FACTORS INFLUENCING UTILIZATION OF HEALTH INFORMATION SYSTEM IN THE MANAGEMENT OF MISSED APPOINTMENTS AMONG HIV POSITIVE PATIENTS IN MOMBASA COUNTY, KENYA

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DECLARATION AND RECOMMENDATION

I declare that this thesis is my original work and has not been presented in any other University.

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DEDICATION

This work is dedicated to my dear dad, spouse and son for their tremendous support throughout this entire period of doing this thesis.

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ABSTRACT

A health system requires a well-functioning health information system to enhance measurement of health outcomes, and ensure effective health care decisions. This process of utilizing health information, increases retention rate, improves patients' health outcome and reduces cost of care. With low retention rates among HIV positive patients, this study aimed at determining the factors associated with the utilization of health information in curbing missed appointments. The research study was guided by the following specific objectives: to establish infrastructural factors influencing health information utilization; to assess the influence of staff capacity on health information utilization; to determine the influence of staff supervision on utilization of health information; and to establish the existing behavioral factors that influence health information use among CCC health care providers. This study utilized descriptive cross-sectional study design using quantitative method of data collection to assess utilization of health information among healthcare workers. The study population for this research was approximately 215 CCC, a sample size of 69 health care workers in the three high volume hospitals offering HIV care in Mombasa County that contributed to high defaulter rate. Primary data was obtained via questionnaires while secondary data was obtained from hospital records available, via checklist. The data was coded and analyzed using the statistical package for social sciences (SPSS). A p-value of less than 0.05 was considered as statistically significant, Asymptotic Significance (2-sided) results indicated a p-value of .000 across all the four factors in relation to the Independent variable on Chi-square test (Infrastructure X1=138.182, p value .001, Staff capacity X1=168.368, p value .000, support supervision X1=145.811, p value .000 and behavioral factors X1=202.570, p value .000). For Spearman Rank Correlation, a strong positive correlation between supervisory factors and utilization of health information (r=.811, 9=.000), an indication that staff supervision improved data utilization hence reducing gaps that could lead to missed appointments, weak positive correlation between Infrastructural factors and utilization of health information, (r_s=.114, p=.384), an indication that infrastructure was important mode in support of data capture and generation of reports thus improving in utilization of data reducing missed appointments. Moderate negative correlation between behavioral factors and utilization of HMIS, (r_s= -.505, p=.000) an indication that staff attitude did not interfere with utilization of information therefore did not affect management of missed appointments. The study concludes that effective support supervision for the CCC health care workers in management of missed appointments would greatly improve data use and thus able to identify where gaps are, hence reducing number of missed appointments among HIV positive patients. Also the study concludes that effective quality targeted training of the staff would improve in data collection and use therefore reducing number of missed appointments among HIV positive patients. The study recommends establishment of SOPs to guide support supervision and also emphasis on continual training among the staff in the CCC. The institutions to also invest on reliable internet network for effective health information systems. There is need for further research to be done to determine other influencing factors in the service delivery of the 47 county governments.

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ABBREVIATIONS AND ACRONYMS

AIDS	Anti-retroviral Immune Deficiency Syndrome
ART	Anti-retroviral Therapy
CCC	Comprehensive Care Centre
CME	Continuous Medical Education
EMR	Electronic Medical records
HAART	Highly Active Anti-Retroviral Therapy
HIS	Health Information System
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
IT	Information Technology
LTF	Lost to Follow
SOPs	Standard Operating Procedures
WHO	World Health Organization

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Decision-making is based on solid and trustworthy information throughout all components of the health system. It is crucial for the creation and implementation of health system policies, for governance and regulation, for health research, for the development of human resources, for health education and training, for the provision of services, and for finance. The health information system's four main tasks—data creation, compilation, analysis and synthesis, and communication and use—provide the foundation for decision-making. The health information system gathers information from the health and other pertinent industries, analyzes it to assure its overall quality, relevance, and timeliness, and then transforms it into knowledge for making health-related decisions (world health organization [WHO], 2008).

It has been demonstrated that maintaining people with HIV in medical care on a regular basis leads to favorable health outcomes. An urgent public health concern is the requirement to make sure that HIV-positive individuals are kept in care. Furthermore, retention offers the chance to put into practice preventative healthcare interventions and to encourage behavior changes that may reduce transmission and boost public health by lowering the burden of HIV on the population. There is still no strong basis for how patient retention is described and how it should be monitored as individual healthcare professionals, clinics, and the larger health care system try to solve the problem of keeping HIV-infected patients in care (Cree et al, 2006).

HIV-positive participants in a New York City research missed visits for a variety of reasons, including forgetfulness and unanticipated social obligations. Retention rates ranged from 20% to 100%, according to self-reported data from ambulatory care clinics in 2007. (Dekker et al, 2003). The amount of patients who reschedule consultations after missing one has increased as a result of multifaceted approach interventions. These include calling patients to remind them of their appointments, updating their contact information and address at each visit, contacting patients' emergency contacts and local organizations, and calling patients after three missed visits in a row (Sendzik, 2004)

According to a research from a primary HIV clinic in a semi-urban area of Gabon, Central Africa, a large percentage of patients (34.1%) were LTFU within a relatively short amount of time. This study's findings of poor HIV care retention were consistent with those from other African settings. Frustrations over not feeling supported by the medical personnel were the main causes of LTFU cited when patients were tacked and put in a discussion within a focused group then brought back into treatment (Mutasa et al, 2010).

Information sharing is necessary to maintain patients' continuity of care and to guarantee that all patients receive consistent, high-quality care that leads to the desired patient and community health outcomes. By enhancing HIV-specific health outcomes and lowering emergency department visits and hospitalizations, keeping HIV-infected individuals in the system has the potential to lower health care costs. Additionally, it would provide timely and comprehensible health information to individuals and communities, empowering them and enhancing the standard of services. One key important aspect of the Health Information Since

information must be converted into actions at all levels; management systems (HMIS) must have sufficient capability for information collection, analysis, interpretation, and utilization (Nekesa et al, 2014). Routine health information systems (RHIS) are essential for the collection of data for the planning, monitoring, and evaluation of the health sector, but their usage is still low, according to Assimwe et al (2016).

HIV is a key universal health problem; those with HIV infection were approximated to be 36.9 million by the year 2017. By the time the epidemic started, about 77.3 million individuals had become HIV positive while those who had died due to illnesses related to Acquired Immune deficiency syndrome (AIDS) were approximately 35.4 million. In 2018, 1,493,382 Kenyans were living with HIV; 5.2% were women and 4.6% were men. Mombasa County is among the 47 counties in Kenya with relatively high HIV prevalence rate at 7.4% (Kenya Aids Strategic Framework, 2018). It is estimated that there are 54,570 people currently living with HIV in Mombasa county, amongst them are 6870 children; this is according to (Mombasa county HIV infections, 2015). It is also estimated that there are 1600 new HIV infections and 900 HIV deaths that do occur on annual basis in Mombasa County.

The retention rate in Mombasa County is slightly below the expected standard percentage which is 85%. It ranges from 73% and 75% in the years 2018 and 2019 (www.hiskenya.org). Poor retention includes a number of conducts including not attending one clinical appointment to not following up, which means that those who had failed to present themselves to a clinic within a specified time frame where assumed not to be alive (Rosen et al., 2007). The patient missing appointments has been highlighted as one of the challenges that affect management of chronic illnesses such as HIV, it actually increases cost of care delivery, increases waiting

time for appointments and leads to underutilization of equipment and personnel thus creating negative relationship between the patient and the health provider (Paterson et al., 2010)

1.2 Statement of the Problem

Health information is among the core pillars of a health system. A health system requires a well-functioning health information system to facilitate measurement of health outcomes, accountability for resource allocations and to inform for decision making. Effective health information provides triggers to both health care workers and the patients so that they prepare for the patients and the patients to plan to come for care in time. This process of utilizing health information enhances decision making such as reducing missed appointments, increasing retention rate, improving cost of care delivery and improving patients' health outcome (Kraschnewski & Gabbay, 2013).

In Mombasa County, there are lower retention rates among the HIV positive patients with 73% retention rate in 2018, 75% in 2019 and 79% in 2020 while the country's rate was at 83%, this, attributed to underutilization of information. These trends indicate poor retention rates among the HIV positive patients prompting the utilization of health information. Irrespective of the facilities having effective health information system, data is collected as a routine activity and not utilized for decision making such as prior informing the patients of their next schedule and still have poor follow up mechanisms. There is still little proof that information is used despite the rapid expansion of standards for data recording and reporting inside the health information system (Hotchkiss et al., 2012).

Usage of information on health is essential in delivery of effective and efficient health care services. When information in health system is utilized, then patients are followed up in time and are retained in care leading to improved retention rates, improved health outcomes and enhanced cost-effectiveness (Armstrong & del Rio, 2017).

1.3 Purpose of the Study

The purpose of this study was to determine factors affecting utilization of health information system in the management of missed appointments among HIV positive patients in Mombasa County, Kenya.

1.4 Objective of the study

To determine the elements affecting utilization of health information system in the management of missed appointments so as to create the value of data use thus improving retention among HIV positive patients in Mombasa County, Kenya.

1.4.1 Specific Objectives

i. To establish infrastructural factors influencing health information system utilization in management of appointments among HIV positive patients in Mombasa County, Kenya.
ii. To assess the influence of staff capacity on health information system utilization in management of appointments among HIV positive patients in Mombasa County, Kenya.
iii. To determine the influence of supervision of staff on utilization of health information system in management of appointments among HIV positive patients in Mombasa County, Kenya.

iv. To determine existing behavioral factors that influence health information utilization among health workers in Mombasa County, Kenya.

1.5 Research Questions

i. Which are the infrastructural factors influencing health information system utilization in management of appointments among HIV positive patients?

ii. How do staff capacity factors influence health information system utilization in the management of appointments among HIV positive patients?

iii. How does staff supervision influence health information system utilization in the management appointments among HIV positive patients?

v. Which are some of the behavioral factors influencing health information system utilization in the management of missed appointment among health workers?

1.6 Justification of the Study

Usage of information on health is essential in delivery of effective and efficient health care services. Health information is one of the pillars of a health system as it informs decisions in health care management. When information in health system is utilized, then patients are followed up in time and are retained in care, causing improvement in their health outcomes and cost effectiveness (Armstrong & del Rio, 2017).

The importance of selecting the appropriate patient's health information system for monitoring is essential as it makes monitoring of patients to be scalable and effective in terms of cost (Armstrong & del Rio, 2017). According to Hurley et al. (2018), an enhanced health information system acts as a link between the health providers and the patient. The system

collects demographic, clinical data and the patient contacts hence providing support in facilitation of alerts and reminders to patients in case they forget their dates of appointments.

In Mombasa County, retention rate among HIV positive patients was at 75% by the end of the year 2019 against the national target which is at 90%.

Investigations predictably revealed that non attended visits were linked to worse results in health such as lack of ability to subdue viral load, and considerable clinical resistance to drugs. At the clinic handling HIV cases within the University of Johns Hopkins, patients who had not attended twenty five or less scheduled clinics, in comparison with patients who had not attended twenty five or more scheduled visits were more anticipated to receive HAART, to having subdued viral loads, to experience a positive alteration in the count of CD 4 cells, to be admitted in hospital less, and to less visit the emergency department (R. D. Moore, personal communication). Therefore an investigation on the influence of health information system in management of missed appointments facilitated data use and advocate for prompt decision making among health workers thus reducing cost of care and improving health outcomes among HIV positive patients.

1.7 Limitations and Delimitations of the Study

The limit of the investigation was focused on health care providers in the CCC who were busy attending to the patients, but the researcher sort permission from the management and was in constant communication with the health workers so that she could get to book appointment when they were less busy.

1.8 Significance of the study

Usage of information related to health is essential in delivery of effective and efficient health care services. Information related to health is among the pillars of a health system as it informs decisions in health care management. When information in health system is utilized, then patients are followed up in time and are retained in care, causing improvement in their health outcomes and cost effectiveness (Armstrong & del Rio, 2017). The importance of selecting the appropriate patient's health information system in monitoring is essential because it allows monitoring of patients to be scalable and effective in terms of cost (Armstrong & del Rio, 2017). According to Hurley et al. (2018), an enhanced health information system acts as a link between the health providers and the patient. The system collects demographic, clinical data and the patient contacts hence providing support in facilitation of alerts and reminders to patients in case they forget their dates of appointments

1.9 Assumptions of the Study

It was assumed that the researcher would receive support and cooperation from the management and health workers in the various health facilities and would find all the sampled respondents of the study during the study period and they would be willing to give honest and relevant answers to the study and that they would be objective not subjective.

1.10 Operational Definition of Terms

System - a set of procedures according to which work is done

Health Information System - an available procedure of collecting patient's information (i.e. manual register or tailors' software)

Electronic Health Records - Patients records stored in software

Tracking system- an available procedure of following up patients who miss their appointments

Defaulter rate - percentage of all patients who miss their hospital appointment for more than seven days

Retention rate - percentage of patients who kept their appointments excluding transfers out

Behavioral factors - one's views, values, and beliefs regarding health information.

CCC Staff- health workers providing health care to HIV positive patient (care include medical, tracking

Infrastructural factors- these are tools/equipment that facilitate data capture and processing

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter gives the discussion of studies done both locally and internationally on the influence of health information utilization in management of appointments among HIV positive patients. The chapter discusses on the theoretical review, conceptual framework, review of study variables, critique of the existing literature, research gaps and finally gives the summary of the literature review.

2.2 Theoretical Framework

A number of suppositions can expound the influence of utilization of health information technology in management of appointments among HIV positive patients worldwide. In this study, three theories are discussed with their relevance to influencing health information utilization in management of appointments among HIV positive patients. These theories include; Health Information Actor-Network theory, diffusion of technological innovation theory and The Health Information System design theory.

2.2.1 Health Information Actor-Network theory

The theory of actor network is a substitute technique in the social construction theory of innovation in the conceptualization of the responsibility of technology in small survey of utilization of health information in strengthening the management of missed appointments among booked patients. Borrowing key notions and presumptions for shaping social innovations on health information Callon and Law(2007) makes usage of health information strategies of actor networks to emphasize the interconnected and correlative nature of all constituents (technical and social). The theory of actor network in relation to information on

health is basically in regards to studying technical and social matters connected with technology change on the use of information regarding health in strengthening the management of missed appointments among patients. The hypothesis presupposes that technical and social elements are indivisible. The symbolic boundary between the health workers and technology related to health information is continuously changing in a dynamic and modern health duties and activities related to leisure, and health information in relation to the theory of network actors is an approach to research the matters and obstacles in the current world basing on the utilization of health information among HIV positive patients. In information health actor-network theory as articulated by Latour (2005) and Callon (2007, innovation in technology is perceived as a way to develop and stabilize a disperse structure on the utilization of health information in strengthening the management of missed appointments among HIV positive patients. Based on an outlook of the theory of actor network (Walsham, 2017) asserts that: Health information in relation to the theory of actor network which develops its elements, connected by coalition of similar networks with aligned interests. When health information innovation is initiated into health Centre, it comes with new purpose and hence disrupts the bond of social connection. An obligatory passage point occurs among the health workers which are connected by conversations bringing the solutions to challenges in regards to owned resources by health organizations that suggest utilization of health information in strengthening the management of missed appointments among HIV positive patients.

2.2.2 Diffusion of Technological Innovation Theory

An explanation provided by Rogers (2017) is that a number of health personnel embrace innovations related to technology at the onset yet the rest of them embrace it much later or not at all. They argue that every new health technology is embraced based on a number of stages such as experience, views, choice, execution and verification. Additionally the decision by health workers to embrace certain technology on the usage of health information is strengthening the management of HIV positive patients if they know how to use it. Recently, the theory of information diffusion has been utilized to study health workers' adoption of new healthcare information technologies.

These theories assess the adoption health information utilization among HIV positive patients. Chew et al. (2017) utilized the theory of diffusion of innovation to survey how the health workers use the internet to study the healthcare services basing on the usage of information related to health in strengthening the management of missed appointments among HIV positive patients in the health centers. Nevertheless, this hypothesis was utilized in the survey as a theoretical structure to analyze and elucidate on the influence of health information utilization among the health workers, specifically the attributes of innovation in the process of making decisions on the usage of information related to health in strengthening the management of missed appointments among HIV positive patients.

Diffusion of Technological Innovation hypothesis is amongst the highly desired hypothesis in investigating how information technology related to health is embraced and comprehension on how innovation related to IT is used by the health workers on the utilization of health information in strengthening the management of missed appointments

among HIV positive patients. In regards to this theory, innovation is a notion, procedure or technology that is viewed as current or unknown to health workers in a certain area of health or social structure.

2.2.3 The Health Information System design theory

The selection of this hypothesis was founded on the philosophy that drives the exercise of health care medication with the ones which direct the crafting of systems of information and needs a standard comprehension of the health workers on the usage of information on health in strengthening the management of missed appointments among HIV positive patients (Richardson, 2016). From history, healthcare information systems in organizations were addressing issues like admissions and discharges, billing, payroll, insurance, and related tasks. The institutions of healthcare were enabled by these structures to enhance efficient functions and accomplish minimization of coast hence retaining of change and further change depends on the evidence attained (Carbone, 2008) by embracing systems related to health information within all setups. The technology (operating system) will work as a catalyst to enable the overall "clinical care" task (input) delivered by anticipations of enhancing the health of a HIV positive patients well carried out (results) referred to as in the health sector as clinical outcome (Jutand & Salamon, 2000).

A vital notion of this hypothesis is the link connecting the personnel (behavioral) and catalyst (technical) elements which require to be developed within philosophies of common trust and ambitious activities between health workers that exist to hold a mutual target (accomplishment of health results) on the utilization of health information in strengthening the management of missed appointments among HIV positive patients. This link connecting the health setup and the catalyst is often exhibited within the short term targets of the health setup

which is seen differently for instance health workers (catalysts) and system of information might not be financially obliged to workforce information system. This explains the construct relationship between the organization structure and information use on the usage of information related to health in strengthening the management of missed appointments among HIV positive patients (Jutand & Salamon, 2000).

2.3 Infrastructural factors on health information utilization in management of appointments among HIV Positive Patients

Mutale et al. (2013) noted "that weak Infrastructural system on information related to health are an essential obstacle to reaching the goals of millennium development that are focused on health due to accomplishments in health systems that can't be properly evaluated or tracked where infrastructural factors influencing health information utilization are partial, flawed or mistimed".

A research by Suartini Bambang in Indonesia on utilization of health information showed that health information among the HIV positive patients was inadequate especially the baseline information on population. Without quality health information data, data capable of influencing informed making of decisions would not happen and the results would be ineffective and inefficient programs.

