial and district databases has made monitoring and evaluation of HIV programs easier. The main disadvantages were found to be privacy and security. In conclusion the study highlighted that, In Zambia; Smartcare has expanded since its initiation in 2004 to integrate more than 500 health facilities and has harmonized patient records of more than 308000 individuals across the country. Therefore, recommends that as health professionals gain improved access to patient health information electronically, there is need to ensure this information is secured, and that patient privacy and confidentiality is maintained.

2.3 Has Smartcare Electronic Management System at Health Centres reduced the number of Medical errors?

Sharon Silow-Carroll,et al ,2012 in their study carried out in 2012 to establish the reduction of medical errors with the introduction of Smartcare Electronic Management System in nine different health facilities concluded that ,with the advent of SEMs a number of medical errors have reduced as mentioned below ; late diagnosis of patients leading to mortalities reduced ,misdiagnosis due to miss up of patient medical tests in paper based records reduced, late referral to specialized facilities for complicated cases reduced. Lack of follow ups monitoring of chronic patients reduced, delay in commencing treatment due to loss of patient records also reduced drastically, above Surveillances of contagious diseases which was not easily done in the paper-based record was enabled in the electronic record enabling quick identification, isolation and treatment to prevent the disease spreading further.

2.4 The Cost Effectiveness of Smartcare Electronic Management System in Health Care Centres

JMIR Med Inform, 2017 conducted many studies on the cost-effective benefits of using SEMs in Health care facilities in 2017 and it evaluated quantitatively that the studies conducted around the world from 288 facilities presented mixed and inconclusive results, leaving one unable to draw a definitive conclusion about cost effectiveness. The analysis of costs was more limited than the evidence on quality and efficiency.

The study concluded that cost effectiveness was mainly on time as follows; SEMs reduced charting time Electronic surveillance achieves equal or better sensitivity than manual surveillance. Several studies also reported time savings of 60% to 99.9% or a reduction in chart reviews of 40% to 90.5. Increased time spent on direct patient care and reduced the occurrence of errors (medication errors, intravenous and ventilation incidents) thereby Improving in clinical outcomes. Such outcomes improved accuracy, legibility, data accessibility, and decision support. Although further studies are recommended for validation Ken Choi ,2017 stressed that ,there are short term benefits and long term benefits of using SEMs in a health care facility such as the following; Short Term Cost-Benefits are; Reduce employee time spent on filing, retrieving, and organizing physical charts and documents, Reduce the amount of physical space used to store filing cabinets and other storage areas for papers, time saved with information exchange between medical professionals and insurance companies (information is sent instantly instead of mailed)

Long term cost-benefits include ;Significantly reduce risks of data breach and data loss ,transferring large amounts of data is simpler and faster when changing locations ,less physical papers are needed, along with the reduced necessity for paper products (printers, copiers, office supplies) ,easier to adopt new regulations in the future with a technologically-appropriate system, handwritten charts can be difficult to comprehend by future healthcare providers, making SEMs that much more efficient for future users.

2.5 Challenges in using Electronic-Health Records

According to Azubuike (1999) a greater challenge in the management of Smartcare facility may be "the patients' unwillingness for their clinical data to be shared". Some patients may want to withhold certain information from doctors, such as a history of mental illness or sexually transmitted diseases., Physicians

like Dr Adrian Gropper, CTO of the non-profit Patient Privacy Rights, are concerned that current systems are interfering with physician-patient and physician to physician relationship (Mengesha, 2011). Bramson and Liebovitz (2010) identified 'failure to use human factors design principles' as a major factor that impede usability and user satisfaction in their use of SEMs. According to them, management, designers and vendors SEMs systems often fail to apply human and social factors when designing the system, rather they just concentrate on the technological aspect. These results in little time dedicated to appreciating the context of use. Designers of the system thus focus on workflow (for instance, click here to fill a data or open here to access this file) at the neglect of what Schumacher et al. (2010) descried as "less obvious, but often more important, 'thought flow' the review and thinking which physicians inherently do before finishing a task". They also identified other challenges to the use of SEMs as "Physician's attitudes that they want a computer system to mimic a paper system as closely as possible as well as IT staff's attitudes that technology solutions are more important than the purpose of the solution and the problem it was intended to solve".

Maxwell et al. (2011) conducted a study on the use of Smartcare Electronic Management System in sub-Saharan Africa: Progress and challenges. It was found that 91% use of open source healthcare software, with open MRS being the most widely used. Challenges to adoption of SEMs included high cost of procurement and maintenance, poor network infrastructure and lack (Compare this to cost effectiveness) of comfort among health workers with electronic medical records. In conclusion the study noted that there has been an increase in the use of SEMs in sub-Saharan Africa, largely driven by utilization by HIV treatment programs penetration is still however very low. Therefore, the study recommended that government institutions in sub-Saharan Africa should be quick in implementing SEMs and other appropriate ICTs which are required to improve healthcare on the continent.

Chao et al. (2013) conducted a study on the benefits and challenges of Smartcare Electronic Management System on stakeholders: A qualitative study of outpatient physicians in New York City. Semi structured interviews were conducted with 32 physicians who worked in the outpatient department. The results showed that 78 % physicians interviewed used SEMs frequently during their daily practice despite individual preferences of documentation methods. They agreed that systemic Smartcare Electronic Management System allowing smooth communication was beneficial to the health institutes, patients and physicians. However, privacy and confidentiality concerned both the health institutes and patients. In

conclusion the study highlighted that inefficiency of the SEMs that only allowed retrieval of limited medical information of the patients hindered physicians' acceptability of SEMs. Therefore, the study recommended that the health institutes should take into consideration interests of different stakeholders when designing and implementing SEMs.

2.6 Summary

Review covered; The benefits of utilization of Smartcare Electronic Management System in health care centres; Challenges in using Smartcare Electronic Management System; The cost effectiveness of Smartcare Electronic Management System in health care centres and the challenges in using Smartcare Electronic Management System.

