COMPLIANCE WITH THE MEDICAL RECORDS DOCUMENTATION STANDARD OPERATING PROCEDURE AMONG HEALTH WORKERS IN BUNGOMA HOSPITAL COUNTY, KENYA

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DECLARATION

This research thesis is my original work and has never been submitted or presented to any institution of higher learning for an academic award.

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DEDICATION

This research thesis is dedicated to my wife Charity, and my children Prince Samuel, Princess Purity, and Princess Joy for being my enduring delight.

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ABBREVIATIONS AND ACRONYMS

AFYAEHMS Afya Electronic Health Management System

AHIMA American Health Information Management Association

BLIS Basic Laboratory Information System

DHIS District health Information Software

EHR Electronic Health Records

EMR Electronic Medical Records

GOK Government of Kenya

HIS Health Information System

HIT Health Information Technology

HMN Health Metrics Network

HRIO Health Records and Information Officer

IT Information Technology

MOH Ministry of Health

NASCOP National AIDs and STI Control Programme

PHO Public Health Officer

RCO Registered Clinical Officer

SOP Standard Operating Procedure

SPSS Statistical Package for Social Sciences

UHC Universal Health Coverage

WHO World Health Organization

DEFINITION OF OPERATIONAL TERMS

Advanced: means to be ahead or far or further along in progress, knowledge, and skill, of information technology.

A Health Information System: is a comprehensive and integrated structure that collects, collates, analyses, evaluates, stores disseminate, health and health-related data and information for use by all.

Compliance: it's the state of adherence to the set guidelines, recommendations, pathways, protocols, and requirements by the organizations or institutions.

Confidentiality: An ethical principle that ensures the non-disclosure of information to unauthorized persons.

Demography: of a region includes population size and composition, as well as key socio-economic attributes such as literacy levels and wide or narrow disparities in a society's distribution of income.

Documentation: is the material that provides official information or evidence or that serves as a record.

Electronic Medical Records: (EMR) systems, is an electronic record of health-related data on an individual that can be created, gathered, managed, and consulted by authorized clinicians and staff within one health care organization.

Health Workers: all people engaged in actions whose primary intent is to enhance health with key training in respective disciplines within the health sector, excludes the non-trained (casual laborers) but work within the hospital**.**

Health Information Technology (HIT)- The use of computers to collect and share data about patients' health is a way to harness information resources to support the delivery of safe, effective, and efficient care. Health information technology (health IT) uses computers, software programs, electronic devices, and the Internet to store, retrieve, update, and transmit information about patients' health.

IT Proficiency: is abilities, knowledge, and talents related to the use, administration, development, design, architecture, and management of technology.

Intermediate: having or suitable for a level of knowledge or skill between basic and advanced.

Institutional Characteristics: are defined as the basic values and arrangement of the institution in support of service delivery, such as availability of qualified staff adequacy of ICT equipment, management organization, training of staff, availability of documentation tools, and technical support.

Medical Record is a systematically written document that encompasses the patient's credentials, physical examination findings, health history, diagnosis, laboratory reports, treatment, and other surgical procedures

Medical Data Collection Tools strategies or methodologies used to collect medical information that enables clinical staff and health partners to determine relevant and efficient patient care. These include both paper-based and electronic systems.

Novice is someone who has been doing a job or other activity for only a short time and so is not experienced at it.

Socio-Demographic Characteristics are nothing more than characteristics of the population, such as age gender, education level, work experience, and cadre.

Standard Operating Procedure (SOP) are documents that describe in detail the necessary steps to perform a task (such as management or experimental procedures) so that the task is carried out correctly and always in the same way.

ABSTRACT

Improving medical records documentation among the health workers remains a major challenge to achieving compliance to medical records documentation SOP in many developing countries. Compliance to medical records documentation SOP can be used to improve health care and protect people against catastrophic health care risks and expenses. Most developing countries have low compliance to medical records documentation SOP and rely on manual systems for documentation. Despite having automated systems in some private and public health facilities, compliance to medical records documentation is still below the acceptable standards. The main objective of this study was to establish compliance with medical records documentation SOP among health workers in Bungoma level 4 hospital, Kenya, with specific objective of determining association between socio-demographic characteristics and compliance with medical records documentation SOP**,** influence of institutional characteristics and, influence of health workers' IT Proficiency on compliance with medical records documentation SOP among health workers in Bungoma level 4 hospital. The current study adopted an analytical cross-sectional design and quantitative data was collected using self-administered questionnaires, stratified proportionate and simple random sampling techniques were both employed to select 197 health workers sampled from a target population of 400 in Bungoma level 4 hospital. Chi-square, fishers exact, and Binary logistic regression analyses were used to test the association and the relationships between dependent (compliance with medical records documentation SOP) and independent variables (sociodemographic, institutional, and IT proficiency) respectively, albeit at a 95% confidence interval (CI), frequency tables, pie charts, and bar graphs were used to summarize and present the results. The current analysis confirmed that the compliance level to medical records documentation SOP was indeed very low at 47.2%. Socio-demographic factors such as Cadre (Fisher's exact test *=24.52; p=0.002*), level of education (Fisher's exact test *=11.26; p=0.042*), and work experience χ^2 (8.75, *df=5, N =195*) *p=0.047* were significantly associated with compliance to medical records documentation SOP. On both Institutional characteristics (*P=0.023, exp(B)=1.454*) and healthcare worker's Information Technology proficiency (*P=0.027*, *exp(B)=2.156*), positively influenced compliance to medical records documentation SOP. The current study concludes that, cadre, level of education, and work experience were significantly associated with compliance to medical records documentation SOP, Institutional characteristics like technical support, requisite documents, staff training and, health worker's information technology proficiency, positively influenced compliance to medical records documentation SOP respectively. The study therefore, recommends an urgent need for the County Government to channel additional funding towards employing more technical staff, procuring the requisite documentation tools, and training of staff on the documentation tools. Otherwise, the facility health management team needs to factor in periodic Information Technology refresher training for health workers, since the majority of health workers in Bungoma level 4 facility seem to have at least an intermediate level of IT proficiency. Future research should incorporate more robust data collection methods like observation checklists, and also consider qualitative methods like Key Informant Interviews to establish better insight on the compliance with medical records documentation SOP across all level 4 health facilities in Bungoma County and beyond.

CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

A standard operating procedure (SOP) is a written document or instruction specifying entirely important steps and activities of a procedure or process. It is comprehensive, written guidelines geared towards attaining consistency of the performance of a specific activity. Most importantly, Compliance with medical records documentation standard operating procedure (SOP). It's the state of observance of the set guidelines, standards, protocols, and requirements by the health facilities when carrying out documentation of medical records. Hence, reducing nonconformity to the set standards, thus minimizing medical errors and preventable causes of disabilities and deaths (Sachdeva, 2018). Universal health coverage remains the main objective for the ministry of Health (Hammonds, Ooms, Mulumba, & Maleche, 2019). However, improving on compliance to SOP's remains the main barrier to achieving this objective even in Kenya where the compliance stands at 80% across all the 47 counties.

According to a survey done by WHO it has been shown that poor communication between health care professionals is one factor for medical errors (Barathi & Prashanthi, 2020). Ever since the 1990s, significant funding in data collection has improved the knowledge and understanding of global health, but huge gaps remain between what health professionals do know and what they need to know to improve the health of the world's population. Reliable and timely health information is an essential foundation for public health action, particularly when resources are limited and funding decisions can mean the difference between life and death (Spigel, Wambugu, & Villella, 2018).

Globally, especially in low resource settings, compliance to SOPs is at 83%, 12% less than the global target (WHO, 2016). Similarly, as many as 4 in 10 patients are harmed in primary and outpatient health care. Over 80% of harm is preventable. The most detrimental errors are related to diagnosis, prescription, use of medicine, and non-compliance to medical records documentation standards among health workers (WHO, 2018). In high-income countries, it is estimated that one in every ten patients is harmed while receiving hospital care ((Jha, 2019). The harm can be caused by a range of adverse events, with nearly 50% of them being preventable (Rajasekaran, Ravi, & Aiyer, 2016). There are also pieces of evidence indicating that health workers' documentation has a relationship with patient mortality (Waudby-Smith, Tran, Dubin, & Lee, 2018).

In America, it is approximated that almost 210,000 individuals succumb in a year due to errors that occur in hospitals this is as a result of non-compliance with documentation standards. Updates on medical record management systems indicate that there is a need to update automated systems to minimize medical errors (Makary & Daniel, 2016). There is hence a need to create awareness among staff and training on medical record contents to enable uniformity (Maslyanskaya & Alderman, 2019).

Moreover, in Africa's most populous nation, it is reported that utilization and research personnel use much of their time looking for data than time spend on medical care provision (Abdelhak, Grostick, & Hanken, 2019). For instance, in Nigeria, the practice was observed to be lacking with limited use of modern technology resulting in problems in transmission of patient information, the inadequacy of data, and duplication of records, loss of data which are invariably some of the factors that inhibit effective health care delivery. Furthermore, record-

keeping practices inadequacy have since been testified at the prime health care level in the public medical sector in even more developed settings like South Africa. Such insufficiencies can negatively influence patient health results as the break-in data may hamper care continuity (Bhanot, Abdi, Bamania, Samuel, & Watfah, 2017). Besides, subjective evidence about record-keeping quality given by the operational manager of the prime health care in South Africa supports other research done in other third world countries that show that there was indeed inadequacy in practices involving the keeping of records including replication, partial data, and information inexactness (Dababneh *et al.*, 2015).

In Kenya compliance to SOPs was reported at 80% across all the 47 counties (MOH, 2018). More importantly, is the fact that Kenya utilizes the District Health Information System (DHIS2) to stand as the main architecture supporting its medical data needs (Dehnavieh *et al.*, 2019). Although, failure to observe the standards of documenting in similar developing country contexts often results in mismanagement of patients and medical errors which eventually results in poor outcomes and deaths (Méndez & Ren, 2017). Moreover, developing countries with poor health systems and unclear guidelines are bound to experience poor productivity due to a complex mix of sociodemographic factors (Pirkle, Dumont, & Zunzunegui, 2016). Despite still experiencing serious problems in documentation influenced by either institutional characteristics or even information technology (IT) skills or lack thereof (Chebole, 2015).

Previous studies have shown that factors like Gender, Age, Work Experience, and Education are associated with compliance to SOPs (Ahwidy & Pemberton, 2016). Moreover, institutional factor-like management involvement, staff training, availability of requisite documentation tools, technical support, employment of

qualified staff, and IT proficiency has also been revealed to influence compliance to SOPs, albeit, at a hospital setting (Alkhamisi *et al.*, 2017). Therefore, the current study was done at Bungoma level 4 facility to measure Compliance to SOPs in such a high burden yet low resource setting.

1.2 Statement of the Problem

Many studies identified deficiencies in the practice of medical records documentation among health workers across the globe (Kebede, Endris, & Zegeye, 2017; Lindo *et al.,* 2016). It has been reported that health workers' documentation for medical records is often incomplete and this is brought about by non-compliance to medical records documentation SOP (Ebrahimpour & Pelarak, 2016; Kebede *et al.,* 2017). One of the key challenges identified in the second Kenya Health Sector Strategic and Investment Plan (KHSSP) is weak health information systems (MOH, 2017). In Bungoma level 4 hospital compliance to SOPs was reported to be 63%, 17% less than the national average (MOH, 2018).

More importantly, it is still unclear whether the existing problem with compliance to medical records documentation SOP is associated with human factors, organizational determinants, or information technology skills. Yet to date few studies to assess the level of compliance to medical documentation standards have been done in Bungoma level 4 hospital, and no known study has attempted to incorporate socio-demographic, institutional, and IT proficiency characteristics in determining the level of compliance to medical records documentation SOP.

1.3 Justification

Universal health coverage remains the main objective for the ministry of Health (Hammonds *et al.,* 2019). However, improving on compliance to SOP’s remains the

main barrier to achieving this objective even in Kenya where the compliance stands at 80% across all the 47 counties. Failure to observe the SOP's in medical records documentation often results in mismanagement of patients and medical errors, which eventually results in poor outcomes, injury, disabilities, and deaths (Méndez & Ren, 2017). Although studies elsewhere have shown that improving socio-demographic factors like education, cadre, work experience, and Institutional factors like employing qualified staffs, training, top management involvement, and IT skills are the option to improve compliance to the documentation of medical records in most developing countries including Kenya.

The current study was therefore conducted in a Bungoma level 4 hospital since data processing and analysis in Kenya is usually centralized. Moreover, in such a devolved, yet low resource setting in the rural parts of the country, it was also unknown whether socio-demographic characteristics were associated with non-compliance with SOPs for medical records documentation by health workers. More importantly, the current study highlighted the proportion of health workers who were compliant with the medical records documentation SOP. The current study also succeeded in measuring the strength of the relationship between both institutional characteristics and the influence of IT proficiency on compliance with medical records documentation SOP among health workers in Bungoma level 4 Hospital.

1.4 Research Questions

1. What is the association between socio-demographic characteristics and compliance with medical records documentation SOP among health workers in Bungoma level 4 hospital?

2. What is the influence of institutional characteristics on compliance with medical records documentation SOP among health workers in Bungoma level 4 hospital?
3. What is the influence of health workers' IT proficiency on compliance with medical records documentation SOP among health workers in Bungoma level 4 hospital?

1.5 Objectives

The study sought to achieve the following objectives;

1.5.1 Broad Objective

The Broad objective of the study was to establish compliance with medical records documentation SOP among health workers in Bungoma level 4 hospital, Kenya.

1.5.2 Specific Objectives

1. To determine the association between socio-demographic characteristics and compliance with medical records documentation SOP among health workers in Bungoma level 4 hospital.
2. To determine the influence of institutional characteristics on compliance with medical records documentation SOP among health workers in Bungoma level 4 hospital.
3. To determine the influence of health workers' IT Proficiency on compliance with medical records documentation SOP among health workers in Bungoma level 4 hospital.

1.6 Significance of Study

The current study sufficed to inform academia, health researchers, hospital administrators, county health management, and policymakers with evidence-based recommendations on the significant sociodemographic, institutional, and IT-proficiency predictors of compliance to SOPs in similar resource-limited settings like Bungoma level 4 Hospital and beyond.

1.7 Limitations and Delimitations

1.7.1 Limitations

The study only covered health workers and leaving out casuals and support staff from participation leading to vital information being missed out from these participants. Similarly, participants' reporting bias, that is, the respondents were reluctant to report on their shortcomings regarding poor documentation and compliance to SOPs. Moreover, the findings of the current study may lack external validity beyond Bungoma level 4 hospital, and thus, cannot be generalized to all level 4 facilities in Kenya.

1.7.2 Delimitation

The study covered only one public hospital in Bungoma County, and all health workers both on day and night duty were considered in the study. Moreover, the respondents reporting bias was minimized significantly by explaining to the respondents the benefit, and the confidentiality of the research. All questionnaires were anonymized to maintain confidentiality.

1.8 Assumptions

All the departments within Bungoma level 4 hospital had a functioning computer system (Software, hardware, networking, etc), and that all the health workers have some basic level of IT competency, and were familiar with the medical records documentation SOP.