2.3.1 Internet connectivity

According to Fraser et al (2005) access to internet enables more elastic designs bearing external data communication and external backups. Complete systems based on the web require networks that are reliable though dial up connections may work only when the pages are carefully designed while the system is not needed every time. Placing servers at the clinic locations is the conventional method for managing electronic data in a remote location. In

certain setups, data is regularly sent to a central server. This presents a challenge in rural Haiti due to intermittent electrical power, humidity, dust, security worries, and the challenge of providing technical help. Data collection and evaluation can be done from numerous remote sites thanks to the implementation of a secure, web-based electronic medical record. The extra benefit of using a shared server in a safe setting with reliable power and robust data backup is that all users can access the most recent data. Training new health professionals is necessary for scaling up therapy, and decision support systems may help them become comfortable with HIV management (Fraser et al, 2004).

2.3.2 Data collection tools/Electronic Medical Records Systems

It has been indicated by Saueborn (2018) that complications in the designed system utilized in keying in the data was the most essential technical element influencing routine use of health information within facilities of health. In regards to this, Boone et al.,(2013) argued that the system complications challenge the health offices in the utilization of the system and they end up utilizing manual files in capturing information which after some time gets spoilt or becomes poorly managed. Further, the engagement on technical elements restricting use of regular health information, it was discovered by Rhoda et al.,(2010) that a number of soft wares utilized for these systems were also few, costly and complicated. It is argued by Gopalan et al., (2013) that soft wares and utilization of IT were the emerging ideas within modern organizations in nations which are developing specifically within Africa. System complexity was also found to be influenced by lack of knowledge to analyze. This is in agreement with Garrib et al (2008) who assessed the rural South African district health information system found out that health facilities were not utilizing data aggregation tools as

expected because they had limited skills to analyze, interpret and utilize the data and also agrees with the World Health Organization who emphasizes that correct use of data transforming tools into information needs to be dealt with (WHO, 2008). According to Sauerborn (2018), “the infrastructural factors influencing health information utilization is utilized in keying in and data documentation because it a vitally essential element influencing the use of ordinary information related to health in facilities of care. Gopalan et al., (2013) argues that infrastructural factors influencing health information utilization such as information technology (IT) usage and peripheries are the latest notions in the current institutions of health within countries that are developing specifically in the content of Africa. Gopalan et al., (2013) also argues that each nation needs better health information pointers that deliver several health requirements, though they should sustain a provided number of infrastructural factors influencing health information utilization among the HIV positive patient. The evaluation also illustrated the hindrance caused by systems which do not function and also having too many health system indicators to handle the health information among the HIV positive patients.

The effects of infrastructural factors for HIV health information utilization are highly regarded as divulged in the extensively effects of HIV patients’ considerable levels of satisfaction (David et al, 2013).

2.4 Staff Capacity on health information utilization in management of appointments among HIV positive patients

The influence of staff capacity on health information utilization has an impact on health information, demand and utilization among the HIV positive patients. Staff capacity always influences the health information application, often, need ineffable perceptions such as outlook, the norms grasped by health workers in relation to information regarding health, duties, inspiration, manner in which health workers accomplish their duties, and the hierarchy of command of health management.

2.4.1 Training

To ascertain a number of the elements connected with staff capacity on health information utilization there requires interventions beyond simple training among the health workers to improve skills and knowledge in analyzing data and using health information in the strengthening and management of missed appointments among HIV positive patients (Hozumi et al, 2016). A survey that targeted middle level health workers within a developing nation that was unidentified, to evaluate how effectively they assessed and utilized data from health information among the HIV positive patients divulged a considerable existence to train health workers approaches of evaluating data and utilization and connecting data application activities when health information systems are installed (Loevinsohn, 1994).

The influence of staff capacity on health information utilization among the HIV positive patients provide intuition that is essential in the manner in which policy developers, administrators and healthcare staff utilize information among the HIV positive patients. For

instance the main task of the health provider is service delivery in health centers which rotates on their daily/clinical job as technical worker or health service manager. They perceive duties such as surveillance of diseases, keeping of stock, budgeting and evidence-based planning as not important compared to health care provision as extra work.

2.4.2 Availability

The staff capacity in health care centers that are extremely proficient such as health managers, nurses, physicians and other subsidiary personnel are essential in delivering high standards of results and effective standard accomplishments thus growth in the hospital and better adhere to health information utilization in management of appointments among HIV positive patients (Argote & Fahrenkopf, 2016). There is a demand for careful appointment of qualified manpower. Accomplished appointment and sustainability of health employees is related to equipment of health personnel who should be regarded as invaluable hospital partners in its functions and provided with chances for growth. Boone et al. (2013) also argued the complications within these systems have made it a challenge for health officials to use the system instead maintaining manual files for recording information making it deteriorate and lacking proper management. Additionally, the technical elements restricting routine use of health information affects data analysis and interpretation at all levels.

2.4.3 Skills

To be able to enable development and standard service, hospitals need to embrace approaches of human resource that are effective such as careful appointments of well qualified health staff, and sustain nurses and physicians, tracking of doctors and making sure that they continuously accomplish certain targets and quality of practice to maintain credentials in the

utilization of health information in management of appointments among HIV positive patients. According to Aqil et al. (2015), the influence of staff capacity on health information utilization was challenged by complex forms and registers for collecting data, inadequate inspiration of health personnel to acquire data and inadequate comprehension of how the data should be used. Senior staff in health centers showed little interest in the utilization of the acquired data.

2.5 Influence of support supervision on utilization of health information in management of appointments among HIV positive patients

Many medical centers offering staff supervisions training services on health information are curative-oriented and urban-based. Health staff supervision greatly caters for needs of patients, enhanced effectiveness in relation to cost and provides more service delivery content to personnel working in health centers. To remain effective in health information utilization and health management, there is need for supervision on the utilization of health information in management and appointments among HIV positive patients in the health facilities.

2.5.1 Processes

Professional support as well as that coming from the organization, management of practices related to health as well as work life balance, chances in careers and professional growth have shown to be regarded by the supervisor to be essential in the usage of health information in management and appointments among HIV positive patients, (Lynn & Redman, 2006).

According to Sauerborn (2018), “the intricacy of the system crafted in keying in and documenting data is the crucial technical element influencing usage of ordinary information related to health within facilities of health”. A survey targeting health workers in a developing nation that was unidentified to evaluate their capability in assessing and utilizing data from a

health system for information divulged that existed a considerable demand to train the health supervisor on how to evaluate and utilize, and to connect the used data activities when information systems are installed (Loevinsohn, 1994). Supervision of HIV health information among positive patients and evaluation of their health management need also to be unlimited to predictors in regards to the degree of influence and intervention results. It is similarly essential to supervise and analyze the procedure for adopting health information management inputs, because together they decide on the accomplishment of an intervention of the real utilization of the HIV health information. Within all the levels, experiences can be grasped by managers and administrators and makers of policies within health systems. Pointers and a structure for assessing and analyzing the utilization of health information interventions are often not defined prior to information systems contribute to huge challenges to establish the productivity of health staff supervision strategies. Supervision and analysis of health information in management and appointments among HIV positive patients need more attention (WHO, 2016). Kamadjeu et al, (2005) emphases that the senior managers leadership on shared values associated to systems of information that are noted to be a pre-existing culture of data collection otherwise " culture of information". Chaled et al. (2013) states that access and availability of feedback and reports that are timely has the ability of establishing the utilization levels of regular health information by facilities of health.

More so, Scott (2006) opined that it is essential for managers to become aware of the required information, ways of acquiring it and how to optimize its utilization to be sustainable and develop in the current environment which is information intensive. It is pointed out by ministry of health (ministry of health [MOH], 2009) that the absence of policies and

guidelines which was noted in the study yet most of the managers felt it was very important in their areas of work. The study found out that support mostly was in form of supervision concurring with Sauerborn (2018) and Boone et al. (2013) argument that some who are members within the team managing health facilities have been advocating for training to be conducted on management, leadership and supervision to improve the ability of effectively managing services of health. Thus they are expected to capacity build lower health facilities through supervision which results in effective use of regular health data.

2.5.2 Feedback

Feedback too is an important aspect in the utilization of information. Feedback is comprehended as the process where users of information make the collectors of data aware of the information so that they can make decisions and actions on the basis of the acquired data. It may be reports transmitted verbally, actions of facilities being supervised, reports being summarized into yearly reports a specified area.

Feedback can be offered through having data on tables monthly, reports on projects, or reports on a yearly or quarterly basis (Nutley et al., 2010). Feedback is seen as potential improvement area that can benefit those in the lower level who are tasked with evaluating and monitoring, making decisions and planning (Kihuba et al., 2014). To improve ways in which providers of data can value information, comparative feedback linked with facilities in the area especially during sub-county data quality review meetings could be embraced. Through these approach providers of data can feel that their acquired data is contributing to change and enhancement which is essential to patients and them and creates data ownership (Health Metrics Networks, [HMN], 2008). The moment systems are in place within the organization which support the

making of decision on the basis of available data, the producers of data together with its users can comprehend the value of the information to the health system, improved data quality is disseminated and offered via systems of health and due to this, it is utilized in making decisions.

2.6 Behavioral factors influencing health information utilization in management of missed appointments

Behavioral factors are characteristics displayed by health workers when it comes to information use or lack of its use. Lack of dependable appropriate information on health, administrators of health care and health workers are unable to decide on effective apportioning of resources or tackle epidemics including HIV and AIDS.

2.6.1 Roles and Responsibilities

With the restructuring of health systems, the need for proper information and expertise to administer and utilize information grew considerably. Most health care work will give attention to their day to day activities such as giving services to the patient as a primary role of the nurse. Therefore if need for information is not made clear to the health care workers, then their motivation and commitment towards it can be easily ignored. Whichever intervention to reinforce systems of health information which doesn't consider elements of behavior for instance perception in regards to health information, inspiration, and inducements for decision making founded on information will lead to substandard data, misreporting, untimely information utilization and making poor decisions (Routine Health Information Network [RHINO], 2016).

2.6.2 Attitude

Attitudes and Perceptions of the facility managers towards data determine the effects on the usage of information related to health. If the managers neglect the use of making decisions founded on evidence and the utilization of information for clarity and responsibility then a tradition of information will not be embraced. It is thus important to critically scrutinize the views, perceptions and norms of facility managers and other staff in regards to operations that are related to information (Odhiambo-Otieno, 2005). It is important to involve and strengthen health care workers and instill the sense of ownership thus able to improve the perception and attitudes towards health information in terms of collection and use. Utilization of mechanized data administration techniques including KHIS is anticipated to increase operations of health personnel within all levels to evaluate and discern routine health data. This together with information focused training can be utilized in making decisions that result in ownership, analysis, interpretation and use of information within entire level. Nations that are developing such as Kenya which have embraced KHIS as a means of administrating their daily operations are thus better stationed to transform from disintegrated and nonoperational HIS to being examples of productive utilization of routine heath data within setups that have inadequate resources.

To embrace consistent information use, there is need for high quality data; this gives confidence in the users knowing they are using actual reliable data. The absence of standard data, making of decision not based on information will lead to ineffective and inefficient projects pegged on assumptions (Mavimbe et al., 2005). Also, with poor data quality, demand for information drops significantly crippling the cycle of data-informed decision making even

further (Braa et al., 2012). Procedures for standard data need to be crafted, disseminated and executed including capacitating and sustaining health personnel related to approaches of data quality and operations.

2.6.3 Motivation

Carbone (2008) argues that clinical officers required being motivated so as to influence change of behavior within their work; this would enable them utilize their normal health records in making decisions. Additionally, it is opined by WHO (2005) that not so much attention has been allocated to tackle the needs of staff in regards to training so as to equip them with skills as a form of motivation for officers in the health information; thus the need for the organization to address the challenge.

Survey outcomes agree with Aqil et al., (2015) who noted that a number of behavioral elements need interventions that are more than the ordinary training to enhance their skills and knowledge in comprehending the data and utilization of information. The findings stresses on the area highlighted by Chaled et al., (2013) which stated that regular users of information need the right competencies, confidence and motivation to undertake their functions which influence the performance and processes of the system directly and the manner in which a person perceives the outcomes or utility of a function together with the complications of the function which influence the chances of undertaking a task.

The absence of incentives in the utilization of information and nature of work corresponds with a study which revealed that managers in facilities of health are acquiring data without completely comprehending why they are acquiring it and it use hasn’t been looked into hence less chance of being appreciated.

Human beings have the ability to associate information for instance among health officers in making choices concerning how to utilize information focused on the intention of making decisions that are right and in enhancing services of health (Aqil et al., 2015).

A culture of information is attained when each person asks for information prior to planning and decision making. An organization culture may create enthusiasm for information use or discourage it.

To guarantee sustainability of an information system of health, there is need to create a culture that relies on information in making it decisions as an essential technical component (Kihuba et al., 2014). An organizations effectiveness is directly associated with its employees performance (Belita et al., 2013). It is the systems, processes and rules which govern organizations. The systems, processes and rules have the capability of supporting or hampering a person's capabilities of utilizing data in making decisions (Aqil et al., 2015). For instance, an institution with processes and structures for enhancing communication between producers of data and users, allowing for clear direction for enabling the processing of quality data, and describing responsibilities and roles regarding how to use data will be able to support other approaches instituted with an aim of enhancing data for making decisions.

Personnel documents need to describe responsibilities and roles of employees in regards to usage of data. In Uganda, a survey was in 2009 by MEASURE evaluation. It revealed that factors within the organization including a culture of promoting quality supervision and information were not strong. Very few documents existed showing the presence of systematic communication in relation to performance targets, data utilization in making decisions and support for or distribution of stories of success (Aqil, 2015).

An absence of systems on a regular basis in support of activities of evaluation and monitoring negatively influence the quality and value of acquired data and its utilization. Nevertheless, developing a culture of information is a problem and therefore, a lasting strategy is needed (Azelmat et al., 2010). The absence of interactivity between the person who crafted, applied and administered studies and systems of information contributes to the challenges experienced in the cycle of making decisions (Lomas, 2007).

The moment producers of data and users work as a unit, they become well acquainted with the methods and processes of the acquired data, sources of data that are available, and data quality. They therefore have the chance to tackle the challenges in the usage of data and in enhancing data sharing. They could also dwell on challenges and look for clarity concerning the process of acquired data (Patton et al., 2008). Together they can evaluate and interpret the data to come up with solutions to actual problems. In this regard, data ownership is based on the point of time the data was used in making decisions, the existence of the required buy ins to provide future decisions. When producers and users of data re first understood, then can the relationship be established, the cycle of information is then strengthened and the importance of the data in the link is then cleared (Koon, 2012). The perspective of normative decision provides an assumption that it's just the information which is relevant that will be acquired and evaluated then availed and then quality information utilized (Mutemwa, 2006).

2.7 Utilization of health information system in the management of missed appointments among HIS positive patients

Boone et al., (2013) outlined infrastructural factors influencing health information utilization in management of appointments among HIV positive patients as those linked with skilled technology and expertise to craft, administer and enhance health information systems accomplishments and procedures. Notwithstanding the big accomplishments realized to develop a state system of health information, some issues and challenges have to be tackled that are connected with health information utilization in management of appointments among HIV positive patients utilization in making decisions, discussion on policies and suitable utilization of techniques for remolding information from data (World health organization [WHO] 2017).

2.7.1 Decision making

An effective Health Information System (HIS) is required for acquiring, processing, analyzing, and utilizing health information, according to the World Health Organization (WHO, 2017). However, despite the rapid growth of requirements for data recording and reporting within the health information system, there is still little evidence that the information is used **(**Hotchkiss et al., 2012). A health system's information systems are created to satisfy the requirements of various information users. Users of information have various information needs, require information at various levels of detail, and play various roles in the decision-making processes (Davies et al., 2011). When data are combined and conveyed into information products for stakeholders at the many levels of the health system, all of these considerations must be made. Therefore, it is crucial to make data accessible through the creation of focused information products that address the information demands of certain data users (Aqil et al., 2015).

According to a study conducted in India, respondents at the facility, state, and district levels most frequently reported making decisions about program management, planning, and budgeting, while staff members working in health clinics made decisions about the availability of medical and pharmaceutical supplies as well as the trends in emerging epidemics. The most often mentioned statistics for decision-making were those from the Health Management Information System (HMIS), district-level surveys, and state/district departmental reports (Harrison & Nutley, 2010). The majority of the institutions' employees claimed to use HMIS data for medical supply and drug management, staffing decisions, and service improvement, according to MEASURE Evaluation's (2009) similar study in Uganda.

Another study was conducted in Tanzania, and the results showed that participants used health information to decide on clinical services, necessitating organizational policy and staff training. The majority of respondents identified a heavy workload, a lack of incentives, poor technical abilities, and a lack of understanding of the available data sources as barriers to the use of health information (Harrison & Bakari, 2008).

However, because health data was frequently erroneous and inadequate, personnel did not always depend on it and hardly ever used it in decision-making.

2.7.2 Data analysis and Interpretation

Staff access to data was limited by a lack of computers and frequent power outages, which slowed down the reporting process. Due to a lack of technical expertise and effective tool utilization, the staff's ability to analyze, interpret, and use data was constrained. Data quality and utilization were impacted by data accuracy and timeliness. Because the procedures for ensuring data accuracy and providing feedback on the submitted monthly reports were not in place, it was difficult for staff to grasp the significance of the data collected for the

department, higher levels of government, or the workforce as a whole (Aqilet al., 2015). According to the assessment done by the Kenya ministry of health, (2014) and Health Metric network (HNM, 2008), data utilization was very weak especially for data that is routinely collected. It showed that only 51% of healthcare professionals utilized data. Lack of diverse human capacity to gather, analyze, and standardize database and printing resources, most reports are not produced on time, and reports generated are from a few years ago were the factors emphasized (HMN, 2008). The main aim of health information is to make effective the health service performance at the various levels where it is administered through providing vital and adequate information needed by the managers of health to monitor, evaluate and plan their activities. Thus the need to conduct this study to find out the factors affecting utilization of health information in management of missed appointments in Mombasa County, Kenya.

2.8 Critic of Existing Literature of the Study

Criteria for assessing the elements influencing the usage of information related to health in strengthening the management of missed appointments among HIV positive patients have less often been outlined leave alone executed. In comparison to other sectors apart from health, information utilization and specifically statistical finance and macro-economics, significant health worker has defined health information utilization standards and guidelines on the utilization of health information among HIV positive patients. Monteiro et al., (2016), elucidates that the theory of actor networks is better productive for discerning how decisions related to crafted techniques are interlinked to organizational issues.

In that survey of infrastructural factors influencing health information utilization in management of appointments among HIV positive patients, the hypothesis of actor network

offers manifested gains in being open in the manner in which standards offer sustainability, the manner in which they increasingly become irredeemable. Also, essential notions of the theory of actor network is its likelihood to provide for ways to limit analytical dynamics over a distance can be guaranteed on health information utilization in management of appointments among HIV positive patients. Nonetheless, they have faith that the dominancy of the theory of actor network over the theory structuration basically applies to matters of being distinct to health technology. Another condemnation in relation to utilization of the theory of structuration within the health information System is in relation to philosophy. Criticism by Monteiro et al., (2016) is based on the usage of the theory of structuration within health information utilization among HIV positive patients. They concede that the perspective of the theory of structuration certainly in relation to dichotomy of technology.