In summary, several publications have documented benefits of the use of SEMs in Africa including greater data accuracy, improved timeliness and availability of routine reports. Improved patient care, increased patient participation, improved care coordination, improved diagnostics and patient outcomes, practice efficiencies and cost savings are some of the major benefits of the SEMs. The implementation of SEMs in most health facilities has largely decreased the paperwork for clinicians. This has in turn reduced record-keeping time thus leading to the optimization of workflow efficiency and increase in the general productivity of health professional. However, highlighted that inefficiency of the SEMs in that they only allowed retrieval of limited medical information of the patients and this hindered physicians' acceptability of Smartcare Electronic Management System.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Overview

This chapter covers the research in the following; the research design which will be used in this research; the total population where the study will be carried out; the sample size and sampling procedure; the data collection instruments and the data analysis method.

3.2 Research Design

The research design refers to the overall strategy that one choose to integrate the different components of the study in a coherent and logical way, thereby, ensuring that one will effectively address the research problem; it constitutes the blueprint for the collection, measurement, and analysis of data describes a research design as a plan that describes how, when and where data are to be collected and analysed. Mweebo (2014)

This study focuses on the effectiveness of the use of Smartcare Electronic Management System in service delivery to the clientele of various Health Centres in Lusaka. Mathiyazhagan .T and Deoki Nandan ,2010 defines a Survey research "As a method of descriptive research used for collecting primary data based on verbal or written communication with a representative sample of individuals or respondents from the target population."

This study is a Case study, according to Qualitative Research Methods, 2011 "A case study is a method used in both qualitative and quantitative research methodologies". This entails that a mixed method of study will be to investigate the effectiveness of Smartcare Electronic Management System from various health centres in Lusaka. In order to collect data from the facility whose levels of education are diverse both questionnaires and Interview guides will be used to collect the data.

The word qualitative implies an emphasis on the qualities of entities and on processes and meanings that are not experimentally examined or measured in terms of quantity, amount, intensity, or frequency.

Qualitative researchers stress the socially constructed nature of reality, the intimate relationship between the researcher and what is studied, and the situational constraints that shape inquiry. Such researchers emphasize the value-laden nature of inquiry. They seek answers to questions that stress how social experience is created and given meaning. In contrast, quantitative studies emphasize the measurement and analysis of causal relationships between variables, not processes. Qualitative forms of inquiry are considered by many social and behavioural scientists to be as much a perspective on how to approach investigating a research problem as it is a method. (Merriam, B, 2009)

The advantages of using qualitative are; Obtain a more realistic view of the lived world that cannot be understood or experienced in numerical data and statistical analysis; Provide the researcher with the perspective of the participants of the study through immersion in a culture or situation and as a result of direct interaction with them; Allow the researcher to describe existing phenomena and current situations; Develop flexible ways to perform data collection, subsequent analysis, and interpretation of collected information; Yield results that can be helpful in pioneering new ways of understanding and Provide a holistic view of the phenomena under investigation.

3.3 Sample Size

According to these Health Centres monthly reports, the facilities attend to about 12000 clients per month. This includes adults both female and male, youth both female and male and children both female and male. Therefore, the sample size of the research will be 300 members of the communities where the research will be conducted from those seeking medical services from the facilities. It is believed that in the research, at least 75 members from each facility, ranging from the age of 18 to 50 will be included in our research and the findings will be generalized to the entire community, this excludes children.

3.4 Sample Procedure

 The method to be used in this research is a simple random sampling. Frerichs, R.R. Rapid Surveys, 2008) states, "A simple random sample is a subset of a statistical population in which each member of the subset has an equal probability of being chosen" Subjects in the population are sampled by a random process, using either a random number generator or a random number table, so that each person remaining in the

population has the same probability of being selected for the study and the findings will be generalized to the entire population being studied.

Sampling of the participants will be done as follows; assistance of the head of the facility will be sought to identify potential participants ,these are the facility's clients and the research proposal will be explained to the prospective participants who will be short- listed and they will asked personally if they want to take part in the research.

3.5 Data Collection Instruments

Accurate and systematic data collection is critical to conducting scientific research. Data collection allows us to collect information that we want to collect about our study objects. Depending on research type, methods of data collection include: documents review, observation, questioning, measuring, or a combination of different methods. A Data collection instrument is a research instrument or a tool used to collect data. It is used to measure knowledge attitude and skills. It is used to obtain data from participants with different experience and prevents information biasness and thus increasing credibility regarding the information collected.

In this research questionnaires and Interview guides will be used for data collection. A questionnaire is a data collection instrument consistent of a series of questions and other prompts for the purpose of gathering information from respondents. (The Free Encyclopedia, September 2012.) A questionnaire is simply a tool for collecting and recording information about a particular issue of interest. It is mainly made up of a list of questions, but should also include clear instructions and space for answers or administrative details. Questionnaires should always have a definite purpose that is related to the objectives of the research, and it needs to be clear from the outset how the findings will be used. Respondents also need to be made aware of the purpose of the research wherever possible.

An interview guide helps help a researcher to engage in a conversation with subjects of a study for the sole purpose of gather data or collecting data for the study. It is the process of the researcher asking asks questions and respondents can responds to those questions. Interviews can be conducted face-to-face or over the telephone. In this case, face-to-face interviews will be conducted. The advantages of using interviews for this study are that; Interviews is a quick way of obtaining data from respondents within a

short period of time since answers are given as soon as they asked. It is also advantageous because clarifications a given there and then where the question is not clearly understood. Above interviews will help to collection data from respondents are illiterate who do not know how to read and understand English used in the questionnaires. (Merriam, B, 2009)

3.6 Data Analysis

Data analysis means to organize, provide structure and elicit meaning. Analysis of qualitative data is an active and interactive process; this is a process of bringing order, structure and meaning to the mass of collected data.

The ability to analyse data is a powerful skill that helps you make better decisions. Microsoft Excel is one of the top tools for data analysis and the built-in pivot tables are arguably the most popular analytic tool. In addition, Excel formulas can be used to aggregate data to create meaningful reports (Analysing Data Using Excel, 2017.