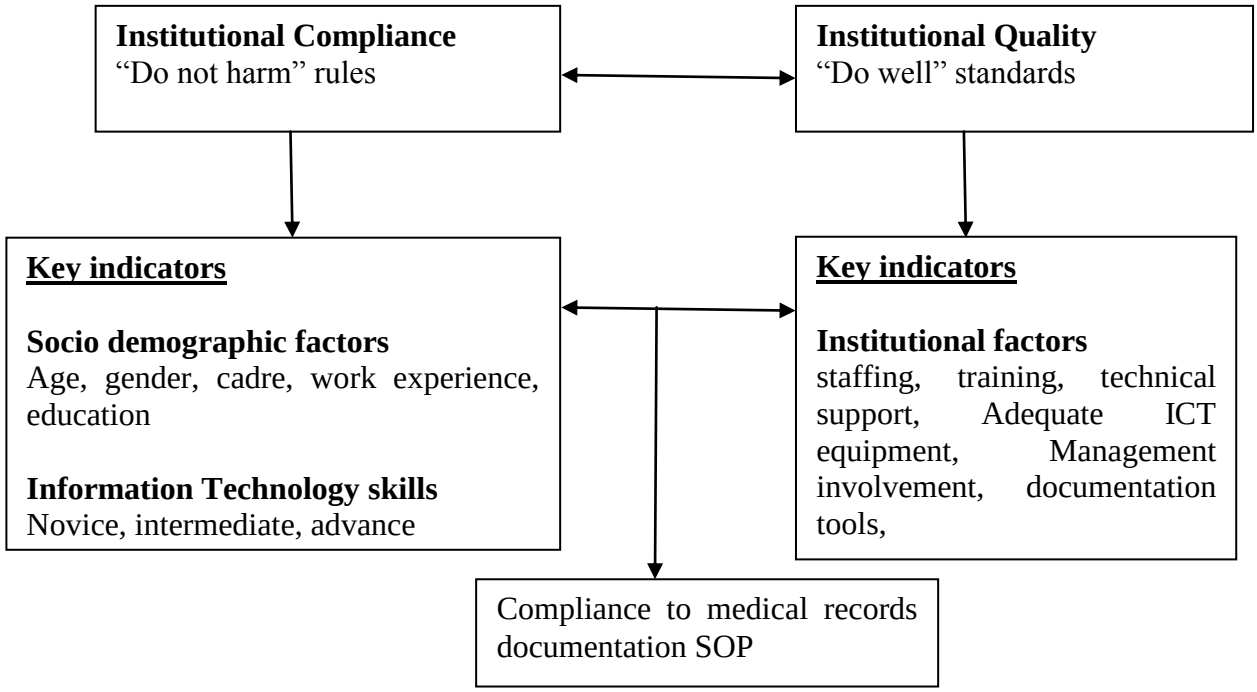
1.9 Conceptual and Theoretical Framework

1.9.1 Theoretical Framework

Compliance with the medical records documentation SOP is a simple but complicated process, and following a theoretical framework can offer a basis for making informed choices that allow for an improved mechanism for documentation of medical records (Moore, 2015).

Based on theory of regulatory compliance (TRC) deals with the importance and significance of complying with rules or regulations. This theory has implications for all rule, regulatory, and standards development throughout human service and economic domains although the research is being drawn from the human services field. What is important about the TRC is its emphasis on selecting the right rules rather than having more or less rules and the nature of these rules as being significantly predictive of positive outcomes by being in compliance with said rules (Fiene, 2016). Balance of “do no harm” rules with “best practice” standards selected by key indicators and ability to predict Compliance to medical records documentation SOP. The Theory of Regulatory Compliance deals with selecting the “right” rules and standards that have predictive validity and do no harm. It acknowledges that all rules and standards are not created equal and have a differential impact in a monitoring or licensing system. By following a differential

monitoring approach of key indicators, the most cost efficient and effective system can be implemented. The Theory of Regulatory Compliance proposes policy based upon substantial but not full compliance (100%) with all rules.



Source: (Fiene, 2016)

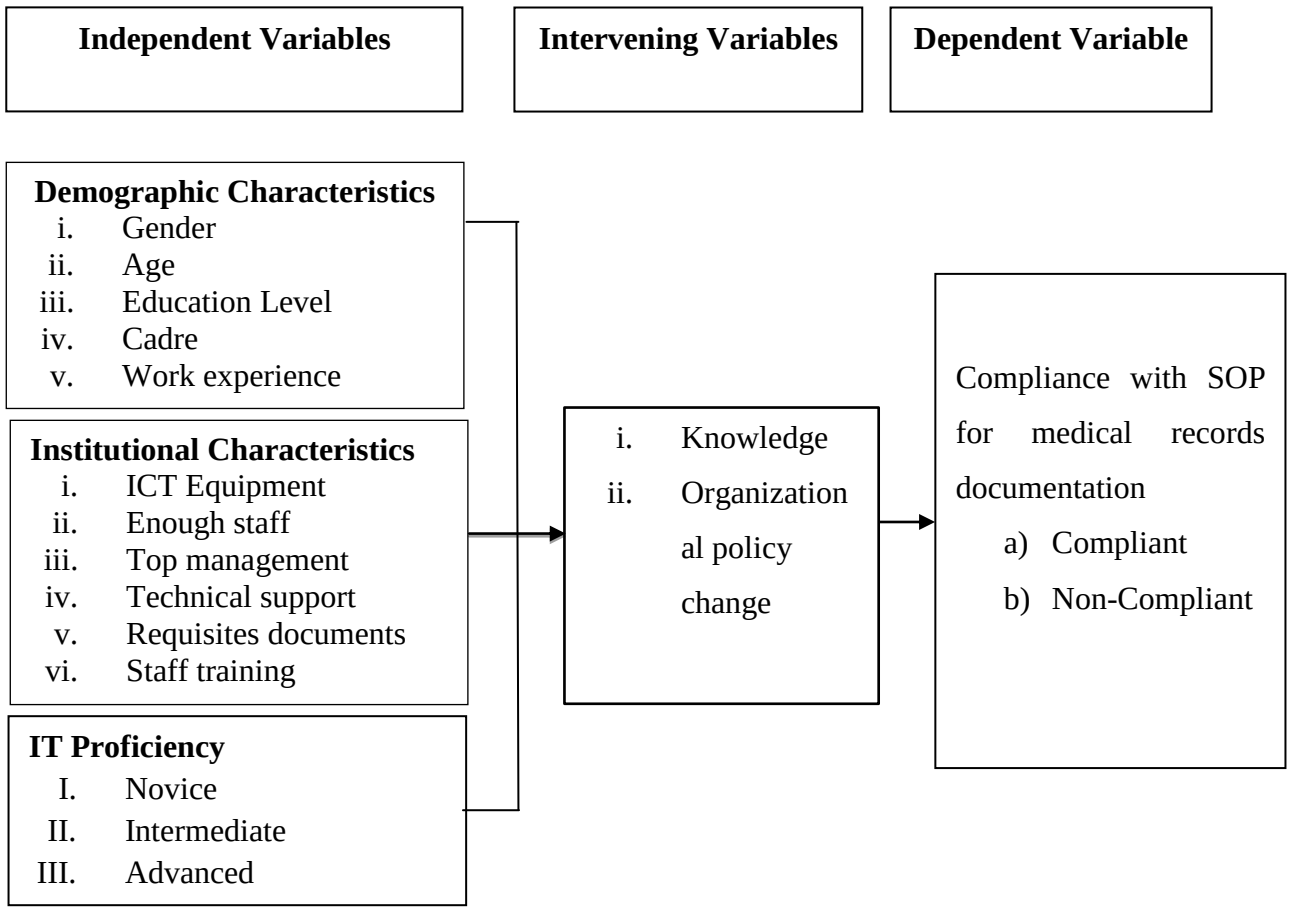
Figure 1.1 Theoretical Framework

1.9.2 Conceptual Framework

The Conceptual framework represents the interplay between independent, intervening, and dependent variables as they were used in the current study. In this study, three independent variables consisted of measures of demographics characteristics, institutional characteristics, and IT proficiency. Compliance of health workers to SOP was the dependent variable as shown in Figure 1.2.

More importantly, the presence of the intervening variable, that is, knowledge and organizational policy change in technology, enhanced the association and relationship between the independent and dependent variables. Although, failing to

account for the correct combination of factors within each independent variable would significantly affect the compliance with medical records documentation SOP, based on knowledge and organization policy change in technology. As such, the current conceptual framework allowed for the testing of the significance and more so the magnitude of the relationship between the demographic characteristics, Institutional characteristics, including IT proficiency, and compliance with medical records documentation SOP by the health workers.



Source: (Orodho, 2009).

Figure 1.1 Conceptual Framework

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter reviews existing evidence and gaps in compliance with the medical records documentation SOP among health workers in Kenya and specifically Bungoma level 4 hospital in Bungoma County. Having analyzed the available literature on documentation standards both in Kenya and outside Kenya. A literature review was carried out under the following sub-headings based on the objectives. In this study, related literature aimed at establishing what the other researchers have researched the aspects of the medical record approach in the related health sectors (Creswell & Creswell, 2017).

2.2 Empirical Literature Review

2.2.1 Medical Record Standards

Standard operating procedure (SOP) is a written document or instruction specifying entirely important steps and activities of a procedure or process. It is comprehensive, written guidelines geared towards attaining consistency of the performance of a specific activity. More importantly, it's the state of observance Compliance to medical records documentation SOP to the set guidelines, standards, protocols, and requirements by the health facilities when carrying out documentation of medical records. Hence, reducing nonconformity to the set standards, thus minimizing medical errors and preventable causes of disabilities and deaths (Sachdeva, 2018).

2.2.2 Kenya Health Sector Indicators and Standard Operating Procedure

To make the data comparable in time and space, data collection is standardized. Sets of forms are designed on which the collected data can be recorded. Some are tally

sheets, monthly report forms, and annual summary sheets. Each health facility, activities are instantly recorded in a register then tallied in the existing tools and summed up at the end of the day. The sum-up of the daily totals makes weekly or monthly totals for each activity available easily. Some common sources of error that should be avoided include, but not limited to forgetting to record in the service/activity register, forgetting to- tally, Marking or crossing more than one tally at a given tally, double counting of the figures, or tallies, Misclassification, Miscalculations, and Figure "cooking" (MOH, 2017).

2.2.3 District Health Information Software (DHIS) and Data Management tools

The District Health Information Software (DHIS) is used in more than 60 countries around the world. DHIS is an open-source software platform for reporting, analysis, and dissemination of data for all health programs, developed by the Health Information Systems Programme (Chu, Phommavong, Lewis, Braa, & Senyoni, 2017). National standard data collection primary tools (registers) in use include; MOH 204 A outpatient register (under five years), MOH 204 B Outpatient register (over 5 years), MOH 511 child welfare clinic (CWC) register, MOH 510 immunization register for children, MOH 333 maternity (delivery) register, MOH 406 postnatal register, moh 512 daily activity (family planning) register, MOH 301 in-patient register, MOH 209 radiology register, MOH 240 laboratory register, MOH 268 diagnostic index card, MOH 405 antenatal clinic (ANC) register, MOH 513 community health workers logbook, MOH 514 household register (Dehnavieh *et al*., 2019).

The medical record is the collection of information about patients that is created in regular form. Policies are made by the person who knows record events and opinions in the documentation. Medical records consist of records maintained in the

electronic system framework integrating data from several sources in making decisions. Medical records do not include health records of official business records or personal health records managed by a patient. It includes information to be used to identify patient diagnosis treatment and healthcare users. It involves legal medical records (LMR) that serve as the record of health services given by the patient in the clinic, physician as the designated record set (Williams, Becky, & Theophilus, 2018). Therefore, policy or procedures involve the maintenance of medical records in which medical records should be based on every patient treated either outpatient, emergency, inpatient. Procedures necessities for management and documentation of medical records must be maintained in paper or electronic formats in digital images (Herdiyanti, Puspitaningrum, Astuti, & Yuhana, 2018).

Besides, the confidentiality of records is protected in unauthorized disclosure by medical circumstances under which records are intended in the health system. Medical records content must meet state and federal legal regulatory requirements including patient details but limited to Medicare conditions in medical record documentation content in current electronic status or papers. The medical record is a designated record set in access to protect the information contained in billing records information (Davis Giardina, Menon, Parrish, Sittig, & Singh, 2017).

Moreover, the authentication, completeness, and timeliness of medical records argued on in-patient healthcare records must be done on the date of discharge. The SOP must be provided to guide on retention and destruction of medical records and how to provide storage in a routine activity. Many health workers rely on SOPs to ensure consistency and quality. Copies of SOPs should be made available where the work is done. This is not to ensure that the need to access, but it also demonstrates

that healthcare efforts must communicate policy and regulation to health workers (malley, Grossman, Cohen, Kemper, & Pham, 2016).

2.3 Association between Socio-Demographics Characteristics and Compliance with SOP

A study on the factors influencing the adoption of electronic medical records systems in public health facilities in Kenya examined the extent to which user perception influences the compliance of medical records systems in public health facilities in Nakuru County. Although the findings revealed that physician's perception and knowledge are the major concern to the use of medical records systems. Moreover, the physician was usually afraid to transform from manual to electronic medical records. Personal resistance to compliance with EMR does not mean a change in working skills. The study however fails to assess the compliance to demographic factors such as age, gender, education, marital status, etc. which creates a knowledge gap (Chebole, 2015).

On the other hand, nurses do not record their actions to a great extent and they only record observations when there are abnormalities and such incomplete recording may lead people to think that they did not accomplish their responsibilities (Demirci, Acamur, & Bulut, 2017).

Nevertheless, a study in the city of Chicago in the United States found out that more than 60% of the physician without electronic medical records improved clinical results and patient care records. The same study also asserted that record management is not dependent on the use of medical records systems but compliance with the medical records documentation SOP to improve quality (Davis Giardina *et al.*, 2017).

However, a previous study on the effects of the performance of health workers in the management of seriously sick children at a Kenyan tertiary hospital, before and after a training intervention, revealed that compliance to records management is due to a lack of consistent standards in the country, the skill of recording data changes between different documents. This makes documented data exchange difficult but not impossible among record management systems. Moreover, the system skills were explained not to be compatible with the desired benefit of connecting with the physical devices to complement the major problem to wide compliance (Gathara *et al.*, 2015). Similarly, lack of work experience in documentation is unique in using electronic medical records software and so since connectivity is limited to the health organization, this creates a level of education gap (Gathara *et al.*, 2015).

A study elsewhere on the primary care physician experience in electronic medical records found that a barrier to document and implementation is free for service situations in telemedicine and application. Theoretically, more of the staff population in the hospital has no experience in documentation (Vaithamanithi, Raj, & Prabhakar, 2016). However, a previous study found out that the education and work experience of health workers has a strong association with compliance with SOP in improved service delivery. Although, a study elsewhere indicated that providing adequate skills across different cadres will improve documentation and it's an important socio-demographic factor that can affect compliance with the medical records documentation SOP. This means that equipping staff with relevant skills and knowledge may have a greater role in influencing proper medical records documentation and data quality (Rudolph, Katz, Lavigne, & Zacher, 2017).

A similar study highlighted that the quality of data of electronic medical records doesn't differ with gender roles assigned (Hamm, Kamin, Chipperfield, Perry, &

Lang, 2019). Moreover, the work of an experienced population in terms of age and gender influenced precise products, Consequently, demographic factors such as literacy levels provide clarification on the total population of the health workers in a health facility in those people who are expected to comply with SOPs for health documentation and those who are not to comply with the standards. The overall change in the number of health workers in the documentation facility influences compliance with the medical records documentation SOP. The group of health workers by demographic characteristics had also significant changes in compliance with documentation standards (Ahwidy & Pemberton, 2016).

Although a study elsewhere on the determinant of electronic health records in developing countries sought to examine the quality of record management in health care sectors. The results showed that new technologies, effective medication, highly experienced staff, and effectiveness of documented service delivery, transformed healthcare information technology in Japan which required document review, policy and people progress. The same study also underlined the need to have documented healthcare services corresponding to the specified standards and procedures, to achieve the desired goals. Their view is shared by those who use quality health services from individuals' populations in the increased desired health outcomes (Sayeski, 2015).

Nevertheless, there is a need for reliable current professional knowledge to meet the expectations of healthcare providers. However, computer skills had a great hindrance to health record documentation among hospitals in rural areas (Evans, 2016).

