MEDICAL RECORDS MANAGEMENT TO SUPPORT EVIDENCE-BASED MEDICAL PRACTICE AT KISII TEACHING AND REFERRAL HOSPITAL, KENYA

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ABSTRACT

This paper presents findings of a Master of Philosophy Degree in Information Sciences that was undertaken to assess medical records management (MRM) in support of evidence-based medical practices at Kisii Teaching and Referral Hospital (KTRH) with a view of proposing strategies to improve MRM in the hospital. Data was collected through interviews conducted with health records and information management officers, a system administrator, admission clerks, doctors, clinical officers, and nurses drawn from four departments that create and generate; use; and manage medical records (MR). Preliminary findings indicate that KTRH faced several challenges in the management of MR that impact the provision of health care based on reliable evidence. The challenges that were identified included an absence of comprehensive MRM policies and procedural frameworks, and there was a scarcity of MRM knowledge and skill at the hospital. Although the hospital has adopted the use of information and communication technology (ICT) in the provision of healthcare, MRM processes were partially automated. The study concluded that the general status of MRM at KTRH was inadequately positioned to manage MR as a strategic evidence resource in a continuum from creation to disposition, and therefore requires urgent attention. The study recommends that for the MRM at KTRH to succeed, the hospital needs to integrate MRM functional, structural and infrastructural aspects into the hospital's health information system (HIS) and business process, and continuously manage these MR in line with the Records Continuum Model and best-practice strategies proposed by this study. The hospital should also develop operational policies and procedural frameworks for MRM, build MRM capacity and provide MRM knowledge and skill to staff; improve on its ICT infrastructure and integration of MRM functionalities; and the adoption of the proposed study recommendation.

Keywords: Medical Records Management, Evidence, Evidence Based Practices, Medical Records

1. INTRODUCTION

In health care, evidence-based practices take place when decisions that affect the care of patients are taken with due weight accorded to all valid and reliable evidence. Globally, studies have pointed out that sound medical records management (MRM) strengthens healthcare services by supporting evidence-based decision-making, policymaking, clinical service, and the administration of hospitals (Ngoako et. al., 2017; Marutha & Ngoepe, 2017; Were, 2013). Koech et al., (2017) underscored this point by observing that sound MRM is an indispensible prerequisite for supporting efficiency and effectiveness in service delivery in a hospital.

Medical records (MR) play an important role as a tool and basis for planning patient care besides medical education, research, and legal protection (Mogli, 2009), due to the fact that MR furnish essential documentary evidence of patients' activities, transactions, and decisions. Marutha & Ngoepe (2017) affirms that medical practitioners need information about previous diagnoses, treatments and prescriptions in order to note the progress made with previous treatments and how to move forward. In fulfilling these functions, An et. al (2011) acknowledges that effective service delivery always begins with better records management practices. Accurate evidence is a product of a functioning MRM program hence the need for MRM strategies to ensure that patients' information is stored in a uniform and standardized manner where MR retains evidential weight (Marutha, 2016). MRM, therefore, plays a critical role in supporting evidence-based medical practices.

Unfortunately, the significance of MRM for achieving quality healthcare based on evidence has never been fully recognized, particularly in the digital environment. In an era where quality healthcare is high on the global agenda, effective MRM tends to be overlooked. Different MR scholars have highlighted the need for effective MRM, but nevertheless, MRM continues to receive inadequate attention. Evidence abounds of cases of neglect of MRM, hospitals paying little attention to standardized management of MR, and organizations in Kenya run in falling MRM (Koech et al., 2017; Waithera et al., 2017; Were, 2013). The apparent absence of sound MRM in Kenyan hospitals provided a rationale for the study.

Besides, a study by Wamukoya and Mutula (2005) further note that ESARBICA member countries face the same challenges which include the absence of organizational plans for managing records,

low awareness of the role of records management, absence of legislation, policies, and procedures, absence of core competencies in records management, and the absence of migration strategies. Consequently, Were (2013) and Koech et al. (2017) point out that effective MRM and supporting documents irrespective of media is a critical factor in success in areas like billing, compensation, and backup (in the case of a legal challenge). To achieve this, hospitals need to maintain systematic and planned MRM approaches that cover the MR from creation to final disposition.

In addition, a literature search indicated that an increasing number of healthcare organizations are adopting Information and Communication Technology (ICT) applications and systems such as district health information system (DHIS), electronic medical records (EMR) systems such as electronic document and records management system (EDRMS), and mobile health (M-health) and evidence-based strategies as a tool for providing effective healthcare services, communication, and decision making to its clients (Issa, and Wamukoya, 2018; Unadkat et al., 2020; Waithera et al., 2017). Consequently, the rapid rate of the creation and accumulation of MR has become evident and necessitated the need to implement a systematic and functional MRM program to ensure their integrity is upheld (Marutha, 2016).

1.1 Kisii Teaching and Referral Hospital

KTRH is a formal institution developed for patient care, diagnosis, and treatment of human ills and restoration of health. The hospital was established as a county referral hospital in line with the Constitution of Kenya 2010, which gave way to establishment of at least one referral hospital in each of the 47 counties across the country. The hospital, which began in 1960 as a general hospital, was gradually upgraded to a level 6 Hospital in November 2014.

The direction, control, and governance of the hospital is divided among the executive director, hospital administration, and the hospital management committee. The human resources at KTRH comprise of doctors, clinical officers, nursing officers, pharmacists, HRIM officers, a system administrator, among others. These staff are involved in activities inclined to creation and generation; use of medical records in practice; and MRM both paper and electronic at different sections at KTRH.

KTRH is currently undergoing reorganization and restructuring (Waithera et al., 2017) to enable it to provide healthcare based on evidence. As a result, the rapid rate of the creation and accumulation of MR, both paper and electronic, has become evident. However, the envisaged benefit of these efforts will largely be determined by the MRM regime that is put in place. Therefore, these has necessitated the need to implement a systematic and functional MRM program to ensure their integrity is upheld (Marutha, 2016).

2. STATEMENT OF THE PROBLEM

The focus of this study is premised on the fact that KTRH is currently undergoing reorganization and restructuring to enable it to provide quality healthcare as a regional county referral hospital in line with the Constitution of Kenya 2010 and EMR Standards and Guidelines for Kenya (ESG). Consequently, there has been an interest in the adoption of ICT (EMR) as well as evidence-based initiatives. The hospital has adopted an institution-wide EDRMS (funsoft) whose aim was to computerize all healthcare services including MR procedures. The envisaged benefit of the project was to improve productivity and customer service, quick retrieval of information, improved records security (Ondieki, 2017; Waithera et al., 2017), and these would be part of the hospital's evidence-based strategy. Consequently, the rapid rate of the creation and accumulation of MR has become evident and necessitated the need to implement a systematic and functional MRM program to ensure their integrity is upheld (Marutha, 2016). These recent developments have led to a renewed interest in the assessment of MRM at KTRH.