2.9 Research Gap

Utilization of data from available health information systems in the management of appointments among HIV positive patients is an intervention that has partially been researched on. This survey will look at the manner in which health information systems functions; integration between the staff and the patients, and how the available information systems are used as the mode of communication to improve retention rates among HIV positive patients

The research work attempts to address some of the factors affecting information utilization such as; infrastructure, staff capacity, influence of staff supervision and the behavioral factors influencing the health information utilization in management of appointments among HIV positive patients. The intention is to strengthen the health information utilization among health

care workers; to capture, analyze, and use data to improve retention rates among HIV positive patients therefore reducing cost of care and improving the general health outcomes of the HIV positive patients.

Literature reviewed in earlier studies does not bring out the factors affecting utilization of data towards improved retention rates. This gap remains a big challenge since most of the health care workers don't understand why they keep collecting data using the available tools/systems yet the patient numbers of defaulters remain afloat. The study has never been carried out in the coastal region of Kenya where there are still low retention rates among HOV positive patients besides having EMR systems in place.

Literature and documentation is needed to emphasize the necessary policies towards the improvement of data utilization from all health care providers. The factors such support supervision, infrastructure and behavior have not been well documented in terms of data use and influence on management of missed appointments among HIV positive patients.

This study will also make use of the existing findings to relate to the importance of information utilization towards other development factors such as effective human resource recruitment, training, establishment of policies to embrace support supervision and feedback.

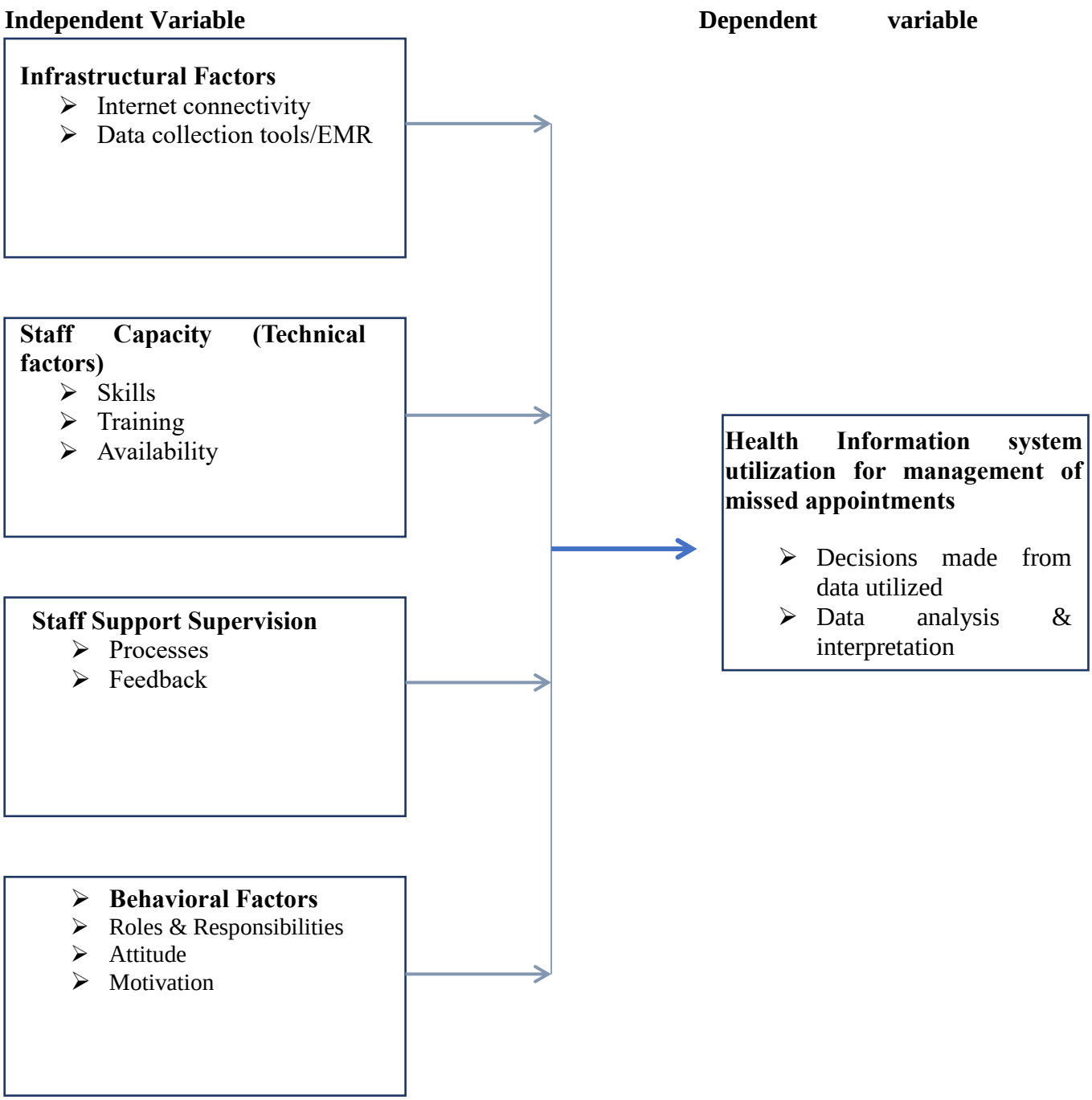
2.10 Conceptual Framework

The Mosby's Medical Dictionary (2013) refers to the conceptual framework as the categorization of notions that are generally outlined and structurally arranged to offer a perspective, reasoning, and an apparatus for connection and analysis of information. Kothari (2015) explains an independent variable as one also known as a variable for explanation which is assumed to result in changes of the dependent variable whistle the dependent

variable is explained as facet that the researcher intends to explicate. A figurative depiction of the variables considered in this study is capture below. The structure of concepts represents the variables (independent and dependent);

Figure 2.1:

Conceptual Framework



CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The section reviews the research methodology that was used to conduct this research study. It describes the type of research design used, the target population, sampling procedure, data collection methods used, and operation definition of variables. It also describes how data was analyzed and presented.

3.2 Research Design

A cross sectional study was utilized to determine elements influencing utilization of health information. Different cadres (nurses, clinical officers, health records officers and tracers) working in CCC were interviewed using a structured questionnaire. Also, a checklist was used to determine retrospective use of available tools/EMR for patient follow up. The study was carried out using a descriptive research design. Sekaran and Bougie, (2016) acknowledges that descriptive survey is utilized to discover and enable delineation of aspects of variables under scrutiny in an occurrence. As explained by Villar et al. (2013) descriptive survey concentrates on the crafted study and will be focused on inscribing certain tenets of a particular subject population, within a certain time frame or at differs periods in order to compare them. This is to mean that they lack emphasis while being evaluated as a design though they have a similar purpose of locking a paradigmatic same within a suitable mass. This ensures that successive evaluation of tenets of that mass will be dependable and the outcome will be extrapolated. This is to mean providing a valid population.

3.3 Target Population

The population that is targeted depicts a summation of entire individuals or firms that own specific attributes; it is the broader category that produces the sample (Flick, 2014). Often,

inadequacy of time and insufficient finances are an issue in acquiring information within the masses, the purpose then becomes identifying a paradigmatic group to sample. In this study, the population was all the health workers attending to HIV positive patients in the three health facilities and the community. The population of health workers in the CCC for the three health facilities was 215. The three health facilities were purposely chosen as they had the huge number of patients, that translated to increased number of health care providers using the information, hence contribution to massively to the low retention rates in the county.(www.hiskenya.org)

Table 3.1:

Target Population

	Bomu	**Portreitz**	**Coast General**	**Total**
Clinical Officers	13	8	13	34
Nurses	18	9	15	42
Health Records Officers	24	4	6	34
Tracers/CHW's	55	20	30	105
Total	110	41	64	215

3.4 Sampling Procedure and Sampling Techniques

Kombo and Tromp (2006) describe a sampling procedure as an amalgamation of items decided on from the masses to depict it. Yang and Yang (2013) define a sample size as sub categorization of the selected population. The technique of sampling is an approach which will be utilized to agree on the participants (Kothari, 2015).

The health care providers were stratified into four groups i.e. the clinical officers, nurses, health records officers and tracers, a 30% of each cadre was sampled and a simple random selection made across each of them.

3.5 Sample Size

The size of the sample was collected from 3 health institutions, two health facilities funded by the government and one health faith-based institution. As suggested by Mugenda and Mugenda (2009), a 30% sample derived from the targeted population is sufficient. This was be adopted by this study.

Table 3.2:

Sample Size

	Bomu	Portreitz	Coast General	Total
Clinical Officers	4	3	4	**11**
Nurses	6	3	5	**14**
Health Records Officers	8	2	2	**12**
Tracers/CHVs	17	6	9	**32**
Total	**35**	**14**	**20**	**69**

3.6 Data Collection Instruments

The research study used questionnaire as data collection tool. Questionnaires which are structured in nature were utilized to acquire data from participants while guided by the study elements. The sessions for conducting data per participant were timed at a 20 minutes interval in English. A questionnaire is a pre-arranged and organized question to which the participants document their views within prescribed elements. A five pointer Likert scale that captures levels of agreement and disagreement were provided. The behavior, norms, views and

attitudes of participants were hence captured. Mugenda and Mugenda (2009) opine that a Likert scale has levels that enable responses to be converted into quantitative measure.

The research study also used a checklist to determine retrospective use of tools/existing health information systems to follow up of patients missing appointments

3.7 Primary Data Method

Primary data is information that is generated to meet the specific need of the investigation carried out (Kumar & Ranjit., 2014). Primary data is first-hand information acquired by the investigator on certain elements of interest to the survey (Sekaran & Bougie, 2016). For the purpose of this study, primary data was collected using questionnaires, with close-ended questions and a Likert scales rating measured on a five-point scale, it was also collected using a checklist. This helped the researcher to code the information easily for subsequent analysis (Sekaran & Bougie 2016).

3.8 Secondary Data

Secondary data is any set of data which was acquired previously for a purpose and from other sources (Kumar & Ranjit, 2014) Secondary data is helpful as it may indicate gaps or deficiencies, is economical to use as cost and time of collecting data is saved, having relevant secondary also improves the researcher's understanding of the problem and secondary data will also be utilized as a foundation for collation by the investigator in relation to the primary data (Kumar & Ranjit, 2014). Secondary data was obtained from hospital records available, the registers, EMR and reports generated.

3.9 Data Collection Methods

Data (secondary and primary) was acquired by the investigator. Primary data consist of data acquired through questionnaire. The questionnaires had questions with a strict form of enquiry

and others to solicit free responses. The researcher also used a checklist to collect retrospective data to evaluate process of tracking the patient and if information acquired was used. The researcher also observed the processes.

3.10 Operational Definition of Study Variables

The study variables of interest include:

Independent Variables

i. Infrastructural factors influencing health information utilization in management of appointments among HIV positive patients.
ii. Influence of staff capacity on health information utilization in management of appointments among HIV positive patients.
iii. Influence of supervision on utilization of health information in management of appointments among HIV positive patients.
iv. Influence of existing behavioral factors on health information use among health workers.

Dependent Variables

Factors influencing health information system utilization in management of appointments among HIV positive patients

3.11 Pre-test

This is a brief exercise of study whereby the respondents are given mock interview or questions to fill. It is a traditional norm for detecting flaws and also for extra preparation for the survey. It is essential to hold pretest to make certain the comprehension of the participants

and enable solving of challenges related to wording or measurements. The aim of pretest was to divulge the dependability and suitability of the crafted design and tools (Saunders, et.al.., 2015). (Khawaja & Kumar, n.d.) agrees that piloting purposes to disclose flaws in crafting and execution. Prior to the actual data collection, 15 questionnaires were piloted to provide for questionnaire effectiveness and identify gaps; Melody, (2008), recommends 10-40% of the sample size can be used during a pretest. Pre-testing of the questionnaires was done in Mariakani Sub-County hospital to determine suitability of the study instrument, 15 questionnaires were distributed among the CCC staff and had 100% response rate. 10 were female while 5 were male staff; all of them had a college level of education. From the findings the questionnaires were well understood and there was ease in filling them. The perceptions acquired were utilized to find out how the participants had apprehended the questions and determined their capability and ease of providing responses to the issues. Acquired data was scrutinized for measurability, validity and reliability to sustain conclusions (Saunders, et al., 2015).

3.12 Validity

Validity is the level at which the results of a study can be meaningfully and accurately inferred. Instrument validity was provided through an assessment of the sampled population as subjected to the pre-test. Ambiguous and unsuitable items were either removed or realigned to conform to the study objectives and acquire needed data. A few of the population were piloted and their opinion on ease of comprehension of the questionnaire sought. This process enabled identification of areas to correct and make clear hence presenting a suitable questionnaire to the actual study participants. The supervisor reviewed the tool of research and provided opinion on what to adjust and how as instructed by (Saunders et al., 2015)

regarding content validity. The tool was however found valid as the results collected were accurate and meaningful.

3.13 Reliability

Reliability is related to identifying uniformity of measure in repeated studies. A measure that is reliable is one that replicated a number of times will provide similar outcomes (Mugenda & Mugenda, 2009). The questionnaires reliability was checked using the technique during pretest. A similar instrument was used to test the perception of accountants. The two sets of acquired tests were assessed to pinpoint inaccuracy of responses. From the pretest, results indicated uniformity among the questionnaires distributed. Used cronbach alpha formula;

$$\alpha = \frac{N \cdot \bar{c}}{\bar{v} + (N-1) \cdot \bar{c}}$$

- N = the number of items.
- $\bar{c}$ = average covariance between item-pairs.
- $\bar{v}$ = average variance

- N = 15
- $\bar{c}$ = 12
- $\bar{v}$ = 6

α= 15.12/6 + (15-1).12

α=180/6+168

α=180/174

α=1.03

α ≥ 0.9 is an indication of excellence internal consistency and the tool is reliable

3.14 Data Processing, Analysis and Presentation

The procedure for analyzing data is a scientific technique for obtaining facts to be utilized in testing hypothesis and delivering inferences that in future contribute to theoretical advancements. It disentangles a somewhat complex procedure and enables it to become important to information consumers. Data analysis is referred to by (Zikmund et al., 2013) as usage of cognition to comprehend the acquired data with a purpose of discerning reconcilable connections and a outlining appropriate issues divulged in the investigation. Field data was adapted and encoded to form concepts cropping up from study elements. Version 2010 of MS Access was used in entering data for evaluation and then software for statistical evaluation used for analysis. A summarization of demographic elements occurred leading up to percentages and frequencies. A 0.05 or less p-value was accepted as significant statistically. Chi-square and Spearman Rank Correlation were used in the analysis to evaluate the results emanating from the differences and association. A presentation of the outcome was done through use of tables.

CHAPTER FOUR:

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter analyses the data collected, presented in tables and undertakes data interpretation. The chapter provides the major findings and results of the study as obtained from the questionnaire.

The researcher conducted descriptive research to determine factors influencing utilization of health information management system. Different cadres (nurses, clinical officers, health records officers and tracers) working in CCC were interviewed using a structured questionnaire.

In this study, the population was all the health workers attending to HIV positive patients in the facilities and the community. The population of health workers in the CCC for the three health facilities was 215. In a previous chapter, we covered data collection techniques and data analysis procedures. Additionally, the research outcomes were presented and debated in relation to the study's goals. The findings were utilized to formulate recommendations to advance the utilization of Health Management Information System to manage missed appointments in the hospitals.

There were two main levels to the analysis. Level one includes the use of uni-variate statistics using the frequencies, means, and standard deviation of the study variables listed in the questionnaire. Frequency and descriptive tables are used to enhance the results. The second level involves the bi-variate statistics to investigate relationship among each of the specific

factor on utilization of HMIS in managing missed appointments in the selected hospitals in Mombasa County to determine Spearman Rank Correlation, and Chi-square

4.2 Questionnaire Response Rate

The percentage of questionnaires filled out and returned by respondents in accordance with the criteria held is known as the questionnaire response rate. The questionnaires that were returned were examined. Table 4.1 displays the sample size's response rate.

Table 4.1:

Questionnaire Response Rate

Cadre	Bomu	Portreitz	Coast General	Total	Response
Clinical Officers	4	3	4	11	10
Nurses	6	3	5	14	10
Health-Records Officers	8	2	2	12	10
Tracers/CHV's	17	6	9	32	30
TOTALS	35	14	20	69	60

4.3 Response Rate

Out of the 69 respondents targeted in the study, 60 completed and returned the questionnaire which constitutes a response rate of 86.9%. According to Mugenda and Mugenda (2009), who recommended that a response rate of 70% is great, a rate of 60% is good, and a rate of 50% is sufficient for analysis and reporting, this number of responses is excellent and reflective of the target demographic. According to Mugenda and Mugenda (2009), a study's response rate should be at least 50% in order to draw broad conclusions.

4.4 Test of Normality

Many statistical tests require an evaluation of data normality since normal data is a fundamental premise of parametric testing. Normal tests are used to determine whether data generated through questionnaire administration are approximately normally distributed. SPSS runs two statistical tests of normality that is Kolmogorov-Smirnov for data sets greater than 80 elements and Shapiro-Wilk for data sets less than 80 elements. If the significance value is greater than the alpha value of 0.05 then we can conclude that data obtained is normally distributed. Dependent variable data is approximately normally distributed for each category of the independent variable. Skewness and Kurtosis should somewhere be in the span of -1.96 to +1.96. Since significance value of both Kolmogorov-Smirnov and Shapiro-Wilk was greater than alpha value of 0.05, normal Q-Q plots and box plots should visually indicate that our data was not normally distributed.

A normal Q-Q plots and box plots showed that the Utilization of Health Information System were not approximately normally distributed for Infrastructural, Staff Capacity, Staff supervision and Behavioral factors hence non Parametric tests, Chi-square and Spearman Rank Correlation were used in the analysis.