Subsequently, long-term care facility employees who work with EHR systems daily were positive about their experiences. In particular, operational improvements were

achieved through increased access to resident information, cost avoidance, increased documentation accuracy, and implementation of evidence-based practices per cadre (Meehan, 2017). More importantly, a study on the factors affecting the provision of service quality in the private health sector in Bungoma County. The finding indicates that some hospitals have less experienced specialized staff which creates a crisis with safety prescriptions leading to drug errors in checklists (Maloba, 2018). Although physicians have a good record orientation, lack of mentorship and compliance with medical records depicts insufficient training and post-service experience. The study also found that physicians in health documentation have not been given sufficient training with their relevant skills. They always access the patients' records in technical support at any given time and yet become a challenge to implement compliance with medical records documentation SOP. It is a must to adopt follow-up mentorship happening often as a way to embrace compliance with documentation in medical records (Muya & Kimando, 2018).

Patient reports have the first time using current data at the time of record analysis, interviewed patients, physicians, hospital administrators, and safety experts, reviewed medical records, and looked at inspections and investigations. But rating documents include only 18 percent of hospitals since data on patients may still miss fully or consistently countrywide. The hospitals that use volunteer safety information regardless of safety are accountable. Despite that limitation, record ratings provide a unique way to use the medical record in the hospital community. The standard and procedure yield important insights into the state of what hospitals need to do to manage records or someone to care for when clients are entering the hospital (Michell & Tehrani, 2017).

2.4 Influencing of Institutional Characteristics on Compliance with the SOP

The quality of healthcare in health institutions in Kenya shows that institutional characteristics comprise top management involvement, leadership, organizational structure, technical support, training, and participation of health workers in documenting patient records (Ghiasipour, Mosadeghrad, Arab, & Jaafaripooyan, 2017). Most healthcare facilities are struggling with obstacles such as the acquisition of ICT equipment which is very expensive, power failures, inadequate human resources in most developing countries. In essence, the innumerable difficulties in the health sector may not be completely disregarded through only procuring these technologies, but connecting the technologies for improvement (Afolayan & Oyekunle, 2016).

The record varies with a specific type of care given to different clients; Top management use different departments, for example, the Antenatal clinic department to gather information based on antenatal services, which includes; family planning methods, child welfare, etc., and also the outpatient department for outpatient services, inpatient department for inpatient services and comprehensive care department for chronic diseases and HIV/AIDs. The diversity of these services requires training of health workers working in those departments to equip them with adequate skills in the documentation. Each department has a designed tool required for documentation and subsequent clinical monitoring and follows up on the patients' progress. This relies heavily on health workers' skills in records management procedures, it can also be done through electronic medical records or electronic health records systems (Macharia, Singh, & Zuva, 2016).

Although a study elsewhere revealed that knowledge of the nursing process, which forms the basis for nursing documentation, is inadequate (Tasew, Mariye, & Teklay,

2019). Similarly, a health facility requires the provision of more technical support staff, requisite documents for documentation, and staff training on documentation would achieve the desired level of compliance to the medical records documentation SOP (Amini, Bilan, & Ghasempour, 2015).

Furthermore, the effect of medical records documentation for patient safety and physician defensibility. The records provide support of documentation done and evidence of a variety of medical physicians and medical office staff in medical insurance exchange in California, Oakland (Giardina *et al.,* 2018). Besides, the institutional records are created by a variety of health institutions inpatient registrations, and general correspondences. The local record management rules and procedures in health institutions are created in transmitting documents handwritten, typewritten, audio recording, and computer-generated email and databases (Prytherch, 2016).

However, health information service is not only one hospital drive; it examines the effect of organizational structure on medical records documentation. The organizational structure had a great influence on quality assurance in medical publishers (Peine *et al.*, 2019). Records quality in health care has been influenced by top management involvement. A conceptual analysis in health care showed the use of a research questionnaire in descriptive analysis to analyze the collection of health information for patient data linked by the patient identifier (Al Khamisi, Khan, & Hernandez, 2017).

Subsequently, the nursing documentation is still poor in many countries due to insufficient documentation of key aspects of assessment and other linked nursing care, including inaccuracy of documentation which requires adequate requisite

documents for documentation and training of staff as well (Galasiński & Ziółkowska, 2017).

Also, training and participation with top management involvement include; medical clinical information entered by a health care worker at the point of medical procedures in laboratory outcomes and general practitioners. In developed countries, identification details, and medication prescriptions in healthcare information are recorded (Bhattacharya & Phill, 2015).

Nevertheless, the patients' folder is arranged for easy identification with labeled forms set on top, followed by a patient continuation sheet, patient treatment sheet, patient investigation forms, and patient discharge summary. The patient summary tools are used to summarize patient captured data reports to the next level of record management (Al Khamisi *et al.*, 2017).

Although a study elsewhere on the effect of implementing electronic medical record systems in developing countries revealed that electronic health records consist of leadership information limited to a traditional health record including a patient's health profile, behavior, and information. The content of medical records is also including the aspect of time, which allows for multiple providers, it ultimately develops lifetime records. The study may use the dimensions of documentation quality to ensure compliance with the medical records documentation SOP by health workers by use of the checklist and survey to conform to the accuracy, completeness, timeliness, integrity, accuracy, and dependability to come up with documentation examination (Maslyanskaya & Alderman, 2019). The use of registers, summary forms, patient files, use of policies, and SOP was not adequate (Vaithamanithi *et al.*, 2016).

Moreover, the electronic medical record is used by the physician with the help of technical support and training. Extremely complicated, that general training and technical support are related to electronic medical records. The physicians struggle to provide the necessary appropriate training and support in problems connected with the electronic medical record. The physicians are not technically supported in the system inherently to patients (Tyagi, 2019).

For institutions, characteristics identify good training in information communication technology, and the level of computer literacy in health care professionals struggle. Most physicians are used to getting reluctant to adopt electronic medical records to ensure the availability of the required time in the form of training implemented in healthcare institutions while nursing and midwives and healthcare staff are well trained to incorporate healthcare documentation (Lockwood, 2019).

In particular, the process of investigating challenges to electronic medical records systems adoption. The study used a case of a coastal province. The study found that improving the organization of medical information contributes to high-quality patient care inefficient in record organization standards. The role of electronic medical records comprises patient billing, electronic medical record of investigation laboratory results, prescribing and recording clinical records, decision support documents from data software. The patient perspectives have the benefit of electronic medical records consisting of enhanced diagnosis treatment is significantly related to fewer errors in personal health records with faster health care institutions in their medical professionals in the institutions (Lockwood, 2018).

More importantly, the institutions have the point of view of doctors and health specialists with many medical records. The ability to transfer patients from one section to another depends on a change in leadership participation with stakeholder's

participation and incentive compliance to improved management of patient care records with minimal results such as transcription services, labor expenses, customizable, and medical records practices. The advanced prescribed clinical documentation ability has improved the bottom line in health care practice enhanced by accurate support of clinical data (Anyango, 2017).

2.5 Health Workers IT Proficiency Influencing Compliance with the SOP

The inadequacy of computer skills in the e-health care industry hinders service quality, which is indeed very important in providing the patient level of satisfaction because quality service is directly related to customer satisfaction, reliability, and financial support. On the other hand, medical records require more resources in the startup capital is higher to computer proficiency sentiment by noting that service provides quality if it assists somebody to enjoy a good sustainable health care documentation (Pagno & Nedel, 2015).

In particular, the physician needs to allocate time and effort to record medical prescriptions and physicians allocate time to learn how to use the medical records system effectively to master the system bearing in mind the complexity problem related to EMR systems (Davis Giardina *et al.*, 2017).

Moreover, technical challenges emerging electronic medical records systems adoption. This declares that IT proficiency involves basic word processing, spreadsheet, use of email, system security, internet, and the ability to resolve errors and bugs (Sumbi, 2016). The unavailability of technical computer skills, lack of technical training and support, computer skills among physicians, system limitation, system complexity, customizability, and reliability of the systems has influenced medical record documentation and storage (Bierman, Hufmeyer, Liss, Weaver, & Heiman, 2017). However, the study elsewhere revealed that technical skills barriers

had a significant influence on electronic medical records utilization and compliance to SOP (Anyango, 2017).

Nevertheless, the trends in medical records had experienced the high cost of documentations. With many advances in information technology over the past 17 years, particularly in healthcare institutions, many different electronic health records have been developed, in the implementation. The institutions are currently increasing the introduction of electronic medical records while systems have essentially implemented a form of health records (Vaithamanithi *et al.,* 2016).

Although the interest in automating health records is generally high in both developed and developing countries, unfortunately, the introductions of the electronic health records system appear to be overwhelming in the medical record by health information managers (Abisoye, Abisoye, & Ojonuba, 2016). A study elsewhere also indicates that the time barrier to medical record selection involves using different parameters in electronic medical records, affects the use of medical records management, throughout patient visits, hence time is important in record implementation and applicability (Abisoye *et al.,* 2016).

More importantly, the World Health Organization library cataloging in publication data found that many people involved in healthcare today expect to change from paper to a paperless environment and it has successfully been achieved in a few health institutions. Therefore, health institutions should not focus only on paperless but encouraging departments to change to electronic systems to improve the accuracy and quality of data recorded in health records, access to patient's healthcare information enabling to share by present and continuing care. However, compliance with the electronic records documentation SOP has not been effectively implemented in most hospitals (Schneider, 2016). Besides, medical records are an

integral instrument of patient treatment and are not properly controlled due to inadequate knowledge of information technology skills in medical records documentation (Abdekhoda, Ahmadi, Dehnad, Noruzi, & Gohari, 2016).

2.6 Summary of the Literature Review

The study indicates assessment on Socio-demographic factors such as age, gender, cadre, work experience, and education level, has not been properly evaluated on their compliance with the medical records documentation SOP which creates a knowledge gap. Similarly, different cadres have a significant effect on documentation, nurses do not record their actions to a great extent and such incomplete recording may lead to medical errors and deaths. Many studies identified deficiencies in the practice of documentation among nurses across the globe. The socio-demographic characteristics, if worked on will greatly improve the service delivery among health workers, otherwise, poor performance will continue to affect the quality of services being offered to the patients at the hospital.

More importantly, the assessment of the institutional characteristics such as technical support skills, training, top management involvement, requisite documents, and adequacy of computer skills among health workers, has not been properly checked on their compliance with the medical records documentation SOP. Besides, health facilities require the provision of more technical support staff, requisite documents for documentation, and staff training on documentation would achieve the desired level of compliance with SOPs. It has been reported most records are often incomplete and this is brought about by non-compliance to medical records documentation SOP. Failure to observe the standards of documentation often results in mismanagement of patients and medical errors which eventually results in poor outcomes and deaths.

Finally, the health worker's Information Technology proficiency such as Novice, Intermediate and advanced skills, has not been properly assessed to ascertain their compliance to medical records documentation SOP. Substantial investments in data collection have improved the knowledge and understanding of global health, but huge gaps remain between what health professionals do know and what they need to know to improve the health of the world's population. Reliable and timely health information is an essential foundation for public health action, particularly when resources are limited and funding decisions can mean the difference between life and death.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter deals with the study design, variables of the study, location of the study, study population, inclusion and exclusion criteria, sampling technique and sample size determination, construction of research instruments, validity and reliability of the research instrument, data collection, data analysis, and ethical consideration.

3.2 Research Design

A cross-sectional analytical research design was used in this study. A cross-sectional study involves the collection of data at one point in time (Connelly, 2016). The phenomenon under study is captured during one period of data collection and these studies are appropriate for describing the status of phenomena or relationships among phenomena at a fixed point in time. In this study, data was collected from 24th December 2018 to 19th March 2019.

The analytical research aims to gain knowledge on the quality and the amount of influence that predictors have on the outcome variable. The usual way to gain this knowledge is by group comparisons. Such a comparison starts from one or more hypotheses about how the determinant may influence the occurrence of disease (Connelly, 2016; Howitt & Cramer, 2017). In this study, the researcher sought to highlight and quantify the rather complex relationships of the various demographic and institutional factors influencing compliance with medical records documentation SOP in Bungoma level 4 hospital.

3.3 Variables

A variable is defined as anything that has a quantity or quality that varies (Freire-González, Decker, & Hall, 2017). The current study had one dependent or outcome variable, and three independent or predictor variables.

3.3.1 Independent Variables

An independent variable is a variable believed to affect the dependent variable. This is the variable that is manipulated to see if it makes the dependent variable change (Creswell & Poth, 2016). The Independent variables of the study were demographic characteristics (age, gender, cadre, level of education, work experience) institutional characteristics (adequacy of ICT Equipment, top management involvement, enough qualified staffs, technical support, requisite documents for documentation, and staff training) Information technology Proficiency (novice, intermediate, advanced). Similarly, for the Information technology proficiency indicators, a new variable, IT Proficiency indicator (It_Profiency) were obtained as the mean across all the responses under the influence of health workers IT Proficiency on compliance with medical records documentation SOP (see appendix 2 Section C). The new variable was further used to model the data to come up with three outcome variables as novice, intermediate and advanced. This was obtained from the variable, (It_Profiency), in such a way that any observation < 2.5 was assigned novice, and any observation >2.5 and <3.5 was assigned intermediate, otherwise the observation was advanced.

3.3.2 Dependent Variables

A dependent variable is a variable a researcher is interested in. The changes to the dependent variable are what the researcher is trying to measure during analysis (Creswell & Creswell, 2017). The dependent variable was the extent of compliance with the medical records documentation SOP by health workers that were categorized as either compliant or non-compliant. The overall compliance was measured using the selected 16 SOP indicators (see appendix 2 Section B1). The SOP indicator was obtained as the mean across all the responses under the extent of compliance with medical records documentation SOP. The outcome variable was the SOP category (SOP_cat) which was a binary outcome with the option compliant and non-compliant. This was obtained from the variable, SOP_indicator, in such a way that any observation >4.5 was assigned 'Compliant' otherwise the observation was 'Non-compliant.

3.4 Location of the Study

Bungoma level 4 hospital It's located in Kanduyi sub-county; it borders Kabuchai to the North, Webuye west to the east, Kakamega north to the southeast, Sirisia to the west, and Bumula to the south. It covers an area of 318.5 km^2 and it's a referral hospital for Bungoma county. The facility's catchment population was 108,261 with 52,073 males and 56,187 females. The doctor population ratio is 0.2 per 10,000 populations, clinical officer ratio is 2.1 per 10,000, and nurse's ratio 3.2 per 10,000 populations (appendix 4) (KNBS, 2019). The facility serves a total of 272,755 patients as outpatient attendances and 20,084 as inpatient admissions (MOH, 2018). The selection of Bungoma level 4 hospital was informed by casual observation on documentation of the patients' records and the routine data quality audit reports,

which have shown discrepancies in the data and were purposely chosen for its size and a referral health facility for Bungoma County.

3.5 Study Population

The study population (also known as accessible population) is the actual sampling frame, from which a sample is randomly drawn (Howitt & Cramer, 2017). The study population for the current study consisted of 400 health workers, both on permanent, contract, and temporary terms at the Bungoma level 4 hospital, and were distributed in various departments within the hospital. The study sample was 197 health workers and this represents 50% of the total population. According to Mugenda and Mugenda, a sample of between 10%- 50% was a favorable and adequate representation of the entire population (Mugenda & Mugenda, 2003). The sampling frame was acquired from the human resource department who gave a copy of the current human resource establishment at Bungoma level 4 Hospital.

3.6 Target Population

The target population (also known as the theoretical population) is the group to whom we wish to generalize our findings (Creswell & Poth, 2016). The target population for the current study consisted of 400 health workers (see table 3.1).

Table 3. 1 Proportion of health workers Selected from each Department

Cadre	Number of health workers	Sampled respondents	Proportionate stratified sample %
Medical Officers	29	12	41%
Clinical Officers	65	23	35%
Clinical Officer Intern	29	10	34%
Dentist	2	2	100%
Nurses	157	77	49%
Health Records & IT officers	8	8	100%
Laboratory officers	30	15	50%
Physiotherapy	7	3	43%
Occupation Therapy	8	4	50%
Orthopedic officer	3	3	100%
Plaster Technician	4	2	50%
Pharmacist	8	8	100%
Pharm Tech	8	3	38%
Radiographers	5	4	80%
Dental Technologist	4	3	75%
MET	6	4	67%
Hospital Administrator	3	1	33%
Public health Officers	4	4	100%
HTS	6	4	67%
Nutritionist	6	4	67%
Medical Social Worker	8	3	38%
TOTAL	400	197	49%

Source: Bungoma level 4 hospital human resource department.

