

# Assessing the Readiness of the Digitization of Health Records: A Case of a Municipal Hospital in Ghana

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**Abstract:** The emergence of computers with all types of digital software and internet technology, appropriate information and health information systems are seen as indispensable to strengthen the health system in developing countries and pursuing the millennium development goals. It is therefore relevant to do away with the manual recording of records and move to the digitization of health records for easy accessibility, storage and retrieval. This study seeks to assess the readiness of Mampong-Ashanti Municipal hospital on the digitization of health records. A descriptive cross sectional survey was used to assess the readiness of Mampong-Ashanti Municipal hospital on the digitization of health records. A sample size of 90 correspondents was used. A well-structured interview questionnaire with both close ended and open-ended questions were used for the data collection. Data collected was analyzed using Statistical Package for Social Sciences (SPSS) version 22.0 and Microsoft Excel. Results of the study showed that much time was spent on the creation, storage and retrieval of health records of patients and the staff of Mampong-Ashanti Municipal hospital have shown readiness in adopting and usage of computer and its software to create, store and retrieve health records of patients. The study recommends that health institutions in Ghana need to have ICT departments to aid them in their service delivery.

**Keywords:** HIS (Health Information System,) Electronic Health Records (EHRs), Statistical Package for Social Sciences (SPSS).

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## 1. INTRODUCTION

For thousands of years, doctors and other medical personnel kept detailed notes on disease encountered and the treatment applied in all areas of medicine, including gynecology, bone surgery and eye complaints on papers. This paper method of keeping records are often amenable to security threats, limited storage space and does not allow for easy analysis for decision making. The important role, influence, and impact of Information and Communication Technology (ICT) in all sectors of our society have long been recognized. In the health sector, ICT tools are being more and more developed, recommended, and used to improve the quality of work in administration, patient records, health services, and research (Lapointe & Rivard, 2006).

During the nineteen-eighties, at the inception of the use of ICT tools in most developed countries, the use of ICT tools was not an issue or at best a matter of low priority in Less Developed Countries (LDC). Given the complex nature of healthcare delivery and the numerous decisions that must be made, sometimes under very challenging circumstances, the need for accurate, reliable and timely information becomes very crucial. Paper-based records cannot provide the flexibility and leverage that Electronic Health Record (EHR) presents. The ministry of health (Ghana) clearly identifies the need for an efficient health information management system (Afarikumah, 2014). Medical work is a highly complex,

distributed, dynamic, regulated, knowledge-intensive and often time-critical activity. To make treatment of ill and/or injured patients possible in these time-critical, specialized and physically distributed work settings, medical staff constantly needs to cooperate with each other. Cooperation in these distributed medical work settings requires extensive coordination between the medical actors involved.

To facilitate this coordination, medical work is heavily regulated by procedures and conventions, as well as supported by a number of technologies like paper documents and analogue films that are used by a large number of medical actors for many different purposes. Over the years, the government being the principal health care service provider has implemented a number of policies to improve care delivery development, unfortunately these policies have not yield the necessary success expected due to lack of accurate and timely data (Adjorlolo & Ellingsen, 2013).

On the other hand, most developed countries are experiencing improvements in care delivery by implementing various kinds of health information systems such as electronic medical record, computerized provider order entry and clinical decision systems. It is therefore the focus of this study to examine the readiness of the Mampong-Ashanti Municipal Hospital towards digitization of health records.

#### **STATEMENT OF THE PROBLEM:**

Ghana has demonstrated progress in developing a routine health information system in the government hospital and the District Health Information System (DHIS) has been accepted by the national government to be used for the collection of routine health information (Brown, Austin & Boxerman, 2012). However, apart from the DHIS in the district hospital, there is no other form of digitised health record. The major challenge is that most of the health staffs are not computer literate. Hence, health managers do not have the confidence to deploy electronic health records.

Acheampong (2012) stated that though there is a national policy on e-health now in Ghana which came into been in 2010; the country does not have policy guidelines for the digitisation of EHR and the sharing of data between hospitals and medical staff. Alvarez (2012) also indicated that the challenges encountered in the digitisation of health records have been more with commitments from staff and users of the system. He concluded that most of the time, users are ignored in the beginning of the projects but are expected to use it after its completion.

The current manual system used at Mampong-Ashanti Municipal Hospital generates huge amount of paper work that is difficult to deal with, in terms of storage, retrieval, maintenance and sharing of information among the medical personnel. The personnel spend more time looking for information than they would spend on health care delivery. Duplication of records resulting from multiple registration and misplacement of some of them makes the situation worse. This does not favour the generation of reports in terms of timeliness and accuracy. This research therefore seeks to add to the body of knowledge and assess the readiness of the health staff in digitizing health records.

#### **OBJECTIVES:**

To assess the readiness of the Mampong-Ashanti Municipal Hospital in digitizing health records, the following specific objectives will be considered:

1. To assess the current health record management practices of the Mampong-Ashanti Municipal Hospital
2. To assess the technological readiness of the Mampong-Ashanti Municipal Hospital.
3. To assess the societal readiness of the Mampong-Ashanti Municipal Hospital.
4. Assess the challenges towards the digitisation of health records of the Mampong-Ashanti Municipal Hospital

#### **RESEARCH QUESTIONS:**

In order to achieve the specific objectives, the study will seek answers to the following questions:

1. How is health record managed in the Mampong-Ashanti Municipal Hospital?
2. Is Mampong-Ashanti Municipal Hospital technologically ready to digitize its health records?
3. What is the societal readiness of the Mampong-Ashanti Municipal Hospital for digitisation of health records?
4. What are the challenges of digitisation of the health records at the Mampong-Ashanti Municipal Hospital?

### **SIGNIFICANCE OF THE STUDY:**

Hailey (2008) indicated that digitisation of health records has the potential substantially to improve the delivery of health care. He concluded that readiness studies were needed to help define the appropriate scope and application of digitised health records in different settings. In this light of scope and different setting, the researchers have decided to conduct readiness analysis of the health managers of the Mampong-Ashanti Municipal Hospital. This study may be helpful for initial decision making. This is because without information on the readiness of electronic health records, decision makers run the risk of supporting health information systems that are not responsive to health-care needs or which do not provide cost-effective services.