3.7 Summary of Chapter

A research design is an overall strategy that one chooses to integrate the different components of the study in a coherent and logical way.

In order to determine the effectiveness of use of SEMs in health service, research will be carried out at the above-mentioned health centres targeting the clients who seek medical services at the facilities. In order to come up with generalized finding 300 people will be included from each category of age group and these respondents will be picked from clients the selected Health Centres.

To collect data from the participants Simple Random Sampling method will be used, questionnaires will be used. A questionnaire is a data collection instrument consistent of a series of questions and other prompts for the purpose of gathering information from respondents. Final analysis of data will be done using Microsoft Excel computer application to present our findings to help to analyse the data.

PRESENTATIONS OF FINDINGS

4.1 Introduction

This chapter presented the information obtained from all respondents using self- administered questionnaires and an interview guide. It should be noted that the research involved about three hundred (300) respondents and so 300 questionnaires were distributed. However, 288 were collected and 12 were not returned, meaning 96% of the intended respondents participated in the study. Furthermore, data analysis was done using Microsoft Excel and the data is presented in quantitative form. Data was analysed in two parts; the first was based on the analysis of frequency while the second one was based on cross tabulation of important variables. Lastly, the frequency of the statistics is expressed in form of percentages (%).

Response rate	Frequency	Percentage
Returned	288	96
Unreturned	12	4
Distributed	300	100

Section A: 4.1.0 Background Information of Respondents

This section presented the demographic characteristics of the sample which includes; gender, age as well as level of education, residence of respondents and frequency of visit to the health facility.

4.1.1 Respondent's age

	18-24 years	25-34 years	35-44 years	45 Years
▢ Pecentage	18.50%	37.50%	23.60%	20.10%
▧ Frequency	54	108	68	58
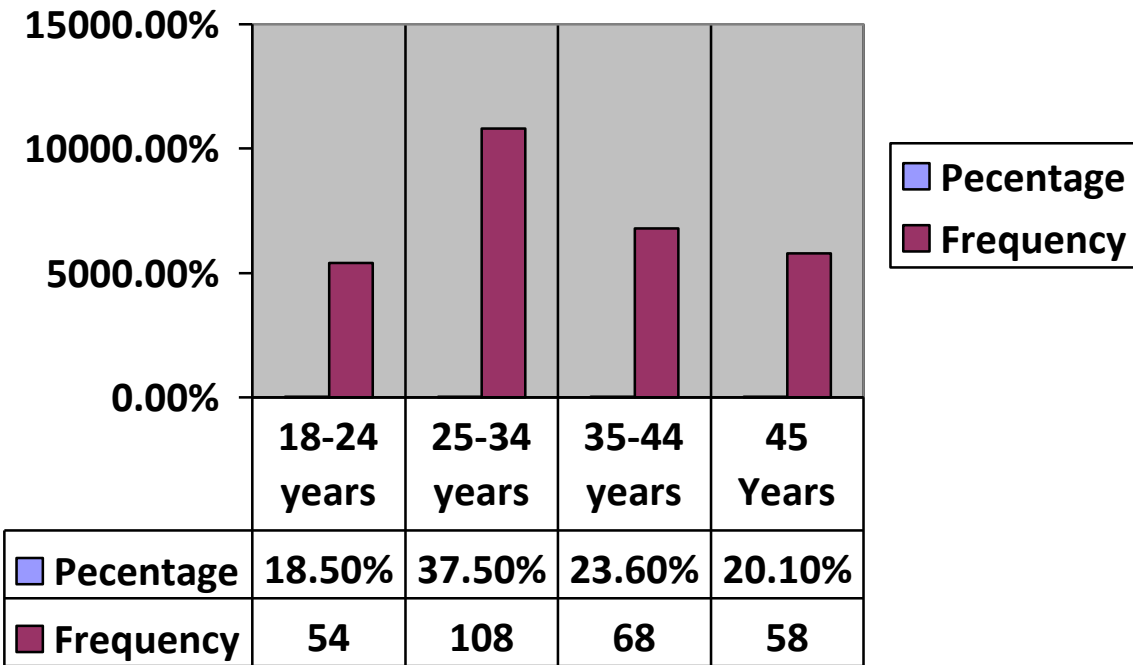
Figure 1: Age Distribution

The first figure above shows the age distribution of participants. The majority were aged between 25-34 years with 37.50% of the sample frequency of 108.The second highest age group of respondents were ages between 35-44years with 23.60 % of the sample frequency 68, followed by the age group 45years and above with 20.10% of the sample frequency of 58.

The least age group was between 16-24years with 18.75% of the sample frequency of 54.