3.6.1 Inclusion Criteria

The study included all Bungoma level 4 hospital health workers both day and night duties. Likewise, the medical officers and clinical officers on internship. Those who had given written or verbal consent.

3.6.2 Exclusion Criteria

The study excluded all health workers who were away on leave. Those who were unwilling to participate in the study. Besides, the casual workers and Support staff, the critically ill and mentally unwell, and those who were not workers of Bungoma level 4 hospital.

3.7 Sampling Techniques and Sample Size

3.7.1 Sampling Techniques

The participating hospital was purposively selected based on the fact that it's the main hospital and a referral facility for Bungoma County. The sample frame for the study consisted of health workers in Bungoma level 4 Hospital. The calculated sample size of 197 participants was stratified according to departments after which simple random sampling was used to get a proportionate number of respondents according to the size of the department as shown in (Table 3.1). All departments were involved in the study and respondents were drawn from them.

3.7.2 Sample Size

The quantitative sample size was determined using a formula by (Fisher, Laing, Stoeckel, & Townsend, 1998) as shown:

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

Where,

N= desired sample size

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

P= proportion of the targeted population that has the characteristic focusing in the study estimated at 30%. In this study, the particular characteristics are the members of staff at Bungoma Level 4 Hospital.

q=1-p

d= degree of accuracy set at 0.05-degree proportion of error that should be accepted in the study (0.05) that is 5%

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

Thus $n=1.96^2*(0.3*(1-0.3)$

0.05^2

Hence; $n= (1.96*1.96) *(0.3*0.7) \quad = 1.96^2*0.3*0.7$

$$(0.05*0.05) \qquad 0.05^2$$

$$= \frac{3.8416*0.21}{0.0025}$$

$$n = 322.69$$

Since the population estimate is less than 10,000 which is 400, (Fisher *et al.,* 1998) second correction formula will be used;

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

where;

nf = New sample size

n=desired sample size calculated using the first formula

N=Population estimate

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

$$nf = 323/ (1+\frac{323}{400})$$

$$=179$$

10% (18) of the sample was added as attrition to cater for non-responses. Therefore, 197 subjects meeting the inclusion criteria were interviewed.

3.7 Data Collection tools

Data were collected using structured questionnaires which were administered to respondents selected from every department within the hospital. Every participant was either given a questionnaire or had the questionnaire read to them by the research assistant after obtaining his or her consent to participate. The questionnaires had three sections which were to address each objective. The first section identifies the socio-demographic characteristics of the respondents; the second section established healthcare worker's compliance with SOP and the influence of

institutional characteristics on compliance to medical records documentation SOP by health workers. While the third section inquired into the influence of healthcare worker IT proficiency on compliance to medical records documentation SOP.

3.8 Pre-Testing

Pre-testing is the stage in survey research when survey questions and questionnaires are tested on members of the target population/study population, to evaluate the reliability and validity of the survey instruments before their final distribution. The study questionnaires were pre-tested at Webuye Level 4 hospital, which is also a level 4 hospital and has similar facilities like Bungoma Level 4 Hospital.

3.8.1 Validity

Validity in research are used for enhancement of accuracy of the assessment and evaluation of research work (Quansah, 2017). The research tool's validity was tested using applicable tests. The validity of the instrument is the extent to which it does measure what it is supposed to measure (Thatcher, 2019). Validity is the accuracy and meaningfulness of inferences, which are based on the research results. It is the degree to which results obtained from the analysis of the data represent the variables of the study (Creswell & Creswell, 2017).

A pre-test study was conducted on a predetermined sample of 20 health workers in Webuye level 4 Hospital to test the validity of the instruments to be used. To determine validity in this study, 20 questionnaires were administered to respondents during pretests conducted at Webuye level 4 Hospital where 17(85%) of the questionnaires gave consistently and intended responses while 3 had errors which were corrected before the questionnaire could be used for data collection in Bungoma level 4 hospital. Few changes were made during pre-testing which

included reducing the number and length of the study tools to minimize the time required to complete an interview, besides, to enhance the logical flow of questions and answers and revision of questions that were not clear to the respondents.

3.8.2 Reliability

Reliability in research are used for enhancement of accuracy of the assessment and evaluation of research work (Quansah, 2017). Reliability refers to the consistency, stability, and repeatability of results (Hall, 2017). The reliability of an instrument is the degree of consistency with which it measures a variable (Van Teijlingen & Hundley, 2019). All research instruments were pre-tested to check their reliability. Cronbach's alpha was used where any value of more than 0.5 indicated that the instruments were reliable and gave good internal consistency during the study. The method was ideal for the study because it required a single administration of a test and was the most appropriate type of reliability for measures that contains a range of possible answers for each item of an instrument. Cronbach's alpha was 0.8, which indicated that the instrument was reliable.

3.9 Data Collection Techniques

3.9.1 Recruitment and training of Research Assistants

Research Assistants were recruited from the hospital. To qualify as a Research Assistant one was required to be a holder of certificate or diploma in Health Records and information, clinical medicine, nursing, or a holder of any other medical field qualification. They were required to be fluent in both spoken and written English and Kiswahili. The recruited research assistants were trained on the study tools to equip them to understand the process of administering the research questionnaire.

3.9.2 Recruitment of Participants for the Study

After determination of the number of respondents in each department the researcher obtained consent from the medical superintendent and verbal permission from the respective heads of departments to allow the researcher and research assistants access the health workers in the selected departments.

3.9.3 Data Collection Process

The data was collected between 24th December 2018 and 19th of March 2019 by research assistants and the researcher who visited Bungoma level 4 hospital on different days. Clients were counterchecked to ensure no repeat interview of participants occurred. After introducing oneself and obtaining consent, the researcher either read or gave the questionnaire to the respondent and recorded the responses.

A structured questionnaire (appendix 2) was administered to collect primary data from a total of 197 health workers. The filled questionnaires were checked for completeness, accuracy, and irrelevant, incomplete, or inaccurate records were removed from the database. Once questionnaires were completed the data collected

was systematically arranged according to the codes of the questions to facilitate analysis. The data was eventually stored on a computer. A password was used to secure the database while the questionnaires were locked in a cabinet at the health records department.

3.10 Data Analysis

The collected data were processed by carrying out editing where data was scrutinized to detect any errors and omissions to ensure data accuracy. Thereafter data was coded by assigning numbers to categorize responses. Data were then classified based on their characteristics. The classified data was tabulated by placing summarized data into columns and rows. The tabulated data were entered into a computer using the statistical package for Social sciences (SPSS) Version 22.0 and analyzed using descriptive analysis. Chi-square and Fisher's exact test were used test for independence while binary logistic regression analysis was used to analyze the relationship between independent and dependent variables. The results were then presented using frequency tables, percentages, pie charts, and bar graphs, to summarize and describe the study sample and study variables. In this study, all the tests were done at a 95% confidence interval (CI) with a P-value of < 0.05 considered statistically significant.

3.11 Ethical Considerations

Research approval to conduct the study was granted by Kenyatta University Graduate School (appendix 4). Ethical approval was obtained from Kenyatta University Ethics Review Committee (appendix 5) and a research permit granted by the National Commission for Science, Technology, and Innovation (NACOSTI) (appendix 7). Authorization by County Commissioner (appendix 8), County

Director of Education (appendix 9), and County Director of Health (Appendix 10). To safeguard the rights of the respondent and uphold the obligations of the principal investigator, Informed consent to participate in the study were obtained from study respondents using a consent form (appendix 1). The consent form was used to obtain informed consent, which provided relevant information on the study, its purpose, expected benefits, associated risks as well as enable respondents to inquire about any issues of concern that related to the study, especially ethical concerns.

The identities of the respondents involved in the study were duly protected by ensuring that the names of the participants were not indicated in the data collection tools; unique codes were used to identify the study tools for ease of data entry, cleaning, and analysis. Filled questionnaires were kept in a lockable cabinet to ensure security and confidentiality and only the principal investigator had access to the contents thereof.

CHAPTER FOUR: RESULTS

4.1 Introduction

This chapter presents the results of the study based on the procedure described in the research methodology. It provides for descriptive and inferential statistics respectively. It describes the overall compliance with medical records documentation SOP by the health workers in Bungoma level 4 hospital and subsequent analysis as per the objectives.

The overall compliance was measured using the selected 16 SOP indicators (see appendix 2 Section B1). The SOP indicator was obtained as the mean across all the responses under the extent of compliance with medical records documentation SOP. The outcome variable was the SOP category (SOP_cat) which was a binary outcome with the option compliant and non-compliant. This was obtained from the variable, SOP_indicator, in such a way that any observation >4.5 was assigned 'Compliant' otherwise the observation was 'Non-compliant. Similarly, for the Information technology proficiency indicators, a new variable, IT Proficiency indicator (It_Profiency) were obtained as the mean across all the responses under the influence of health workers IT Proficiency on compliance with medical records documentation SOP (see appendix 2 Section C).

The new variable was further used to model the data to come up with three outcome variables as Novice, intermediate and advanced. This was obtained from the variable, (It_Profiency), in such a way that any observation < 2.5 was assigned Novice, and any observation >2.5 and <3.5 was assigned Intermediate, otherwise the observation was advanced.

4.2 Response Rate

The study targeted 197 health workers at Bungoma level 4 hospital. However, 195 health workers responded to the questionnaires giving a response rate of 98.9%.

4.3 Socio-Demographic Characteristics of Respondents

Table 4.1 presents the social-demographic characteristics of respondents. There were more males 50.3% (n=98) than the females' respondents 49.7% (n=97). Moreover, close to half 47.2% (n=92) of the participants in the study were aged between 25-34 years old. Even though 21.5% (n=42) and 18.5% (n=36) of the participants were aged between 18-24 and 35-47 years old respectively, while only 12.8% (n=25) were aged above 48 years old. The majority of research participants were however Nurses 39.5% (n=77) and Clinical officers 16.9% (n=33). Other cadres accounted for 17.4% (n=34) of respondents.

More importantly, 48.2% (n=94) of participants had work Experience of between five and ten years at the time of data collection. 4.6% (n=9) of respondents had worked for less than 12 months, while 4.1% (n=8) had worked for over 20 years. Concerning the level of Education, more than half of the respondents 50.3% (n=98) in the survey had a diploma, otherwise, 30.3% (n=59) had a bachelors' degree. Certificate level and post-graduate holders accounted for only 5.6% (n=11) and 2.5% (n=5) of all participants, respectively.

Table 4. 1 Socio-Demographic Characteristics

Socio-Demographics	Frequency n (%)
Gender	
Female	97 (49.7)
Male	98 (50.3)
Total	195 (100)
Age	
18-24yrs	42 (21.5)
25-34yrs	92 (47.2)
35-47yrs	36 (18.5)
Above 48yrs	25 (12.8)
Total	195 (100)
Cadre	
Medical Officers	10 (5.1)
Nurse	77 (39.5)
HRIM	8 (4.1)
Physiotherapy	3 (1.5)
Laboratory	15 (7.7)
Administration	1 (0.5)
Pharmacy	8 (4.1)
OT	4 (2.1)
RCO	33 (16.9)
PHO	4 (2.1)
Others	32 (16.4)
Total	195 (100)
Work Experience	
Less than 1 Year	9 (4.6)
1-5 years	16 (8.2)
5-10 years	94 (48.2)
10-15 years	43 (22.1)
15-20 years	25 (12.8)
20+ years	8 (4.1)
Total	195 (100)
Level of education	
Certificate	11 (5.6)
Diploma	98 (50.3)
Higher National Diploma	22 (11.3)
Undergraduate	59 (30.3)
Postgraduate	5 (2.5)
Total	195 (100)

4.4 Compliance with Medical Records Documentation SOP

This section presents the overall level of agreements on compliance with medical records documentation SOP by health workers. The SOP variables have been

grouped into three categories; data validation and collation; report writing, data retrieval, and storage; supportive supervision, and dissemination.

From table 4.2, data validation and collation 36.9% (n=72) of participants in the study attested that most of the times daily totals are correctly tallied at the bottom page of the source documents, 23.1% (n=45) of the respondents always ensured that daily totals are correctly tallied at the bottom of each page, 15.9% (n=31) and 10.8% (n=21) rarely and not at all respectively, do make daily totals correctly tallied at the bottom page of the source document. With regards to the reconciliation of erroneous values in the reporting tools, the Majority of respondents 40.5% (n=79) always reconciled erroneous values in the reporting tools. Whereas, 4.1 % (n=8) and 7.2% (n=14) rarely and not at all respectively do reconcile the data. Documenting missing data was not at all done by 5.6% (n=11) of respondents, 3.6% (n=6) rarely document missing data in the source documents. Data collation activities within appropriate timelines were always done by a majority of the participants in the study 41% (n=80). Only three percent of them rarely collated data within appropriate timelines. Concerning the treatment of suspected data, At least 42.6% (n=83) of respondents most of the time carried out treatment of suspect data, 23.6% (n=46) always did, only 9.7% (n=19) did not at all carry-out treatment of suspect data.

Moreover, on report writing, data retrieval, and storage 42.6% (n=83) of participants in the study agreed that most of the time reports are made following the requisite format. Twenty-three percent of the respondent always made reports according to the requisite format, and only less than 9.7% (n=19) did not at all complied with making reports using the requisite format. On matters concerning the formal request for retrieval of data, 37.4% (n=73) of the respondents most of the time receive

formal requests for data retrieval, 41% (n=80) of respondents always receive the formal requests, and only 5.6% (n=11) did not at all. A large proportion as displayed in table 4.2, 42.6% (n=83) of staff, most of the time, were assigned to retrieve data. Twelve percent claimed that staff was rarely assigned to retrieve data. With regards to the sorting of data, an equal proportion of respondents in the survey either at most times or always often sorted data for retrieval. Only 3.1% (n=6) of respondents claimed that they rarely sort data before retrieval. However, regarding the use of the password, 36.4% (n=71) of participants in the survey used passwords to secure electronic data; 23.1% (n=45) of them always used password, 10.8% (n=21) sometimes and only 4.1% (n=8) rarely used passwords for electronic data. Concerning the use of the approved filing method, at least 40.5% (n=79) always used the approved filing methods.

Furthermore, regarding supportive supervision, and dissemination 36.9% (n=72) of respondents in the study agree that most of the time best practices on documentation are shared among all users. Twenty-three percent asserted, 13.3% (n=26) sometimes while 10.8% (n=21) did not at all share best practices with its users. On documenting lessons learned, 40.5% (=79), 37.4% (n=73) always, and most of the time do document the lessons learned respectively. Whereas, 6.7% (n=13) and 4.6% (n=9) rarely and not at all respectively, do document the lessons learned. With regards to incorporating feedback from supportive supervision, a minority proportion of respondents in the survey 3.6% (n=7) rarely incorporate feedback from supportive supervision, 41% (n=80) always incorporated feedback from supportive supervision. Whereas, 5.6% (n=11) do not incorporate feedback from supportive supervision activity.