However, the exercise was carried out without undertaking a comprehensive assessment of MRM and its impact on evidence based healthcare delivery at the hospital. As the hospital continues to adopt these initiatives, little is known about a framework that defines the creation, capture, and management of MR as evidential assets. Subsequently, the lack of a clear documented framework for MRM exposes the hospital to risks associated with MRM, especially in the electronic environment. This situation not only limits access to reliable evidence but also compromises the general flow of services as staff have to juggle between manual MRM systems and electronic MRM systems to reconcile information required for healthcare provision (Marutha, 2016; Nzoka and Ananda, 2014).

Evidence from both ICT and MRM literature has pointed out that while these computerized systems have the potential to improve the provision of healthcare, the majority of MRM programs in public institutions in Kenya have fallen short of expectations (Koech et al., 2017; Waithera et al., 2017; Were, 2013). Shortcomings are often due to a lack of comprehensive functional, structural, and infrastructural MRM frameworks. In that regard, there was the need for a thorough assessment of MRM at KTRH in order to ascertain whether a strong underlying MR and information management infrastructure and if functionalities are in place and effectively implemented.

It is in light of the above that an assessment was done against the RC model (Upward, 2001) and JHNEBP model (Dearholt and Dang, 2017) with particular focus on functional, structural, and infrastructural MRM aspects including policy and procedural frameworks; knowledge and skills of staff; use of ICTs; and the possible strategies to improve the quality and integrity of evidence at KTRH. Such an assessment would help KTRH to be aware of the existing gaps, risks, and opportunities in the MRM systems and programs in use.

3. AIM OF THE STUDY

The aim of this study was to assess medical records management in supporting evidence-based practices at Kisii Teaching and Referral Hospital with a view of proposing strategies to improve medical records management in the hospital.

4. OBJECTIVES OF THE STUDY

The objectives of the study were to:

1. To ascertain the status of medical records in supporting evidence-based practices at Kisii Teaching and Referral Hospital.

2. To establish policies and procedural frameworks governing the management of medical records at Kisii Teaching and Referral Hospital.

3. To find out the knowledge, skills and training of staff in the management of Medical Records at Kisii Teaching and Referral Hospital.

4. To explore the use of ICTs in managing medical records in supporting evidence-based practices at Kisii Teaching and Referral Hospital.

5. Propose strategies to improve medical records management for better healthcare service delivery at Kisii Teaching and Referral Hospital.

5. RESEARCH METHODOLOGY

A qualitative research approach largely guided the study in order to acquire an in-depth insight into MRM and evidence-based practices situation at KTRH. In addition, case study approach was used as the research design. Study population comprised of 500 workers, while, the target population comprised of 291 KTRH staff. The study sample comprised of 52 respondents drawn from four departments that create and generate, use, and manage medical record, namely: clinical, admissions, HRIM, and ICT departments, and therefore represent a demographically diverse group. They included, 3 HRIM officers, a system administrator, 10 admission clerks,7 doctors, 8 clinical officers, and 23 nurses. Purposive sampling was used to select a sample from which the most could be learned because of the position they occupied and the critical roles they played in provision of healthcare.

Triangulation of interviews, observation, and documentary reviews were used to elicit information from the respondents. Validity and reliability of the results were assured through peer debriefing, piloting, triangulating of data sources. Data collected were analyzed using thematic analysis. The data obtained was presented in prose form, consolidated, arranged, and analyzed around thematic themes related to the objectives and research questions of the study. Data collected was cleaned, coded, and analyzed to make sense.

6. FINDINGS AND DISCUSSION

The following discussion presents major research findings and the analysis of the results in line with the study's research questions.

The findings cover the following research themes: (i) status of medical records in supporting evidence-based practices at KTRH; (ii) policies and procedural frameworks governing the management of medical records; (iii) knowledge, skills, and training of staff in the management of medical records; (iv) the use of ICT in MRM to support evidence-based medical practices; (v) and the strategies to improve on MRM to support evidence-based medical practices.

The study obtained an overall interview response rate of 52 respondents drawn from clinical, admissions, HRIM, and ICT departments because of their roles in creation, use of MR in practice, and managing MR. In the case of admission clerks, doctors, clinical officers, and nurses, the sample size was not fixed prior to data collection and the ultimate number of participants was determined by theoretical saturation. While the total population for the HRIM officers (3) and a system administrator (1) was considered small, therefore, the researcher took a complete enumeration of the study population (census). The 52 respondents represented a demographically diverse group and was considered adequate to make conclusions for the study.

6.1 Status of Medical Records in Supporting Evidence-based Practices at KTRH

This section discusses the findings on a number of sub-themes based on the first research question: how MR are generated, type of MR, their use and role in supporting evidence-based practices, and MRM from Creation to Disposition. This was found to be more helpful in understanding if the MRM processes are restructured in parallel with business processes and whether the MRM requirements are built into the KTRH business processes (ISO 15489-1, 2016).

6.1.1 How Medical Records Are Generated and Captured at KTRH

Findings revealed that the hospital depended upon MR to deliver healthcare services. This was supported by responses from D5 who stated:

> *The bulk of activities at KTRH are direct clinical services and the majority of the activities we are involved in, are clinical centered on diagnosis, treatment, and care of patient*s.

Specific services identified include inpatient, outpatient, surgical, maternity, radiology, laboratory, physiotherapy, among others. Non-clinical activities relevant to the study identified include health records and information management, ICT, and admission duties both outpatient and inpatient. The general view of the above is that the main source of the MR is the hospital itself, and activities from both clinical and non-clinical departments play a critical role in the creation of MR and subsequent use in the provision of healthcare service.

6.1.2 Types and Formats of Medical Records at KTRH

The study revealed that the most common types of MR cited by different individuals within the distinct departments include patient case notes, x-rays, pathological specimens and preparations,

patient indexes and registers, pharmacy and drug records, nursing, and ward records, among others. The findings further established the existence of massive MR, both in paper and electronic formats, within the departments. The majority of the respondents interviewed confirmed that although the hospital has an electronic system in place, MR in paper format (70%) was dominant for inpatients because some of the inpatient MR were still in the paper format while the electronic format is dominant in outpatient. The dominance of paper MR in public organizations in Kenya and the emergence of electronic formats are similar to the findings of Koech et al. (2017) and Maseh (2015). From the study findings, it is apparent that staff at KTRH relied on MR in both electronic and paper formats to perform their duties.