4.1.2 Respondent's Gender Distribution
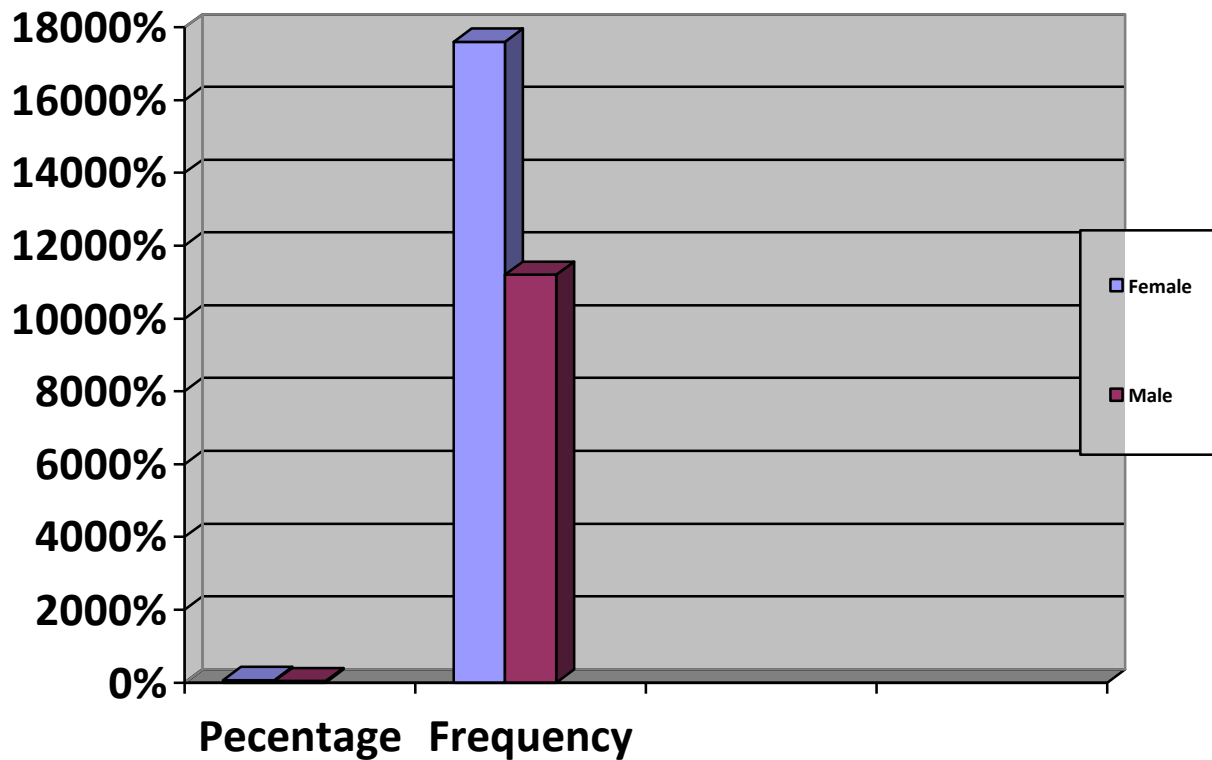
**Figure 2: Gender Distribution**

The figure above shows the gender distribution of respondents. The majority were female with 61% percentage with a frequency of 176 and males with a percentage of 39% with a frequency of 112. The results show that, the research was biased towards the female respondents.

4.1.3 Respondent's level of Education
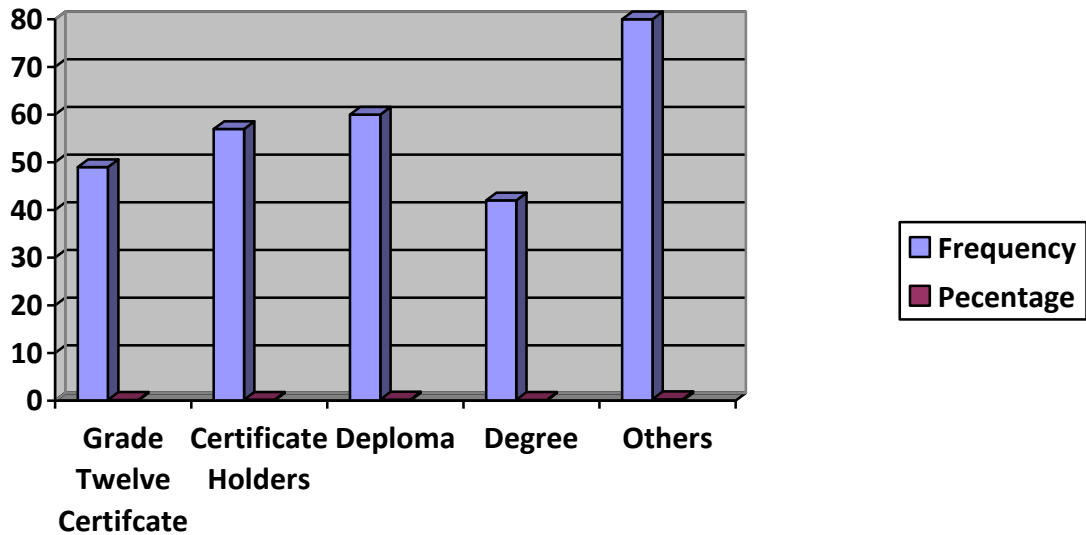
Figure 3: Level of Education

The figures above show the respondent's Level of Education. The highest percentage of respondent on the level of education is others with 27.70% with a frequency of 80. The second ones are Diploma holders with 20.80% with a frequency of 60. The third ones are certificate holders with 19.70% with a frequency of 57. The grade twelve (12) certificates with 16.60% with a frequency of 49 and the least were the Degree Holders with 14.90% with a frequency of 42.

4.1.4 Respondent's residence

Area	Percentage	Frequency
N'gombe	44%	127
Kalingalinga	20.40%	59
UNZA Area	11.80%	34
Chelstone	9.30%	27
Others	14.20%	41

Table 1: Respondent's Residence

Table one above shows that, most of the respondents were coming from N'gombe at 44% with a frequency

of 127. The second highest group of respondents were from Kalingalinga at 20.40% with a frequency of 59. The least group of respondents were from Chelstone at 9.30% with a frequency of 27. Chelstone is the least as the Clinic is not fully fledged with EHRs system yet.

4.1.5 Respondent's frequent visits to the health Facility

Number of Visits	Percentage	Frequency
Once a Month	23.26%	67
Once every three months	36.45%	105
Once every six months	20.80%	60
Once a year	4.10%	12
Others	15.27%	44

Table 2: Respondents Visit to the Health Facility

Table two above shows that the most frequently visits of respondents were once every three months at 36.45% with a frequency of 105 and the second highest were once a month at 23.26% with a frequency of 67. The least were those who visit once a year at 4.10% with a frequency of 12 and this is from different health centres.

4.2.0 Section B: Benefits of Using E-Health Records Management System in Health Care   Facilities

4.2.1 The experience of using an Electronic Health Record

Experience	Percentage	Frequency
Strongly Agree	73.20%	211
Agree	18.75%	54
Strongly Disagree	3.40%	17
Disagree	2.40	7
Not sure	2.0%	6

Table 3: Respondents' experience

Table 3 above shows that 73.20 % of respondents with a frequency of 211 strongly agreed having

experienced using EHRs is of good benefits. While 2%, with a frequency 6 were not sure of the benefits of using EHRs at the health facility.