Table 4. 2 Compliance with Medical Records Documentation SOP

Variables	Not at all n (%)	Rarely n (%)	Sometimes n (%)	Most times n (%)	Always n (%)
Data Validation and Collation					
Daily Totals	21 (10.8)	31 (15.9)	26 (13.3)	72 (36.9)	45 (23.1)
Reconciliation	14 (7.2)	8 (4.1)	21 (10.8)	73 (37.4)	79 (40.5)
Missing Data	11 (5.6)	7 (3.6)	24 (12.3)	73 (37.4)	80 (41.0)
Timeliness	11 (5.6)	6 (3.1)	18 (9.2)	80 (41.0)	80 (41.0)
Data Treatment	19 (9.7)	25 (12.8)	22 (11.3)	83 (42.6)	46 (23.6)
Report writing, Data Retrieval, and Storage					
Requisite format	19 (9.7)	25 (12.8)	22 (11.3)	83 (42.6)	46 (23.6)
Formal request	11 (5.6)	7 (3.6)	24 (12.3)	73 (37.4)	80 (41.0)
Staffs assigned	19 (9.7)	25 (12.8)	22 (11.3)	83 (42.6)	46 (23.6)
Sorting of data	11 (5.6)	6 (3.1)	18 (9.2)	80 (41.0)	80 (41.0)
Use of a password	22 (11.3)	32 (16.4)	25 (12.8)	71 (36.4)	45 (23.1)
Filing Method	14 (7.2)	8 (4.1)	21 (10.8)	73 (37.4)	79 (40.5)
Supportive Supervision, and Dissemination					
Best Practices	21 (10.8)	31 (15.9)	26 (13.3)	72 (36.9)	45 (23.1)
Lessons Learned	9 (4.6)	13 (6.7)	21 (10.8)	73 (37.4)	79 (40.5)
Incorporating Feedback	11 (5.6)	7 (3.6)	24 (12.3)	73 (37.4)	80 (41.0)

4.4.1 Overall Compliance with Medical Records Documentation SOP

Figure 4.1 presents the overall level of compliance with medical records documentation SOP. Overall, 47.2% complied with the medical records documentation SOP.

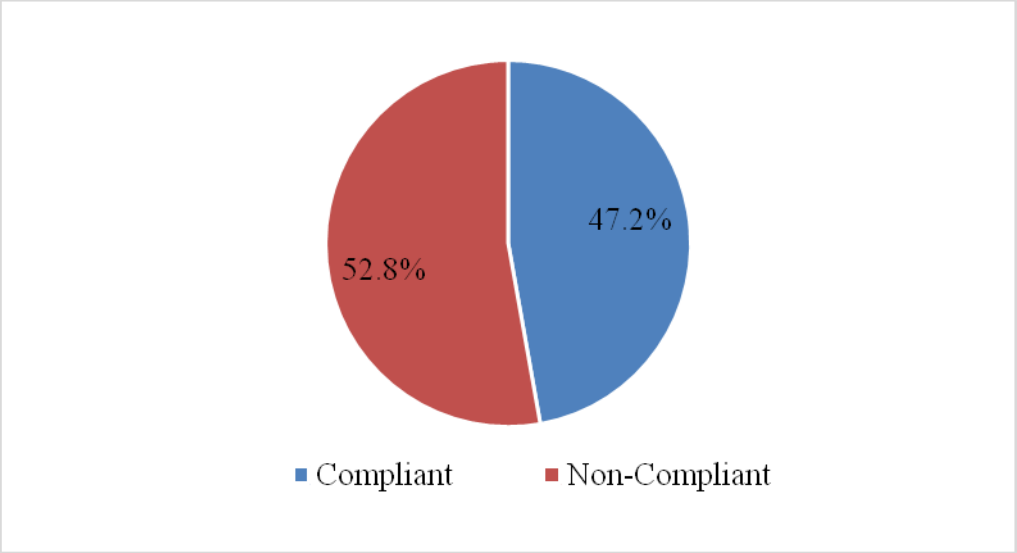


Figure 4. 1 Overall Compliance with Medical Records Documentation SOP

The outcome variable was SOP_cat which is a binary outcome with the option compliant and non-compliant. This was obtained from the variable, SOP_indicator (see appendix 2 Question 6.1 - 6.16), in such a way that any observation >4.5 was assigned 'Compliant' otherwise the observation was 'Non-compliant.

4.5. Association between Socio-Demographic Characteristics and Compliance with SOP

Table 4.3 presents the socio-demographic characteristics associated with compliance to medical records documentation SOP. The findings indicate there was no significant difference in gender on compliance with medical records documentation SOP (χ^2 =0.412, p = 0.521). Likewise, there was no substantial change in the age of respondents with the compliance to the medical records documentation SOP (χ^2=3.172; p=0.366).

However, the respondent's cadre was associated with compliance with the medical records documentation standard operating procedure (Fisher's exact test =24.52; p=0.002). This concurs with the proportion of 50% (n=5) medical officers, nurses 62.3% (n=48), physiotherapy 100% (n=3), laboratory 53.3% (n=8) who were

compliant as compared to HRIO 87.5% (n=7), pharmacy 62.5% (n=5) who were non-compliant.

Furthermore, work experience was associated with compliance with the SOP for medical records documentation (χ^2=8.75; p=0.047). The years spent working at Bungoma level 4 hospital played a key role in compliance with SOP. A high proportion of 64.7% (n=11) of those who were compliant was above 20 years of work experience as compared to 46.9% (n=15) those who have worked between the 1-5 years and were compliant. Besides, the level of education of respondents was significantly associated with compliance with medical records documentation SOP (Fisher's exact test =11.26; p=0.042).

Table 4.3 Association between Socio-Demographic Characteristics and Compliance with SOP

Socio-Demographics	Compliant n (%)	Non-Compliant n (%)	χ^2 (df)	p-value
Gender				
Female	48 (49.5)	49 (50.5)	0.412(1)	0.521
Male	44 (44.9)	54 (55.1)		
Age			χ^2 (df)	
18-24yrs	21 (50.0)	21 (50.0)	3.172(3)	0.366
25-34yrs	38 (41.3)	54 (58.7)		
35-47yrs	18 (50.0)	18 (50.0)		
>48yrs	15 (60.0)	10 (40.0)		
Cadre			Fisher's Exact	
Medical Officer	5 (50.0)	5 (50.0)	24.52	**0.002***
Nurse	48 (62.3)	29 (37.7)		
HRIM	1 (12.5)	7 (87.5)		
Physiotherapy	3 (100)	0 (0.0)		
Laboratory	8 (53.3)	7 (46.7)		
Administration	0 (0.0)	1 (100)		
Pharmacy	3 (37.5)	5 (62.5)		
OT	2 (50.0)	2 (50.0)		
Clinical Officer	12 (36.4)	21 (63.6)		
PHO	2 (50.0)	2 (50.0)		
Others	8 (25.0)	24 (75.0)		
Work Experience			χ^2 (df)	
Less than 1 Year	5 (45.5)	6 (54.5)	8.75(5)	**0.047***
1 -5 years	15 (46.9)	17 (53.1)		
5 -10 years	45 (60.0)	30 (40.0)		
10 -15 years	18 (45.0)	22 (55.0)		
15 -20 years	8 (40.0)	12 (60.0)		
>20 years	11 (64.7)	6 (35.3)		
Level of Education			Fisher's Exact	
Certificate	5(45.5)	6 (54.5)	11.26	**0.042***
Diploma	43 (43.9)	55 (56.1)		
HND	11 (50.0)	11 (50.0)		
Undergraduate	30 (50.8)	29 (49.2)		
Postgraduate	3 (60.0)	2 (40.0)		

4.6 Influence of Institutional Characteristics on Compliance with the SOP

4.6.1 Institutional Characteristics

As displayed in table 4.4, a large proportion of respondents, 62.6% (n=122) strongly agreed that the institution had adequate ICT Equipment, 3.1% (n=6) strongly disagreed that there was no adequate ICT equipment in the facility. Correspondingly, 30.8% (n=60) disagreed that the institution has adequate staff. Close to a quarter 23.6% (n=46) strongly disagreed that there was the available qualified staff. Nonetheless, 16.9% (n=33) agreed that there was available staff in the facility. At least 37.9% (n=74) of respondents in the study agreed that the institution's top management provided supervision on compliance with medical records documentation SOP. Slightly more than a fifth of respondents 24.1% (n=47) were not sure but only less than 5% (n=9) strongly disagreed.

Likewise, 42.6% (n=83) of all respondents in the study were in agreement that the institution provides technical support to health workers in terms of documentation. Twenty percent strongly agreed and that only 5% (n=10) strongly disagreed that the institution provided requisite technical documentation support to health workers. However, 39% (n=76) of the respondents were in agreement that documentation tools were available at the outpatient, maternity, and laboratory. Whereas 29.2% (n=57) of the respondent strongly agreed, 14.9% (n=29) were not sure while 10.3% (n=20) and 6.7% (n=13) disagreed and strongly disagreed respectively on the availability of documentation tools.

Table 4. 4 Institutional Characteristics

Variables	Strongly Disagree n (%)	Disagree n (%)	Not Sure n (%)	Agree n (%)	Strongly Agree n (%)
ICT Equipment	6 (3.1)	6 (3.1)	8 (4.1)	53 (27.2)	122 (62.6)
Qualified staff	46 (23.6)	60 (30.8)	29 (14.9)	33 (16.9)	27 (13.8)
Top management involved	9 (4.6)	22 (11.3)	47 (24.1)	74 (37.9)	43 (22.1)
Technical support	10 (5.1)	25 (12.8)	38 (19.5)	83 (42.6)	39 (20.0)
Requisite data tools	13 (6.7)	20 (10.3)	29 (14.9)	76 (39.0)	57 (29.2)

4.6.2 Influence of Institutional Characteristics on Compliance with the SOP

The study results in table 4.5 present institutional characteristics associated with compliance to medical records documentation SOP among health workers. There was no difference in compliance with medical records documentation SOP with the adequacy of ICT Equipment among health workers (Fisher's exact test*=7.540; p= 0.102*). Correspondingly, there was no major change in compliance with SOP for medical records documentation with top management involvement (χ^2 =6.625; p= 0.155). A high proportion of 60.5% (n=26) of the respondents who were non-compliant, strongly agreed that there was no significant difference in compliance with medical records documentation SOP with top management involvement as compared to 39. 5% (n=17) who strongly agreed were compliant.

Subsequently, there was no significant difference in compliance with medical records documentation SOPs with the availability of enough qualified staff (χ^2=6.32; p=0.177). This was in contrast with a high proportion of 65.2% (n=30) of the respondents who were non-compliant strongly disagreed that there was enough qualified staff as compared to 34.8% (n=16) who were compliant. Whereas, the

availability of technical support to health workers was associated with compliance to medical records documentation SOPs (Fisher's exact test *=10.301; p=0.034*).

In terms of availability of requisite documents for documentation, those who were compliant 29.8% (n=17) strongly agreed that there are available requisite documents for documentation as compared to 70.2% (n=40) of those who were non-compliant. The availability of requisite documents for documentation was significantly associated with compliance to medical records documentation SOP at (*p=0.009*). Finally, staff training on requisite documentation tools was associated with compliance to the medical records documentation SOPs (χ^2*=10.05; p=0.041*).

Table 4. 5 Influence of Institutional Characteristics on Compliance with the SOP

Institutional Characteristics	Response Categories	Compliance to SOP		χ^2 (df)/ Fisher's exact	*p-value*
		Compliant n (%)	Non-compliant n (%)		
Adequacy of ICT Equipment among health workers	Strongly Disagree	6 (100)	0 (0.0)	Fisher's exact 7.540	*0.102*
	Disagree	2 (33.3)	4 (66.7)		
	Not Sure	4 (50.0)	4 (50.0)		
	Agree	25 (47.2)	28 (52.8)		
	Strongly Agree	55 (45.1)	67 (54.9)		
Top management involvement in ensuring compliance to SOPs	Strongly Disagree	5 (55.6)	4 (44.4)	Fisher's exact 6.625	*0.155*
	Disagree	11 (50)	11 (50)		
	Not Sure	29 (61.7)	18 (38.3)		
	Agree	30 (40.5)	44 (59.5)		
	Strongly Agree	17 (39.5)	26 (60.5)		
Are there enough qualified staff	Strongly Disagree	16 (34.8)	30 (65.2)	χ^2 (df) 6.32*(4)*	*0.177*
	Disagree	35 (58.3)	25 (41.7)		
	Not Sure	14 (48.3)	15 (51.7)		
	Agree	16 (48.5)	17 (51.5)		
	Strongly Agree	11 (40.7)	16 (59.3)		
Availability of Technical Support to Healthcare Worker	Strongly Disagree	2 (20.0)	8 (80.0)	Fisher's exact 10.301	***0.034****
	Disagree	18 (72.0)	7 (28.0)		
	Not Sure	17 (44.7)	21 (55.3)		
	Agree	40 (48.2)	43 (52.8)		
	Strongly Agree	15 (38.5)	24 (61.5)		
Availability of requisite documentation tools	Strongly Disagree	7 (53.8)	6 (46.2)	χ^2 (df) 13.58*(4)*	***0.009****
	Disagree	13 (65.0)	7 (35.0)		
	Not Sure	19 (65.5)	10 (34.5)		
	Agree	36 (47.4)	40 (52.6)		
	Strongly Agree	17 (29.8)	40 (70.2)		
Staffs training on documentation tools	strongly Disagree	11 (50.0)	11 (50.0)	χ^2 (df) 10.05*(4)*	***0.041****
	Disagree	8 (57.1)	6 (42.9)		
	Not Sure	24 (46.2)	28 (53.8)		
	Agree	34 (54.0)	29 (46.0)		
	Strongly Agree	13 (29.5)	31 (70.5)		

*****significant at $p<0.05$

4.6.3 Influence of Institutional Characteristics on Compliance with the SOP

The results of the binary logistic regression analysis revealed that for every unit advancement in institutional characteristics the log of odds of compliance with SOP for documentation of medical records would increase by more than 45.4%. Moreover, the results show that the institutional characteristics (availability of technical support, requisite documents for documentation, and staff training on documentation) were statistically significant regarding compliance with SOP for medical records documentation by health workers.

Table 4. 6 Influence of Institutional Characteristics on Compliance with the SOP

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp (B)
Step 1[a]	inst_char	.374	.165	5.178	1	**.023***	**1.454***
	Constant	-1.234	.609	4.103	1	.043	.291

a. Variable(s) entered on step 1: inst_char.

4.7 Influence of Health Workers Information Technology Proficiency on Compliance with the SOP

4.7.1 Health Workers Information Technology Proficiency

The study findings in table 4.7, show that the majority of the participants 31.8% (n=62) were fully able to log in without guidance (level 5 in the Key). 19.5% (n=38) were able to perform the task with guidance. Only 8.7% (n=17) of the respondents were not able to perform this task. At least 47.7% (n=93) of respondents (level 2) were able to find an existing patient within the system with guidance. Close to a third, (level 1) 27.7% (n=54) could not be able to perform the task. Subsequently, 22.6% (n=44) of respondents in the study were able to somewhat navigate through the system with occasional assistance (level 3). 21.5% (n=42) of respondents were

able to fully navigate through the system without guidance. At least a third of respondents (level 2), were able to generate reports with guidance while 26.7% (n=52) level 3 somewhat were able to generate reports with guidance. Regarding the use of the internet, a large proportion of respondents in the study 31.8% (n=62) were unable to perform documentation with the use of the internet. 28.7% (n=56) of the respondents were able to carry out documentation with assistance and only 11.3% (n=22) were able to carry out fully with the use of the internet on documentation.

However, the majority of the respondents 38.5% (n=75) were fully able to carry out documentation using word processors without guidance. 27.7% (n=54) (level 4) was mostly able to carry out documentation using word processors with guidance. Whereas, 15.9% (n=31) somewhat able to perform this skill with occasional guidance. Similarly, 4.6% (n=9) were not able to perform the task using word processors. Besides, a large proportion of respondents 39.5% (n=77) (level 1) were not able to use spreadsheets in carrying out documentation tasks, while 37.4% (n=73) (level 2) were able to use spreadsheets in documenting with assistance.