The negative side effect of paper records in the Mampong-Ashanti Municipal Hospital is a source of concern to public health authorities and related stakeholders. This study after assessing the readiness of the hospital towards the digitization of the health records would benefit the hospital to save information for future use and also be able to share information among clients and health workers within the hospital and other health centers. It will also add up to the body of knowledge in eHealth.

## **2. LITERATURE REVIEW**

### **Electronic Health Records (EHR):**

There exist numerous names with its accompanying acronyms for describing the use of computer systems or ICTs in healthcare delivery. Some of the names could be mentioned as Electronic medical record (EMR), electronic patient record (EPR), computerized medical record (CMR), computer-based patient record (CPR), and electronic health record (EHR). These lexicons are often used to mean the same thing but there could still be some minor differences in the meanings depending on the defining country of origin, health sector, professional discipline, and period of time (Nøhr, 2006). In giving meaning to consistency, this study prefers to adopt electronic health record (EHR) to describe the ICT implemented in the hospital. Again, Nøhr (2006) noted that the term 'health' in EHR refers to a person's vital data independent of any specific periods of being a patient, therefore the use of EHR is deemed as most suitable for this study.

ISO (2005) defined EHRs as a repository of information regarding the health of a subject of care, in computer processable form. This definition narrowly focuses on only the structure of EHR systems, therefore Hayrinen, Saranto and Nykanen (2008) sought to explain EHRs by broadening the focus given to EHRs in the ISO definition. According to Hayrinen *et al.* (2008), EHRs should be construed as comprising of retrospective, concurrent as well as prospective information which has the primary objective of supporting continuous, efficient and quality integrated healthcare delivery. Luo (2006) also asserts that EHRs go beyond just the electronic version of the paper based record to encompass the whole management of data required for patients' care.

In order to effectively support information flow, EHR systems have the functionality to store longitudinal health information and data, and enable results management, order management, decision support, electronic communication and connectivity, patient support, administrative processes and reporting (Tang, 2003). An electronic record may be created for each service a patient receives from an ancillary department, such as radiology, laboratory or pharmacy. Again some clinical systems allow the electronic capture of physiological signals (e.g. electrocardiography), nursing notes, physician orders etc. Often these records are not integrated; they are captured and remain in silo systems which have their own user logins and patient identification system.

### **Health Record Management Practices:**

The healthcare industry has widely made use of paper based record system as a means of keeping patient's medical information for the past two hundred decades (Schumacher, Berkowitz, Abramson & Liebovitz, 2010). Although, it has helped the entire healthcare delivery system a great deal from antiquity to date, Coiera and Clarke (2004) observed that, paper based record inherently poses some corporeal and informational challenges that makes it difficult for it to be sustained as a proper means of record keeping in healthcare delivery. Thus according to many practitioners, paper-based system alone is just not good enough anymore and they justify this by citing various challenges of the paper record which include; difficulty in accessing and sharing medical history of patients; improper organisation of patient records; error in prescriptions and medications; no guarantee for information backup; and breach of patients' privacy ((Schumacher *et al.*, 2010).

Also, according to Institute for Medication practices ([ISMP], 2005), paper based record system makes it extremely knotty for medical professionals at different geographical location to access previous medical information of patients for proper diagnosis or treatment regimes. It is a fact that paper-based medical information of patients can be conveyed with the aid of fax machine, telephone conversation, and even via courier services or through the post, but these modes of transmitting medical information have the potential for the misreading or mishearing of data, loss of information and delay (ISMP, 2005). Even in cases where health professionals at various geographical locations get hold to previous medical information of patients, it is intimates that reconciling the medical data could still be impossible (Coiera& Clarke, 2004)).

According to Warshawskyet *al.* (2014), retrieval of medical file from a pile of health records can also be daunting and time consuming. These improper classifications of medical records impede access to data and sharing data for proper healthcare delivery. In addition, with paper based record systems, prescriptions are usually written completely by hand. This could lead to a pharmacist making mistakes in filling prescriptions because of an illegible handwriting, or may have to spend extra time calling the doctor's office to get clarification about a prescription. ISMP (2005) estimated that pharmacists make more than 150 million calls to physicians each year to clarify what was written on prescription forms in order to avoid error of medication. Another study byYusif and Soar (2014) indicated that approximately 39 percent of medication errors; which occurs at the time of prescribers' order medications, occurring due to the illegibility of prescribers' handwritings which is often misinterpreted by pharmacists.

Haselth, and Ryser (2008) indicated that one of the important issues in paper-based records are, all the clinical information is written in free style, and chances are high to miss or forget some important information, as this will lead to serious effect on patient's treatment and care. The case sheet is a hard copy that can be accessed by one person at a time and needs physical transfer for other physicians to access. Retrieving a record will be a hard task given number of medical records present and missing a record will not be a surprise in a huge pile of paper based medical records. Moreover, with time, information in paper records gets diminished of ageing paper and ink, even fire accidents or natural disasters can ruin the archive of paper records. Li *et al.* (2008) explained that all the above discussed issues can be over-come by digitizing health, it can not only solve the problems but also improves the efficiency of healthcare by increasing accessibility, and needs less resources to maintain records. Digitized health records can be used as a resource of researchers, it will be a tool for disease surveillance, which can be used for public health initiatives and for practicing evidence based medicine.

In an empirical study conducted in the United States by Varga (2011), it was noted that although EHR is needed to aid in the automation of paper based health records, the complete migration to EHR system; and thus the consequent elimination of the cosmic majority of paper in the delivery of healthcare, will take at a minimum of 10-15 years or potentially many years longer. The study again noted that high percentage of healthcare professionals will continue to receive health information from patients in the form of paper documents for some long time to come, even if healthcare professionals themselves convert to an EHR system. Therefore, many healthcare facilities are now combining the use of both EHR systems and the paper based records systems. This is nonetheless, not exclusive to Varga's study amongst US medical professionals but the same phenomenon of combing paper based health records with EHR has been observed by some writers in the implementation of EHR systems (Adjorlolo&Ellingsen,

#### **Technological Readiness Assessment:**

Stoop and Berg (2003) identified three (3) phases or stages of conducting an evaluative research in EHR system. The various phases or stages in the life of an EHR, where an evaluation could be done are pre-implementation, implementation (during) and post-implementation. At the pre-implementation stage, an evaluative assessment is done before an EHR system is implemented and is anticipated, among other things, to give a course for decision-making with respect to successive development or implementation of future responsibilities (Brender, 2006). Pre-implementation or readiness assessment is often thought of as a pivotal measure, which is conducted before rolling out any useful EHR system (Adjorlolo&Ellingsen, 2013). This assessment affords any health facility the opportunity to identifying failure factors associated with the actual implementation of EHR system and the mitigating factors to be deplored in order to address these failures. Hence a health facility which shows a noticeable lack of readiness invariably lacks the ability to undergo transformation for successful implementation of a useful EHR (Brender, 2006).