Below figures show the Q-Q plots;

Figure 4.1:

Utilization of HMIS for Infrastructure

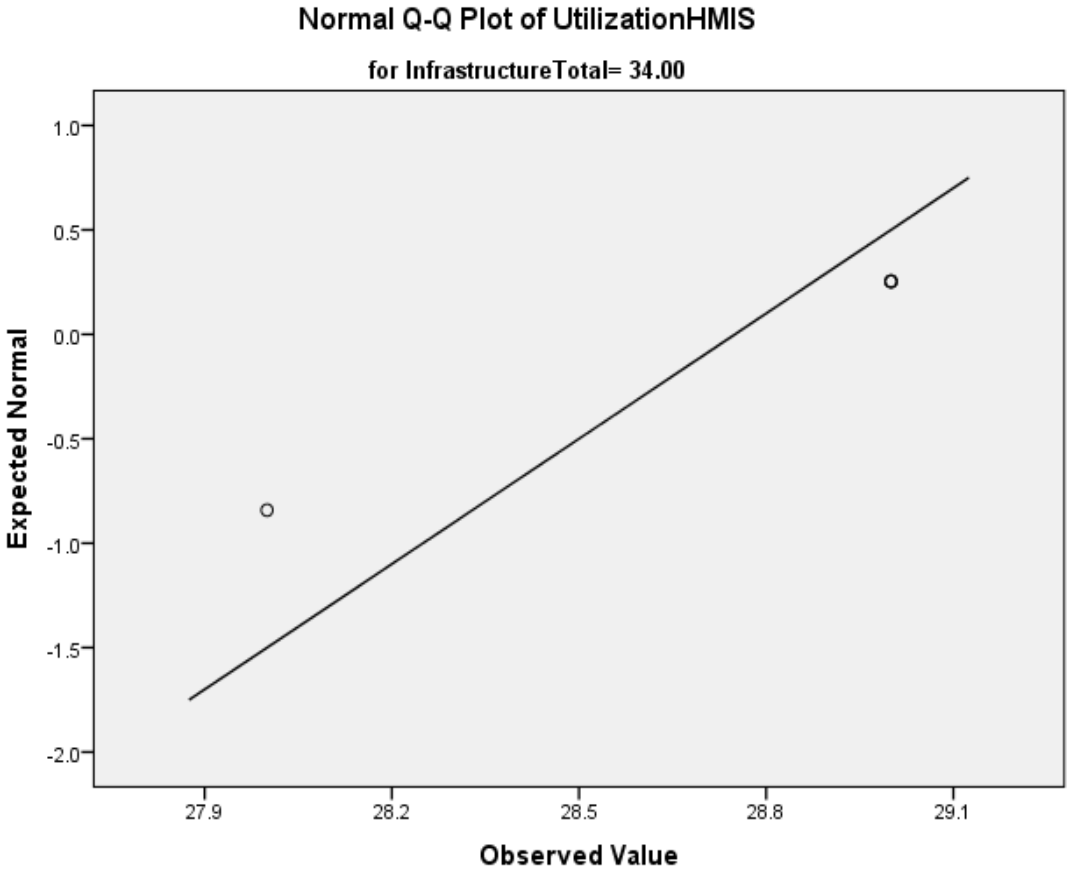


Figure 4.2:

Utilization of HMIS for Behavioral factors

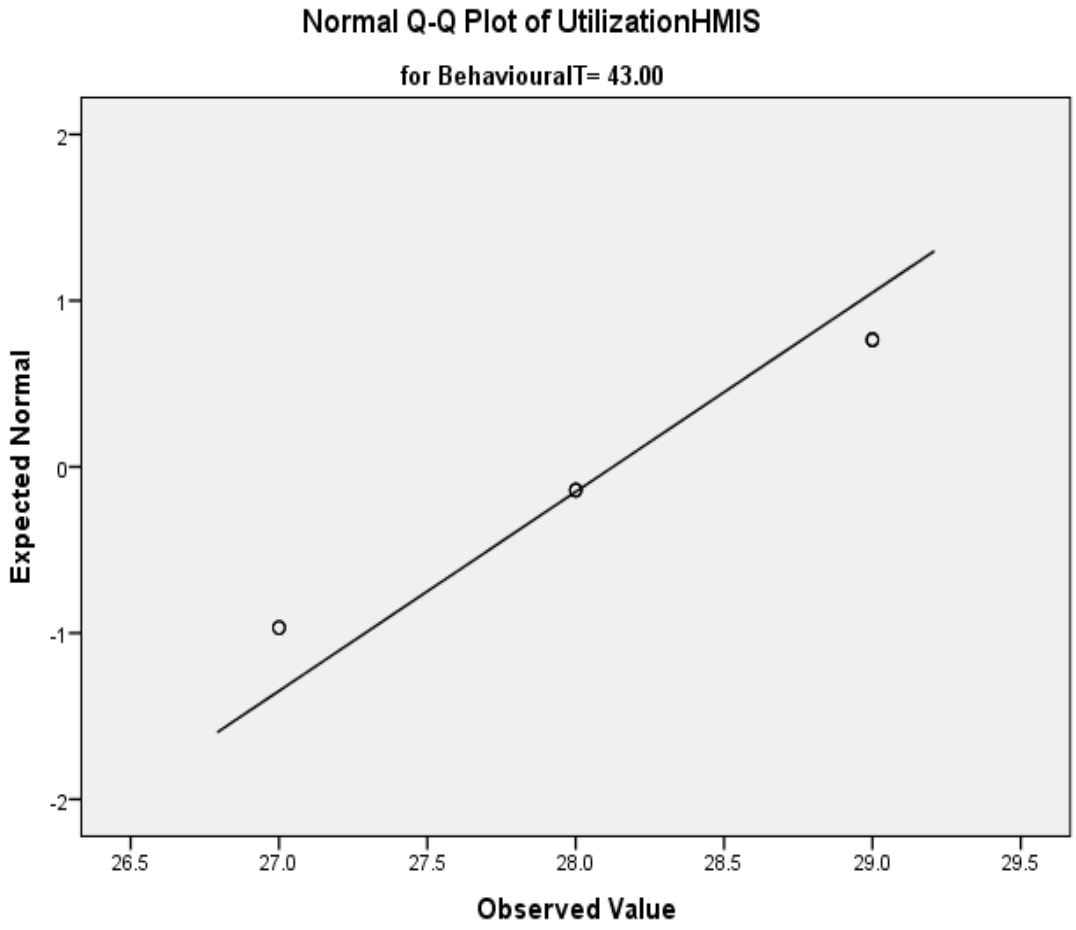


Figure 4.3:

Utilization of HMIS for staff capacity

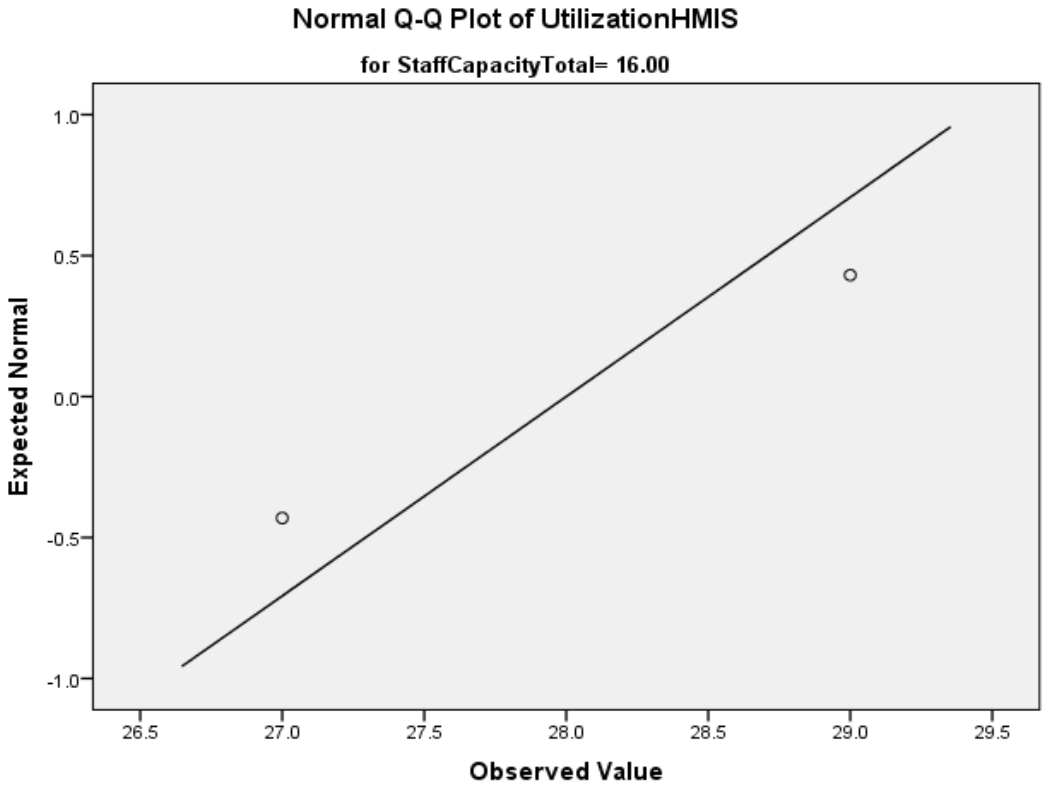
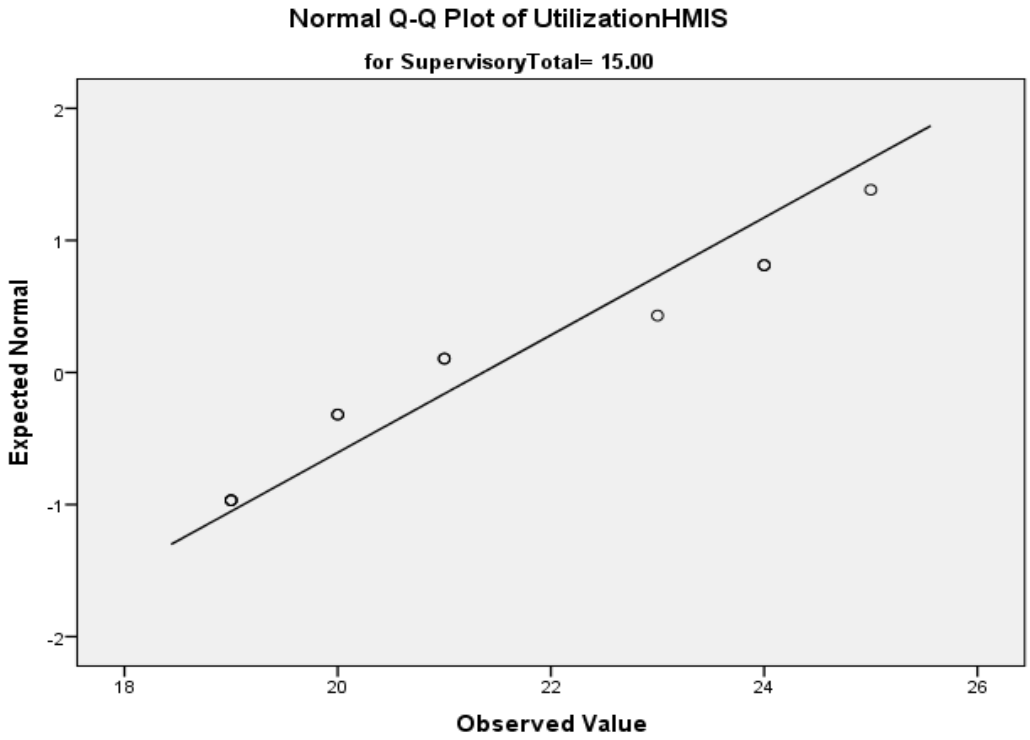


Figure 4.4:

Utilization for HMIS for Support Supervision



4.5 Demographic Characteristics of the Respondents

4.5.1 Distribution of Respondents by Gender

The study required to assess the gender of the respondents. This was important to find out the gender representation of the departmental in charges in Mombasa County. To determine gender parity implementation status at the selected hospitals, this was found necessary to determine the gender distribution employed in implementing and advancing 2/3 gender principle to advance service delivery and performance at the hospital.

Results showed 68.3% and 31.7% female and male representation respectively; this showed female were a majority from the population size of 60 respondents with an expected value of 1.68 and a variation of 0.469.

Table 3.2:

Distribution of Respondents by Gender

Sex of respondent:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	19	31.7	31.7	31.7
	Female	41	68.3	68.3	100.0
	Total	60	100.0	100.0	

4.5.2 Distribution of Respondents by Level of Education

The study sought to collect data to determine the Level of professional/academic qualification of the respondents to determine their capacity in making decisions with the right information availed to them in their qualification, results showed a 58.3% acquired college level of education, 20% had 1st degree university level, 10% had secondary level of education, 8.3% had professional qualification while 3.3% had post graduate level respectively from the respondents size of 60. This showed that majority of the respondents were qualified and had capacity in making decision with the right information with an expected value of 2.42 and variation of 1.013 which is small indicating more of the data is clustered about the median. This shows that employees were competent in their qualification and had the capacity to utilize information for management of missed appointments.

Table 4.3:

Distribution of Respondents by Education Level

Highest Education Level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Secondary Level	6	10.0	10.0	10.0
	College level	35	58.3	58.3	68.3
	University level	12	20.0	20.0	88.3
	Post Graduate	2	3.3	3.3	91.7
	Professional qualification	5	8.3	8.3	100.0
	Total	60	100.0	100.0	

4.5.3 Distribution of Respondents by Work Experience

The research assessed whether the years of experience in the current position contributed to utilization of information: results showed that 40% of the employees had experience of 6 -10 years, followed by 38.3% with less than 5 years of experience (38.3%) with an expected value of 1.97 and variation of 1.073 which indicates more of the data is clustered about the median. This result was an indication that the staff had many years of work experience and it was expected that this will enhance utilization of information improving retention rates among HIV positive patients.

Table 4.4:

Distribution of Respondents by Work Experience in years

Working Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 5 years	23	38.3	38.3	38.3
	6 - 10 years	24	40.0	40.0	78.3
	11 - 15 years	9	15.0	15.0	93.3
	5	4	6.7	6.7	100.0
	Total	60	100.0	100.0	

Most of the respondents had stayed in their current area of work; 40% for years between 6-10 years, 38.3% for less than 5 years, 15% for years between 11 - 15 years, and 6.7% had worked for more than 15 years. This was found necessary to determine the level of commitment brought about by years of employment towards advancing performance with an expected value of 2.55 which is a low score and a variation of 1.25 which is small hence the values are close to the median of the data set respectively. The result indicated that majority of staff had worked in the institution for more than 5 years, an indication that they were familiar with the existing health information systems in use hence expected to utilize data and reduce the number of missed appointments.

4.5.4 Current position in your facility

The study sought to collect data to determine the respondents current position in the facility, results showed a 75% were the middle level staff, while 25% were top management from the respondent size of 60; this was found necessary to determine the level of commitment bought

about by administrative position to advance service delivery and performance among the respondents with an expected value and variation of 1.75 which is a low score and a variation of .437 which is small hence the values are close to the median of the data set respectively. The results indicate that most of the staffs are the general staff who deal with the patient one on one therefore using the systems available for entry and analysis, thus utilizing the information.

Table 4.5:

Distribution of Respondents by position in facility

Position

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Top Management	15	25.0	25.0	25.0
	Middle level Staff	45	75.0	75.0	100.0
	Total	60	100.0	100.0	

4.5.5 Period working in this institution

The study sought to collect data to determine the years of experience worked, results showed for 60% of the respondents had worked in the institution for 5 years and above, 15% had worked for more than one year but less than 3 years, 13.3% had worked for three years but less than 5 years, 3.3% had worked for more than six months but less than 1 year and 8.3% had worked for less than 6 years from the population size of 60 respondents; This was found necessary to determine the level of commitment brought about by years of employment towards advancing Performance with an expected value of 4.13 a high score and a variation

1.282 which is small hence the values are close to the median of the data set respectively. Most of the staff had worked in the institution for more than three years, an indication that they were familiar with the information they were working with.

Table 4.6:

Distribution of Respondents by length of stay in the institution

For how long have you been working in this institution?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than six months	5	8.3	8.3	8.3
	Six months but less than 1 year	2	3.3	3.3	11.7
	One year but less than 3 years	9	15.0	15.0	26.7
	Three years but less than 5 years	8	13.3	13.3	40.0
	Five years and above	36	60.0	60.0	100.0
	Total	60	100.0	100.0	

4.6 General Responses

4.6.1 Response regarding using data/information generated from the HMIS for Monitoring and evaluation of various programs

The study sought to collect data to determine whether respondent relied on HMIS in Monitoring and evaluation of various programs; results showed a 53.3% always relied on information, 31.7% often relied on the information, and 15% sometimes relied on information for monitoring and evaluation from the population size of 60 respondents; This was found necessary to determine the level of commitment on the current HMIS towards improving and advancing performance with an expected value and variation of 3.38 which is a high score and .739 as variation which is small hence the values are close to the median of the data set respectively. This was an indication that the staff utilized the information for monitoring the trends of missed appointments among the HIV positive patients.

4.6.2 Response regarding using data/information generated from the HMIS for Identification of gaps and priority areas

The study sought to collect data to determine whether respondent relied on HMIS in Identification of gaps and priority areas; results showed 46.7% always relied on the information, 26.7% often relied on the information, 25% sometimes relied on the information and 1.7% rarely used the information generated, from HMIS for identification of gaps. This was found necessary to determine the level of commitment on the current HMIS towards improving and advancing performance with an expected value and variation of 3.33 which is a high score and .816 which is small hence the values are close to the median of the data set respectively an indication they depended on HMIS to identify gaps.

This helped to determine the utilization of information using the available HMIS among the staff to determine the missed appointments among the HIV positive patients.

4.6.3 Response regarding using data/information generated from the HMIS for Staffing decisions

The study sought to collect data to determine whether respondent relied on HMIS in Staffing decisions. Results indicated 55% always used data, 28.3% often used the data, and 16.7% sometimes used the data generated from the HMIS for Staffing decisions**.** This was found necessary to determine the level of commitment on the current HMIS towards improving and advancing Performance with an expected value and variation of 3.05 which is a high score and .982 which is small hence the values are close to the median of the data set respectively an indication that data was embraced and used to determine staffing. For prompt follow of patients, there was need to have adequate staff for the role, and data generated indicated the

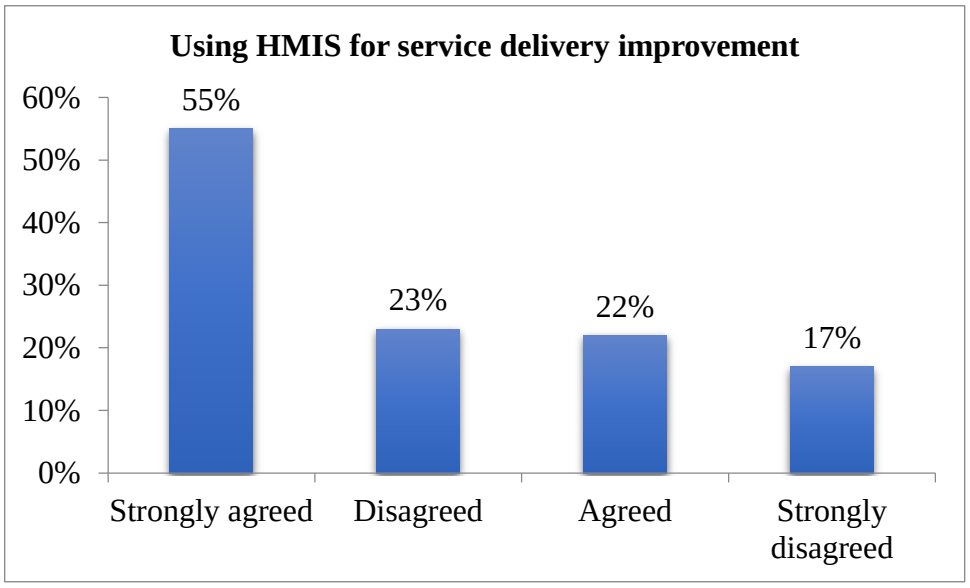
workload that triggered the need to either increase or reduce the number of staff therefore facilitation in improving retention rates

4.6.4 Response regarding using data/information generated from the HMIS for Service delivery improvement

The study sought to collect data to determine whether respondent relied on HMIS in Service delivery improvement results showed a 40% always used, 35% often relied , 15% sometimes used the data while 10% rarely used HMIS in Service delivery improvement. This was found necessary to determine the level of commitment on the current HMIS towards improving and advancing Performance with an expected value and variation of 3.05 which is a high score and .982 which is small hence the values are close to the median of the data set respectively; an indication that data generated was used to improve service delivery. To improve retention rate, it was identified that most of the staff used information in improving service delivery such as generation lists of missed appointments for follow ups.