Table 4. 7 Health Workers Information Technology Proficiency

Variables	Level 1 n (%)	Level 2 n (%)	Level 3 n (%)	Level 4 n (%)	Level 5 n (%)
Able to login on	17 (8.7)	38 (19.5)	34 (17.4)	44 (22.6)	62 (31.8)
Able to find an existing patient	54 (27.7)	93 (47.7)	22 (11.3)	16 (8.2)	10 (5.1)
Able to navigate through	36 (18.5)	39 (20.0)	44 (22.6)	34 (17.4)	42 (21.5)
Able to generate reports	28 (14.4)	61 (31.3)	52 (26.7)	29 (14.9)	25 (12.8)
Able to use internet	62 (31.8)	56 (28.7)	27 (13.8)	28 (14.4)	22 (11.3)
Use of word processors	9 (4.6)	26 (13.3)	31 (15.9)	54 (27.7)	75 (38.5)
Able to use spreadsheet	77 (39.5)	73 (37.4)	18 (9.2)	13 (6.7)	14 (7.2)

4.7.2 Overall Information Technology Proficiency by Skill Level

Figure 4.2 presents the level of overall Information Technology proficiency after recording the level of Information Technology proficiency and activities identified in table 4.7. From the table, it can be concluded that 64.1% (n=125) of respondents in the study had an advanced level of Information Technology proficiency, whereas, 25.1% (n=49) were considered to have an intermediate level of skill while only 10.8% (n=21) were considered as novices.

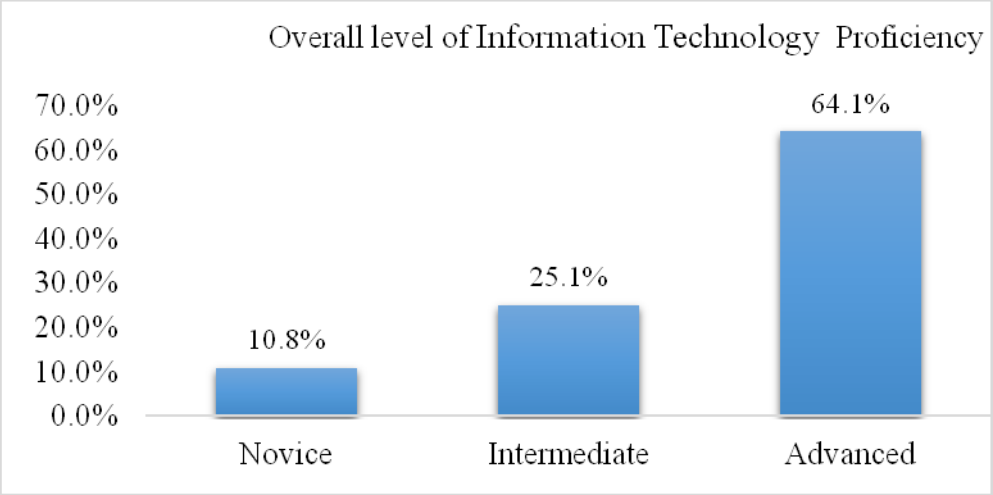


Figure 4. 2 Overall Information Technology Proficiency by Skill Level

4.7.3 Influence of Health Workers Information Technology Proficiency on Compliance with the SOP

The study results in table 4.8 indicate the level of healthcare worker's information technology proficiency was statistically significant with the extent of compliance to the medical records documentation SOP (χ^2 =5.29; p=0.041). Similarly, those who were compliant and were at an advanced level 52.8% were high as compared to 47.2% of those who were non-compliant at the advanced level.

Table 4. 8 Influence of Health Workers Information Technology Proficiency on Compliance with the SOP

Level of IT Proficiency	Compliant n (%)	Non-compliant n (%)	χ^2 (*df*)	p-value
Novice	6 (28.6)	15 (71.4)		
Intermediate	20 (40.8)	29 (59.2)	5.29(2)	0.041
Advanced	66 (52.8)	59 (47.2)		

*significant at p<0.05

4.5.4 Influence of Health Workers Information Technology Proficiency on Compliance with the SOP

The study results in table 4.9 present, the Health Workers' IT proficiency was significant with compliance to medical records documentation SOP. A unit advancement in IT proficiency will increase the log of odds of compliance to medical records documentation SOP by more than double.

Table 4.9 Influence of Health Workers Information Technology Proficiency on Compliance with the SOP

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	it_Proficiency	.768	.348	4.885	1	**.027***	**2.156***
	Constant	-4.563	1.419	10.340	1	.001	.010

a. Variable(s) entered on step 1: it_Proficiency.

CHAPTER FIVE: DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary and discussion of the main findings of the study concerning each study objective. Also, conclusions based on the findings are made, followed by recommendations of the study as well as suggestions for further study which are proposed at the end of this chapter. Every attempt was made to represent the facts with completeness and clarity.

5.2 Discussion

5.2.1 Association between Socio-Demographic Characteristics and Compliance with SOP

The findings show considerably more than half of the participants were male; although there was no significant association between gender and compliance with medical records documentation SOP by the health workers. Correspondingly, this was consistent with a most recent study that concluded that the quality of data of electronic medical records doesn't differ with gender roles assigned (Hamm *et al.,* 2019). Although, the current findings contrast a previous study which revealed that in accumulation, the work of an experienced population in terms of age and gender influenced precise products (Ahwidy & Pemberton, 2016).

Besides, most of the health workers in Bungoma level 4 hospital were aged between 25-34 years old, thereby implying that the healthcare workforce is indeed youthful, even though there was no significant association on compliance with medical records documentation SOPs, this was also consistent with a study concluded that age and the previous computer experience on documentation did not affect

Electronic medical records usage frequency (Msiska, Kumitawa, & Kumwenda, 2017).

On the other hand, although the majority of the respondent in the study were nurses and clinicians, the current findings confirm that the individual cadre indeed affected compliance with SOPs, and more importantly, there was a significant association between the cadre of the respondents on compliance with medical records documentation SOPs. Nevertheless, this was consistent with a previous study that revealed that operational improvements were achieved through a better data management process that checks on data quality issues such as timeliness, completeness, accuracy precision on documentation which in turn measures the real practice per cadre (Meehan, 2017). Similarly, the current results were in tandem with an earlier study that concluded that providing adequate skills across different cadres will improve documentation, which is an essential socio-demographic factor that can affect compliance with medical records documentation SOPs (Herdiyanti *et al.,* 2018).

Furthermore, most of the health workers at Bungoma level 4 hospital had worked between five and ten years in the facility, and therefore are presumed to be well versed with the operations of the facility. Nevertheless, the current study revealed that the work experience of health workers was indeed significantly associated with compliance with medical records documentation SOPs. This was however consistent with a previous study that concluded that the work experience of health workers had a substantial association with compliance to the SOPs regarding improved service delivery (Rudolph *et al.,* 2017). The current findings were also in agreement with a much earlier study that revealed that more experienced staff and improved effectiveness of documented service delivery transformed healthcare information

technology in Japan which required document review, policy, and people progress (Sayeski, 2015)

Moreover, most health workers in the current study had at least a diploma certification, implying that health workers had the requisite education to comply with medical records documentation SOPs. More importantly, is the fact that the level of education was also significantly associated with compliance with medical records documentation SOPs. This mimics the results of a more recent study that affirmed the need to strengthen medical records documentation through improved capacity building (skill transfer) of the staff and with strong quality controls (Demirci *et al.,* 2017).

5.2.2 Influence of Institutional Characteristics on Compliance with the SOP

The findings of the current study indicate that the adequacy of ICT equipment was not significantly associated with compliance with medical records documentation SOP. A study elsewhere, previously revealed that most healthcare facilities are struggling with obstacles such as the acquisition of ICT equipment which is very expensive, power failures, inadequate human resources in most developing countries. In essence, the innumerable difficulties in the health sector may not be completely disregarded through only procuring these technologies, but connecting the technologies for improvement (Afolayan & Oyekunle, 2016).

Moreover, the top management involvement in ensuring that health workers comply with medical records documentation SOPs was not significant. Although, this contrasted with a previous study that found that the institutional characteristics and conduct have changed our understanding of institutional characteristics and top management competencies that drive quality improvement in healthcare remains

weak. The same study further clarified that the field of institutional conduct, a multidisciplinary field requires contributions from sociology, economics, and psychology studying individuals and group dynamics within the institution has proved that top management and employees and institutional establishments are key contributing factors to performance and quality improvement (Osland, Devine, & Turner, 2015). The current study however contrasted previous research that revealed that records quality in healthcare has nevertheless been influenced by top management involvement (Al Khamisi *et al.*, 2017).

Subsequently, a high proportion of the non-compliant respondents strongly disagreed that there was enough qualified staff in the facility which was in agreement with the current findings of a non-significant association between the availability of enough qualified staff on health workers and compliance with the medical records documentation SOP. The aforementioned findings however contrasted a previous study that concluded that institutional factors within the scope of management to influence compliance with SOP were not limited to staffing levels, training, workload, supervision, and time pressure (Williams, Sasangohar, Peres, Smith, & Mannan, 2017). Nevertheless, contrasting research concluded that poor performance results from limited staff, or staff not given that care according to standards and not being open to the needs of the patients and the community (Northouse, 2018). Although findings of the current study, concur with that of previous work that revealed that the provision of competent personnel and relevant training was reported to have a significant effect on the documentation of medical records (Amini *et al.*, 2015).

Moreover, the majority of the respondents in the current study perceived that the institution provides technical support to health workers in terms of compliance with

medical records documentation SOP. In concurrence with current findings, the availability of technical support to health workers was found out to be significantly associated with the health workers' compliance with medical records documentation SOP. This agrees with recent research that concluded that the health workers performance depends not only on their skills and knowledge but also on the accessibility of equipment, technical support systems, and infrastructures such as the organization, resources, accountability systems, and information systems that are in place (Ditlopo, 2017). It also concurs with a much earlier study that revealed that health facilities by providing more technical support staff will improve service delivery and work performance (Amini *et al.*, 2015).

However, the availability of requisite documents for documentation was significantly associated with the healthcare worker's compliance with medical records documentation SOP. A high proportion of the respondents strongly agreed that there were available requisite documents for documentation. This was in agreement with a previous study that concluded that requisite documents for documentation are key to improve data quality and performance (Sachdeva, 2018). This was also in tandem with a much earlier study that argued that the nursing documentation is still poor in many countries due to insufficient documentation of key aspects of assessment and other linked nursing care, including inaccuracy of documentation which requires adequate requisite documents for documentation and training of staffs as well (Galasiński & Ziółkowska, 2017).

Nevertheless, staff training on requisite documents for documentation was significantly associated with the healthcare worker's compliance with the medical records documentation SOP. Most of the participants strongly agreed that training staff on required data tools would improve compliance with medical records

documentation SOPs. This was concurring with a previous study that concluded that knowledge of the nursing process, which forms the basis for nursing documentation, is inadequate and staff training on documentation would achieve the desired level of compliance with SOPs (Tasew *et al.,* 2019). A recent study also ratified the current findings that the development and usage of SOP reduce deviation and promote quality through the consistent implementation of a process or procedure within the institution, even if there are contract or permanent staff changes. SOPs can be used as a part of a staff training program since they should provide detailed work instructions. It minimizes opportunities for miscommunication and can address safety concerns (Bhattacharya & Phill, 2015). More importantly, the binary logistic regression analysis confirms that there was a significant statistical relationship between the institutional characteristics (availability of technical support, requisite documents for documentation, and staff training on documentation) on healthcare worker's compliance with medical records documentation SOPs. This finding was consistent with an earlier study that concluded that it is necessary to have institutional, instructional changes for need-based training, coordination between education, health care systems in various health systems to have health professionals who provide efficient, effective care. For appropriate healthcare delivery, clinicians need the training, documentation tools, and equipment to provide bridged care, across systems, teams, settings, time frames, responding to patients' needs expectations for wellness (Chhabra, 2019).

5.2.3 Influence of Health workers IT Proficiency on Compliance with the SOP

The current study results indicate the Information Technology proficiency was significantly associated with healthcare worker's compliance with medical records

documentation SOP. Therefore, the current findings agree with earlier work that concluded that despite technical challenges emerging in electronic medical records systems adoption, the level of IT proficiency among the respondents, the basic IT proficiency was critical in healthcare service delivery (Moomba, 2017). It also concurs with a recent study that revealed that IT played a crucial role in improving the quality of service delivery and that computers formed a significant component of efficient data and information systems which improved service delivery on documentation of medical records (Alotaibi & Federico, 2017).

Although, the overall level of compliance with the SOPs shows that slightly more than half of respondents in the study were non-compliant with medical records documentation SOP. The current study findings agree with recent work that concluded that many of the health workers had inadequate technical skills to support the execution of their roles and that technical skills barriers had a significant influence on electronic medical records utilization, technical support was important elements for achieving high data quality and service delivery on documentation of medical records (Anyango, 2017). It also concurs with previous research that argued that the records standards program improved the quality of clinical information in hospital backgrounds (Frellick, 2016).

More importantly, the binary logistic regression analysis test indicated that there was a significant relationship between a healthcare worker's IT proficiency in compliance with medical records documentation SOP. The current finding was in agreement with previous research that concluded that technical skills barriers had a significant influence on electronic medical records utilization (Sumbi, 2016). It also concurs with a previous study that argued that to improve the quality of healthcare, information technology has significant potential for use in measuring the level of

performance of health care providers. Specifically, information technology can facilitate the collection of process and outcome data that can be used to assess the competency of health care professionals (Chhabra, 2019).

5.3 Conclusions

The conclusions of this study are drawn from study findings and based on the objectives of the study.

5.3.1 Association between Socio-Demographic Characteristics and Compliance with SOP

The first objective was to determine the association between socio-demographic characteristics and compliance with medical records documentation SOP by health workers in Bungoma level 4 hospital. More importantly, it is logical to conclude that, Cadre, Level of Education, and Work Experience were significantly associated with compliance to medical records documentation SOP.

5.3.2 Influence of Institutional Characteristics on Compliance with the SOP

The second objective was to determine the influence of institutional characteristics on compliance with the SOP for medical records documentation by health workers in Bungoma level 4 hospital. Therefore, it is logical to conclude that, Institutional characteristics like Technical Support, Requisite documents, and Staff Training, positively influenced compliance to medical records documentation SOP.

5.3.3 Influence of Health Workers IT Proficiency on Compliance with the SOP

The third objective was to determine the influence of health workers' Information Technology Proficiency on compliance with the medical records documentation SOP in Bungoma level 4 hospital. Consequently, it is logical to conclude that,

health worker's Information Technology proficiency positively influenced compliance to medical records documentation SOP.

5.4 Recommendations

The study makes policy action recommendations drawn from the study conclusions and based on the objectives of the study:

1. The hospital management team needs to factor in education level, cadre, and work experience during recruitment, training, and retraining to strengthen the health workers' skills in compliance with the medical records documentation SOP.
2. There is an urgent need for the County Government to channel additional health development funding towards employing more technical staff, procuring the requisite documentation tools, and training of staff on the documentation tools.
3. The facility health management team needs to factor in periodic Information Technology refresher training for health workers.

5.5 Further Research

This study mainly focused on standards and guidelines on documentation, and the availability of the documentation tools, how they are used in the various departments, but other important tools were not looked at.

1. Future studies should incorporate more robust data collection methods like observation checklists, and also consider qualitative methods like Key Informant Interview to establish more insight on the compliance with medical records documentation SOP.

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APPENDICES

Appendix I: Informed Consent Form

Introduction

My name is David Omoit I am a Master's student from Kenyatta University conducting a study on 'compliance with the standard operating procedure for documentation of medical records by health workers in Bungoma level 4 Hospital, Kenya''. You are being invited to participate in this study because you are among the sampled respondent believed to have useful information on the study subject.

Purpose

The purpose of this study is to assess the compliance with the standard operating procedure for documentation of medical records by health workers in Bungoma Level 4 Hospital. The information will be used by the Health Management Team, County Health Management Team, and Ministry of Health to inform strategies and opportunities for improving the quality of data in this Hospital and County level as well as other regions of Kenya.