4.2.2 Electronic Health Records are better than using paper-based Health Records
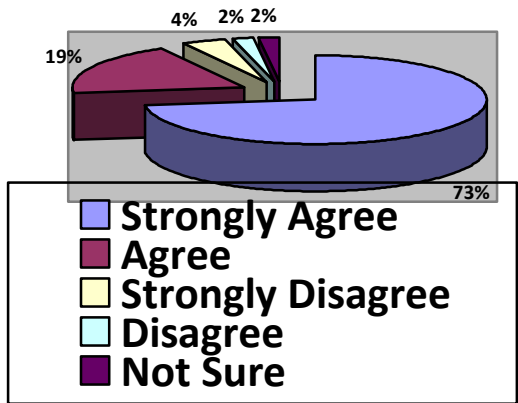
The figure above revealed that 92% of the respondents agreed that EHRs are better than paper-based records to use.

4.2.3 Benefits of using Electronic Health Records
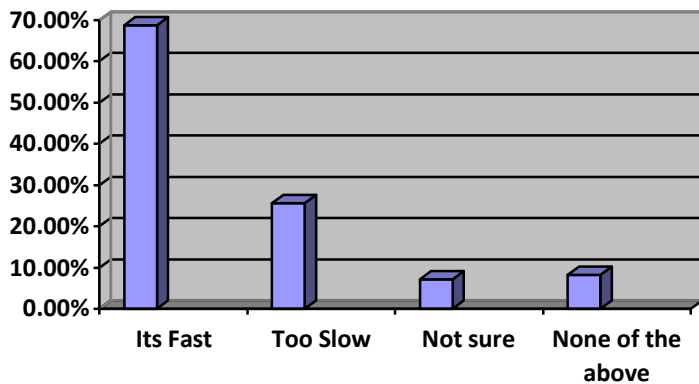
Figure 5: Benefits of EHRs.

Figure 5 above revealed that the primary benefit of using EHRs is faster to use compared to using Paper-based records.

4.3.0 Reduction of Medical errors in Health Care Facilities

4.3.1 Electronic Medical Health Records have reduced Medical errors.

Reduction of medical errors
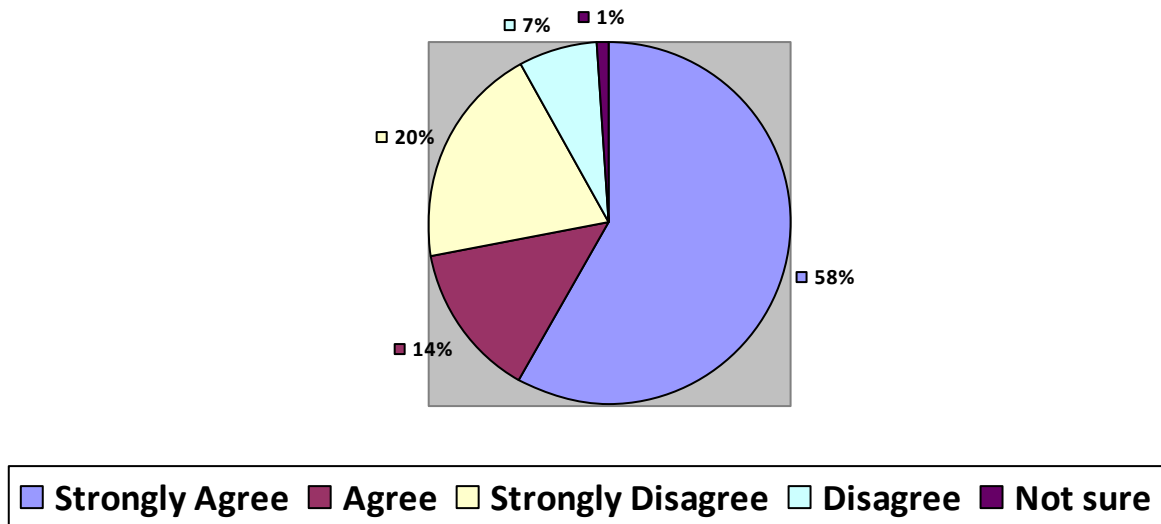
Figure 6: Reduction of medical errors

It is evident from the figure above that EHRs has reduced medical errors as 72% of the respondents indicated so, 27% of the respondents disagreed and 1% of the respondents were not sure.

4.3.2 Medical errors Electronic Medical Health Records reduced.

Medical Errors	Percentage	Frequency
Loss of patients records	50	144
Misplaced records	35	100
Multiple patients records	7	20
Misdiagnosis	3	10
Others	5	14

Table 4: Medical Errors

Table 4 above shows that the major medical errors reduced is loss of patients' records at 50% with a frequency of 144 and the least reduced Medical Error is Misdiagnosis at 3% with a frequency of 10.