Figure 4.5:

Using HMIS for Service delivery improvement



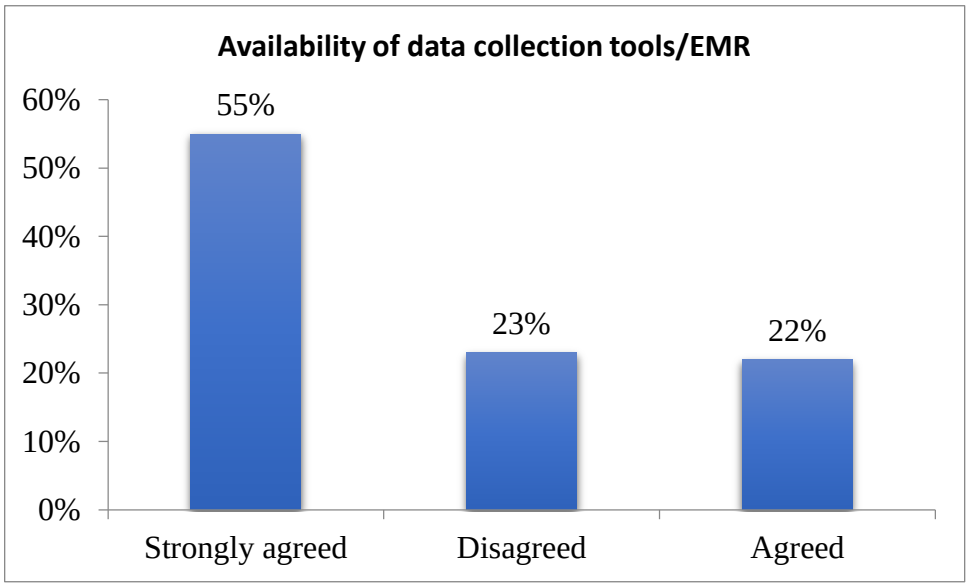
4.7 Response on influence of infrastructural factors on utilization of HIS

4.7.1 Response on whether hospital has tools for data collection and analysis (a health information system in place)

The study sought to collect data to determine whether respondent hospitals had tools for data collection and analysis; results showed 43.3% strongly agreed, 43.3% agreed, 13.3% were neutral in their opinion with an expected value and variation of 4.30 which is a high score and .696 which is small hence the values are close to the median of the data set respectively, indicating that staff had tools in place for data collection and were utilizing the information generated, thus able to follow up patients in time to reduce number of patients missing appointments; this was in agreement with Sauerborn (2018), who states that "the infrastructural factors influencing health information utilization is utilized in keying in and data documentation because it a vitally essential element influencing the use of ordinary information related to health in facilities of care.

Figure 4.6:

Availability of data collection tool/EMR



4.7.2 Response on whether respondents accessed functional equipment in their office

The study sought to collect data to determine whether respondents accessed functional equipment in their office; results showed a 60% strongly agreed, 21.7% agreed, and 18.3% were neutral in their opinion with an expected value and variation of 4.42 which is a high score and .787 which is small hence the values are close to the median of the data set respectively; an indication that the staff had accessibility to functional equipment like computers that facilitated data entry, this would enable data capture that would be used in minimizing missed appointments; a notion echoed by Gopalan et al., (2013) who states that infrastructural factors influencing health information utilization such as IT usage and peripheries are the latest notions in the current institutions of health within countries that are developing specifically in the content of Africa. Gopalan et al., (2013) argues that "each

nation needs better health information pointers that deliver several health requirements, though they should sustain a provided number of infrastructural factors influencing health information utilization among the HIV positive patients" (p. 74)

4.7.3 Response on whether the hospital has adequate infrastructural resources for electronic health records for linkage and retention in the strengthening of management of missed appointments among HIV positive patients

The study sought to collect data to determine whether the hospital had adequate infrastructural resources for electronic health records for linkage and retention in the strengthening of management of missed appointments among HIV positive patients; results showed 48.3% strongly agreed, 35% were neutral, 11.7% disagreed and 5% agreed in their opinion with an expected value and variation of 3.90 which is a high score and 1.145 which is small hence the values are close to the median of the data set respectively; a notion that was agreed by the staff therefore assurance of EMR that articulates data capture and utilization reducing missed appointments, this too was echoed by (Mugavero et al., 2009) that there were benefits in the utilization of health information including continuity of care, curbing re-infections that could be even fatal hence improved health outcomes.

4.7.4 Response on whether the hospital has an effective working local area network that facilitates EMR

The study sought to collect data to determine whether the hospital had an effective working local area network that facilitates EMR. Results showed 35% disagreed, 30% were neutral, 13.3% strongly disagreed and 11.7% agreed in their opinion with an expected value and variation of 2.70 which is a low score and 1.154 which is small hence the values are close to

the median of the data set respectively. This was an indication that the hospitals did not have stable network thus disrupting use of EMR; this would therefore lead to gaps and miss out on identification of patients who may miss out on their appointments. According to Fraser et al (2005) access to internet access enables more elastic designs bearing external data communication and external backups.

4.7.5 Response on whether the hospital has a dedicated IT department

The study sought to collect data to determine whether the hospital had a dedicated IT department. Results showed; 45% strongly agreed, 20% were neutral, 20% disagreed and 15% agreed in their opinion with an expected value and variation of 3.85 which is a low score and 1.205 which is small hence the values were close to the median of the data set respectively. This indicated that a few staff acknowledged the dedication of the IT department and the roles it played. The survey determined that insufficient knowledge of IT, absence of tools for documentation, complicated systems, and an absence of knowledge in evaluating relevant information for utilization in Mombasa County. It was determined by Saueborn (2018) that complications in the designed system utilized in keying in the data was the most essential technical element influencing routine use of health information within facilities of health. In regards to this, Boone et al.,(2013) argued that the system complications challenge the health offices in the utilization of the system and they end up utilizing manual files in capturing information which after some time gets spoilt or becomes poorly managed. Further, the engagement on technical elements restricting use of regular health information, it was discovered by Rhoda et al., (2010) that a number of software utilized for these systems were also few, costly and complicated. It is argued by Gopalan et al., (2013) that soft wares and

utilization of IT were the emerging ideas within modern organizations in nations which are developing specifically within Africa. System complexity was also found to be influenced by lack of knowledge to analyze. This is in agreement with Garrib et al (2008) who assessed the rural South African district health information system found out that health facilities were not utilizing data aggregation tools as expected because they had limited skills to analyze, interpret and utilize the data and also agrees with the world health organization who emphasizes that correct use of data transforming tools into information needs to be dealt with (WHO, 2008).

Table 4.7:

Descriptive Statistics indicating Influence of Infrastructural Factors

	n	**SD**	**D**	**N**	**A**	**SA**	**Mean**	**Std. Dev.**
Health information system in place	60	0 0%	0 0%	8 13.3 %	26 43.4 %	26 43.3 %	4.30	.696
You have access to functional equipment in your office/workplace	60	0 0%	0 0%	11 18.3 %	13 21.7 %	36 60%	4.42	.787
The hospital has linkage with the community health workers to facilitate home visit/home dispensing	60	0 0%	0 0%	3 5%	31 51.7 %	26 43.3 %	4.38	.585
adequate infrastructural resources for electronic health records for linkage and retention	60	0 0%	7 11.7 %	21 35%	3 5%	29 48.3 %	3.9	1.145
Availability of effective working local area network that facilitates EMR	60	8 11.7 %	21 35%	18 30%	7 13.3 %	6 11.7 %	2.70	1.154

4.8 Influence of staff capacity on HIS utilization

4.8.1 Response on respondents feeling adequately trained on the existing health information system

The study sought to collect data to determine whether the respondents were adequately trained on the existing health information system. The results showed 50% disagreed; while 28.3% were neutral and 21.7% strongly agreed in their opinion with an expected value and variation of 4.07 which is a low score and .710 which is small hence the values are close to the median of the data set respectively; an indication that most of the staff were not adequately trained on the existing health information thus affecting utilization of information use hence poor management of missed appointments among HIV positive patients. This would however lead to days when patient would come in great numbers and overwhelm the staff of come in few numbers thus underutilizing the staff, This was agreed by (Aqil et al. (2015), who states that the influence of staff capacity on health information utilization in management of appointments among HIV positive patients was challenged by complex forms and registers for collecting data, inadequate inspiration of health personnel to acquire data and inadequate comprehension of how the data should be used.

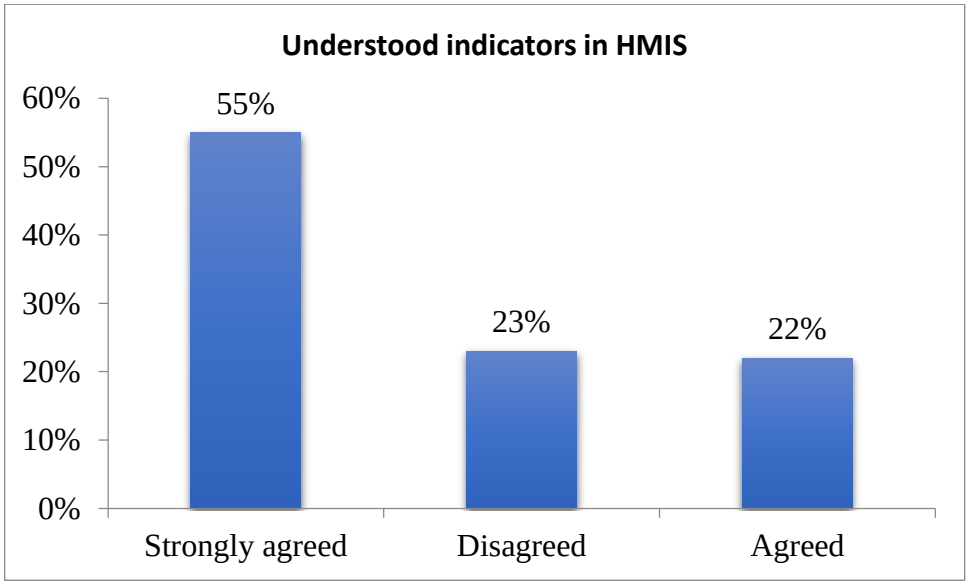
4.8.2 Response on respondents effectively understood the indicators in the existing health information system

The study sought to collect data to determine whether the respondents effectively understood the indicators in the existing health information system results showed 43.3% were neutral 33.3% agreed, while 23.3% disagreed in their opinion.

With an expected value and variation of 3.10 which is a low score and .752 which is small hence the values are close to the median of the data set respectively; an indication that a few staff understood the indicators they were working with, this would their lead to underutilization of health information therefore increasing number of missed appointments. concept that is in contrary to (Hozumi et al, 2016) who states that there are a number of the elements connected with staff capacity on health information utilization required interventions beyond simple training among the health workers to improve skills and knowledge in analyzing data and using health information in the strengthening and management of missed appointments among HIV positive patients. Increased missed appointments is a public outcry that may lead to patient getting resistant to drugs, increasing their viral loads therefore increasing cost of their management

Figure 4.7:

Understood indicators in HMIS



4.8.3 Response on whether health workers in the hospital have vast experience in usage of the computers which aids in better utilization of health information system (where they use EMR)

The study sought to collect data to determine whether health workers in the hospital have vast experience in usage of the computers which aids in better utilization of health information system (where they use EMR) results showed 53.3% strongly disagreed, 23.3% disagreed, and 15% were neutral while 8.3% agreed in their opinion. With an expected value and variation of 1.78 which is a low score and .993 which is small hence the values are close to the median of the data set respectively; an indication that most of the staff did not have computer usage knowledge, affecting utilization of health information, this translate that if staff did not understand simple entry skills then not all data would be captured, this would lead to gaps hence leading to poor follow up of patients due to missing information; a concept echoed by Boone et al., (2013) who argues that complications within these systems have made it a challenge for health officials to use the system instead maintaining manual files for recording information making it deteriorate and lacking proper management. Additionally, the technical elements restricting routine use of health information affects data analysis and interpretation at all levels.

4.8.4 Response on whether hospital provides Continuous Medical Education for both new and existing staff coming on board

The study sought to collect data to determine whether hospital provides Continuous Medical Education for both new and existing staff coming on board results showed 43.3% disagreed, 33.3%strongly disagreed, 13.3% agreed neutral while 10% were neutral in their opinion.

With an expected value and variation of 2.03 which is a low score and .991 which is small hence the values are close to the median of the data set respectively; an indication that the staff hardly attended to CMEs, this meant that in cases where there are updates and staff did not get induction on the same they would continue with normal routine work which would jeopardize quality of data captured and generated. The quality of data generated is what will be analyzed therefore informing which patients to be followed up, hence need to understand the requirements, for instance, the staff may be following up patients who have missed drugs for more than 30 days when it is required that a patients is followed up after 24 hours. This agrees with Harrison and Bakari (2008) who opined that analytical and technical expertise becomes challenging in the production of data that is reliable and high quality. This is supported by Rotich et al. (2003) who stated that insufficient knowledge on the benefits of HMIS data was established to be a key component in the low utilization of quality information and data.

4.8.5 Response on whether all staffs have work stations with access to intranet and internet for communications hospital providers

The study sought to collect data to determine whether all staffs have work stations with access to intranet and internet for communications hospital providers. Results showed 28.3% being neutral, 25% strongly disagreed, 23.3% disagreed lastly 23.3% agreed in their opinion.

With an expected value and variation of 2.50 which is a low score and 1.112 which is small hence the values are close to the median of the data set respectively; an indication that there was poor intra and internet thus disrupting communication among health care providers affecting information use, therefore underutilization of information due to emerging gaps

during times of net shortage. According to (Fraser et al. 2005) access to internet access enables more elastic designs bearing external data communication and external backups. Complete systems based on the web require networks that are reliable though dial up connections may work only when the pages are carefully designed while the system is not needed every time

4.8.6 Response on whether the staff has ever been trained on data management

The study sought to collect data to determine whether the staffs have ever been trained on data management. Results showed 51.7% indicated a Yes that they had been trained on job, through seminar and workshops while 48.3% indicated that they had not been trained at all with an expected value and variation of 1.48 which is a low score and .504 which is small hence the values are close to the median of the data set respectively; an indication that most of the staff have not been trained in data management hence affecting information use. With lack of skills; that translated to no utilization of data except the normal data entry which would in no way improve retention among HIV Positive patients. This agrees with Harrison and Bakari (2008) who opined that analytical and technical expertise becomes challenging in the production of data that is reliable and high quality. This is supported by Rotich et al. (2003) who stated that insufficient knowledge on the benefits of HMIS data was established to be a key component in the low utilization of quality information and data. Poor data management would lead to poor utilization hence losing track of the patients, by the time it's realized, the patients would come back with deteriorated health taking more resources to revive the patient and even more cost and time to start tracing many patients at a go.

4.8.7 Response on whether the hospital staffs have been sufficiently trained on effective and efficient use of IT resources

The study sought to collect data to determine whether the hospital had all staff sufficiently trained on effective and efficient use of IT resources; results showed a 33.3% disagreed, 26.7% neutral, 20% strongly disagreed and 11.7% agreed in their opinion with an expected value and variation of 2.55 which is a low score and 1.185 which is small hence the values are close to the median of the data set respectively; an indication that the staff were not sufficiently trained. IT resources include on aspects such as the CPU, mouse, so if a staff doesn't have the basic knowledge on what to do if his mouse is not working, it means he will sit back and wait until the IT person attends to it, this would in turn waste time and miss out on information the patient would have given. This could hence lead to poor data capture therefore gaps that may lead to no follow up of the patient due to missing data. This is in agreement with Garrib et al (2008) who assessed the rural South African district health information system found out that health facilities were not utilizing data aggregation tools as expected because they had limited skills to analyze, interpret and utilize the data and also agrees with the World Health Organization who emphasizes that correct use of data transforming tools into information needs to be dealt with (WHO, 2008).