Procedure to be followed

If you agree to be in this study, you will be asked to respond to some questions through a self-administered questionnaire that will be used to obtain the necessary information. **Study Time:** Study participation will take a total of approximately 45 minutes

Benefits

There is no direct benefit to you anticipated from participating in this study. However, it is hoped that the information gained from the study will help to identify strategies and opportunities for improving the quality of data at this hospital.

Risks/Discomforts

Some of the study instruments may make you uncomfortable or upset, but you are free to decline to answer any questions you do not wish to or to leave the group at any time.

Confidentiality

Your study data will be handled as confidential as possible. If the results of this study are published or presented, individual names and other personally identifiable information will not be used.

Rights

Participation in research is completely voluntary. You have the right to decline to participate or to withdraw at any point in this study without penalty or loss of benefits to which you are otherwise entitled.

Question/Contact information

If you have any questions or concerns about this study, you may contact Dr. George Ochieng Otieno on Mob. 0719506770 or Dr. Kenneth Rucha on Mob. 0723227480 or

Kenyatta University Ethics and Review Committee Secretariat or chairman. kuerc @ku.ac.ke, secretary.kuerc@ku.ac.ke or ercku2008@gmail.com.

Participant (s) Statement

The above information regarding my participation in the study is clear to me. I have been given a chance to ask questions and my questions have been answered to my satisfaction. My participation in this study is entirely voluntary. I understand that my record(s) will be kept private and that I can leave the study at any time.

Participant's Name……

Participant's Signature…… Date……

Investigator's Statement

I, the undersigned, have explained to the participant in the language she understands, the procedure to be followed in the study, and the risks and benefits involved.

Person Obtaining Consent Name…….

Person Obtaining Consent Signature……Date……

Appendix II: Questionnaire

Section A: Socio-Demographic Characteristics

1.0 Kindly indicate your Gender

Male [ ]

Female [ ]

2.0 Please indicate your age bracket?

18-24 years	[ ]	35-47 years	[ ]
25-34 years	[ ]	Above 48 years	[ ]

3.0 Kindly indicate your cadre

MO	[ ]	Physiotherapy	[ ]
Nurse	[ ]	Laboratory	[ ]
HRIM	[ ]	Administration	[ ]
Pharmacy	[ ]	RCO	[ ]
O T	[ ]	Other specify……..	
PHO	[ ]		

4.0 Work experience in the Hospital

Less than 1 year	[ ]	10- 15 years	[ ]
1-5 years	[ ]	15-20 years	[ ]
5-10 years	[ ]	20 + years	[ ]

5.0 Highest level of education completed

Certificate [ ]

Diploma [ ]

HND [ ]

Undergraduate [ ]

Postgraduate [ ]

Section B1: Compliance with Standard Operating Procedures for Medical Records Documentation

6.0 On a scale of 1-5, Where 1-Not at all, 2-Rarely, 3-Sometimes, 4-Most of the times, 5 Always, the extent to which you agree with the following questions about Standard Operating Procedure for documentation.

	ITEMS	1	2	3	4	5
6.1	To what extent do you make daily totals correctly tallied at the bottom of each page of the register/source documents					
6.2	How often do you make the reconciliation of erroneous values in the reporting tools					
6.3	How often do you document missing data in the source documents					
6.4	How often do you carry out treatment of suspected data					
6.5	Do you collate data within appropriate timelines					
6.6	How often do you use a password for electronic data					
6.7	How often do paper-based data stored in lockable cabinets and rooms					
6.8	Do you change your passwords of electronic data every 6 months					
6.9	How often do you file your data using approved filing method					
6.10	How often do you receive a formal request for retrieval of required data					
6.11	How often do staff assign to retrieved data					
6.12	How often do you sort your data for retrieval					
6.13	How often do you share best practices with all users of data					
6.14	How often do you have lessons learned documented					
6.15	How often do you Incorporate feedback from supportive supervision					
6.16	How often do you make reports according to the requisite format					

7.0 On a scale of 1-5, where 1-Strongly disagree, 2-Disagree, 3-not sure, 4-agree, 5 strongly Agree to rate the extent to which you agree with the following questions about the association between demographic characteristics and compliance to Standard Operating Procedure for documentation of medical records.

Statement		1	2	3	4	5
7.1	Does gender affects compliance with documentation					
7.2	Does the age affects compliance for documentation					
7.3	Does the work experience affects compliance for documentation					
7.4	Does the education level affects compliance for documentation					
7.5	Compliance to factors such as age, gender, and education improves documentation skills					
7.6	Inadequate work experience in documentation affects the use of electronic medical records					
7.7	Does Use of different cadre affects documentation					

8.0 How would you rate your knowledge regarding documentation?

Excellent [ ]

Good [ ]

Fair [ ]

Poor [ ]

Section B2: Influence of Institutional Characteristics on Compliance with SOP for Medical Records Documentation

9.0 On a scale of 1-5, where 1-Strongly disagree, 2-Disagree, 3-not sure, 4-agree, 5 strongly agree to rate the extent to which the following characteristics influence documentation

Statement		1	2	3	4	5
9.1	Are there Adequate ICT equipment among health workers					
9.2	Are there enough qualified staff					
9.3	Is the top management involved in ensuring SOPs for documentation are complied to					
9.4	Is there availability of technical support, and participation among the health workers					
9.5	Do outpatient, laboratory, and inpatient, maternity have required documentation tools					
9.6	Do outpatient, laboratory, inpatient, and maternity staffs been trained on the documentation tools					

10.0 Do the technical staff support documentation to provide evidence to the hospital?

Yes [ ]

No [ ]

11.0 If yes, explain.....

Section C: Influence of Health Workers IT Proficiency on Compliance with SOP for Medical Records Documentation

12.0 Please indicate your competency in IT skill areas, according to the levels below, Where, Level 1: Not able to perform this skill/task, Level 2: Able to perform this skill/task with guidance, Level 3: Somewhat able to perform this skill/task; need occasional guidance, Level 4: Mostly able to perform this skill/task without guidance, Level 5: Fully able to perform this skill/task without support.

	Skill Area	Level 1	Level 2	Level 3	Level 4	Level 5
12.1	Log on using correct username and password					
12.2	Find an existing patient					
12.3	Navigate through the system					
12.4	Generate report					
12.5	Create a new patient in the system					
12.6	Enter data in excel sheet					
12.7	Use the internet					
12.8	Use Word processing					

13.0 Which systems do you use for documentation in your department? **Tick all that apply.**

a) Sanitas [ ]

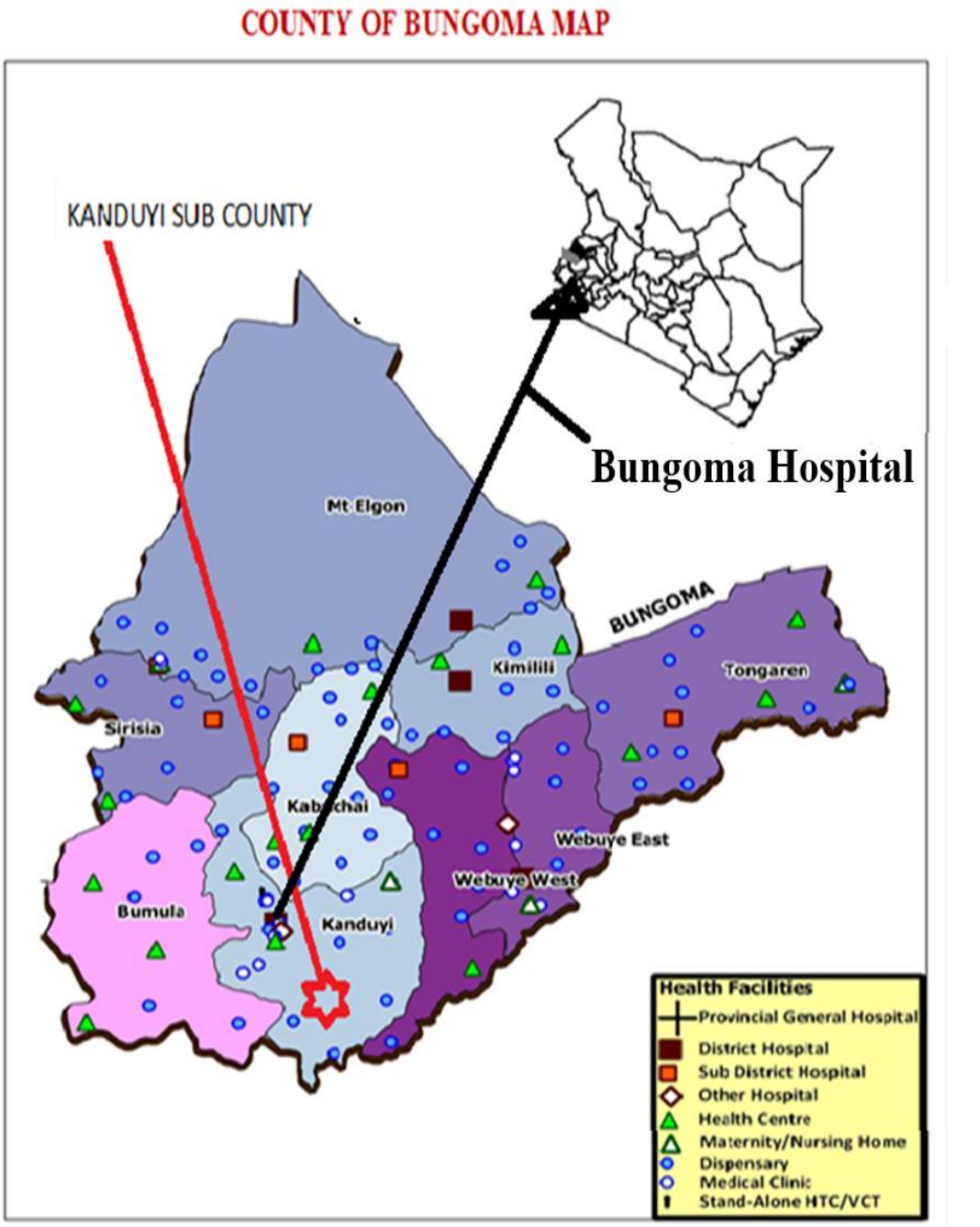
b) Afya Ehms [ ]

c) Basic lab information system (BLIS) [ ]

d) EMR [ ]

e) Other Specify……

Appendix III: Bungoma County Map



SOURCE: SARAM Kenya 2013: Health Facility Distribution by Type across Constituencies

Appendix IV: Approval from Graduate School

KENYATTA UNIVERSITY
GRADUATE SCHOOL

E-mail: dean-graduate@ku.ac.ke
Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 020-8704150

Internal Memo

FROM: Dean, Graduate School

DATE: 12th June, 2018

TO: David F. Opudi
C/o Health Management and Informatics Department

REF: Q141/CE/26279/2014

SUBJECT: APPROVAL OF RESEARCH PROPOSAL

We acknowledge receipt of your revised Research Proposal as per our recommendations raised by the Graduate School Board 14th March, 2018 entitled **"Assessment of Adherence to Standard Operating Procedure for Documentation of Medical Records by HealthCare Workers in Bungoma Hospital, Bungoma County, Kenya".**

You may now proceed with your Data collection, subject to clearance with the Director General, National Commission for Science, Technology and Innovation.

As you embark on your data collection, please note that you will be required to submit to Graduate School completed Supervision Tracking Forms per semester. The form has been developed to replace the Progress Report Forms. The Supervision Tracking Forms are available at the University's Website under Graduate School, webpage downloads.

KENYATTA UNIVERSITY OFFICE OF DEAN 12 JUN 2018 GRADUATE SCHOOL P.O. Box 43844-00100 NAIROBI

Thank you.

JACKSON LUVUSE
FOR: DEAN, GRADUATE SCHOOL

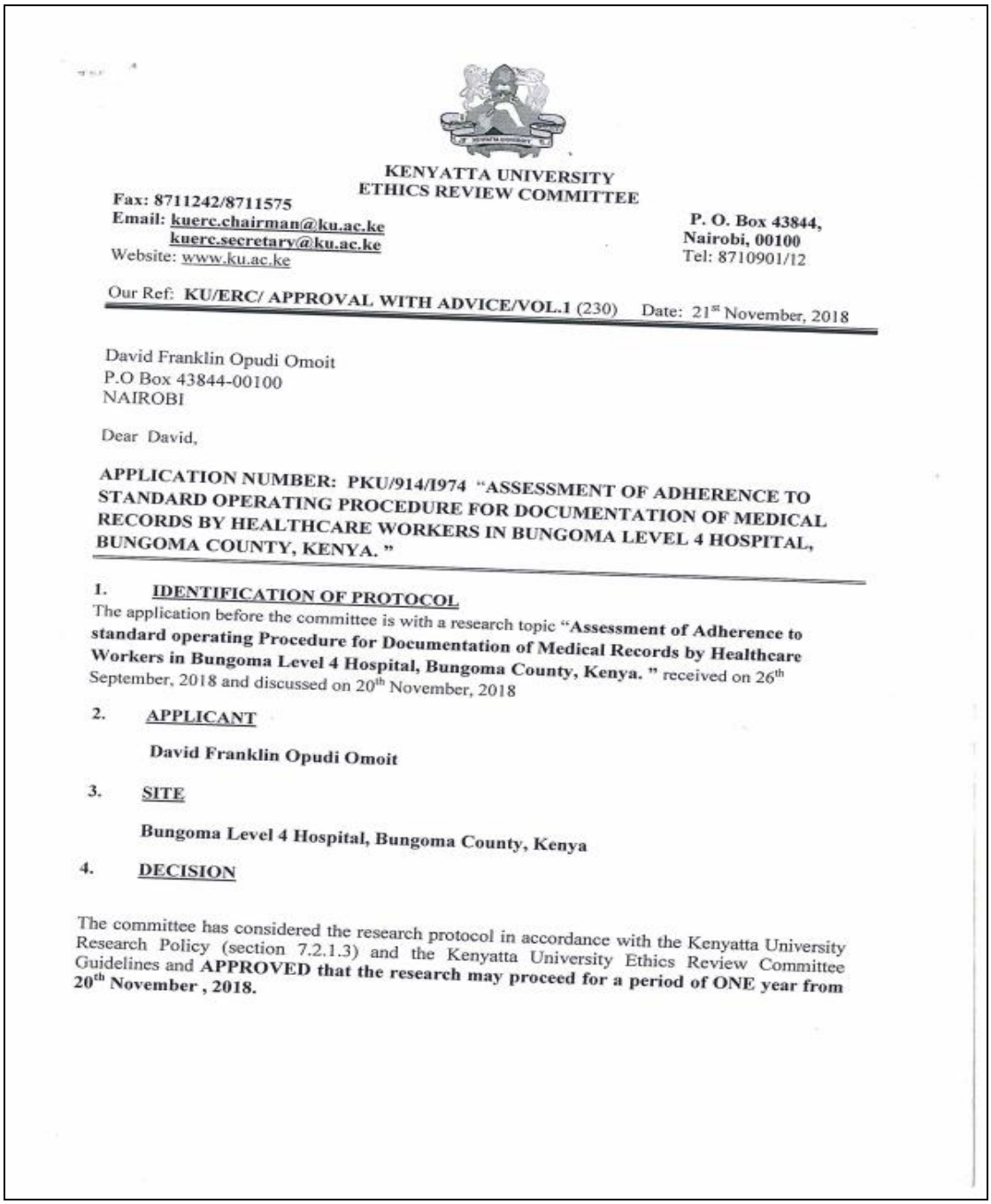
CC. Chairman, Health Management and Informatics Department

Supervisors:

1. Dr. George Ochieng' Otieno
   C/o Health Management and Informatics Department
   Kenyatta University
2. Dr. Kenneth Rucha
   C/o Health Management and Informatics Department
   Kenyatta University

JL/rwm

Appendix V: Approval from Ethics and Review Committee



KENYATTA UNIVERSITY
ETHICS REVIEW COMMITTEE

Fax: 8711242/8711575
Email: kuerc.chairman@ku.ac.ke
kuerc.secretary@ku.ac.ke
Website: www.ku.ac.ke

P. O. Box 43844,
Nairobi, 00100
Tel: 8710901/12

Our Ref: **KU/ERC/ APPROVAL WITH ADVICE/VOL.1** (230) Date: 21st November, 2018

David Franklin Opudi Omoit
P.O Box 43844-00100
NAIROBI

Dear David,

APPLICATION NUMBER: PKU/914/I974 "ASSESSMENT OF ADHERENCE TO STANDARD OPERATING PROCEDURE FOR DOCUMENTATION OF MEDICAL RECORDS BY HEALTHCARE WORKERS IN BUNGOMA LEVEL 4 HOSPITAL, BUNGOMA COUNTY, KENYA. "

1. **IDENTIFICATION OF PROTOCOL**

The application before the committee is with a research topic "**Assessment of Adherence to standard operating Procedure for Documentation of Medical Records by Healthcare Workers in Bungoma Level 4 Hospital, Bungoma County, Kenya. "** received on 26th September, 2018 and discussed on 20th November, 2018

2. **APPLICANT**

David Franklin Opudi Omoit

3. **SITE**

Bungoma Level 4 Hospital, Bungoma County, Kenya

4. **DECISION**

The committee has considered the research protocol in accordance with the Kenyatta University Research Policy (section 7.2.1.3) and the Kenyatta University Ethics Review Committee Guidelines and **APPROVED that the research may proceed for a period of ONE year from 20th November , 2018.**

5. **ADVICE/CONDITIONS**

Care and protection of research participants; Ok, But should be more explicit

Protection of research participant's confidentiality; Not clearly stated

YOU MUST ALWAYS ENSURE

i. Progress reports are submitted to the KU-ERC every six months and a full report is submitted at the end of the study.
ii. Serious and unexpected adverse events related to the conduct of the study are reported to this committee immediately they occur.
iii. Notify the Kenyatta University Ethics Committee of any amendments to the protocol.
iv. Submit an electronic copy of the protocol to KUERC.