6.1.3 Flow of Patients Information at KTRH

Based on the findings on activities at the hospital, the study revealed that activities from patient registration, clinical and MR systems are the three main levels that influence the quality of evidence, and are the major source of MR at KTRH. Figure 5.1 below shows the flow of patients' information, activities at different service points that generate medical records, and the MRM functionalities at KTRH.

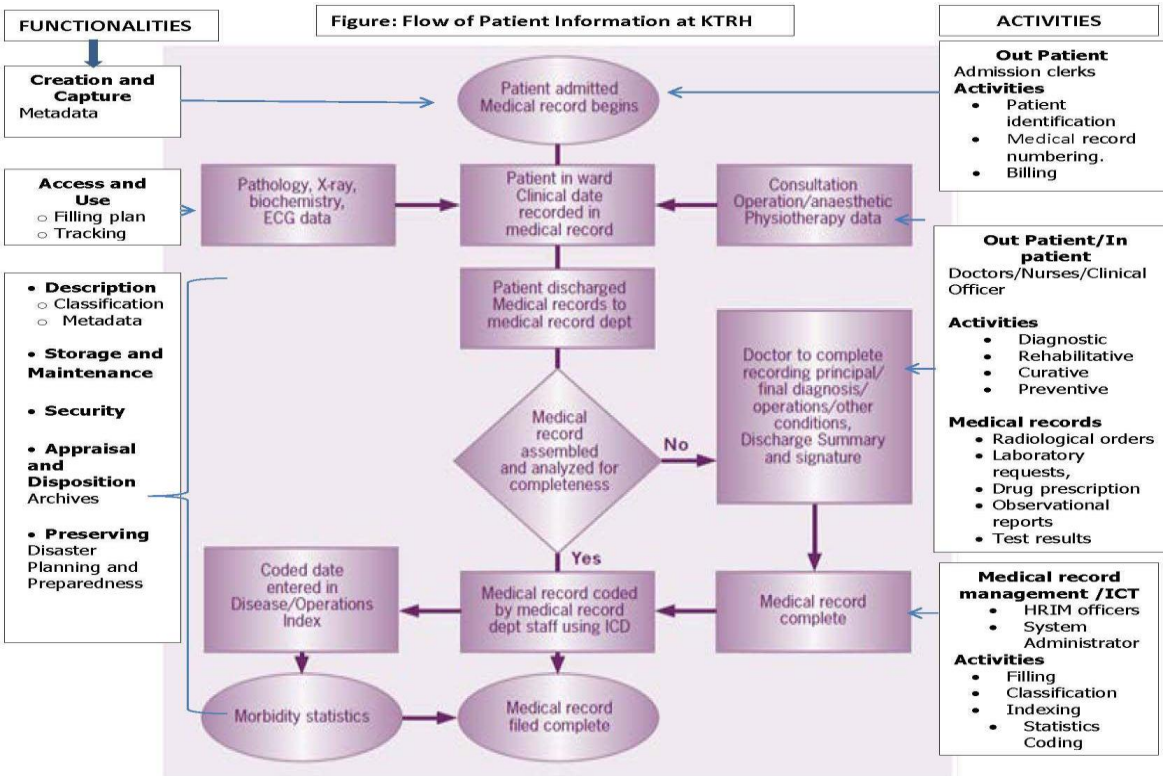

Figure 6.1: Flow of Patient Information at KTRH

Findings from the majority of the respondents indicated that the MR go through various stages. As seen in figure 5.1 above the admissions section carries out critical activities related to patient identification and MR numbering, which is usually considered the first stage of the MR. The second key area that generates MR at KTRH identified by the study is the clinical section. These activities are ideally responsible for the growth and expansion of a MR. Lastly, the generation of MR, and the flow of patient information at KTRH is also influenced by other non-clinical services and activities such as ICT and HRIM. These activities provide instructions designating how a medical record is to be organized, identified, accessed, and preserved for as long as it is required.

6.1.4 Use and Role of Medical Records to Supporting Evidence-based Practices

It was clear from research findings that MR is useful in the provision of health care. The idea that MR are essential evidential resources to support evidence-based practices in the provision of health care at KTRH was referred to regularly by a range of participants. The majority of the respondents indicated that medical records support patient treatment and care, communication between physicians and other health workers. This notion is best described by D6 who stated that:

> *Even the most experienced medical practitioner uses patient information from previous diagnoses, treatments, and prescriptions in order to note the progress made with previous treatments and how to move forward.*

From the findings, the majority of the respondents indicated that they used MR daily in the execution of their work and for reports. Respondents interviewed revealed MR systems are used for registration and clerking of patients, sending of radiological and laboratory requests, sending of drug prescription, raising of departmental internal requisitions, and communication to other health care providers among others. Generally, a good number of respondents interviewed indicated that MR served as corporate memory and used for research, legal purposes, and billing purposes.

When asked to comment whether the current MRM program at KTRH served them to their satisfaction, findings revealed that because of automation, the current program facilitated the free flow of patients' information, and aided in retrieval and accesses to MR, especially in electronic format. However, in paper records, majority of respondents (28) were of the view that the current MRM program undermined service delivery because of the inadequacy in providing access, use, and preserving paper MR. For example, nurse 1 stated that:

Sometimes files took longer to reach the wards especially at night when the medical repository is closed and as such, it is often difficult to deliver required services.

Thus, this means that service delivery could be affected. MR, therefore, play an important role in hospitals with statutory responsibility for the provision of healthcare for a number of reasons (Mogli, 2009): they provide evidence for decision making, documentation, reference, and for use in the conduct of current business. They are also a critical factor in success in areas like billing, compensation, and backup. Wamukoya (2000) pointed out that records represent a major source of information and are almost the only reliable and legally verifiable data source that can serve as evidence. Therefore, the importance of MRM at KTRH cannot be overlooked.

6.1.5 Medical Records Management from Creation to Disposition

This section discusses the findings of the study on how MR were being managed from creation through to disposition at KTRH in line with best MRM practices spelt in the RC Model and the ISO 15489-1 (2016) records management standard:

6.1.5.1 Creation and Capture of Medical Records

From an MRM functional viewpoint, the findings from the study revealed that both clinical and non-clinical activities led to the generation and/or receipt of MR in both paper and electronic formats. The data yielded from interviews provided convincing evidence that there was an absence of documented procedures for the creation and capture to guide the staff on how the MR needed to be created and captured. This was as also indicated by admission clerk 2 who surprisingly asked:

…ahh (shrugging the shoulder) are there such procedure in this hospital?