The pre-implementation stage therefore allows for proper planning and management in an attempt to test the feasibility of the EHR system or to access whether or not to implement the EHR system in the whole healthcare delivery facility (Stoop & Berg, 2003). At the actual implementation stage, an evaluation of EHR system is carried out which aims to provide feedback so that the optimum level of utilization could be realized in real time. This is akin to the formative evaluation, which also provides responses or feedback to users and system designers (Wills, El-Gayar & Sarnikar, 2011). According to Stoop and Berg (2003), at the implementation stage, questions generated in the evaluation process “are often concerned with the first consequences of real time use and with tentative results. Thus questions like; is the system easy to use or what are the benefits compared to the old situation, according to them suffices at this stage of evaluation.

Aas (2001) emphasized that the introduction of electronic health records into a healthcare organization is regarded as a novel information technology innovation and adoption. Aas (2001) further stated that any innovation into a community or system requires the community to adapt to the changes when such innovation is introduced. The adoption of an innovation is essentially an adoption to change, and therefore, must be examined in the light of extensive change management and innovation adoption (Adjorlolo&Ellingsen, 2013). Again Adjorlolo and Ellingsen (2013) indicated that technological readiness can be assessed using readiness for hardware, network, related software, IT support personnel and healthcare providers’ IT past experience. According to Afarikumah (2014), presence of hardware, network, related software, IT support personnel and healthcare providers’ IT past experience are precursors to technological readiness in health institutions for the adoption of innovation.

#### **Societal Readiness Assessment:**

In the opinion of Chau and Hu (2002), to foster users’ acceptance of EHR, management in the health facility needs to work out a plan for cultivating positive attitudes toward using the technology. Management must robustly ‘emphasize, demonstrate and communicate the usefulness of the system regularly to not only the users but also the entire organization. This is the only way to reinvent the negative attitude or perceptions of users towards the use of the system. In order to increase usability and user satisfaction, the EHR system but be seen to be smarter and add to the overall intellectual value of health professionals after an encounter with a patient (Schumacher *et al.*, 2010). The system should be able to reveal buried content and interrupt or suspend apparent medical mistakes. Users of EHR in various health facilities would likely be more satisfied with the system if it presents inconspicuous assistance with context sensitive reference algorithms and data-sets (Schumacher *et al.*, 2010).

To ensure usability and maximum user satisfaction of EHR, there is a need for continuous awareness and training workshops or courses concerning basic ICT skills as well as the actual usage of EHR systems (Walker, Bieber & Richards, 2015). The technical intricacies of EHR systems necessitate the need for a high level of technical competence on the part of users (Sahay & Walsham, 2006). These technical competences are achieved largely by organizing training and other workshops for users of the system. Further, there is a need for training in order to alleviate or lessen the problems associated with general usage of EHR such as poor preparation of data for use, and low initiative for using the data. This is reflective of empirical findings from a study in Tanzania conducted by Smith, Madon, Anifalaje, Lazarro-Malecela and Michael (2007) who revealed that there is a need for training in order to alleviate or lessen the problems associated with general usage of EHR such as poor preparation of data for use, and low initiative for using the data.

A societal readiness assessment result is determined by organizational communication links to hospitals, administrative centres and provision of healthcare in collaboration with various healthcare organizations. A consideration of socio-cultural factors among staff and among clients is also considered as societal readiness (Khoja, Hirschheim & Klein, 2007). According to Lanseng and Andreassen (2007), when users are presented with a new technology, two notable factors influence their attitude towards using the application. These are its perceived usefulness and perceived ease of use. Davis (2009) explained that perceived usefulness refers to the degree to which a person believes that using a particular system can enhance his job performance, while perceived ease of use refers to the degree to which a person believes that using a particular system may free him or her from effort. These two, according to Davis (2009), are key contributors to societal readiness.

Finally, according to Ojoet *al.* (2006), acceptance and use readiness is the intension to accept and use e-healthcare technology. They mentioned that the societal readiness to accept digitization of health records is measured by several indicators such as attitude towards using ICT in healthcare management, perception of the usefulness of ICT to job performance, perceived ease of use, social influence and facilitating condition for using ICT.

**Challenges of Digitization of Health Records:**

The progression and sequence of EHR, particularly in developing countries' health facilities has never been an easy undertaking as there are many peculiar factors impeding the progression and diffusion of such technologies (Bra, Monteiro&Sahay, 2004). But the point ought to be made fiercely that challenges of digitization of health records in developed countries, somewhat differ from the challenges of digitization of health records in developing countries. The works of Sood *et al.* (2008) is a clearer manifestation of the differing challenges of digitization of health records in developed and developing countries.

Khalifehsoltani and Gerami (2010), in their study obtained a model, which considers the challenges facing E-Health in Developing Countries. This model included challenges relating to six areas of technology and operational; social and cultural; native environment; legal; policymaking; and financial. However, their model had a general outlook of e-Health, which EHR is just a fraction. Therefore, upon a further review of other works regarding the challenges of digitisation of health records in developing countries, some peculiar issues that affront digitization of health records in developing countries were discovered. inadequate electric power supply; lack of ICT infrastructure; lack of basic ICT knowledge/skills; poor internet connectivity; financial issues; and resistance to new technology were identified broadly (albeit others) as the major challenges that hinder the successful implementation of EHR in developing countries like Ghana.