Table 4.8:

Descriptive Statistics on Staff Capacity Influence

	n	SD	D	N	A	SA	Mean	Std. Dev.
whether the hospital has an all staff able to access essential services and devices and perform work outside the office	60	11 18.3 %	26 43.3 %	16 26.7 %	7 11.7 %	0 0%	2.32	.911
Access essential services and devices and perform work outside the office	60	11 18.3 %	26 43.3 %	16 26.7 %	7 11.7 %	0 0%	2.26	1.083
Response on whether the hospital staffs had adequately trained on efficient and effective utilization of resources of IT	60	12 20%	20 33.3 %	16 26.7 %	7 11.7 %	5 8.3%	2.55	1.185
Every employee had been properly trained on efficient and effective utilization of resources of IT.	60	12 20%	20 33.3 %	16 26.7 %	7 11.7 %	5 8.3%	2.55	1.185
The hospital has a dedicated IT department	60	0 0%	12 20%	12 20%	9 15%	27 45%	3.85	1.205

4.9 Response of influence of supervision of staff on utilization of HIS

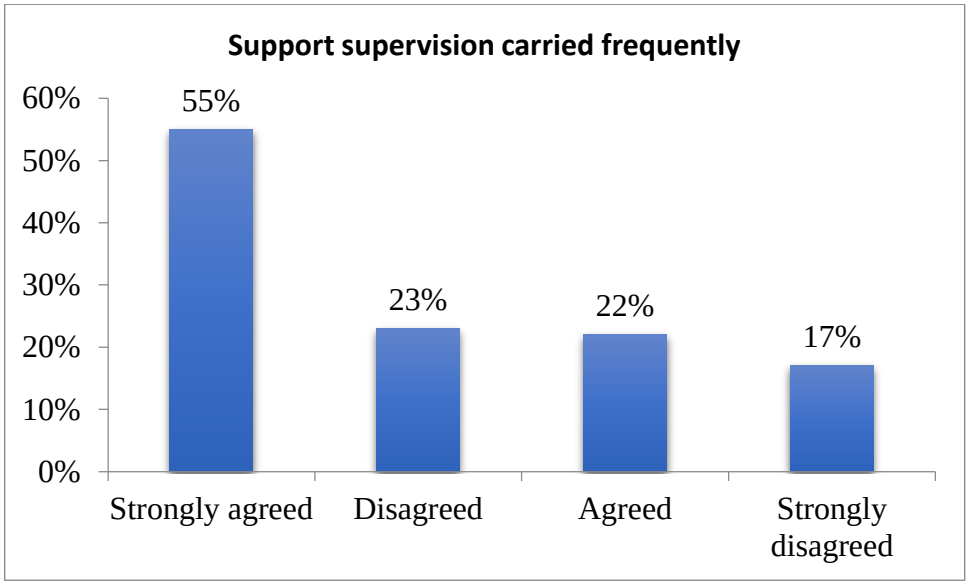
4.9.1 Response on whether Support supervision on hard/software is carried out regularly (monthly, quarterly)

The study sought to collect data to determine whether Support supervision on hard/software is carried out regularly (monthly, quarterly); results showed 40% strongly disagreed, 33.3%

disagreed, 13.3% were neutral while 13.3% agreed in their opinion with an expected value and variation of 2.00 which is a low score and 1.042 which is small hence the values are close to the median of the data set respectively; an indication that supportive supervision had not been embraced; this meant staff will continue to do what they think is fine if they are nt supervised, this may in turn lead to lack of proper data collection hence utilization of poor data entered for the HIV positive patients therefore leading to poor retention rates, a notion supported by (Lynn & Redman, 2006) who states that "professional support as well as that coming from the organization, management of practices related to health as well as work life balance, chances in careers and professional growth have shown to be regarded by the supervisor to be essential in the usage of health information".

Figure 4.8:

Support supervision carried frequently



4.9.2 Response on whether feedback on support supervision is given to the users

The study sought to collect data to determine whether feedback on support supervision is given to the users; results showed 48.3% were neutral, 36.7% disagreed, 11.7% agreed while 3.3% strongly disagreed in their opinion.

With an expected value and variation of 2.68 which is a low score and .725 which is small hence the values are close to the median of the data set respectively; an indication that feedbacks were rarely given to the staff thus lack of improvement in their areas of expertise. Lack of feedback means continuity of what is being done, either good or bad, therefore if staff are not given feedback on their performance especially in tracking HIV positive patients then retention rates may continue to be poor affecting information utilization, according to (Kihuba et al., 2014) “Feedback is seen as potential improvement area that can benefit those in the lower level who are tasked with evaluating and monitoring, making decisions and planning.

4.9.3 Response on whether Supervision of the health information system facilitates monitoring and follow-up

The study sought to collect data to determine whether supervision of the health information system facilitates monitoring and follow-up of the missing patients; results showed 35% strongly agreed, 28.3% were neutral, 25% agreed while 11.7% disagreed with in their opinion.

With an expected value and variation of 3.83 which is a low score and 1.044 which is small hence the values are close to the median of the data set respectively an indication that supervision was rarely done therefore affecting monitoring of data utilization. If supervision was not done, monitoring of data was unnecessary, since from feedback of supervision then monitoring is expected for improvement to would take place. Lack of monitoring data

wouldn't inform the rates of retention therefore no improvement mechanisms. This echoes Lynn and Redman, (2006) "Professional support as well as that coming from the organization, management of practices related to health as well as work life balance, chances in careers and professional growth have shown to be regarded by the supervisor to be essential in the usage of health information.

4.9.4 Response on whether respondents had expertise required for evaluating and utilizing information and data so as to assist in the form of decision they had undertaken

The study sought to collect data to determine whether respondents had expertise required for evaluating and utilizing information and data so as to assist in the form of decision they had undertaken; results showed 33.3% were neutral, 25% strongly disagreed, 23.3% disagreed while 18.3% agreed with in their opinion with an expected value and variation of 3.55 which is a low score and 1.064 which is small hence the values are close to the median of the data set respectively; an indication that there was poor knowledge and skills in the evaluations for decision making. With poor skills then data utilization would be nonfunctional leading to array of decisions dealing with missed appointments without proper interventions. The findings match Loevinsohn, (1994) who did a survey targeting health workers in a developing nation that was unidentified to evaluate their capability in assessing and utilizing data from a health system for information divulged that existed. A considerable demand to train the health supervisor on how to evaluate and utilize, and to connect the used data activities when information systems are installed

Table 4.9:

Descriptive Statistics on Support Supervision

	n	SD	D	N	A	SA	Mean	Std. Dev.
Support supervision on hard/software is carried out regularly (monthly, quarterly)	60	24 40%	20 33.3 %	8 13.3 %	8 13.3 %	0 0%	2.00	1.042
feedback on support supervision is given to the users	60	2 3.3%	22 36.7 %	29 48.3 %	7 11.7 %	0 0%	2.26	1.083
Meetings are held to discuss finding	60	0 0%	0 0%	8 13.3 %	33 55%	19 31.7 %	4.18	.651
Supervision of the health information system facilitates monitoring and follow-up of the missing patients	60	2 3.3%	22 36.7 %	29 48.3 %	7 11.7 %	0 0%	3.83	1.044
Respondents had expertise required for evaluating and utilizing information and data so as to assist in the form of decision they had undertaken.	60	15 25%	14 23.3 %	20 33.3 %	11 18.3 %	0 0%	3.55	1.064

4.10 Response on influence of Behavioral factors on HIS utilization

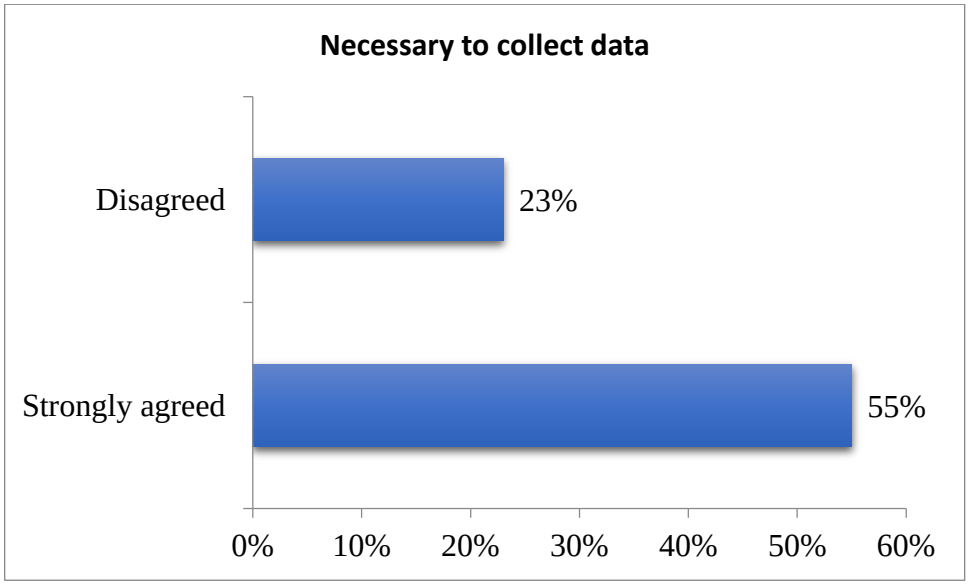
4.10.1 Response on whether it was necessary for them to collect data

The study sought to collect data to assess whether the attitude of the staff was positive on data collection and whether it was necessary for them to collect data; results showed 85% reported that it was necessary to collect data while only 15% reported that it was not necessary as. The

reasons for collecting data; 35% felt it was a routine exercise, 25% felt it was a requirement, 20% data was collected for keeping track of disease trend and only 20% felt data was for decision making. The reasons for not collecting data; 35% felt it was not necessary, 33.3% felt it was boring, and 31.7% felt it was very tedious 31.7% as shown in frequency table. This was an indication that data was collected as routing work and as a requirement, not something passionate for them therefore leading to gaps. The staff did not understand why the need to utilize the existing data wholesomely, poor utilization of data among the staff leading to poor follow up of patients thus increased missed appointments among HIV positive patients; this agrees with Carbone (2008) who argues that clinical officers required being motivated so as to influence change of behavior within their work; this would enable them utilize their normal health records in making decisions.

Figure 4.9:

Necessary to Collect Data



4.10.2 Response on respondent type of data they generate in the course of their daily activities

The study sought to collect data to establish the perceptions of the managers on the significance of information use within their work places 66.7% of the managers felt utilization of information was significance in their places of work while 33.3% felt it was not important and that they highly asked for opinions (31.7%), use their own opinion (26.7%), just decide at 21.7%, lastly relied on using approximates (20%). 21.7% used information for monitoring program , 16.7% used the information for medical legal issues, 15% for planning, 15% to monitor their work, 11.7% to evaluate their work, 8.3% for research,6.7% monitor other works and lastly 5.0% for budgeting.

4.10.3 Distribution of Respondents Feelings on What Motivates People to Use Information

This was a response question that assessed motivation to use information. All respondents strongly agreed (100%), and felt that Staff competence and skills to perform health information tasks is essential for data collection, analysis and use as shown below. This agrees with the revelations of Carbone (2008) that clinical officers required to be motivated so as to influence change of behavior within their work so as to be able to utilize their normal health records in making decisions.

58% of the respondents were neutral, while 16.7% agreed that they were motivated towards data collection and analysis. Aqil et al. (2015) notes that a number of behavioral elements will need interventions that are more than the ordinary training to enhance their skills and knowledge in comprehending the data and utilization of information. 75% of the respondents strongly agreed, while 25% agreed that lack of motivating incentives hinders information use

towards use of data collection, analysis and use as shown below indicating a majority the need for motivating incentives to boost HMIS use. It is opined by WHO (2005) that not so much attention has been allocated to tackle the needs of staff in regards to training so as to equip them with skills as a form of motivation for officers in the health information; thus the need for the organization to address the challenge.

Table 4.10:

Descriptive Statistics on Behavioral Factors

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Behavioral factors	0				
According to you, is it necessary to collect this data?	60	1	2	1.15	.360
Is information use important to you or your area of work?	60	1	2	1.33	.475
If yes in question 2 above, what reason do you have for collecting data? (Tick)	60	1	4	2.50	1.081
If no in Q5 above, how do you make your decisions as you run your services? Tick)	60	1	4	2.65	1.132
What type of data do you generate in the course of your daily activities?	60	1	6	2.93	1.413
If no in question 3 above, what reason do you have for not collecting data?	60	2	4	2.98	.833
I Positive attitude towards data collection and use	60	3	5	3.67	.857
Information is power/key in decision making	60	3	5	4.12	.846
I Confidence to use the generated information	60	3	5	4.27	.710
If yes in 5 above how do you use the health information? (Tick what is applicable)	60	1	8	4.30	2.324

Lack of motivating incentives hinders information use	60	3	5	4.50	.873
Collecting information that adds no value irritates me	60	4	5	4.68	.469
Staff competence and skills to perform health information tasks is essential for data collection, analysis and use	60	5	5	5.00	.000
Valid N (list-wise)	0				

4.11 Response on Utilization of Health Management Information System

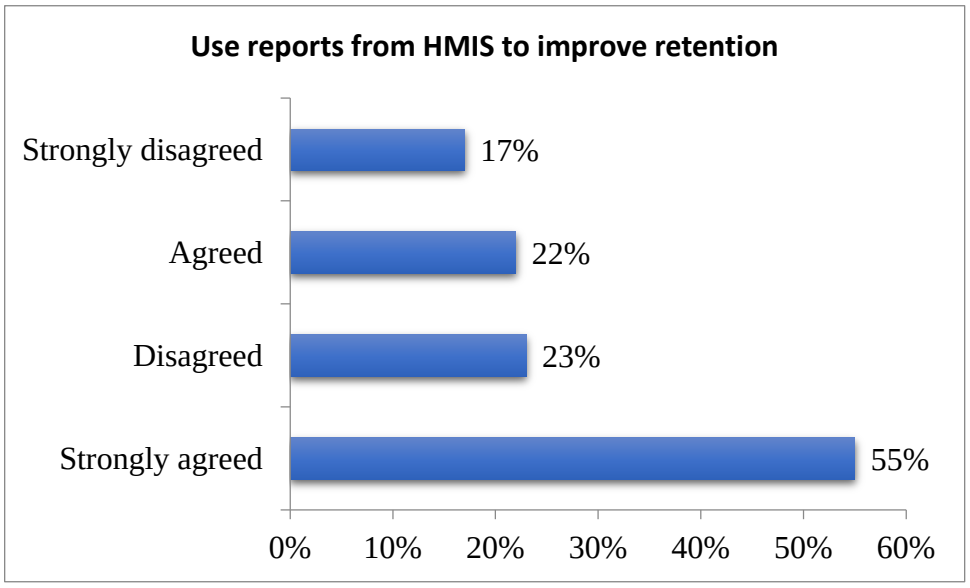
4.11.1 Response on use of reports from the system helps the hospital management to improve retention rates

The study sought to collect data to determine whether reports from the system helped the hospital management to improve retention rates. Results showed 41.7% strongly agreed, 21.7% were neutral, and 20% disagreed while 16.7% strongly disagreed in their opinion.

With an expected value of 4.65 a high score and variation of .481which is small hence the values are close to the median of the data set respectively, an indication that the existing health information were the primary source of reports; they were therefore being utilized through analysis to improve retention rates. This is well elaborated by (Mavimbe et al., 2005) that the absence of standard data, making of decision not based on information will happen leading to ineffective and inefficient projects pegged on assumptions.

Figure 4.10:

Use reports from HMIS to Improve Retention



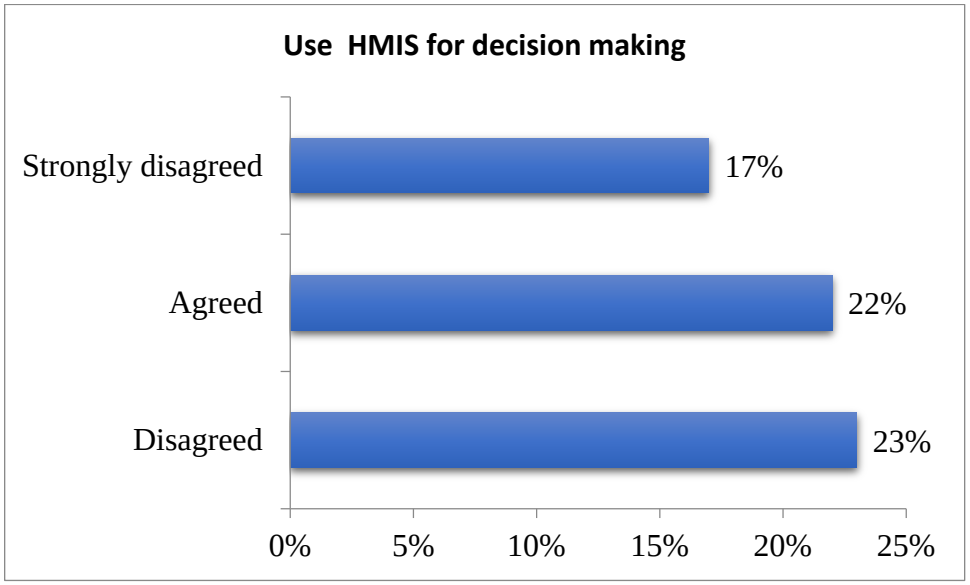
4.11.2 Response on whether the available health information helps the hospital management to provide prompt decision on mechanisms to reduce missed appointments

The study sought to collect data to determine whether the available health information helped the hospital management to provide prompt decision on mechanisms to reduce missed appointments. Results showed 55% strongly agreed, 23.3% disagreed while 21.7% agreed with the opinion with an expected value and variation of 3.30 which is a high score and 1.576 which is small hence the values are close to the median of the data set respectively, an indication that generated information was used in decision making to reduce defaulter rates. The existing health information systems were used to determine reasons from missed appointments which included lack of transport, conflict of time for drugs and opting to go to

work instead, and others even giving responses such as forgetting their refill dates. This prompted the management to come out with strategies that would favor patients such as dropping them drug through the use of community health workers, and even sending by bus to those who stay far away. Decisions made by the facility managers to improve retention rates.

Figure 4.11:

Use HMIS for decision making



4.11.3 Response on whether the health information helps the health workers to provide wider service coverage in the appointments of HIV positive patients

The study sought to collect data to determine whether the health information helped the health workers to provide wider service coverage in the appointments of HIV positive patients. Results showed 58.3% strongly agreed, 31.7% agreed while 10% disagreed in their opinion with an expected value of 4.08 a high score and variation of 1.225 which is small hence the

values are close to the median of the data set respectively; an indication that available information generated from the existing health information system was analyzed and interpreted serving a wider service coverage. From the systems, it could identify patients who stay in a particular area, assign then a community health worker who would pick drugs for the patients and have them pick from her, a central place near all of them, thus serving a wider coverage of patients using only one community health worker. This is consistent with a comparable study carried out in Uganda by MEASURE Evaluation (2009), which revealed that most facilities' staff claimed to use HMIS data for staffing decisions, managing medical supplies and drugs, and enhancing services.

4.11.4 Response on whether respondent got any form of support from the Senior Managers to enhance data analysis and utilization for decision making

The study sought to collect data to determine whether respondent got any form of support from the Senior Managers to enhance data analysis and utilization for decision making results showed 66.7% indicating a yes, accepting that support from senior managers of resources was provided for conducting data review meetings at 28.3% performance of health facility based on routine HIS at 28.3% funding for HMIS activities at 26.7% while support supervision and on job training on data tools at 16.7%, 33.3% denied in their opinion. With an expected value of 4.07 a high score and variation of .821 which is small hence the values are close to the median of the data set respectively; an indication the management supported activities to improve data use hence more effort to ensure that the staff actualize the utilization of the information to improve retention among HIV positive patients. According to (Harrison & Nutley, 2010), the most often stated data utilized for decision-making were HMIS (Health

Management Information System) statistics, district-level surveys, and state/district departmental reports. An organizations effectiveness is directly associated with its employees performance (Belita et al., 2013). It is the systems, processes and rules which govern organizations. The systems, processes and rules have the capability of supporting or hampering a person's capabilities of utilizing data in making decisions (Aqil et al., 2015).

4.12 Inferential Statistics

4.12.1 Relationships between study variables

The data set did not meet the assumptions of normal distribution. Spearman Rank Correlation, and Chi-square test form the core techniques to study relationships and they are discussed in detail the next subsection in that order. The previous sections of this chapter concentrated on the description of the uni-variate statistics of the variables. The current section is dedicated to the analysis of relation among the variables, and it is the core section of the study.