Findings further revealed that at the point of MR creation there were no documented, implemented, or circulated a well-defined requirements for management of metadata associated with an individual MR as also confirmed by observations. In that regard, the study concluded that KTRH's MRM system does not document metadata and the allocation of explicit metadata documenting MR context was still problematic. However, such a policy would benefit KTRH to ensure that MRM systems capture, manage, and maintain MR with sound evidential characteristics.

The results generally suggested ineffective MRM, especially at the creation stage. The absence of the creation and capture guidelines meant that MR were created without a proper plan as to how they were to be effectively managed. This contravened the ideals of the RC model, especially dimension (1) create and dimension (2) capture, which emphasizes the need to establish a master plan to manage each MR from creation until its disposal. The findings corroborated those of Koech, et al., (2017) in a study Medical Records Management in Support of Service Delivery that decried the absence of instructions in registries in Kenya. This, as also observed by Maseh and Mutula (2016), meant that the staff were left to rely on experiential knowledge which often led to inconsistency in standardization in MR creation and discontinuity especially whenever there were staff retirements, transfers or new recruitment.

6.1.5.2 Organization and Classification of the Medical Record Collection

The study revealed the presence of a classification system that guides classification of MR. This is evidenced by a statement by HRIM officer 2:

> A*fter the completion of the discharge procedure, MR goes through classification and clinical coding and the collection of healthcare statistics before the MR is ready to be filed.*

Findings indicated that at present KTRH uses the International Statistical Classification of Diseases and Related Health Problems, 10th revision (ICD-10) as also confirmed by all the HRIM officers interviewed. Thus from the response, the study confirmed the presence of a documented well-defined organization-wide classification scheme (ICD 10) used in the translation of diseases and procedural concepts from text to alphabetic/numeric codes. However, findings also indicated that some staff, especially MR users and creators, are not aware of the procedures for classifying MR and this could be attributed to the fact that the classification process was done by qualified HRIM officers.

The general findings revealed that KTRH had a filing system that worked fairly well, as was also indicated by the majority of the respondents. As indicated by the HRIO officer 1:

> *KTRH uses a centralized medical record system where all medical records about a patient are filed together in one folder and kept in the hospital's Medical Records main repository.*

In terms of the physical arrangement, the study established that in the main repository MR were arranged numerically, a computerized index had been developed, and the shelves were labeled but

there were no catalogs. Such a catalogue helps to show file position and facilitate retrieval. At workstations outside the main repository, respondents revealed that there was no file plan for active MR. To avoid shortcomings arising from not having a file plan, KTRH needs a compressive homegrown MR filling system for all sections in the hospital. The current situation at KTRH may lead to delays in patient information retrieval and dissemination, thereby compromising health care service delivery (Kemoni, 2007; Koech et al. 2017).

6.1.5.3 Access and Use of Medical Record at KTRH

The findings of the study revealed that access and use of MR at KTRH was fairly well managed. On retrieval, data from the interviews revealed that, when it comes to retrieving paper MR, majority of the respondents indicated that it took some time to retrieve patients' files and information when they needed it. However, all the 52 respondents indicated that the situation was better in the electronic environment, meaning automation has sped up access to patient information.

Findings also revealed the presence of the tracking system such as registers, tracking cards, and physical checking of files on shelves as a tool to track MR use. However, respondents unanimously indicated that the hospital does not have a computerized system to complement the manual registers. Findings further indicated that KTRH had not documented any formal guidelines or policy regulating as to who is permitted access to MR.

Garaba (2010) observes that access to records should be facilitated by a relevant policy. Observations revealed that access to MR at the workstations was not controlled; this creates an opportunity for some action offices to temper or steal MR contains valuable information (Kemoni, 2007). An effective MRM retrieval system would enable authorized users to access MR whenever they need them while maintaining their authenticity.

6.1.5.4 Storing and Preserving Medical Records

Findings from the study indicated that MR storage at KTRH, especially for current records at different workstations and archives, was fragmentary. The findings further revealed that the hospital was grappling with the issue of space in the main repository as MR were sometimes filed on top of shelves, impeding ease of retrieval. Consequently, MR were piled together in a manner that compromised storage and preservation metrics.

Concerning the adequacy of the equipment, findings revealed that the equipment at KTRH did not sufficiently cater for MR storage. This problem affected the easy retrieval of MR as misfiling was common. In their respective sections, some respondents revealed that the hospital used medicine cupboards while some indicated that files were kept on the floor. For example, nurse 5 clinical indicated that:

> *…due to lack of space, we store patient files on the tables or on the floor.*

These findings confirmed the absence of procedures and guidelines covering storing and preserving of all MR irrespective of nature or format. The responses given concerning storage and preservation are contrary to Section 9.6 of the ISO standards ISO 15489-1 (2016) which requires MR to be stored in a media that will ensure their authenticity, reliability and usability.

6.1.5.5 Appraising, Retaining and Disposal of Medical Records

The overall findings on appraisal, retention, and disposition of MR at KTRH revealed the absence of a well-coordinated programme for appraisal, retention, and disposition of its MR in both physical and electronic formats, as required by the Records Disposal Act Cap 14 of the Laws of Kenya. Findings from the study revealed that KTRH didn't conduct an appraisal, and there were no documented appraisal guidelines and procedures. Follow-up observation also showed also confirmed these revelations. These results clearly reflect the limits to which the RC model framework is used at KTRH. There is a need, therefore, for hospitals to appraise their MR in order to determine their administrative, legal, and fiscal value, and long-term research value (Craig, 2004).

The current study findings further established the absence of elaborate procedures for MR retention and disposal at KTRH. The implication of this is that almost all MR created ended up being kept permanently contributing to the shortage of MR storage space. The study findings also confirmed a lack of MR retention and disposition schedule, guidelines on the conversion of MR to another medium, transfer to archives, and physical destruction. This also contravenes the ISO records management standard recommendations that appraisal and disposition of records should be done on a systematic and routine basis in the course of normal business activity (ISO 15489-1, 2016).