In most developed countries like United State, United Kingdom, Norway, Denmark and Australia support the new system. Thus limited access to computers and other ICT facilities remain a challenge to the successful implementation of EHR (Martinez, Villarroel, Seoane & delPozo, 2005). There is a growing and robust healthcare infrastructure that receives ample financial support from its governments (Sood *et al.*, 2008). This is however not the situation in most developing countries. In particular, professionals in various health facilities who implement healthcare information technology based solutions like EHR systems in developing countries are overwhelmed with the lack of ICT resources and weak healthcare infrastructure (Sood *et al.*, 2008). Again, Bedeley and Palvia (2014) rates Lack of ICT Infrastructure as the major challenge of e-Health. According to Bedeley and Palvia (2014), the ICT infrastructures that are currently in place are not enough to The majority of health professionals in developing countries lack the basic ICT knowledge or skills that are needed to effectively use the EHR systems (Bedeley & Palvia, 2014). This hampers the full utilization of the system by health professions. As confirmed by interview response gathered from the healthcare professionals in Afarikumah (2014), it was observed that the majority of the current generation of Ghanaians grew up in the rural areas without computers or even common electricity. Such people therefore exhibit negative attitudes towards computers due to their ignorance as they rather prefer someone do their work for them with the computer than doing stuff by themselves. He further opined that the lack of enthusiasm has slowed down implementation efforts as it raises the debate of whether the time is right or not.

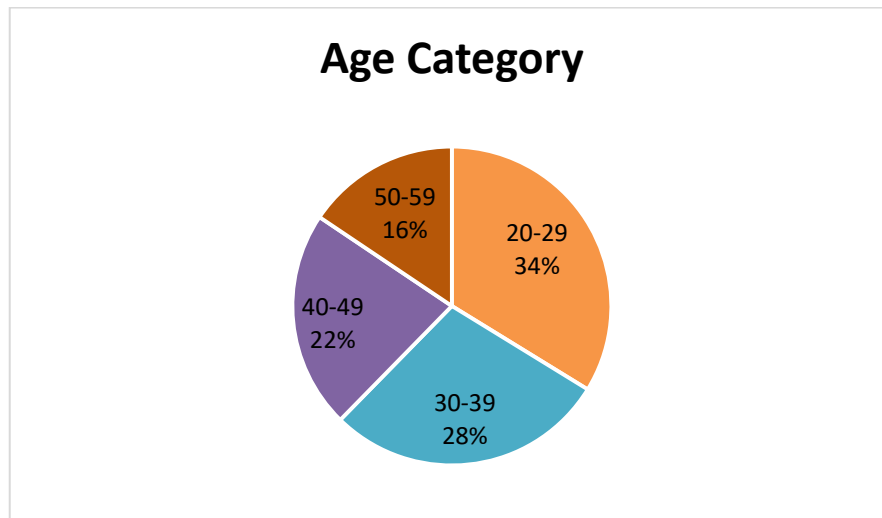
**3. METHODOLOGY**

A descriptive cross-sectional design of health workers was conducted between March and April 2016. Using Epi Info Version 7.1.5 statistical, the total number of health workers at the Mampong-Ashanti Municipal hospital directly involved in patients' record is 110 (Mampong-Ashanti Municipal Hospital, 2015). Using the study population of 110, with an expected frequency of 50 percent and a worst acceptable rate of 5 percent at a confidence level of 95 percent, a sample size of 90 was used for the study. A convenience and simple random sampling were used in selecting the respondents.

A self-administered structured questionnaire with closed-ended items was developed to collect data. In this study, Mampong-Ashanti Municipal Hospital was selected because it is a referral hospital. Data was analyzed with the Statistical Package for Social Sciences (SPSS) version 22.0. Data was presented using descriptive statistics. Comparison of continuous data was done using the Chi-square test to determine the associations at significance less or equal to 0.05.

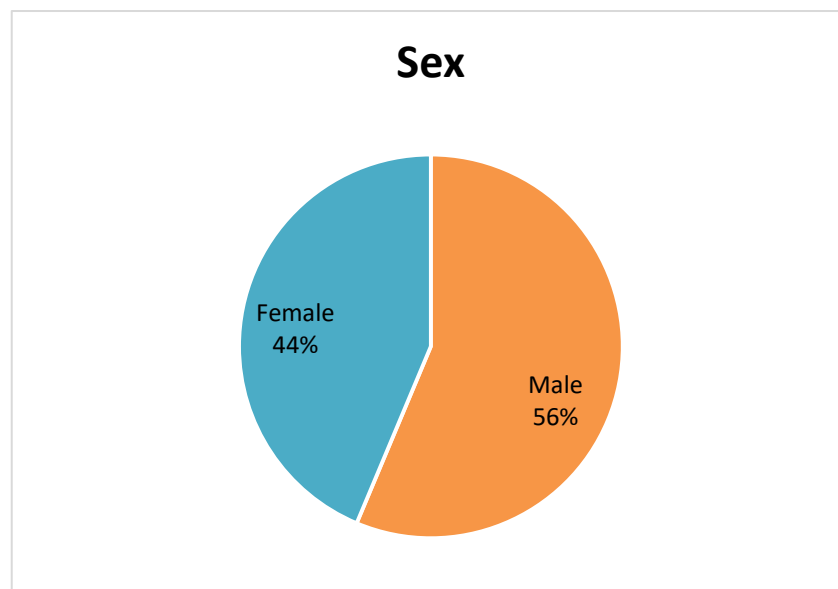
**4. DATA ANALYSIS****Socio-Demographic data of the Respondents:**

This section deals with the age categorizations, sex, educational backgrounds, work background, roles and duties of respondents. The responses gathered from these areas has been analyzed and discussed as follows:



**Figure 1 Responses according to age category field data 2016**

According to the valid responses obtained, it is realized that the age range of the respondents is 34% (between the age range of 20-29), 28% (age range of 30-39), 22% (representing the ages of 40-49) and 16% (representing the age range 50-59). This statistic shows a fair representation of the respondents. Also, the highest rate of respondents (age range 20-29) could be considered as digital citizens who possess the 21<sup>st</sup> century skills, meaning they have fair knowledge on computers and its image. (Afarikumah 2014) in his report opines that, majority of health professionals are from the rural sector who have not been exposed to the use of computers. However, through the data solicited from the use of questionnaire and the interviews conducted, it was observed that even though a greater percentage of the respondents are within the category known as digital migrants, the ubiquity of technology and the advent of social media tools such as Facebook and Whatsapp has created a platform where they are being engaged in the use of computers.