The data was subjected to Spearman correlation analysis to establish nature and strength of association between variables of interest.

4.12.2 Spearman Rank Correlation results between Independent variable (Infrastructural factors, Staff Capacity, Supervisory and Behavioral factors and Dependent Variable (Service Delivery)

A nonparametric indicator of the strength and direction of a link between two variables evaluated on at least an ordinal scale is the Spearman rank-order correlation coefficient. The Greek letter, pronounced rho, or the sign rs are used to represent it. The test is applied to variables that are either ordinal or that fail the assumptions required to conduct the Pearson's product-moment correlation.

Spearman's correlation was used to understand whether there is an association between Dependent Variable (Utilization of information) and Independent Variables (Infrastructural factors, Staff Capacity, Supervisory and Behavioral factors)

Table 4.11:

Spearman Rank Nonparametric Correlations

Correlations

			Infrastructure	Staff Capacity	Supervisory	Behavioral	Utilization HMIS
Spearman's rho	Infrastructure	Correlation Coefficient	1.000	.343**	-.007	.347**	.114
		Sig. (2-tailed)	.	.007	.959	.007	.384
		N	60	60	60	60	60
	Staff Capacity	Correlation Coefficient	.343**	1.000	-.290*	.508**	-.377**
		Sig. (2-tailed)	.007	.	.024	.000	.003
		N	60	60	60	60	60
	Supervisory	Correlation Coefficient	-.007	-.290*	1.000	-.512**	.811**
		Sig. (2-tailed)	.959	.024	.	.000	.000
		N	60	60	60	60	60
	Behavioral	Correlation Coefficient	.347**	.508**	-.512**	1.000	-.505**
		Sig. (2-tailed)	.007	.000	.000	.	.000
		N	60	60	60	60	60
	Utilization of HMIS	Correlation Coefficient	.114	-.377**	.811**	-.505**	1.000
		Sig. (2-tailed)	.384	.003	.000	.000	.
		N	60	60	60	60	60

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

A Spearman's rank-order correlation was run to determine the relationship among the 60 respondents implementing the specified factors influencing HMIS utilization in Hospitals in Mombasa County.

The outcomes are revealed in a matrix as can be viewed in the table. The table shows Spearman's correlation, its significance value and the sample size that the calculation was based on.

There was a strong, positive correlation between supervisory factors and utilization of HMIS, which is statistically significant (r_s = .811, p = .000). The results indicate that with support supervision, information is put to use and this reduces missed appointments. The results are echoed Chaled et al. (2013) that state that access and availability of feedback and reports that are timely has the ability of establishing the utilization levels of regular health information by facilities of health.

There was a negative correlation between staff capacity factors and utilization of health information in management of missed appointments, which is statistically significant (r_s = -.377, p = .003). This concurs (Hozumi et al, 2016) who states that to ascertain a number of the elements connected with staff capacity on health information utilization there requires interventions beyond simple training among the health workers to improve skills and knowledge in analyzing data and using health information. An indication that there is more than just training, failure to which data would not be used and so no changes may be determined to improve retention rates.

There was a weak positive correlation between Infrastructural factors and utilization of health information system in the management of missed appointments, which is statistically significant (r_s = .114, p = .384). It is an indication that there was a relationship between the dependent and the independent variable, A concept echoed by Mutale et al. (2013) "that weak infrastructural system on information related to health are an essential obstacle to reaching the goals of millennium development that are focused on health due to accomplishments in health systems that can't be properly evaluated or tracked where infrastructural factors influencing health information utilization are partial, flawed or mistimed". An indication that with the right infrastructures, there will be embraced data use therefore improving retention among HIV positive patients

There was a moderate negative correlation between behavioral factors and utilization of HMIS in management of missed appointments, which is statistically insignificant (r_s = -.505, p = .000), an indication of poor relationship between the dependent and the independent variables; this however disagrees with (Odhiambo-Otieno, 2005), who states that "attitudes and perceptions of the facility managers towards data determine the effects on the usage of information related to health. If the managers neglect the use of making decisions founded on evidence and the utilization of information for clarity and responsibility then a tradition of information will not be embraced. He further stated that it is thus important to critically scrutinize the views, perceptions and norms of facility managers and other staff in regards to operations that are related to information." It is therefore determined that behavioral factors did not influence data use therefore no effect on management of missed appointments.

4.13 Chi-Square Test of Association

The independence of Chi-square test established the likelihood of a relationship between variables in the categories which utilizes a table of contingencies. The subsets of a particular variable exist within the rows, while the subsets for other elements exist within the columns. Every element requires two or more subsets. Every cell shows the entire count of incidences for a particular pair of set.

Table 4.12:

Association between Infrastructural Factors and Utilization of health informatin in management of missed appointmnets

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	138.182[a]	90	.001
Likelihood Ratio	114.382	90	.042
Linear-by-Linear Association	1.693	1	.193
N of Valid Cases	60		

a. 110 cells (100.0%) have expected count less than 5. The minimum expected count is .02.

This table draws attention to the outcome on the row containing Pearson Chi-Square row. It can be noted on that row the value of Pearson Chi-Square, test statistic is, X1=138.182, P value exists within the same row within the Asymptotic Significance (2-sided) column (000) the result is significant if this value is equal to or less than the designated alpha level normally 0.05

In this case, the p-value is smaller than the standard alpha value, the result is statistically significant the data suggests that the categorical variables Infrastructural factors and utilization of HMIS are associated with each other and the relationship are statistically significant. An indication that with available effective infrastructure, data is put to use and this will translate to increased retention rates. In information health actor-network theory as articulated by Latour (2005) and Callon (2007), innovation in technology is perceived as a way to develop and stabilize a disperse structure on the utilization of health information in strengthening the management of missed appointments among HIV positive patients. Based on an outlook of the theory of actor network Walsham (2017) asserts that: Health information in relation to the theory of actor network which develops its elements is connected by coalition of similar networks with aligned interests.

Table 4.13:

Association between Staff Capacity and Utilization of health information in managenent of missed appointments

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	168.387[a]	90	.000
Likelihood Ratio	131.624	90	.003
Linear-by-Linear Association	2.638	1	.104
N of Valid Cases	60		

a. 110 cells (100.0%) have expected count less than 5. The minimum expected count is .02.

When reading this table we are interested in the results of the Pearson Chi-Square row.

It can be perceived that the value of Pearson Chi-Square, test statistic is, X1=168.387, P value appears in the same row in the Asymptotic Significance (2-sided) column (000) the result is significant of this value is equal to or less than the designated alpha level normally 0.05

In this case, the p-value is smaller than the standard alpha value; the result is statistically significant the data suggests that the categorical variables staff capacity factors and utilization of information. This is an indication that when the staff have the right skills, training and an in-depth understanding of the indicators, hey embrace data use and this lead to targeted follow ups reducing missed appointments among HIV positive patients. According to Diffusion of Technology Innovation Theory, an explanation provided by Rogers (2017) is that a number of health personnel embrace innovations related to technology at the onset yet the rest of them embrace it much later or not at all. They argue that every new health technology is embraced based on a number of stages such as experience, views, choice, execution and verification. Additionally the decision by health workers to embrace certain technology on the usage of health information is strengthening the management of HIV positive patients if they know how to use it.

Table 4.14:

Association between Support Supervision and Utilization of health information in management of missed appointments

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	145.811[a]	60	.000
Likelihood Ratio	126.341	60	.000
Linear-by-Linear Association	30.962	1	.000
N of Valid Cases	60		

a. 77 cells (100.0%) have expected count less than 5. The minimum expected count is .03.

This table draws attention to the outcome on the row containing Pearson Chi-Square row. It can be noted on that row that the value of Pearson Chi-Square, test statistic is, X1=145.811, P value appears in the same row in the Asymptotic Significance (2-sided) column (000) the result is significant if this value is equal to or less than the designated alpha level normally 0.05.

In this case, the p-value is smaller than the standard alpha value, the result is statistically significant the data suggests that the categorical variables Supervisory factors and Utilization of HMIS are associated with each other and the relationship is statistically significant. An indication that effective support supervision does improve data use therefore reducing missed appointments among HIV positive patients. Kamadjeu et al, (2005) emphasis that the senior managers leadership on shared values associated to information systems are alluded to as a preexisting culture of data collection otherwise ‟ culture of information. Chaled et al. (2013) opined that access and availability of feedback and reports in a timely manner has the ability

to establish the utilization levels of regular medical information within facilities of health. Further, Scott (2006) opined that it is essential for managers to be aware of the required information, the way it was acquired and how to optimize its utilization so as to make sure it is sustainable and developing in the current environment which is information intensive. It is pointed by MOH (2009) that the absence of policies and guidelines which was noted in the study yet most of the managers felt it was very important in their areas of work. The study found out that support mostly was in form of supervision concurring with Sauerborn (2018) and Boone, et al. (2013) argument that some who are members within the team managing health facilities have been advocating for training to be conducted on management, leadership and supervision to improve the ability of effectively managing services of health. Thus they are expected to capacity build lower health facilities through supervision which results in effective use of regular health data.

Table 4.15:

Association between Behavioral Factors and Utilization Of healthinformation inmanagement of missed appointments

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	202.570[a]	130	.000
Likelihood Ratio	143.672	130	.195
Linear-by-Linear Association	14.371	1	.000
N of Valid Cases	60		

a. 154 cells (100.0%) have expected count less than 5. The minimum expected count is .02.

When reading this table we are interested in the results of the Pearson Chi-Square row.

We can see here that the value of Pearson Chi-Square, test statistic is, X1=202.570, P value appears in the same row in the Asymptotic Significance (2-sided) column (000) the result is significant if this value is equal to or less than the designated alpha level normally 0.05.

In this case, the p-value is smaller than the standard alpha value, the result is statistically significant the data suggests that the categorical variables behavioral factors and utilization of HMIS are associated with each other and the relationship is statistically significant. An indication that with the right perceptions, attitudes, motivation, and then staff tend to be positive towards their work including data use thus increasing retention rates. According to the Health Information System Design Theory, a vital notion of this hypothesis is the link connecting the personnel (behavioral) and catalyst (technical) elements which require to be developed within philosophies of common trust and ambitious activities between health workers that exist to hold a mutual target (accomplishment of health results) on the utilization of health information in strengthening the management of missed appointments among HIV positive patients.

CHAPTER FIVE
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The dealings of this section are about summarizing of outcomes, recommendations and conclusion. This was conducted in regards to the survey objectives and addresses key outcomes from the study.

5.2 Summary

The purpose of the study was to investigate factors influencing utilization of the Health Information System in the management of missed appointments among HIV positive patients in Mombasa County Government and the specific objectives were: Infrastructural factors, Staff Capacity factors, Supervisory factors and Behavioral factors.

This study was guided by four research questions relating selected independent factors on utilization of the Health Information System in the management of missed appointments among HIV positive patients and the Non Parametric measures Spearman Rank Correlation and Chi Square results provided the statistical evidence answer to the four research questions.

Based on Data Analysis results it was found out that majority of respondents were Female and those responding were Middle level staff, academically qualified with 6 – 10 years of experience and so had capacity and commitment in making decisions on management of missed appointments among HIV patients using HMIS.

The results also revealed that the majority of respondent relied on HMIS in planning, for evaluating and monitoring of different projects, pinpointing areas of priority and gaps. Also data was used for plan and discover epidemics, evaluate approaches by evaluating

performance targeting services, marshaling of resources founded on comparing services, making sure there is effective and efficient utilization of scarce resource, supply of medicine and management of drugs, and service delivery improvement.

5.2.1 What is the influence of infrastructural factors on utilization of health information system in management of missed appointments among HIV positive patients?

A significant majority of the respondents agreed that their hospitals had tools for data collection and analysis and accessed functional equipment in their office and that the hospital had linkage with the community health workers to facilitate home visit/home dispensing.

A significant majority indicated that hospital had adequate infrastructural resources for electronic health records for linkage and retention in the strengthening of management of missed appointments among HIV positive patients however noting that hospitals did not have effective working local area network that facilitated EMR. Significantly, a majority indicated that the hospital did not have all staff access essential services and devices to perform work outside the office.

A majority of the respondents were unaware on whether the hospital's individual department used customized software but were aware that hospital had integrated software to manage their funding and budget and disagreeing with the view that hospital circulars' and other internal documents were available and easily searchable electronically.

In determining whether there is an association between infrastructural factors and utilization of HMIS in hospitals Chi-square test was run and results indicated a value of Pearson Chi-Square, test statistic as, X1=138.182, P value appeared in the same row in the asymptotic

significance (2-sided) column .000 the result is significant if this value is equal to or less than the designated alpha level normally 0.05

In this case, the p-value is smaller than the standard alpha value, the result is statistically significant suggesting that the categorical variable Infrastructural factors and utilization of HMIS are associated with each other and the relationship is statistically significant. Therefore need to ensure that for missed appointments to be captured and followed up in time, infrastructure to facilitate data capture and utilization should be enhanced.

5.2.2 How do staff capacity factors influence health information system utilization in the management of appointments among HIV positive patients?

A majority of respondents were not adequately trained on the existing health information system though indicated that they understood the indicators in the existing health information system. A majority of the health workers in the hospital indicated not having a vast experience in usage of the computers which aids in better utilization of health information system (where they use EMR). Staff did not have work stations with effective access to intranet and internet for communications and disagreeing with statement that hospital provided continuous medical education for both new and existing staff coming on board.

A majority of the staff indicated that they had undergone on job training on data management; results showed 51.7% had been trained on job, through seminar and workshops and while 48.3% indicated that they had not been trained at all.

In determining whether there is a relationship between staff capacity factors and utilization of HMIS in hospitals Chi-square test was run and results indicated a value of Pearson Chi-

Square test statistic as, X1=168.387, P value appears in the same row in the asymptotic significance (2-sided) column (.000) the result is significant if this value is equal to or less than the designated alpha level normally 0.05

In this case, the p-value is smaller than the standard alpha value, the result is statistically significant the data suggests that the categorical variables staff capacity factors and utilization of HMIS are associated with each other and the relationship is statistically significant. Staff with the right training, skills and experience will greatly influence utilization of health information and manage missed appointment unlike staff without the skills, and training

5.2.3 How does staff supervision influence health information system utilization in the management appointments among HIV positive patients?

A majority of respondents indicated that support staff supervision on hard/software was not carried out regularly, feedback on support supervision was not given to the users, that the users did not have the expertise required in evaluating and utilizing information and data so as to assist with forming decisions which they are involved. However, majority agreed that meetings were being held and supervision of the health information system facilitated thus able to monitor and follow-up of the missing patients.

The value of Pearson Chi-Square, test statistic was, X1=145.811, P value appears in the same row in the asymptotic significance (2-sided) column (.000) the result is significant if this value is equal to or less than the designated alpha level normally 0.05. In this case, the p-value is smaller than the standard alpha value, the result is statistically significant therefore suggesting that the categorical variables supervisory factors and utilization of HMIS are associated with each other and the relationship is statistically significant. This has also been proven by the

spearman rank that indicate strong positive relation between staff supervision and utilization of health information (r=.811, p=.000).Therefore need to capacity build lower health facilities through supervision which results in effective use of regular health data. Established staff supervisions influences utilization of health information improved missed appointments among HIV positive patients though identification of loopholes and feedback that in turn improves performance

5.2.4 Which are some of the behavioral factors influencing health information system utilization in the management of missed appointment among health workers?

A majority reporting that it was necessary to collect data as a routine exercise and a requirement, while the minority indicating that is was not necessary to collect data due to it being boring and tedious exercise. Results showed that 21.7% used information for monitoring program , 16.7% used the information for medico legal issues, 15% for planning, 15% to monitor their work, 11.7% to evaluate their work, 8.3% for research,6.7% monitor other works and lastly 5.0% for budgeting.

Most of the respondents strongly agreed (41.7%), neutral (30%) and agreed (28.3%) felt that information was key in decision making.

Most of the respondents agreed (43.3%), strongly agreed (41.7%), neutral (15%) felt that respondents were confident to use the generated information.

All respondents strongly agreed (100%), and felt that staff competence and skills to perform health information tasks was essential for data collection, analysis and use.

58% of the respondents were neutral, while 16.7% agreed that they had positive attitude towards data collection and use data collection, analysis and use.

75% of the respondents strongly agreed, while 25% agreed that lack of motivating incentives hinders information use towards use of data collection, analysis and use.

68.3% of the respondents strongly agreed, while 31.7% agreed that collecting information that adds no value irritates.

The value of Pearson Chi-Square, test statistic was, X1=202.570, P value appears in the same row in the asymptotic significance (2-sided) column (.000) the result is significant if this value is equal to or less than the designated alpha level normally 0.05.

In this case, the p-value is smaller than the standard alpha value, the result is statistically significant therefore suggested that the categorical variables behavioral factors and utilization of HMIS were associated with each other and the relationship was statistically significant. An indication that behavioral factors do influence utilization of health information through motivation thus in return improving retention rates among HIV positive patients

However, for spearman's correlation test, there was a moderate negative correlation between behavioral factors and utilization of HMIS in management of missed appointments, which is statistically insignificant (r_s = -.505, p = .000), an indication of poor relationship between the dependent and the independent variables. This indicates that staff behavioral factors did not have an influence on data utilization in any way therefore could not be related to poor retention rates

Table 5.1:

Checklist on utilization of tools

	Jun-18			Jun-19			Jun-20		
	No. of missed App	No. Contacted	No. Followed-up	No. of missed App	No. Contacted	No. Followed-up	No. of missed App	No. Contacted	No. Followed-up
01-Jun	861	609	609	1016	712	712	711	451	451
05-Jun	566	399	399	807	698	698	621	413	413
10-Jun	608	490	490	981	614	614	808	568	568
15-Jun	1006	716	716	555	414	414	716	418	418
20-Jun	811	518	518	639	406	406	589	431	431
25-Jun	629	419	419	622	361	361	611	400	400
30-Jun	551	361	361	502	312	312	422	298	298
TOTAL	**5032**	**3512**	**3512**	**5122**	**3517**	**3517**	**4478**	**2979**	**2979**

From retrospective study on the use of health information tools to capture and follow up on missed appointments it was noted that(70% in June 2018, 69% in June 2019 and 67% in June 2020 of the patients were not followed up as there was poor documentation thus creating gaps in defaulter tracing. These were attributed to limited skills and a negative attitude to data capture and utilization. According to Aqil et al. (2015), the influence of staff capacity on health information utilization was challenged by complex forms and registers for collecting data, inadequate inspiration of health personnel to acquire data and inadequate comprehension of how the data should be used

5.3 Conclusion

On the basis of these outcomes of the study, these conclusions were arrived at regarding how information utilization influence making of decisions among health managers in Mombasa County

The study indicated availability of the required infrastructure, i.e. 86% agreed that there were systems in place, 81% agree the systems were functional however only 13% agreed that the internet was stable, now if they relied on internet to fast-track their work, the study establishes that there would be gaps when the network was unstable which could lead to lack of entries therefore poor follow up of patients leading to missed appointments. Gopalan et al., (2013) illustrated the hindrance caused by systems which do not function and also having too many health system indicators to handle the health information among the HIV positive patients.