The Kenya National Archives and Documentation Service (KNADS). KNADS is mandated by law examine any public records and advise on the care, preservation, custody and control thereof (Kenya Law Reporting, 2010). KNADS has not yet undertook regular appraisal and advised on disposal of MR at the facility. As Kemoni and Ngulube (2007) pointed out, KNADS had not sufficiently carried out its mandate of advising public agencies to manage their records effectively as per the provisions of the Act.

6.1.5.6 Medical Records Security

The findings from the study revealed that KTRH had a number of security measures including the presence of closed circuit television (CCTV) cameras, lockable steel cabinets and doors to the main storage area. Additionally, the medical records main repository was restricted to HRIM staff only. However, contrary to these findings, response from admission clerk 3 indicated that:

> *Sometimes it is common practice for staff to retrieve files for themselves especially when there was shortage of HRIM staff.*

This situation created an opportunity for some action offices to temper or steal MR which contains valuable patient information. In terms of e-records security, findings revealed that users were provided with username and passwords important for tracking user's activity, and patient information was backed-up daily.

However, respondent also indicated that KTRH has no documented policy regulating access and security of MR. The biggest threat to e-records could be the fact there were no documented policy regulating access and security of MR (Kootsheba, 2011), and therefore there was need for improvement. A similar study on medical records management in Kenya by Kemoni (2007) also found that MR security in many hospitals in Kenya had challenges such as unauthorized access into MR storage areas as messengers and cleaners often had access to MR storage areas.

6.2 Policies and Procedural Frameworks Governing Management

This study acknowledges that in order for MR at KTRH to retain their evidential values, the MRM program must be supported by procedures. According to Mnjama and Wamukoya (2007), the level of organizational commitment to managing records can be gauged by the existence or non-existence of records management policies, plans and guidelines. The findings of the study revealed the absence of a comprehensive internal policy framework to anchor MRM activities in different

sections at KTRH. Respondents indicated that they were not aware of a written MRM policy set by the hospital in their line of work, and the policy had not been adopted at the top management. For example, doctor 3 stated that:

> *In my line of work (shaking the head), I have never heard or seen a medical records management policy, but we have been working under instructions from their HRIM officers and system administrator*.

Contrary, there were slight differences in opinion regarding policies and procedural frameworks governing management of MR across different categories of respondents. Some indicated that they had to formulate their own policy in the course of duty while others stated that a policy was at draft stage but it was not functional. The observation revealed that a specific policy addressing MRM issues was not available.

The observed scenario contravenes RC model (Upward, 2001) and the provisions of Section 6.2 of ISO 15489-1 (2016) standards that requires an organization to document, maintain and promulgate policies to guarantee that its business need for evidence and accountability and information about activities is met. When respondents were asked about objectives, all 52 respondents indicated the objectives were not spelt out since there was no policy. However, HRIO In-charge was of the opinion that it had a MRM objective defined in the service chatter. According to system administrator:

> *We have a service chatter that states the roles and core objectives of each department including the HRIM and ICT departments*

6.2.1 Availability of Medical Records Management Procedures

The finding indicated that the hospital had not yet developed procedures for titling, indexing, classifying, and describing MR. Similarly, respondents revealed that they were indeed not aware of such procedures in their line of work. The absence of documented procedures significantly affected the provision of healthcare service (Mnjama &Wamukoya, 2004). The availability of the manual was a predominant feature of the study since this document provides information on who, what, when, where and how the MRM systems operate for those who may use the service (Kennedy & Schauder 1998). When the researcher checked about the availability of the procedure manual, majority stated that although the manual is utterly necessary, KTRH had not documented a MRM manual. From the findings, it was clear that KTRH has not developed, documented, and

distributed a MRM procedural manual to help in standardizing procedures, establishing responsibility, assisting in employee training, and providing for updates for policies and procedures for physical records as well as e-records (ISO 15489-1, 2016). Thus, the absence of a MRM procedures manual would have implications such as MRM personnel not having the necessary guidelines for managing MR during the continuum of activities.

6.3 Knowledge, Skills and Training of Staff in Management of Medical Records

The findings revealed that there is a gap in terms of training, staff numbers, and competence in MRM at KTRH hence, compromising the quality and quantity of MR. Most skills gaps identified were in the MRM processes such as creation, capture, and management of electronic records. According to the IRMT E-Records Readiness Tool, qualified records management staff are required for effective implementation of records management policies in any given organization (IRMT, 2004).

Concerning training and awareness programs, the findings indicated that the majority of the respondents had a specialty in their clinical area of work hence deemed qualified in their medical area of specialization. However, on MRM findings revealed that clinicians, admission clerks, and other staff handling and using MR, had not undertaken any awareness course, training to enhance their knowledge and skill in MRM. The majority of staff did not possess adequate MRM knowledge and skills required to handle MR. For instance, the response given by the majority of the admission clerks interviewed indicated that they had received certificates as their highest level of professional education but not in MRM. With the implementation of EDRMS in the hospital, such training is deemed important, especially when handling electronic MR. Skills and competencies in records management are necessary for organizations to demonstrate accountability, transparency and a commitment to root out corruption and malpractice (Katuu and Ngoepe, 2015).

The study also revealed that most staff and other healthcare professionals had acquired some MRM skills ‘on the job’ but there had never attended workshops, conferences, seminars. The study established that the some staff took the initiative to train themselves on MRM without the involvement of the hospital. It was also revealed that KTRH was not providing opportunities to staff for capacity building through workshops and conferences in MRM. This impeded staff career

developments and also meant knowledge on new and emerging issues in records management was not being acquired by the staff. Wamukoya (2015) noted that proper MRM requires trained staff for organizations to demonstrate accountability, transparency, and a commitment to root out corruption and malpractice.

In addition, the findings established that that KTRH did not have adequate staff knowledgeable in MRM. Of those trained in MRM, only 3 indicated they work in the HRIM department and had to serve the whole hospital. Of the 3 working in the department, 2 indicated that they worked as HRIM Officers and 1 as HRIM Technician. According to the Second National Health Strategic Plan of Kenya 2011/2012, a referral hospital should have at least 8 HRIM Officers and at least 11 HRIM Technicians. This means that the hospital has a deficit of 6 HRI Officers and 10 HRI Technicians. This translates to a 16 (89%) staff deficit in the HRIM department, compromising on the quality and quantity of data in the hospital. Consequently, the absence of these staff suggests that MRM staff is not adequate to manage both electronic and manual records, and the hospital has a long way to go in order to successfully implement ICT and evidence-based strategies. The Nasieuku et al. (2011) and Wamukoya and Mutula (2005) also noted that proper records management requires trained staff adequate and continuous funding, appropriate environmental conditions, and physical security among others.