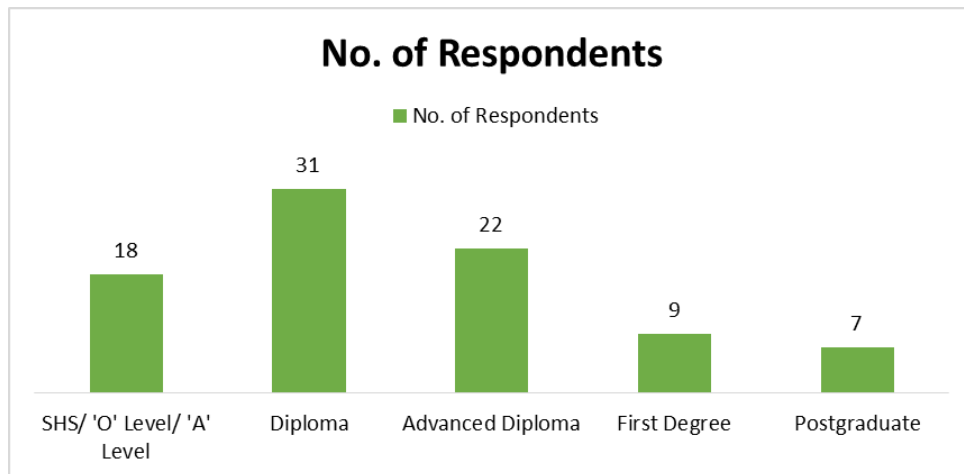


**Figure 2 Responses according to Sex Field data, 2016**

From the chart above, it could also be noted that, there were 49 (56%) of male respondents and 38 (44%) of female respondents. This data shows a fair representation of genders in the assessment undertaken by the researcher.

**a. Educational background/ Qualification:**

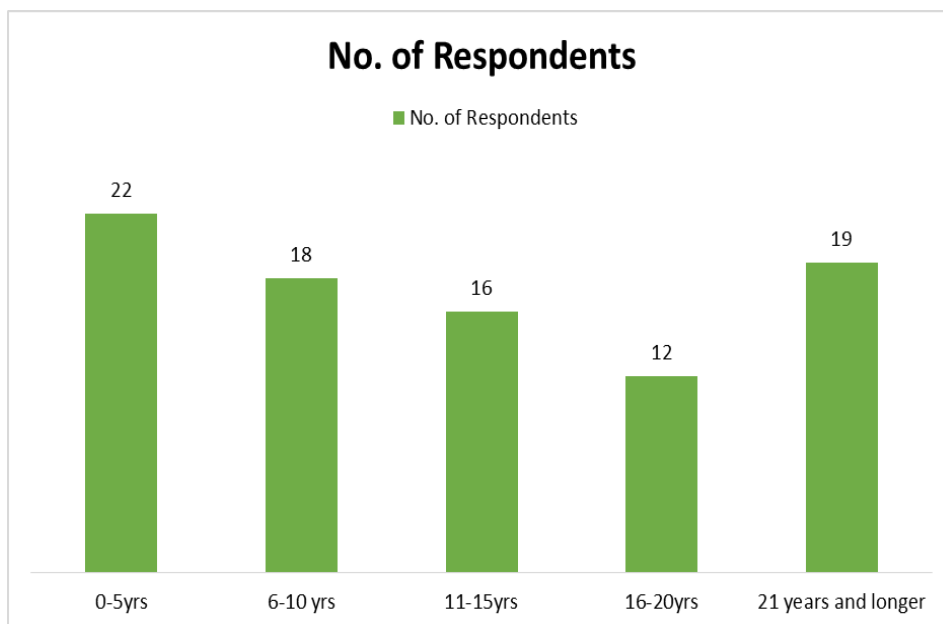
In other to establish the technological and societal readiness of respondents, we considered their educational background to ascertain their knowledge on the use of computers and its related software.



**Figure 3: Respondents educational backgrounds Field data, 2016**

From the chart above, it would be observed that, there is a greater percentage of respondents who are considered to be having diploma certifications. It could be asserted that, they are within the category which would be considered as ones who could easily adapt to the use of technological gadgets and may have also had engagements with computers. However, there is also a considerable level of respondents who fall within the category which is known as digital migrants but with the ubiquity of technology and social media, there are some who are currently engaged with the use of software and computer for communication.

**b. Years of work:**



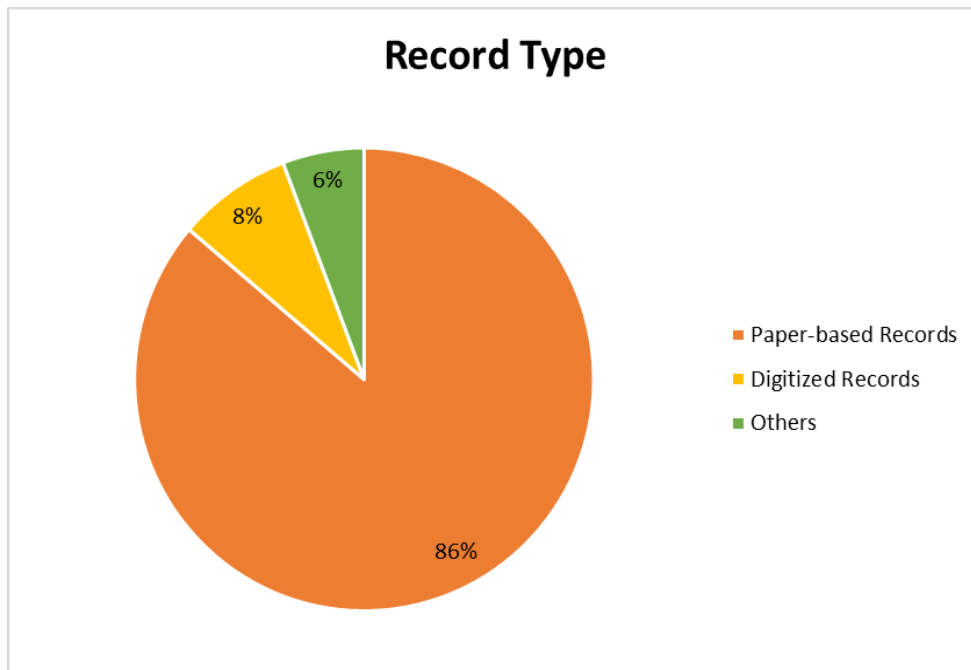
**Figure 4: Years of work in the hospital as staff Field data, 2016**

From Fig. 4, there is a high rate of respondents who have been engaged in the hospital for a high number of years. Even though 22 of the respondents have worked in the facility between 0-5 years, the average number of the respondents have been engaged in the hospital facility for a longer period of time. The results show that, the respondent’s information or data solicited on the health records management practice employed by the hospital is valid and reliable.