The baseline report also indicated few of the staff had the required training in regard to data utilization where 33.3% of the staff understood the indicators they were working with. This therefore supports the assertion that limited knowledge leads to poor utilization of data therefore increasing missed appointments (Aqil et al. 2015) states that the influence of staff capacity on health information utilization was challenged by complex forms and registers for collecting data, inadequate inspiration of health personnel to acquire data and inadequate comprehension of how the data should be used.

The study establishes that there was poor support supervision being offered, where results showed only 13.3% agreed to be having frequent support supervision, 40% strongly disagreed, 33.3% disagreed, and 13.3% remained neutral in their opinion. (WHO 2016)

denotes that supervision and analysis of health information in management of appointments need more attention.

The study reveals that there is relationship between behavioral factors such as attitude, motivation and perception with utilization of health information as indicated in the Chi-Square test statistic, where X1=202.570, p value .000. This ascertains that where staffs have the right attitude towards work, where they are motivated, will do their work with passion, relate well with the patients and get keen with their appointment dates ensuring prompt follow up to reduce missed appointments

5.4 Recommendations

5.4.1 Recommendations on Research Findings:

From the conclusion made, the researcher would wish to make recommendations as follows:

Establish stable network for the existing electronic Medical Records to facilitate capture of patient data and enable retrieval of the missed appointments in time to curb missed appointments.

Strengthen targeted on job trainings for all the staff so that they are familiar with the tools and indicators they are working with, this will enable them to understand how to define missed appointments and when to follow them to avoid defaulters and lost to follow ups.

Establish policies and guidelines/SOPs that will be used by managers/supervisors for support supervision. This would be assessed during supervisor staff appraisals to determine performance.

Enhance synergy between the management and the general staff; this will help identify motivational needs for the staffs that will enhance performance, not only in ensuring improved rates but in whole management of the CCC patients

5.4.2 Recommendations for Future Research

Due to time and resource constraints, the researcher primarily focused on the study's main issues. The study's findings led the researcher to conclude that service delivery is quite dynamic and involves underlying problems that affect it in various ways. It could be important to ascertain the relationship between this dynamics and performance in order to achieve this.

Therefore, additional research is necessary to identify additional driving forces behind the 47 county governments' service performance.

This problem surfaced throughout the research process but was unable to be investigated, necessitating future research consideration.

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APPENDICES

Appendix 1 -: Study Questionnaire

KENYA METHODIST UNIVERSITY

CONSENT TO PARTICIPATE IN A RESEARCH STUDY

I am Ms. Odilia Amalemba from Kenya Methodist University (KEMU), Mombasa Campus. I want to find out if health workers utilize health information systems in management of missed appointments among HIV positive patients - a study in Mombasa county

Kindly note that whatever information you provide will be kept strictly confidential and it will not be shown to any other person or used for any other purpose other than for this research analysis. Participation in the study is entirely voluntary.

Study Title-: Factors influencing utilization of health information system in the management of missed appointments among HIV Positive patients - a study in Mombasa county

Introduction: This is a study on utilization of health information in strengthening the management of missed appointments among HIV positive patients - a study in Mombasa county. If you have any questions, you may ask the enumerator.

You are being asked to take part in this study because you are a professional Health Care in Mombasa County

Why is this study being done? The purpose of this study is to learn more about the Nature, scope and effects Patient relationship management on competitiveness in healthcare facilities in Mombasa, County

What will happen if I take part in this research study? If you agree, the enumerator will give you a structured questionnaire that you will be required to fill as per instructions

Study location-: The questionnaires will be administered in health facilities offering HIV care in Mombasa County.

How long will I be in the study? Participation in the study is about 15- 20 minutes to fill the questionnaire

Are there benefits to taking part in the study? The information that you provide will help us make recommendations for future intervention strategies in strengthening and management of missed appointments. of HIV positive patients

What other choices do I have if I do not take part in this study? You are free to choose not to participate in the study. If you decide not to take part in this study, there will be no penalty to you. The information you give will be kept private. If information from this study is published or presented at scientific meetings, your name and other personal information will not be used.

N.B. Kenya Methodist University (KEMU) may look at and/or copy your records for research, quality assurance and data analysis.

What are the costs of taking part in this study? There are no costs for taking part in this study. No matter what decision you make, there will be no penalty to you in any way.

Will I be paid for taking part in this study? If you decide to take part in this study, NO payment will be done.

Who can answer my questions about the study? If you wish to get more information you can also call the Principal Investigator, Odilia Amalemba (0724545358)

SECTION :

GENERAL INFORMATION

To be answered by.....

1	Sex of respondent: Male Female		2	Highest Education Level Secondary level College level University level Post graduate Professional Qualification	
3	Working Experience Less than 5 years 6-10 Years 11-15years Years & above		4	Position Top management staff Middle level staff	
5	For how long have you been working in this institution? 1. Less than six months				

	2. Six months but less than 1 year 3. One year but less than 3 years 4. Three years but less than 5 years 5. Five years and above					
6	Please, indicate your extent of data use On a scale of 1-4, where 1 means rarely, 2 means sometimes, 3 means often and 4 Always	1=Rare	Sometimes	Often	Always	
6.1	Planning					
6.2	Monitoring and evaluation of various programs					
6.3	Identification of gaps and priority areas					
6.4	Prediction and detection of outbreaks					
6.5	Review strategy by examining service performance target					
6.6	Mobilization/shifting of resources based on comparison by services					
6.7	Ensuring efficient and effective use of limited resource					
6.8	Medical supply and drugs management					
6.9	Staffing decisions (deployment, review personnel responsibilities)					
6.10	Service delivery improvement					

SECTION

INFRASTRUCTURAL FACTORS INFLUENCING HEALTH INFORMATION UTILIZATION IN MANAGEMENT OF APPOINTMENTS AMONG HIV POSITIVE PATIENTS.

Use the following scale in this section. (Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly Agree (5).

Please tick one indicating your option							
7	Statements	1	2	3	4	5	
7.1	The hospital has tools for data collection and analysis(a health information system in place)						
7.2	You have access to functional equipment in your office/workplace?						
7.3	The hospital has linkage with the community health workers to facilitate home visit/home dispensing. If yes, how does it work?						
74	The hospital has adequate infrastructural resources for electronic health records for linkage and retention in the strengthening of management of missed appointments among HIV positive patients						
7.5	The hospital has an effective working local area network that facilitates EMR						
7.6	In your view, what is the institution supposed to improve to enhance information use among the HIV positive patients?						

SECTION C:

INFLUENCE OF STAFF CAPACITY ON HEALTH INFORMATION UTILIZATION IN MANAGEMENT OF APPOINTMENTS AMONG HIV POSITIVE PATIENTS.

Use the following scale in this section. (Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly Agree (5).

Please tick one indicating your option

8	Statements	1	2	3	4	5	
8.1	I feel adequately trained on the existing health information system						
8.2	I effectively understand the indicators in the existing health information system						
8.3	How would you describe health providers skills and competency in routine data collected on missed appointments						

8.4	Kindly elaborate to back up your opinion in 3 above						
8.5	The health workers in the hospital have vast experience in usage of the computers which aids in better utilization of health information system (where they use EMR)						
8.6	The hospital provides Continuous Medical Education for both new and existing staff coming on board						
8.7	All staff have workstations with access to intranet and internet for communications						
8.9	IT Investment: The hospital has a dedicated IT department						
8.10	IT Investment: Each department uses customized software						
8.11	IT Investment: The hospital has integrated software to manage their funding and budget						
8.12	IT Investment: All Circulars and other internal documents are available and easily searchable electronically						

SECTION D:

INFLUENCE OF SUPERVISION ON UTILIZATION OF HEALTH INFORMATION IN MANAGEMENT OF APPOINTMENTS AMONG HIV POSITIVE PATIENTS

Use the following scale in this section. (Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly Agree (5). for those applicable

Please tick one indicating your option

9	Statements	1	2	3	4	5	
9.1	Support supervision on hard/software is carried out regularly(monthly, quarterly						
9.2	Kindly elaborate to back up your opinion						
9.3	Have you ever been trained on data management? TICK 1. Yes 2. No						

9.4	If yes, (above), where did you train? 1. College training 2. Seminars or Workshops 3. On job training 4. Others (specify)-:_____						
9.5	Feedback on support supervision is given to the users						
9.6	Meetings are held to discuss findings						
9.7	Supervision of the health information system facilitates monitoring and follow-up of the missing patients						
9.8	What is your view on existing support supervision						
9.9	Kindly elaborate to back up your opinion in 5 above						

SECTION E:

BEHAVIOURAL FACTORS INFLUENCING UTILIZATION OF HEALTH INFORMATION IN MANAGEMENT OF MISSED APPOINTMENTS AMONG HIV POSITIVE PATIENTS

Use the following scale in this section. (Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly Agree (5). for those applicable Please tick one indicating your option

	Statements	1	2	3	4	5	
10	What type of data do you generate in the course of your daily activities? (Multiple responses allowed (Tick)						
10.1	Outpatient data						
10.2	Inpatient data						
10.3	Clinical						
10.4	Diagnostic data						
10.5	Program data(HIV, IMMUNZATION, FP, and ANC)						
10.6	Health systems data (finances, infrastructure, Human resource)						

10.7	Others (specify).-:_____
10.8	According to you, is it necessary to collect this data? 1. Yes 2. No
10.9	If yes in question 2 above, what reason do you have for collecting data? (Tick) 1. As a requirement 2. To keep track of disease trend 3. As a routine exercise 4. To use it for decision making 5. Others (specify)-:_____
10.10	If no in question 10.8 above, what reason do you have for not collecting data? 1. No tools for collection 2. Not necessary 3. Very tedious 4. Boring 5. Not my work 6. Others (specify)-:_____
10.11	Is information use important to you or your area of work? 1. Yes 2. No
10.12	If yes in 5 above how do you use the health information? (Tick what is applicable) 1. Monitor my work 2. Monitor others work 3. Monitoring programme output 4. Planning 5. Evaluation 6. Research 7. Budgeting 8. Medico –legal 9. Others (specify) -:_____
10.13	If no in Q10.11 above, how do you make your decisions as you run your services? Tick) 1. Use approximates 2. Use my opinion 3. Just decide 4. Ask others opinions 5. Other specify -:_____
Use the following scale in this section. (Strongly Disagree (1), Disagree (2), Neutral (3), Agree	

(4), Strongly Agree (5). for those applicable Please tick one indicating your option							
	Statements	1	2	3	4	5	
10.14	Information is power/key in decision making						
10.15	Confidence to use the generated information						
10.16	Staff competence and skills to perform health information tasks is essential for data collection, analysis and use						
10.17	Positive attitude towards data collection and use						
10.18	Lack of motivating incentives hinders information use						
10.19	Collecting information that adds no value irritates me						

SECTION F

IMPACT OF UTILIZATION OF HEALTH INFORMATION SYSTEM IN MANAGEMENT OF MISSED APPOINTMENTS AMONG HIV POSITIVE PATIENTS

Please rank by a tick in the appropriate box the extent to which they are practiced using the following rating; 1=Strongly disagree, 2= Disagree, 3= Not sure, 4= Agree and 5= Strongly agree

11	Statements	1	2	3	4	5	
11.1	Information generated on missed appointments facilitates planning in terms of cost of care						
11.2	Reports form the system helps the hospital management to improve retention rates.						
11.3	The available health information helps the hospital management to provide prompt decision on mechanisms to reduce missed appointments						
11.4	The health information helps the health workers to provide wider service coverage in the appointments of HIV positive patients.						

11.5	The existing information system provides information that improves the outcome of the patients						
11.6	Do you get any form of support from the County/or senior managers to enhance data analysis and utilization for decision making? 1. Yes 2. No						
11.7	If yes in question 11.6 above, what form of support do you get?(Tick those relevant) 1. Data quality Audits (DQAs) 2. Data collection tools 3. Resources for conducting data review meetings 4. Performance of health facility based on routine HIS 5. Funding for HMIS activities 6. Support supervision and on job training on data tools 7. Other specify -:_____						
	Give your own suggestions and recommendations on how to improve the use/utilization of health information to make decisions in our health facilities _____ _____						
	Kindly share any brief experiences on the utilization of information whether positive or negative _____ _____						

We have reached the end of the interview. Thank you very much for your participation and your time. Do you have any remaining question for me? If the respondent has No more questions, you can inform him/her that the results of the study will be relayed back through the county

Enumerators Code _____	Enumerators Signature and Date _____ _____
Supervisors name _____	Supervisors Signature and Date _____ _____
End time	

Appendix 2 -: Study Checklist

	Jun-18			Jun-19			Jun-20		
	No. of missed App.	No. Contacted	No. Followed-up	No. of missed App.	No. Contacted	No. Followed-up	No. of missed App	No. Contacted	No. Followed-up
01-Jun									
05-Jun									
10-Jun									
15-Jun									
20-Jun									
25-Jun									
30-Jun									

Appendix 3 -: Post-graduate letter

KENYA METHODIST UNIVERSITY
P. O. Box 267 Meru - 60200, Kenya
Tel: 254-064-30301/31229/30367/31171
Fax: 254-64-30162
Email: deanrd@kemu.ac.ke

DIRECTORATE OF POSTGRADUATE STUDIES

December 4, 2020

Commission Secretary,
National Commission for Science, Technology and Innovations,
P.O. Box 30623-00100,
NAIROBI.

Dear sir/ Madam,

RE: ODILA AMALEMBA MBIYA (HSM-3-8882-2/2018)

This is to confirm that the above named is a bona fide student of Kenya Methodist University, Department of Health Systems Management undertaking a Degree of Master of Health Systems Management . She is conducting research on **'Factors influencing utilization of health information system in the management of missed appointments among HIV positive patients: A study in Mombasa County'.**

We confirm that her Research proposal has been defended and approved by the University.

In this regard, we are requesting your office to issue a permit to enable her collect data for her research.

Any assistance accorded to her will be appreciated.

Thank you.

10 DEC 2020

Dr. John Muchiri, PHD.
Director Postgraduate Studies

Appendix 4 -: Ethical Approval

KENYA METHODIST UNIVERSITY
P. O. BOX 267 MERU - 60200, KENYA
TEL: 254-064-30301/31229/30367/31171
FAX: 254-64-30162
EMAIL: serc@kemu.ac.ke

November 26, 2020

KeMU/SERC/HSM/32/2020

Odila Amalemba Mbiya
Kenya Methodist University

Dear Odila,

SUBJECT: FACTORS INFLUENCING UTILIZATION OF HEALTH INFORMATION SYSTEM IN THE MANAGEMENT OF MISSED APPOINTMENTS AMONG HIV POSITIVE PATIENTS: A STUDY IN MOMBASA COUNTY.

This is to inform you that Kenya Methodist University Scientific Ethics and Review Committee has reviewed and approved your above research proposal. Your application approval number is KeMU/SERC/HSM/32/2020. The approval period is 24th November 2020 – 24th November 2021.

This approval is subject to compliance with the following requirements

I. Only approved documents including (informed consents, study instruments, MTA) will be used.

II. All changes including (amendments, deviations, and violations) are submitted for review and approval by Kenya Methodist University Scientific Ethics and Review committee.

III. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to KeMU SERC within 72 hours of notification.

IV. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to KeMU SERC within 72 hours.

Appendix 5 -: Nacosti Licence

Research_Permit_NACOSTI-P-21-8489.pdf - Adobe Reader

File Edit View Document Tools Window Help

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: 338916

Date of Issue: 20/January/2021

RESEARCH LICENSE

This is to Certify that Ms.. Odilia Amalemba Mbiya of Kenya Methodist University, has been licensed to conduct research in Mombasa on the topic: FACTORS INFLUENCING UTILIZATION OF HEALTH INFORMATION SYSTEM IN THE MANAGEMENT OF MISSED APPOINTMENTS AMONG HIV POSITIVE PATIENTS - A STUDY IN MOMBASA COUNTY for the period ending : 20/January/2022.

License No: NACOSTI/P/21/8489

338916

Applicant Identification Number

Director General

Appendix 6 -: Consent letter Coast provincial General Hospital

COUNTY GOVERNMENT OF MOMBASA
DEPARTMENT OF HEALTH SERVICES
COAST PROVINCE GENERAL HOSPITAL

Phone : 2314202/5, 2222148,2225845
Mobile No : 0722207868
Fax : 2220161, Mombasa
Email : cpcpsaipgh@yahoo.com
When replying please quote :

P O Box 90231 - 80100
Mzizima Street
MOMBASA

Ref. ERC-CGH/Msc/Vol.I/110
Ms . Odilia Amalemba Mbiya
Mombasa

RE: CONSENT FOR DATA COLLECTION ON RESEARCH TOPIC- FACTORS INFLUENCING UTILIZATION OF HEALTH INFORMATION SYSTEM IN THE MANAGEMENT OF MISSED APPOINTMENTS AMONG HIV POSITIVE PATIENTS - A STUDY IN MOMBASA COUNTY

Reference is made to your letter dated 1st March,2021. the Ethics review committee acknowledges receipt of your protocol. This is to inform you that the Ethics review Committee received the documents submitted and is satisfied that the issues raised at the meeting of Ethics Review Committee dated 9th April, 2021 have been adequately addressed.

The study is granted approval for implementation effective from the date of this letter . Please note authorization to conduct the study will automatically expire on the 10th of May 2021. If you plan to continue with data collection and analysis beyond this date please re-submit an application to the Ethics Review Committee - Coast General Hospital in appropriate time.

Any unanticipated problem resulting from the implementation of this protocol should be brought to the attention of the ERC-CGH. You are also required to submit any changes to this protocol to the ERC-CGH.

The ERC-CGH looks forward to receiving a summary of the research findings upon completion of the study to be part of the data base to e consulted when processing related researches to minimize duplication.

DR. M. A. OCHOLA.
SECRETARY ERC-CGH

Appendix 7 -: Consent letter Bomu Hospital

Celebrating 40 Years of Service to Humanity
BOMU HOSPITAL
Health • Hope • Humanity

11th February 2021

MCS/ADM/1233/2021

Ms. Odilia Amalemba,
P. O. Box 83013-80100,
MOMBASA.

Dear Ms. Amalemba,

RE: CONSENT FOR DATA COLLECTION ON RESEARCH

We acknowledge receipt of your letter dated 9th February 2021 seeking to consent for data collection on research at Bomu Hospital from 15th February 2021 to 15th April 2021.

We wish to inform you that, the management has accepted your request.

The Human Resources Office will be open to give you any support and guidance during the data collection period.

Faithfully,

Abigail J. Ayako-Ojwang'
Human Resources Manager