There seems to be a gap in terms of staff numbers and competence on MRM in Kenya. An earlier study by Kemoni (2007) on the MRM indicated a shortage of qualified staff in the public sector in Kenya. These findings of the current study seem to confirm those of a study done by IRMT (2011) on managing records as reliable evidence for ICT / e-government in Kenyan which showed that out of an establishment of 66 staff in the whole country's judicial system only 40 had been employed and posted. A study by Maseh and Mutula (2016) on records management readiness for open government in the Kenyan judiciary, indicated that the judiciary did not have adequate trained records management personnel. Those who were trained were designated as archivists and charged with the responsibility of managing semi-current and non-current records. In effect, as also shown by Kemoni (2007), most of the MRM personnel in the public sector lacked the relevant knowledge and skills and lacked training opportunities particularly on managing e-records in the wake of the ongoing transitions. Healthcare organizations need to demonstrate good faith intentions by following best practices consistently and accurately.

6.4 The Use of ICT in MRM to Support Evidence-based Practices

The findings revealed that KTRH is currently undergoing reorganization and restructuring to enable it to provide healthcare based on evidence. All the unanimously recognized that KTRH is making efforts to adopted ICT to manage health information with a view of ensuring the efficient provision of healthcare through an electronic solution as envisioned in its strategic plan. As part of it's HIS management strategy, the hospital has embraced initiatives such the use as ICT as indicated by the presence and use of a number of hardware and software.

Furthermore, findings revealed that some ICT (EMR) technologies and evidence-based initiatives such as electronic medical record systems, evidence-based healthcare, EDRMS (funsoft), Laboratory Information and Management System (LIMS) used only in the laboratory department and Kenya EMR that is used in the Patient Support Center (PSC) are being implemented in MRM and general provision of healthcare at KTRH. In the course of their work, the respondents indicated that they used these technologies for clerking of patients, sharing information within the hospital departments, and coordinating and facilitating efficient service delivery within hospital. Through this channel, the hospital has reportedly improved in the provision of health care services and MRM.

The literature reviewed showed that effective implementation of evidence based medical practices will largely be determined by the MRM strategies that is put in place since MR furnish documentary evidence necessary for healthcare provision. Accurate evidence is a product of a functioning MRM program hence the need for MRM strategies to ensure that patients' information is stored in a uniform and standardized manner where MR retains evidential weight (Mogli, 2009).

The study sought to find out the integration of management of medical records functionalities at KTRH. As the hospital continues to invest in ICT, findings from the study revealed that the recognition that the system produces important evidential information was often lacking. Indeed, the MRM functionalities in EDRMS were partially automated. Some of the crucial MR procedures that have been computerized included disease and procedure index, patient identification, statistic collection and discharge summary system. These findings implied that there was significant assimilation of ICT in KTRH business operations. The automation of these procedures has greatly improved service delivery.

However, findings from the study further revealed that this investment largely focuses on clinical and administrative management, notably clerking of patients and improving revenue collection. Full integration of MRM functionalities was lacking since procedures such as MR tracking, and MR completion were not computerized. However, the use of a fully computerized system may improve the effectiveness but only where the basic manual procedures are already in place and well organized.

Using a multi response list, the challenges in the use and adoption of ICTs were identified by respondents as including: inadequacy of financial resources; lack of training on the ICT use; inadequate security measures; shortage of knowledge of software; and inadequate standard procedures. As indicated by HRIM officer 2:

> *We have minimal training in the management of electronic records. But we are just fine with the use of computers even infrastructure is in place. But we really need training on electronic medical records for us to support well.*

From the above responses, it is evident that KTRH continues to adopt ICT applications without due considerations to basic procedures that govern MRM. Therefore, the adoption and use of ICT in MRM at the hospital require improvement. These has necessitated the need to implement a systematic and functional MRM program to ensure their integrity is upheld (Marutha, 2016). The envisaged benefit of these efforts will largely be determined by the MRM regime that is put in place.

6.5 The Strategies to improve on MRM to Supporting Evidence-based Practices

The findings revealed that there is a gap in terms of training, staff numbers, and competence in MRM at KTRH. Hence, compromising the quality and quantity of MR. Most skills gaps identified were in the MRM processes such as creation, capture, and management of electronic records. According to the IRMT E-Records Readiness Tool, qualified records management staff are required for effective implementation of records management policies in any given organization (International Records Management Trust, 2004). Effective healthcare service delivery always begins with better MRM practices that ensure patients' information is stored in a standardized manner where medical records retain evidential weight.

This is due to the fact that MR furnish essential documentary evidence of patients' activities, transactions, and decisions. Overall, the findings of the study showed that proper MRM practices would improve the creation and capture of evidence, and facilitate the free flow of information. The findings revealed that proper MRM aided staff in retrieval and access to MR, especially in electronic format. Effective MRM was considered a critical factor in success in areas like billing, compensation, and backup in the case of a legal challenge.

However, the study found that the general status of medical records management at KTRH was inadequately positioned to manage medical records as a strategic evidence resource. For instance, medical records were not managed well in a continuum from creation to disposition; lack of standard, policy, and procedural framework; and there was a scarcity of medical records management knowledge and skill at the hospital. Although the hospital has adopted the use of information and communication technology in the provision of healthcare, medical records management processes were partially automated. As a result, the quantity and quality of evidence was compromised because attaining accurate, authentic and reliable patient information in such an environment is difficult. To address these challenges the respondents made the following proposals: the hospital should develop operational policies and procedural frameworks for MRM; build MRM capacity and provide MRM knowledge and skill to staff; improve on ICT infrastructure, and adopt the recommendations and best-practice strategies to improve MRM.

7. CONCLUSION

The aim of the study was to assess medical records management in support of evidence-based medical practices at Kisii Teaching and Referral Hospital with a view of proposing strategies to improve medical records management in the hospital. The overall findings revealed that the general status of MRM was inadequately positioned to support evidence-based medical practices at KTRH as envisaged by the RC model and the JHNEBP model. The study revealed that there were existing challenges that hindered effective to management of MR as a strategic evidence resource in a continuum from creation to disposition. The challenges that were identified included: the absence of guidelines on the creation and capture; absence of documented procedures on access and security necessary for MR tracking the use; lack space for the increasing number of MR; absence of retention/disposal schedules; and absence of guidelines on electronic MR.

Findings further revealed the absence of MRM policies and procedural frameworks, and there was a scarcity of MRM knowledge and skill at the hospital. Although the hospital has adopted the use of ICT in the provision of healthcare, MRM processes were partially automated.