4.3.3 Cost effectiveness of Electronic Health Records Management System at Health Care Facilities.

4.3.4 Cost effectiveness of Medical Health Records in terms of time.
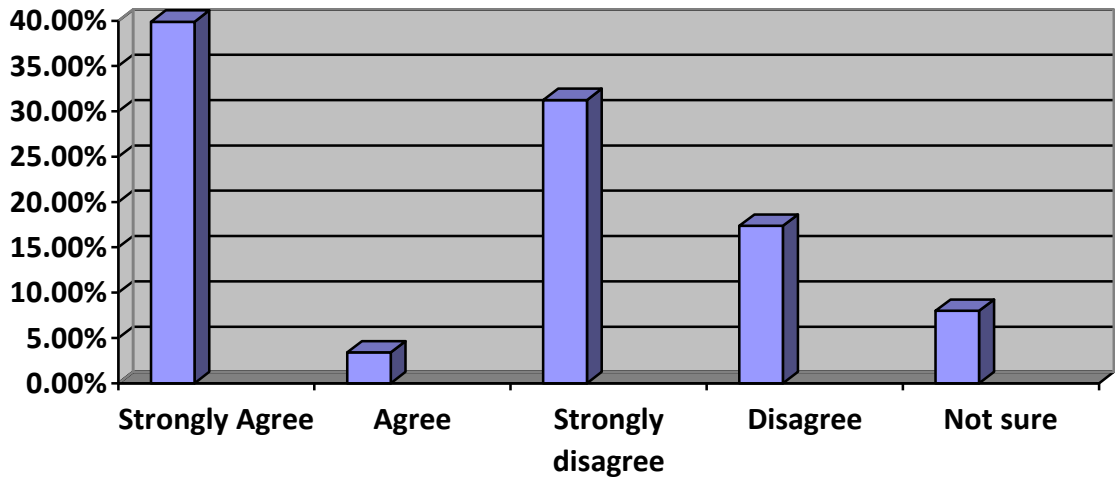
Figure 7: Cost Effectiveness

The figure above revealed that, the use of EHR is cost effective in terms of time than the use of paper-based records. 43.5% of the respondents indicated so whereas, 48.61% disagreed.

4.3.5 Reasons for answer above.

90% of the respondents explained that it is cost effective in terms of time was because no time is spent to retrieve patient's records as the records are carried around by patients using the care card.

4.3.6 Challenges in using Electronic Health Records Management System at Health Care Facilities.

4.3.7 Challenges faced in using Electronic Medical Health Records

Challenges	Percentage	Frequency
Power outages	91%	262
System freezing	7%	20
Lack of staff training	2%	6

Table 8: Challenges

Table 8 above shows that 91% of the respondents indicated that the major drawback is the constant electricity outages which hinder the use of the system.

4.3.8 Solutions to challenges faced with using Electronic Medical Health Records.

87% of the respondents indicated that there is need to procure power generators to be used as back-up when the facility experiences electricity power outages, while 3% recommended that power cuts should not apply to health care facilities.5% of the respondents suggested that ICT personnel at all times to constantly check on the system and ensure that it is in good working condition all the time. The remaining 5% of the respondents recommended that there should a plan to train staff more especially new staff on how to operate the system for efficient and effective service delivery.

4.4 OTHER INFORMATION FROM THE KEY INFORMANT

4.4.1 Benefits of using Electronic Health Records

The key informant stated that using EHRs has brought about many benefits to both the staff and the clients. EHRs have sorted out the issue of filing space for patients' records. Now there is little or no need for filing as the EHRs are carried by the patients themselves.

4.4.2 Reduction of Medical errors in Health Care Facilities

The key informant indicated that with the use of EHRs follow-up of patients is now easy this was impossible with paper-based record system as notification pop-ups can easily be seen on the electronic

record system**.**

4.4.3: Cost effectiveness of Electronic Health Records Management System at Health Care Facilities

This key informant alluded to the fact that now it is easy and faster to produce patient medical reports with a click of a button. EHR saves time of doing reports.

4.4.4: Challenges in using Electronic Health Records Management System at Health Care Facilities.

We were informed the key informant that there are some faced with using the system. Apart from the power cut challenge the system also tends to freeze time and again while attending to clients.

CHAPTER FIVE

DISCUSSIONS OF FINDINGS

5.0 Overview

This chapter presents the findings as presented in the research questions. The four themes that underpin the presentation are; Benefits of using Electronic Health Records, Reduction of Medical errors in Health Care Facilities, and Cost effectiveness of Electronic Health Records Management System at these Health Care Facilities, and Challenges in using Electronic Health Records Management System at Health Care Facilities.

5.1 Back ground information

The majority of the respondents were aged between 25-34 years with 37.50% of the sample frequency of 108. The second highest age group of respondents were ages between 35-44years with 23.60 % of the sample frequency 68, followed by the age group 45years and above with 20.10% of the sample frequency of 58. The least age group was between 16-24years with 18.75% of the sample frequency of 54. Furthermore 61% of the respondents were female and male 39%. This indicates that the study was biased towards the female respondents.

The levels of education of respondents were discovered as indicated below:
The highest percentage of respondents on the level of education is others with 27.70% with a frequency of 80. The second ones are Diploma holders with 20.80% with a frequency of 60. The third ones are certificate holders with 19.70% with a frequency of 57. The grade twelve (12) certificates with 16.60% with a frequency of 49 and the least were the Degree Holders with 14.90% with a frequency of 42. Most of the respondents came from N'gombe at 44% with a frequency of 127. The second highest group of respondents were from Kalingalinga at 20.40% with a frequency of 59. The least group of respondents were from Chelstone at 9.30% with a frequency of 27.

Again, it was established that the majority of respondents visited the health facility at least once every three (3) months at 36.45% and the least were those who visited once a year at 4.10%.

5.2 Benefits of using Electronic Health Records

It was discovered from the findings that, using EHRs is beneficial as 92% of the respondents agreed that EHRs are better to use than paper-based records. It was also revealed that the chief benefit of using EHRs is faster to use compared to the paper-based records. According to Neame (2013) quick access to patient's records saves on time sharing of patient information is easier through integrated nationwide data bases and updated patient smart card. Hornbrook (2010) adds on to say use of smart card is cost effective from less paper work, and elimination of repeated investigations. An electronic health record has made data use easier because health professionals can quickly filter and select relevant reports to make quick decisions. The use of electronic health record also allows physicians more time to spend with patients to discuss issues of concern which are easily accessible and also advise them.

Another benefit of electronic health records is that it is now easy to compile a list of patient's schedules just at a click because all relevant information is stored in system. (WHO, 2013) A comprehensive list of patients booked for review also helps to identify and follow up those who miss their appointments, in order to reduce the number of those who default treatment and reduce the emergency of drug resistance (MOH, 2012). An electronic health record has made it easier to analyse the entire cohort of patients at a clinic instead of sampling, as it occurs with paper-based records in most cases since it is usually not feasible to analyse all the case files in a given period (Tassie et al., 2010). Finally, the lessons learnt will be used to improve the program before the planned rolling out of EHR to other service areas in 2020 (AIHW, 2012).