**Assessing the current health record management practices of the Mampong-Ashanti Municipal Hospital**

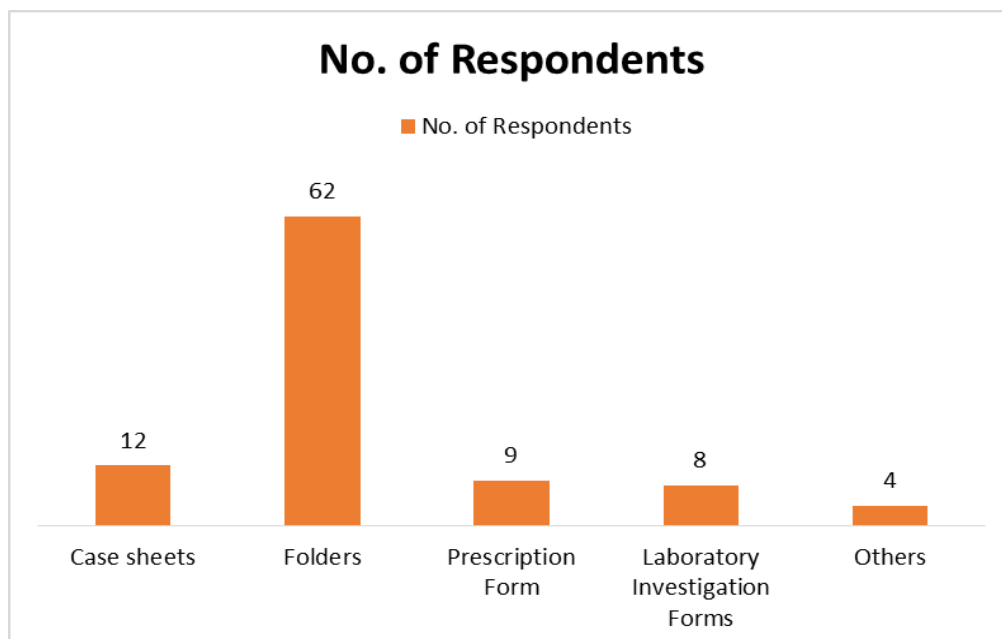
In other to ascertain the current health record management practices of the Mampong-Ashanti Municipal Hospital, we considered series of questions to understand how data of patients is created, stored and the means through which they are later retrieved.





**Figure 4. 4 Types of health records employed in the varied Units**

Figure 5 renders a graphical presentation of the record types being employed by the health institution. It was realized that, 86% of the respondents are of the view that, paper based records are highly used buttressing the assertion by (Schumacher, Berkowitz, Abramson & Liebovitz, 2010) that paper based records is in high use in healthcare institutions as a means of keeping the medical information of patients. The use of digital records was 8% and its usage had to do with records mostly created and used at the accounts office, typed letters and memo in administration and the use of digitized laboratory and X-Ray equipment's.



**Figure 6 How records are created Field data 2016**

From the distributions, a greater percentage of the respondents were of the view that, the use of folders (which is a paper-based record) was still prevalent in the health institution. Then again, the use of case sheets to record cross examination and details of patients was also prevalent. However, they were of the opinion that, when patients visit the hospital frequently, case sheets are created in excess making the duplication of patient records (Snyder-Halpern, 2011). Finally, as

(Coiera& Clarke, 2014) stated, the use of paper based records has challenges with wrong interpretation of handwritten notes and at times improper spelling of medical terminology and this was evident in the response during the interviews.

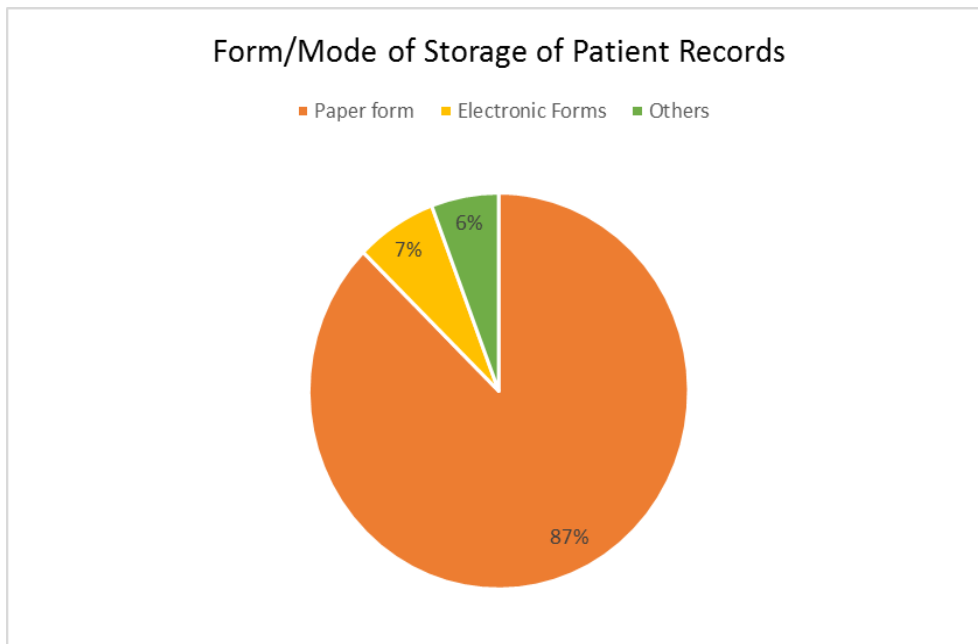


Figure 7 Storage of Patient Records

In trying to understand the current health records management practices of the health institution, we asked the respondents about the form in which they stored records of patients. 87% of the respondents stated that, most of the records can be found in paper formats. However, 7% of the respondents also stated that, they had electronic formats of the patient records and this had to do with the records developed during laboratory operations.

Moreover, 27 representing 31.04% of the respondents were of the view that the records were immediately filed at the unit and 43 representing 49.43% opined that the records were given back to patients to send to the records department. Also 5 representing 5.75% of the respondents take their records notebooks home with 36 representing 41.38% stating that, the records are piled as one unit in a day and sent to the storage room collectively.