The study concluded that the general status of MRM at KTRH was inadequately positioned to manage MR as a strategic evidence resource in a continuum from creation to disposition. In this kind of environment, the accuracy, authenticity and integrity of evidence cannot be guaranteed, and therefore requires urgent attention. In view of this, the study provided recommendations to ensure continuum management of MR as strategic evidential resources.

8. RECOMMENDATIONS

For records management to be implemented properly and support organizational functions, it is highly dependent on the model used to manage the records (Murutha, 2016). This section presents the model proposed to integrate MRM to the provision of evidence-based healthcare at KTRH using the RC model (Upward, 2001) and the JHNEBP Model (Dearholt and Dang, 2017) as a benchmark.

The model presents proposals that underscore good MRM and enhance the strengthening of evidence to support healthcare provision using a functional, structural and infrastructural approach. These will allow the hospital to have a planned and systematic approach to the management of evidence and strengthen healthcare services by supporting evidence-based decision-making, policymaking, and clinical service in the hospital, and the adoption of the proposed model. The model is presented in Figure 1 and it is discussed in three key steps, which are functionalities including creation and capture, access and use, storage and maintenance, appraisal and disposition, and preservation; MRM Infrastructure of policy and procedural framework, information communication technology, and professional expertise; and lastly, integration of evidence in decision making.

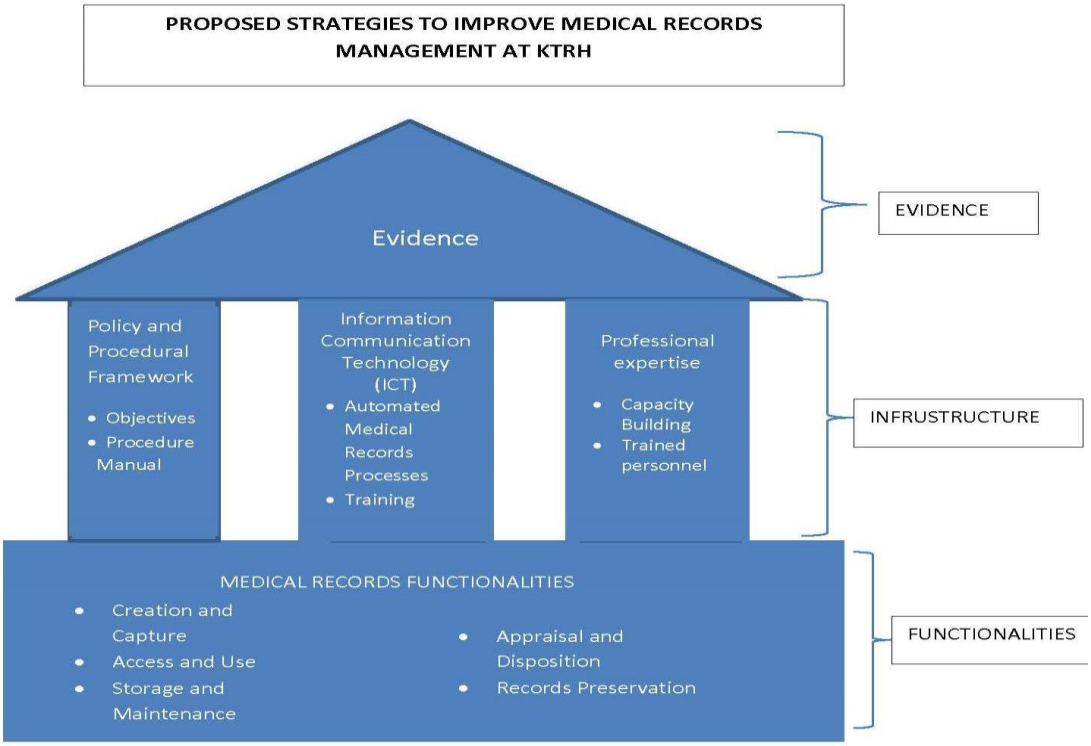

Figure 6.1: Proposed Model to Improve Medical Records Management (Source: Research Data)

The proposed model to improve medical records management at KTRH works like a building construction with a foundation, pillars, and roofing. The levels are discussed in the following three key steps:

A. Foundation

If the foundation is stable, it means the building is strong and reliable. As seen from the figure above, at the foundational level, the model roots for the integration of MRM functionalities from creation to disposal of MR, and structural aspects to manage MR across the continuum in line with the RC model (Upward, 2001).

File creation and records capturing is the first step when the patient visits the hospital. The hospital's MRM system should have a completion procedure to ensure correct and complete MR; have procedures that guide on what, when, and how information is to be captured; and integration

of a unique patient characteristic and allow for cross-referencing; allocation of explicit metadata and professional management of metadata schema.

KTRH should establish procedures that outline how MR are to be classified, indexed, and organized. Each classification scheme should be linked to the retention and disposal authorities. The HRIM officers should plan the filling areas and organize for space for MR filling.

On Access to MR and Security, KTRH should ensure MR restrictions, security, and privacy strategies are identified and documented; availability of policies governing system security and user access permissions; regular review of user access restrictions and other security controls; and automation of a tracking system so as to maintain a history of access to and use of MR.

KTRH should develop a program for storage and preservation of MR in all formats. The hospital should carry out a MR decongestion process; develop comprehensive disaster preparedness and recovery strategies for all MR systems; conduct regular system tests to determine whether they can recover from system malfunctions. It should also consider improving the work environment for the HRIM department including space, lighting, and safety.

KTRH should conduct an appraisal to select MR with enduring value; ensure MR are destroyed or disposed of in accordance with the legislation; and develop policies to support the protection and security of MR throughout their existence.

B. Pillars: MRM Infrastructure

To support the MRM processes, the model further recommends MRM infrastructure including operational policies and procedural frameworks; Information communication and technology; and professional expertise.

KTRH should develop and document MRM objectives that should be translated into a high-level policy that stipulates the requirements for capturing, registering, classifying, retaining, storing, tracking, accessing records, and disposing of them. The policy should develop strong foundations in which MRM in the hospital will be anchored as stipulated in the ISO 15489-1 (2016) standards. The hospital should also develop comprehensive MRM procedures that are based on RC model principles, document them in a manual, and aligned with the hospital's MRM policy.

KTRH should recruit personnel possessing relevant MRM knowledge and skills who will be responsible for the creation, capture, and management of MR across their continuum in line with the requirements of the RC model. The study recommends continuous training of MRM staff through colleges, universities, seminars, workshops, and conferences. The study also recommends the establishment of MRM awareness programs to enable MR users to understand the functions, activities, and benefits of MRM.