5.3 Reduction of Medical errors in Health Care Facilities

It was revealed that, the major medical errors reduced was loss of patients' records as 50% of the responses indicated so. A research conducted by Sharon Silow-Carroll, et al ,2012 in their study carried out in 2012 to establish the reduction of medical errors with the introduction of Electronic Health records in nine (9) hospitals in the United States of America, concluded that ,with the advent of EHRs a number of medical errors have reduced as mentioned below ;

Late diagnosis of patients leading to mortalities reduced, misdiagnosis due to miss up of patient medical

tests in paper-based records reduced, late referral to specialized facilities for complicated cases reduced. Lack of follow ups monitoring of chronic patients reduced, delay in commencing treatment due to loss of patient records also reduced drastically above all, Surveillance of contagious diseases which was not easily done in the paper-based record was enabled in the electronic record enabling quick identification, isolation and treatment to prevent the disease spreading further.

Another advantage of electronic health record is that it is now easy to compile a list of patient's schedules just at a click because all relevant information is stored in system. (WHO, 2013) A comprehensive list of patients booked for review also helps to identify and follow up those who miss their appointments, in order to reduce the number of those who default treatment and reduce the emergency of drug resistance (MOH, 2012). An electronic health record has made it easier to analyse the entire cohort of patients at a clinic instead of sampling, as it occurs with paper-based records in most cases since it is usually not feasible to analyse all the case files in a given period (Tassie et al., 2010). Finally, the lessons learnt will be used to improve the program before the planned rolling out of EHR to other service areas in 2020 (AIHW, 2012).

5.4 Cost effectiveness of Electronic Health Records Management System at Health Care Facilities

The study discovered that EHRs were cost effective in terms of time because no time is spent to retrieve patient's records as the records are carried around by patients using the care card. 90% of the respondents explained agreed to this. JMIR Med Inform, 2017 conducted many studies on the cost-effective benefits of using EHRs in Health care facilities in 2017 and it evaluated quantitatively that the studies conducted around the world from 288 facilities presented mixed and inconclusive results. The study concluded that cost-effective was mainly on time as follows; EHR reduced charting time resulting in increased time spent on direct patient care and reduced the occurrence of errors.

Ken Choi, 2017 stressed that, there are short term benefits and long term benefits of using EHRs in a health care facility such as the following; Short Term Cost-Benefits are; Reduce employee time spent on filing, retrieving, and organizing physical charts and documents, Reduce the amount of physical space used to store filing cabinets and other storage areas for papers, time saved with information exchange between medical professionals and insurance companies (information is sent instantly instead of mailed).

5.5: Challenges in using Electronic Health Records Management System at Health Care Facilities.

The research discovered that the major challenge in using EHRs as indicated by 91% of the respondents was the constant electricity outages which hinder the use of the system.

According to Azubuike (1999) a greater challenge in the management of smart care facility may be "the patients' unwillingness for their clinical data to be shared". Some patients may want to withhold certain information from doctors, such as a history of mental illness or sexually transmitted diseases., Physicians like Dr. Adrian Gropper, CTO of the non-profit Patient Privacy Rights, are concerned that current systems are interfering with physician-patient and physician to physician relationship (Mengesha, 2011). Bramson and Liebovitz (2010) identified 'failure to use human factors design principles' as a major factor that impede usability and user satisfaction in their use of EHR. According to them, management, designers and vendors of EHR systems often fail to apply human and social factors when designing the system, rather they just concentrate on the technological aspect. These results in little time dedicated to appreciating the context of use. Designers of the system thus focus on workflow (for instance, click here to fill a data or open here to access this file) at the neglect of what Schumacher et al. (2010) descried as "less obvious, but often more important, 'thought flow' the review and thinking which physicians inherently do before finishing a task". They also identified other challenges to the use of EHRs as "Physician's attitudes that they want a computer system to mimic a paper system as closely as possible as well as IT staff's attitudes that technology solutions are more important than the purpose of the solution and the problem it was intended to solve".

Maxwell et al. (2011) conducted a study on the use of electronic health records in sub-Saharan Africa: Progress and challenges. It was found that 91% use of open source healthcare software, with open MRS being the most widely used. Challenges to adoption of EHRs included high cost of procurement and maintenance, poor network infrastructure and lack (Compare this to cost effectiveness) of comfort among health workers with electronic medical records. In conclusion the study noted that there has been an increase in the use of EHRs in sub-Saharan Africa, largely driven by utilization by HIV treatment programs penetration is still however very low. Therefore, the study recommended that government institutions in sub-Saharan Africa should be quick in implementing EHRs and other appropriate ICTs which are required to improve healthcare on the continent.

Chao et al. (2013) conducted a study on the benefits and challenges of electronic health record system on stakeholders: A qualitative study of outpatient physicians in New York City. Semi structured interviews were conducted with 32 physicians who worked in the outpatient department. The results showed that 78 % physicians interviewed used EHRS frequently during their daily practice despite individual preferences of documentation methods. They agreed that systemic health record offered by EHRS allowing smooth communication was beneficial to the health institutes, patients and physicians. However, privacy and confidentiality concerned both the health institutes and patients. In conclusion the study highlighted that inefficiency of the EHRs that only allowed retrieval of limited medical information of the patients hindered physicians' acceptability of EHRs. Therefore, the study recommended that the health institutes should take into consideration interests of different stakeholders when designing and implementing EHRs.

5.6 Conclusions

This study was aimed at investigating the effectiveness of e-health records for improved health services at the selected health care facilities in Lusaka and it was discovered that the major benefit of using EHRs is faster than using paper-based records. The other issue is that, the use of EHRs has reduced medical errors and the major medical error was that of reduced loss of patients' records which was very pronounced with paper-based records. In terms of cost effectiveness, EHRs are cost effective in terms of time as little or no time is wasted to retrieve and access patients' records as well as compile patient medical reports. Despite these benefits using EHRs is challenging because operating the system is dependent on power, and the health facility is faced with constant power outages which hinder the use of the system at times.