When replying, kindly quote the application number above.
If you accept the decision reached and advice and conditions given please sign in the space provided below and return to KU-ERC a copy of the letter.

KENYATTA UNIVERSITY OFFICE OF THE CHAIRMAN 29 NOV 2018 ETHICS REVIEW COMMITTEE P.O. BOX 43844-00100 NAIROBI

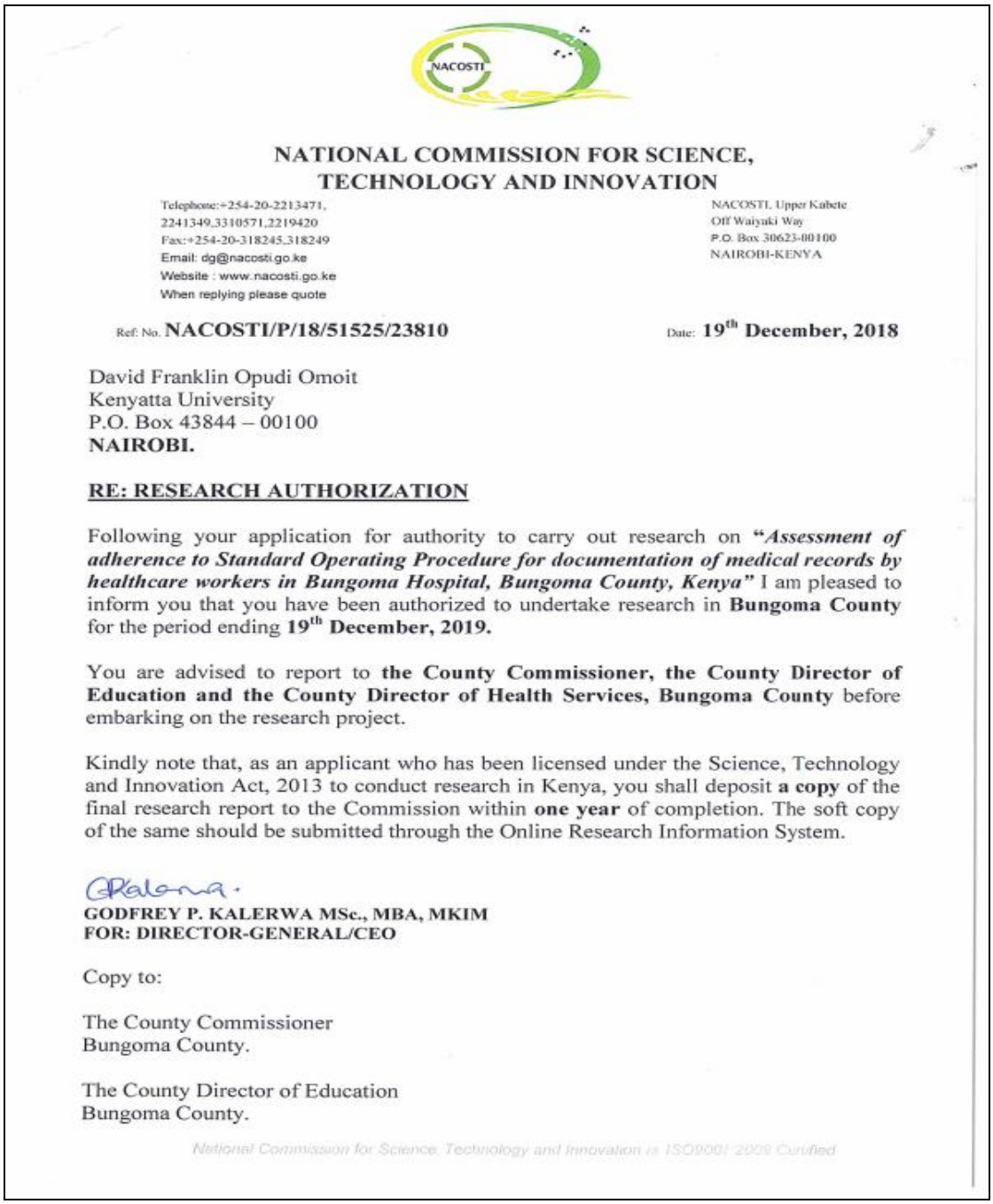
PROF. JUDITH KEMEYWE
CHAIRMAN ETHICS REVIEW COMMITTEE

I DAVID O. OMOTI accept the advice given and will fulfill the conditions therein.

Signature ..... Dated this day of 29/11 ..... 2018.

cc.
DVC-Research Innovation and Outreach

Appendix VI: Research Authorization from NACOSTI



NATIONAL COMMISSION FOR SCIENCE,
TECHNOLOGY AND INNOVATION

Telephone:+254-20-2213471,
2241349,3310571,2219420
Fax:+254-20-318245,318249
Email: dg@nacosti.go.ke
Website : www.nacosti.go.ke
When replying please quote

NACOSTI, Upper Kabete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No. **NACOSTI/P/18/51525/23810** Date: **19th December, 2018**

David Franklin Opudi Omoit
Kenyatta University
P.O. Box 43844 – 00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Assessment of adherence to Standard Operating Procedure for documentation of medical records by healthcare workers in Bungoma Hospital, Bungoma County, Kenya"*** I am pleased to inform you that you have been authorized to undertake research in **Bungoma County** for the period ending **19th December, 2019.**

You are advised to report to **the County Commissioner, the County Director of Education and the County Director of Health Services, Bungoma County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

GPKalerwa.
GODFREY P. KALERWA MSc., MBA, MKIM
FOR: DIRECTOR-GENERAL/CEO

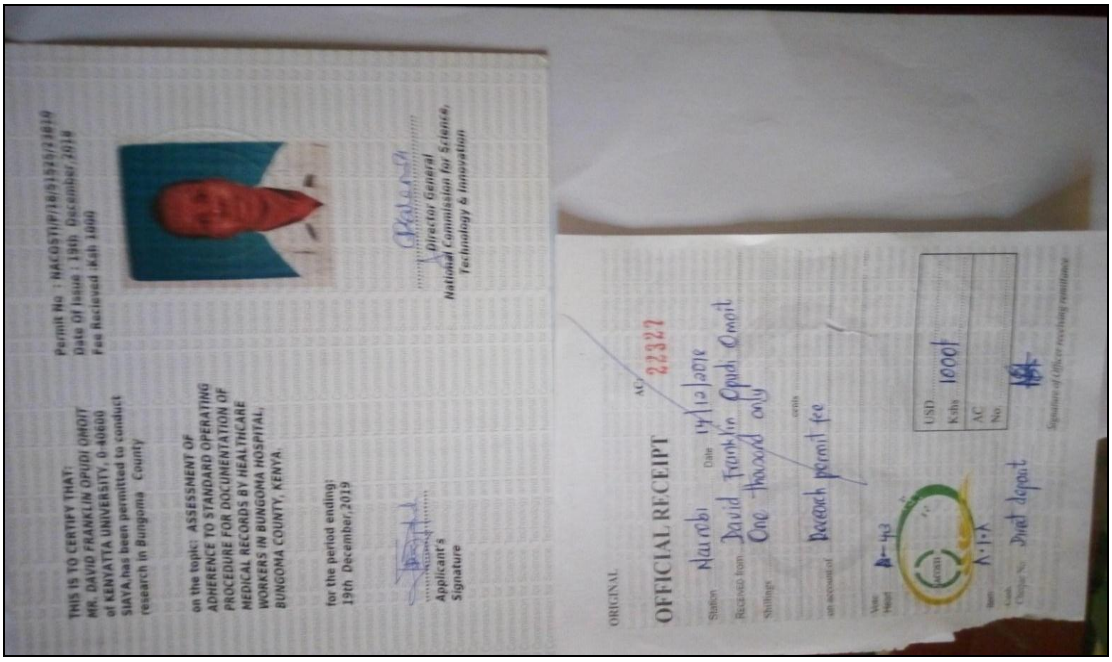
Copy to:

The County Commissioner
Bungoma County.

The County Director of Education
Bungoma County.

National Commission for Science, Technology and Innovation is ISO9001: 2008 Certified

Appendix VII: Research Permit from NACOSTI



THIS IS TO CERTIFY THAT:
MR. DAVID FRANKLIN OPUDI OMOIT
of KENYATTA UNIVERSITY, 0-40600
SIAYA,has been permitted to conduct
research in Bungoma County

on the topic: ASSESSMENT OF ADHERENCE TO STANDARD OPERATING PROCEDURE FOR DOCUMENTATION OF MEDICAL RECORDS BY HEALTHCARE WORKERS IN BUNGOMA HOSPITAL, BUNGOMA COUNTY, KENYA.

for the period ending:
19th December,2019

Applicant's Signature

Permit No : NACOSTI/P/18/51525/23810
Date Of Issue : 19th December,2018
Fee Recieved :Ksh 1000

Director General
National Commission for Science, Technology & Innovation

ORIGINAL

OFFICIAL RECEIPT

AC 22327

Station: Nairobi Date: 19/12/2018

Received from: David Franklin Opudi Omoit

Shillings: One thousand only

on account of: Research permit fee

Vote Head: A-43

USD	
Kshs	1000/-
AC No.	

Item: A-1-A

Cash Cheque No: Direct deposit

Signature of Officer receiving remittance

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013

The Grant of Research Licenses is guided by the Science, Technology and Innovation (Research Licensing) Regulations, 2014.

CONDITIONS

1. The License is valid for the proposed research, location and specified period.
2. The License and any rights thereunder are non-transferable.
3. The Licensee shall inform the County Governor before commencement of the research.
4. Excavation, filming and collection of specimens are subject to further necessary clearance from relevant Government Agencies.
5. The License does not give authority to transfer research materials.
6. NACOSTI may monitor and evaluate the licensed research project.
7. The Licensee shall submit one hard copy and upload a soft copy of their final report within one year of completion of the research.
8. NACOSTI reserves the right to modify the conditions of the License including cancellation without prior notice.

National Commission for Science, Technology and innovation
P.O. Box 30623 - 00100, Nairobi, Kenya
TEL: 020 400 7000, 0713 788787, 0735 404245
Email: dg@nacosti.go.ke, registry@nacosti.go.ke
Website: www.nacosti.go.ke

REPUBLIC OF KENYA

National Commission for Science, Technology and Innovation

RESEARCH LICENSE

Serial No.A 22504

CONDITIONS: see back page

Appendix VII: Approval from County Commissioner

REPUBLIC OF KENYA

THE PRESIDENCY

MINISTRY OF INTERIOR AND COORDINATION OF NATIONAL GOVERNMENT

Telephone: 055- 30326
FAX: 055-30326
E-mail: ccbungoma@yahoo.com
When replying please Quote

Office of the County Commissione
P.O. Box 550 - 50200
BUNGOMA

REF:ADM.15/13/VOL.III/12

3rd January, 2018

TO WHOM IT MAY CONCERN

RE: RESEARCH AUTHORIZATION.

Reference is hereby made on a letter Ref:NACOSTI/P/18/51525/23810 dated 19th December, 2018 from the National Commission for Science, Technology and Innovation on the above subject matter.

The bearer of this letter **David Franklin Opudi Omoit** from Kenyatta University has sought authority to carry out a research on, **" Assessment of adherence to Standard Operating Procedure for documentation of medical records by healthcare workers in Bungoma Hospital, Bungoma County, Kenya."** for the period ending 19th December, 2019.

Authority is hereby granted for the specific period and any assistance accorded to him in this pursuit would be highly appreciated

Ann N. Wilson
For: County Commissioner
BUNGOMA COUNTY

COUNTY COMMISSIONER
BUNGOMA

Appendix IX: Approval from County Director of Education

REPUBLIC OF KENYA

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY
State Department of Education – Bungoma County

When Replying please quote
e-mail: bungomacde@gmail.com

County Director of Education
P.O. Box 1620-50200
BUNGOMA

Ref No: BCE/DE/19/VOL.1/155

Date: 4th January, 2019

TO WHOM IT MAY CONCERN

RE: AUTHORITY TO CARRY OUT RESEARCH – DAVID FRANKLIN OPUDI OMOIT- - REF: NACOSTI/P/18/51525/23810

The bearer of this letter David Franklin Opudi Omoit of Kenyatta University has been authorized to carry out research on ***"Assessment of adherence to Standard Operating Procedure for documentation of medical records by healthcare workers in Bungoma Hospital, Bungoma County, Kenya",*** for a period ending ***19th December, 2019.***

Kindly accord him necessary assistance.

JACOB ONYIEGO
COUNTY DIRECTOR OF EDUCATION
BUNGOMA COUNTY

Appendix X: Approval from County Director of Health

REPUBLIC OF KENYA

COUNTY GOVERNMENT OF BUNGOMA
MINISTRY OF HEALTH
OFFICE OF THE COUNTY DIRECTOR
HEALTH

Telegrams: "MEDICAL", BUNGOMA
Telephone: (055) 30230 Fax: (055) 30650
E-mail: sylvermutoro@gmail.com
When replaying please quote

COUNTY DIRECTOR OF HEALTH,
BUNGOMA COUNTY
P O BOX 18-50200
BUNGOMA

Ref: CG/BGM/CDH/RESRCH/VOL.1 (117) **DATE: 3rd JANUARY , 2019**

TO WHOM IT MAY CONCERN

Dear Sir,

RE: RESEARCH AUTHORIZATION FOR DAVID F. O. OMOIT REF. NASCOSTI/P/18/51525/23810

Following your application to be permitted/authorized to conduct a research at Bungoma County Referral Hospital Ref: **NASCOSTI/P/18/51525/23810**, you are hereby authorized to conduct the research.

We however request you to share with the hospital and this office the findings of the research.

Thank you.

COUNTY DIRECTOR OF HEALTH
BUNGOMA COUNTY
P. O. Box 18-50200

CATHERINE MAKOKHA
FOR, COUNTY DIRECTOR OF HEALTH
BUNGOMA.