The study strongly recommends improvement on the hospital's ICT infrastructure and the incorporation of MRM processes into both electronic business and office systems so that they can capture MR seamlessly and protect their integrity over time. The hospital should also develop a policy that allows for the management of paper and electronic MR as integrated wholes. Training on the use of the electronic MRM system in place should be conducted.

C. Roofing: Evidence

With a stable evidential foundation and support, KTRH should facilitate the integration of the best evidence from both researches and medical with a clinician's expertise along with patients' preferences and values as recommended by the JHNEBP model (Dearholt and Dang, 2017) as a benchmark.

REFERENCES

An, X., Sun, S., & Zhang, W. (2011). Managing electronic records in e-government: current trends and future directions internationally. In *2011 International Conference on Management and Service Science* (pp. 1-5). IEEE.

Craig, B. (2004), *Archival Appraisal Theory and Practice*, Great Britain, K. G. Saur Verlag GmbH, Munchen

Dang, D., & Dearholt, S. L. (2017). *Johns Hopkins nursing evidence-based practice: Model and guidelines*. Sigma Theta Tau.

International Records Management Trust (2004). Information for good governance. http://www.irmt.org.

International Records Management Trust. (2011). *Managing Records as Evidence for ICT/ E-Government and Freedom of Information: Kenya Court Case Study*. IRMT, London.

ISO 15489-1:2016 Information and documentation — Records management — Part 1: Concepts and principles

Issa, M., and Wamukoya, J. (2018). The Role of Electronic Records Management in Promoting the Delivery of Justice in Tanzania: Perspectives from Dar Es Salaam Commercial Court. In *Information and Knowledge Management* (Vol. 8, No. 2, pp. 30-35).

Katuu, S., & Ngoepe, M. (2015). Managing digital records in a South African public sector institution. *INFuture2015 e-institutions-openness, accessibility and preservation. Crotia: University of Zagreb*, 135-141.

Kemoni, H. (2007). Records Management Practices and Public Service Delivery in Kenya. PhD Thesis. Pietermaritzburg. University of KwaZulu-Natal

Kemoni, H., Ngulube, P., & Stilwell, C. (2007). Public Records and Archives as Tools for Good Governance: Reflections within the Recordkeeping Scholarly and Practitioner Communities. *ESARBICA journal* Vol 26:3-18.

Kennedy, J. and C. Schauder (1998). *Records Management: A Guide to Corporate Recordkeeping. 2nd ed. South Melbourne:* Longman Cheshire.

Kenya, & National Council for Law Reporting (Kenya). (2010). *Laws of Kenya: The Constitution of Kenya, 2010*. National Council for Law Reporting.

Koech, M. C. Duncan A. Damaris O. (2017). Assessment of Medical Records Management in Support of Service Delivery at Moi Teaching and Referral Hospital, Eldoret Kenya. *An International Publisher for Academic and Scientific Resources*.

Kootshabe, T. J. (2011). *Preservation of records in selected ministries and departments in Botswana, MARM Dissertation.* University of Bostwana, Gaborone

Marutha N.S. (2016) A framework to embed medical records management into the healthcare service delivery in Limpopo Province of South Africa - University of South Africa, Pretoria, 2016 - core.ac.uk

Marutha, N., and Ngoepe, M. (2017). The role of medical records in the provision of public healthcare services in the Limpopo province of South Africa. *South African Journal of Information Management*, *19*(1), 1-8.

Maseh, E. (2015). Managing Court Records in Kenya. *African Journal of Library, Archives & Information Science*, *25*(1).

Maseh, E., & Mutula, S. (2016). Records management readiness for open government in the Kenyan judiciary. Mousaion, 34(3), 146-166.

Maseh, E., and Katuu, S. (2017). The Kenyan judiciary's open government initiative: prospects and challenges. *Journal of Science and Technology Policy Management*.

Mnjama, N and Wamukoya, J. (2006). E-government and records management: an assessment tool for e-records readiness in government. *The Electronic Library* 25(3):274-284.

Mnjama, N. and Wamukoya, J. (2004). *E-governance: the Need for an E-Records Readiness Assessment Tool. Report on Proceedings of the SADC Regional Consultation on National e-Government Readiness*, Gaborone, Botswana. 14-16 April 2004.

Mnjama, N. and Wamukoya, J. (2007). E-government and Records Management: an Assessment Tool for E-records Readiness in Government. *The Electronic Library* 25(3): 274-284.

Mogli, G. D. (2009). Medical records role in healthcare delivery in 21st century. Acta Informatica Medica, 17(4), 209-212.

Nzoka, M., and Ananda, F. (2014). Blood Bank Management Information System A Case Study of the Kenya National Blood Transfusion Services. In *Proceedings of Sustainable Research and Innovation Conference* (pp. 146-149).

Ondieki, F. (2017). Effects of health records management on service delivery: a case study of Kisii Teaching and Referral hospital. *Journal of Hospital & Medical Management*, *3*(01), 1-5.

Unadkat, M. B., Mbuba, C. K., Ngugi, A. K., & Kamya, D. (2020). Knowledge, Attitudes, Practices and Barriers in use of Evidence-Based Medicine Among Resident Physicians in Kenya: A Mixed Methods Study.

Upward, F. (2001). Structuring the Records Continuum- Part One: Post Custodial Principles and Properties. http://www.sims.monash.edu.au.

Waithera, L., Muhia, J., & Songole, R. (2017). Impact of electronic medical records on healthcare delivery in Kisii Teaching and Referral Hospital. *Med Clin Rev*, *3*(4), 21.

Wamukoya, J. (2000). Records and archives as a basis for good government: implications and challenges for records managers and archivists in Africa. *Records management journal*, *10*(1), 23-33.

Wamukoya, J. (2015). Reflections on African archives: their role in meeting societal needs in the 21st century. *Journal of the South African Society of Archivists*, *48*, 14-20.

Wamukoya, J. and Mutula, S. M. (2005). Capacity-building Requirements for E-records Management: the case in East and Southern Africa. *Records Management Journal*, Vol.15 (2).

Were, S. M. (2013). Management of records in health institutions. *International Journal of Science and Research*, *14*(6), 2319-7064.

World Health Organization (2012). Assessment of health facility data quality: WHO data quality report card Cambodia 2011. http://www.hiscambodia.org/public/fileupload/Cambodia_DataQualityReportCard_2011