5.7 Recommendations

It is recommended that to mitigate the challenge of power outages in the health facilities, power generators should be procured and used as power backups when there is no electricity and also the electricity utility company to avoid cutting power at health facilities. Further the need to roll out the system to all health facilities in the country is need and hence, more employees need to be trained for the system to be of great benefit for everyone.

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ANNEXES

ANNEX 2: BUDGET

NO	DESCRIPTION ITEM	DESCRIPTION	UNIT PRICE
1	Reams of paper	Paper for jotting down notes and printing out the proposal, report and interview guides.	K120
2	Printing	Printing of interview guides, research proposal, work plan and budget.	K180.00
3	Binding	Binding of research proposal and report	K40.00
4	Airtime	Airtime for communicating with group members and supervisor	K350.00
5	Transport	Transport to and from the field for data collection.	K750.00
6	Internet	For research purposes	K300.00
7	Other expenses	Other expenses	500
	TOTAL PRICE		**K2, 240.00**

ANNEX 3: QUESTIONNAIRE

THE UNIVERSITY OF ZAMBIA

SCHOOL OF EDUCATION

DEPARTMENT OF LIBRARY AND INFORMATION STUDIES

LIS 4014: RESEARCH IN DEVELOPMEMT INFORMATION SYSTEM

RESEARCH QUESTIONAIRE FOR SELECTED HEALTH CENTRE IN LUSAKA

TOPIC: To investigate the effectiveness of Electronic Health Records Management System for improved health services in Zambia: A case study selected health centres in Lusaka**.**

Dear Respondent:

This questionnaire is for academic purposes in the fulfilment of a fourth-year course LIS 4014 at the University of Zambia. You have been selected conveniently to participate in this research. Be assured that the information you provide will be used purely for academic purposes and will be treated with maximum confidentiality. Your cooperation will be highly appreciated.

Instructions:

1. Do not indicate your name on the questionnaire

2. Mark the answer that expresses your view with an X

3. Write answers where required in blank spaces provided

SECTION A: Background Information of Respondents

1. How old are you?

A. 16-24   [   ]

B. 25-34   [   ]

C. 35-44   [   ]

D. 45 and above   [   ]

2. What is your Gender?

A. Male   [   ]

B. Female   [   ]

3. What is your highest level of education?

A. Grade 12   [   ]

B. Certificate holder   [   ]

C. Diploma   [   ]

D. Degree   [   ]

E. Others Specify: ………………………………………………………….

4. Where do you stay?

A. N'gombe   B. Kalingalinga   C. Chelstone   D. Unza

E. Others Specify…………………………………………………

5. How often do you come to the health centre? {Tick}

A. Once a month   [   ]

B. Once every three months [   ]

C. Once every six months   [   ]

D. Once a year   [   ]

E. Others Specify …………………………………………………..

SECTION B: **Benefits of Using of Electronic Health Records in Health Care Facilities.**

6. Have you used an Electronic Medical Health Record, how did you find it?

 A. Very good   B. Good   C. Not Good   D. Bad   E. Not sure

7. Do you think using Electronic Medical Health Records is better than using Paper based Medical Health Records?

A. Strongly Agree   B. Agree   C. Strongly Disagree   D. Disagree   E. Not Sure

8. In your view what are some of the benefits of using Electronic Medical Health Record?

A. It is fast   B. Too slow   C. Not Sure   D. None of the above

SECTION C: Reduction of Medical Errors in Health Care Facilities.

9. Do you think Electronic Medical Health Records have Reduced Medical errors?

A. Strongly Agree   B. Agree   C. Strongly Disagree   D. Disagree   E. Not Sure

10. What medical errors has Electronic Medical Health Records reduced? (Tick all which apply)

A. Loss of patient records   [   ]

 B. Misplaced records   [   ]

C. Multiple patient records   [   ]

D. Missed diagnosis   [   ]

E. Other specify………………………………….

SECTION D: Cost Effectiveness of Electronic Health Records at Health Care Facilities in terms of time.

11. Do you think Electronic Medical Health Records are cost effective in terms of time?

A. Strongly Agree   B. Agree   C. Strongly Disagree   D. Disagree   E. Not Sure

12. Explain the reason for your answer on question 11.

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SECTION E: Challenges in Using E-Health Records Management System at Health Care Facilities

13. What challenges do you face in using Electronic Medical Health Records?

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14. In your opinion what are some of the solutions to challenges faced with using Electronic Medical Health Records?

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THE END AND THANK YOU FOR YOUR TIME

ANNEX 4: GUIDE FOR KEY INFORMANTS AT SELECTED HEALTH CENTRES.

THE UNIVERSITY OF ZAMBIA
SCHOOL OF EDUCATION
DEPARTMENT OF LIBRARY AND INFORMATION STUDIES
COURSE TITLE AND CODE: Research in Development Information System (LIS 4014)
RESEARCH TOPIC: To investigate the effectiveness of Electronic Health Records Management System for improved health services in Zambia: A case study of selected Health centre in Lusaka.

We are fourth year students in School of the Education from the University of Zambia pursuing a Bachelor of Arts in Library and information Studies. We are carrying out a research on the aforementioned topic. For this reason, we wish to inform you that you have been purposively sampled to help us with information which will successfully make our research findings representative for the selected Health Centre. We therefore wish to inform you that the information you will give us will be purely used for academic purposes. Utmost confidentiality is guaranteed.

NAME OF THE INSTITUTION…………………………………………………………………...

DATE OF INTERVIEW………………………………………………………….………………..

JOB TITLE OF THE KEY INFORMANT (S)…………………………………………….……….

1   1. What are the benefits of using e-health records management system at a health care facility?

2   2. Has e-health records management system reduced medical errors?

3. The cost effectiveness of e-health records management System in health care centres

4. What are the challenges in using e-health records management system?