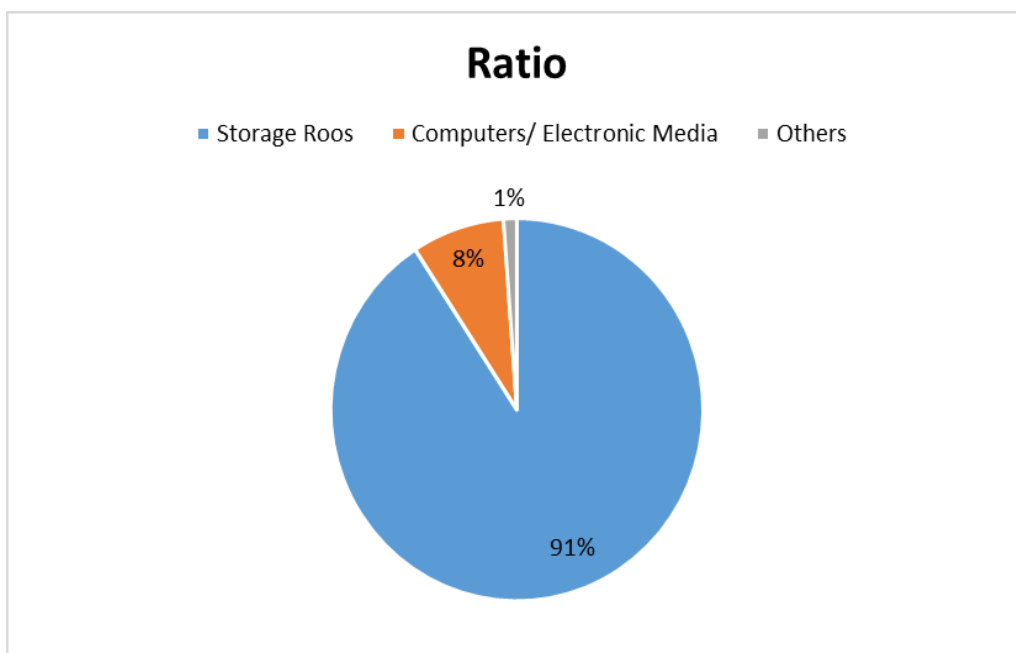


Figure 8 Storage facilities of Patient Records

The respondents when asked about how the records of patients were retrieved by the institution rendered varied opinions. 91.9% of the respondents were of the view that the records were retrieved by looking through the folders found at the records unit which are sometimes time consuming due to improper/ misappropriate classifications making the retrieval intimidating (Warshawsky et al, 2014). Patients, especially nursing mothers sometimes bring their records from home.

There are storage rooms which are being employed by the health institution to keep the folders of patients. Patients present their identification cards for the records department to retrieve them whenever they visit the hospital. This mode of retrieval has been noted to come with challenges and an instance is when respondents have encountered situations where patients have lost their ID cards and would have to reproduce new ones. Then again, issues with animals destroying paper-based records is another concern.

#### **Assessing the technological readiness of the Mampong-Ashanti Municipal Hospital:**

This section of the chapter presents data on the technological readiness of the Konongo Government Hospital. To find out if technologically, the respondents were ready for the integration of digitized records we assessed their access to and usage of technologies. The data solicited is presented and the researcher further analyses their opinion to make inferences.

(Adjorlolo&Ellingsen, 2010) indicated for in assessing the technological readiness of a healthcare institution towards the adoption and implementation, there is the need for one to consider these factors: the institutions access to technological tools such as computers and its accessories, internet, IT support department, health workers previous experience with the use of computers.

- a. Engagement with computers: Through research it was realized that, 77% of the health practitioners used for the purpose of this study in one way or the other are engaged in the use of computers. For example, there is the use of computers by staff for administrative purposes such as writing and printing of letters. In other situations, they could be found undertaking photocopy of patients records which are later kept as paper based records. Then again, in the laboratories, they employed the use of digitalized X-Ray equipment's.
- b. Internet access: Staff of the institution have access to the internet through the use of Ethernet cabling for the sending and receiving of emails.
- c. Past experience with computers and its software: Responses obtained showed that, the category of health practitioners in the institution who are characterized as digital citizens were engaged with the use of computers and its software such as basic typing with Microsoft Word and Excel. They have also been engaged with the surfing of information on the internet and in some instances used the projector for presentation. However, the older generation even though are tagged as "born before computers" have been engaged with computer usage through the advent of social media services such as Facebook and WhatsApp.

From the above presentation, it could be noted that, a greater percentage of the respondents were ready to accept the concept of digitized records which would make their work much easier.

However, when asked if the institution was ready to adopt the concept of digitalized records, they were with mixed feelings and these were their concerns.

The first concern had to do with that of the availability and access to computers. 93.1% of the respondents stated that even though there are computers for administrative duties, there are not enough computers for the institution to use in making the records digitalized.

Then again, they raised concerns in IT personnel's who would be readily available to support in times of challenges. This was as a result of challenges they are having with their current practices. Whenever they are faced with any challenge, they would have to contact personnel's from outside the institution.

Finally, they claim that even though they had basic knowledge about computer and its usage, there should be special trainings for them and a gradual integration of the Electronic Health Records (EHR). This was a result of some member's attitude and perception towards digitized records. Even though, it is a good idea, its adoption and implementation would take a longer period of time as opined by (Varga, 2011) in the report of an empirical study conducted in the United States. He noted that, even though EHR is needed to aid in the automation of paper based health records, the complete migration

and to EHR system and the complete elimination of majority paper. Thus, the process is likely to take between 10-15 years or longer

However, the respondents especially the records department were much excited about such an initiative because it would address many of the challenges they were facing with the use of paper based records. In summary, they indicated that, digitized records would improve healthcare delivery by facilitating storage, retrieval and sharing of data. They also maintained that, data gathering is more likely to be persistent and consistent and there would be no need to duplicate patient data in different documents.

#### Assessing the societal readiness of the Mampong-Ashanti Municipal Hospital:

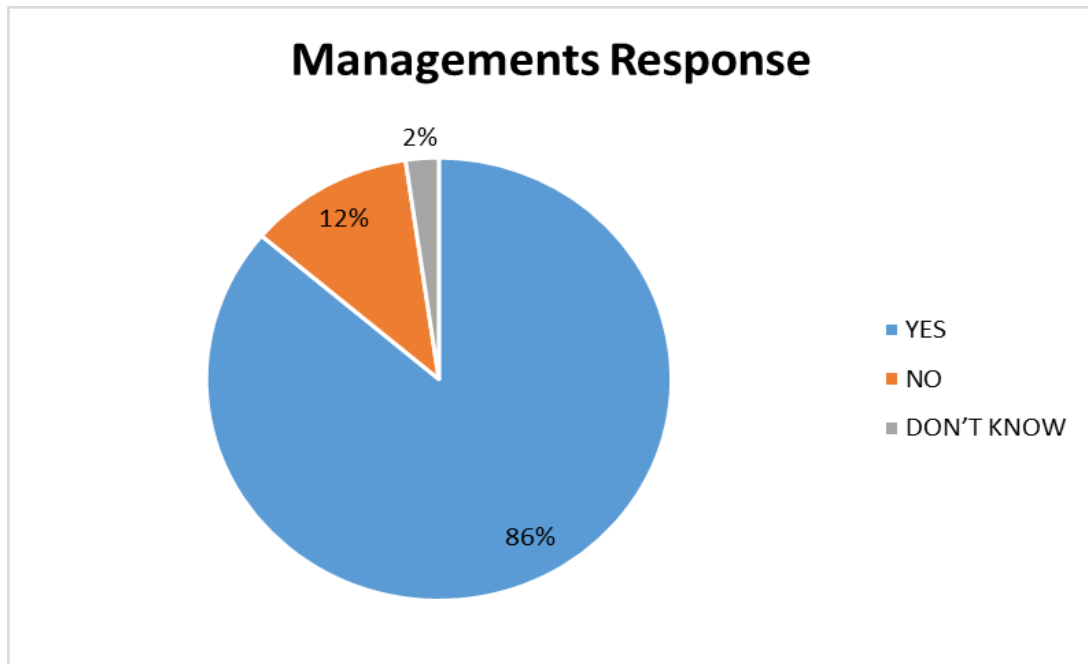


Figure 9 Managements readiness to adopt digitization of health records

From the responses, it was realized that management was ready to adopt the digitization of health records because as stated earlier on, it would enhance the easy creation, storage and retrieval of patient's health records. They are of the view that, it would also enhance their job performance since EHR according to (Hayrinen et al, 2008) supports the continuous, efficient and quality in integrated healthcare delivery. Another factor would be to monitor the activities of patients whenever they come around for health care services.

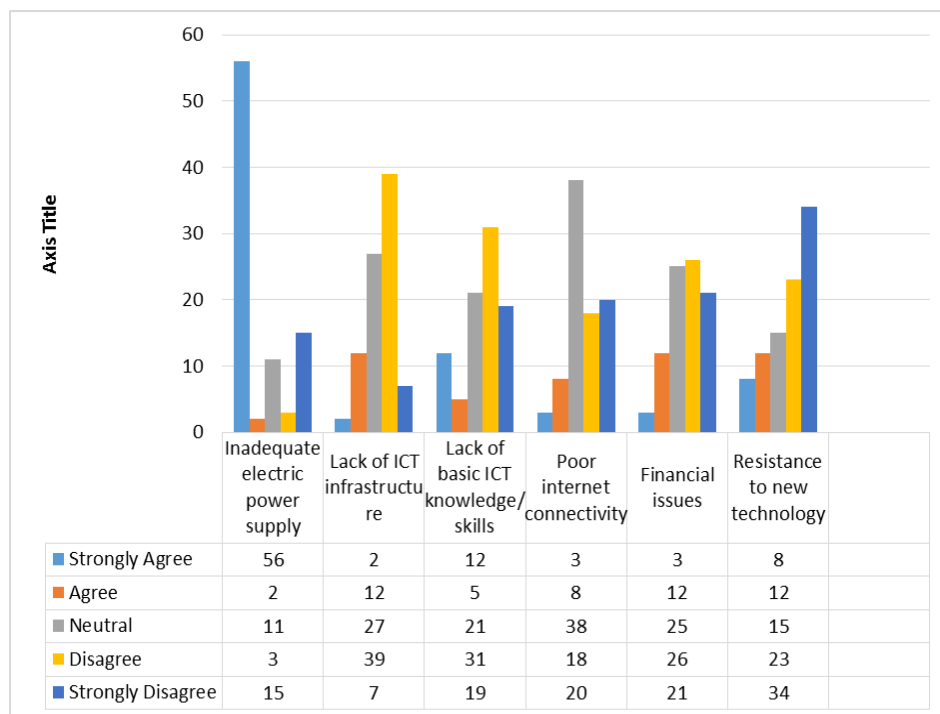
One activity which is being considered by management is to make sure that there is internet connectivity in every area of the health institution to allow synchronizing of data created at every point of a patient's experience with staff. As (Tang, 2003) writes, EHR's fosters the process of electronic communication and collaboration amongst users.

Then again, management in its attempt to prepare staff and environment to allow the effective digitization of health records is making arrangements to have its staff trained and also procuring more computers in addition to the already established one's.

However, they are of the view that, the developers of the software which would aid them in the digitization process should organize a training forum for their staff in its usage. Finally, if there would be external personnel to aid them in the data input, management and support in times of challenges because they didn't have enough staff to handle external activities aside health service delivery.

#### Assessing the challenges towards the digitization of health records of Mampong-Ashanti Municipal Hospital:

In an institution where there is a fair distribution of personnel's who are both "digital literates" and "digital migrants" there would be challenges with the integration of technology. This is represented in the figure below on challenges perceived by both management and staff of the institution.



**Figure 10 Perceived challenges in the adoption of digitalized health records**

From the data presentation above, it could be noted that, the issue of electric power supply is the greatest challenge which is being perceived by the institution with 64.34% of the population strongly agreeing while 20.7% of the population disagreed because they were of the notion the institution had plant which they use in times of power outage, therefore, electricity power would never be a challenge.

Then again, respondents also opined that, the lack of basic ICT knowledge and skills by the older generation of staff would be an impediment to the successful adoption and implementation of the new technology which would further bring about resistance by the perceived category of people to resist its implementation. However, a sure way of addressing this challenge was to undertake a seminar to introduce them to basics computer they would need in handling the use of the software.

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