ISSN 1816-6075 (Print), 1818-0523 (Online)
Journal of System and Management Sciences
Vol. 15 (2025) No. 2, pp. 139-152
DOI:10.33168/JSMS.2025.0209

Advancing Healthcare Service Delivery through the Adoption of an E-Card System in South Africa

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Abstract. Healthcare service delivery in South Africa faces challenges due to the lack of a centralized system for accessing and sharing patient medical records across different health facilities. This study aims to examine the factors influencing the quality of healthcare delivery and propose an e-card solution for improving access to patient records. A mixed-methods approach was employed, involving surveys and interviews with healthcare providers and patients at a large hospital in Cape Town. The findings reveal several critical issues, including data omission, difficulty tracing medical trends, lack of record synchronization, and the use of dual record systems. The study highlights the need for a digital solution that enables real-time access to patient records across different health facilities. The proposed e-card system has significant implications for improving the efficiency and effectiveness of healthcare delivery in South Africa. However, the implementation of such a system would require addressing challenges related to system design, data transfer, staff training, and policy frameworks.

Keywords: healthcare, medical errors, healthcare service, health in Africa, medical records.

1. Introduction

A health passport is an electronic smart device that contains a patient's (holder's) biodata and health-related information. Primarily, it is used as a tool to bridge communication between patients and physicians including administrators of health facilities (such as hospitals and clinics). As a tool, it enhances health service delivery from two main angles: (1) reduces patients' unnecessary visits to health facilities (Heifetz & Lunsky, 2018); and (2) increases access to patients' medical history. The health passport concept is in use in New Zealand by the Health and Disability Commission. In the United Kingdom, the concept is purposely to improve communication with healthcare providers. In South Africa, it is referred to, as "My health passport". It is a nationwide medical communication tool that identifies a patient and associates him or her with the medical record. In South Africa, the practice is not common among the facilities (or medical personnel) that are employed by Discovery Health, which is a private health entity.

Accurate, organised and up-to-date medical records are essential for good patient care. A medical record or a health record demonstrates the patient's health history, physical examination result, progress and the list of prescribed medications (Bali et al., 2011). By examining these records, a physician can easily continue with the treatment of a patient from where another physician has left off, thereby ensuring effectiveness in providing quality healthcare for patients. The information in the medical records also plays a crucial role in determining the truth in circumstances where patients claim negligence against physicians (Pienaar, 2016). Therefore, maintaining and preserving medical records are vital to the provision and judgement of healthcare services.

The administration of medical records in the South African context presents a gloomy picture at the time of this study. On one hand, the quality of record management in healthcare facilities in South Africa varies depending on various factors like infrastructure, budget, and staff capacity (Katurura & Cilliers, 2018). From another perspective, some of healthcare facilities have a proper filing system while others do not. Even if a healthcare facility maintains a proper filing system, its medical records are not accessible among the other healthcare facilities across the country. This becomes problematic because of physicians' obligation to treat a patient without knowing his medical history. The medical history provides useful and important health information of a patient that leads to timely and accurate diagnosis (Muhrer, 2014).

Access to the medical history of a patient proves cost-effective by eliminating the process of physical examination and testing, to determine health conditions. It is also important for a physician to be aware of the medications a patient has taken in the past or is currently taking. The physician can determine the future treatment based on how the patient has responded to these medications. The physicians fail to provide timely and quality services as they do not have access to the medical records of their patients (Marutha & Ngoepe, 2017). The fact is that there is no effective centralized system in South Africa, to guide the health care facilities to care for their patients. Therefore, it necessitates developing a centralized system relating to electronically preserving patient's medical history.

Currently, the practice of the health passport requires patients to have the passport on visit to health facilities. Consequently, any health practitioner or hospital administrative staff can read the information on the passport, which reduces privacy. Despite the benefits of the health passport, Bailie et al. (2020) identified and explained that there is a need to improve clinician engagement and future transference into a smartphone application. Subsequently, from the literature and practice, we identified the gaps in the current health passport concept, as problematized in the section that follows. In bridging the gaps, the main objective is to examine how medical errors come to being and their consequences. This study reveals challenges and presents implications in practice. The novelty of the e-health system is in its diverse nature and accessibility. For example, the e-health system does not necessarily need a patient to always have in possession, his or her passport. It requires the passport or national identity number (NIP), to uniquely identify the patient and associate him/her with physicians and visits to health facilities, which also reveal previous medications.

2. Problematizing the study

Patients consult with various physicians, some of whom are situated in different health facilities and locations across the country. The challenge in many countries including South Africa is that patients' medical histories are not easily accessible or shared between physicians across different health facilities and locations, owing to distinct reasons. This has high consequences for the patients in that the lack of access or limited access to patient's records slows down response time. The challenge emanates from two main perspectives. Firstly, some patients often do not remember or know the medications in their prescriptions from previous visits to physicians. According to Rashid (2018), the health passport seeks to improve the coordination of healthcare for people with intellectual disabilities, with a particular focus on psychiatric and emergency care. Secondly, some patients, simultaneously, visit physicians without disclosing such information. These problems exist because of the lack of a system that securely and seamlessly provides patients' data for real-time access purposes.

Healthcare services refer to a range of services and resources that are aimed at improving individuals or groups of individuals' health, preventing illness, and curing diseases. Currently, the problem is that there is a lack of a centralized system for real-time access to patient records. The consequences of this fragmentation manifest in poor service delivery. Based on the problem, the study aimed to examine the factors influencing the quality of healthcare delivery and to propose an e-card solution for improving access to patient records.

3. Literature review

Based on the objective of this study, which is to propose an e-card solution that can facilitate speedy, real-time, and secure access and sharing of patient's medical records, a review of the literature is conducted. Thus, the review covers the core aspects of the study, which are healthcare services and technology adoption.

3.1. Healthcare services

Healthcare is a basic need that is vital for individuals' and communities' well-being. Hence, some countries including the World Health Organisation (WHO) declare healthcare as one of the human fundamental rights (Dhagarra et al., 2019). As a result, governments of many countries dedicate enormous resources (funds, skills, structures) towards healthcare services delivery (Banik et al., 2022; Gumede et al., 2021). Despite the various resources dedicated to healthcare challenges persist. According to Gumede et al. (2021), the shortage of medical doctors contributes to poor healthcare services at public healthcare facilities in South Africa. Peprah et al. (2020) reported that in Ghana, healthcare services are not available at a reasonable distance, and when they are, people cannot afford them. In India, one of the main challenges that engulf primary healthcare centres is, not able to trace patients' medical history (Banik et al., 2022). Some of these challenges can be associated with the heterogeneity of healthcare services, activities, and processes.

Healthcare services are heterogeneous as such they are provided by multiple healthcare professionals that are not always found within the same healthcare facilities (Tom & Iyamu, 2022). The heterogeneity of healthcare services contributes to various challenges including the accessibility of medical records for both patients and healthcare professionals. Due to the heterogeneity of healthcare services, access to patients' medical data is challenging in the absence of a centralised system. This affects the continuation of care as the patient's current medical conditions are not easily linked to past medical records.

Increasingly, many healthcare facilities do not store patients' medical records in healthcare passports, which is an advancement, instead, the current popular approaches include manual or electronic. Donovan et al. (2020) described a healthcare passport as a portable document which can be completed and updated by one's physician, it summarises a patient's medical information, which is convenient for other healthcare providers. Within ethical guidelines, medical records can be shared

between healthcare providers, and healthcare facilities, to improve services for better patient's healthcare (Sharma & Balamurugan, 2020). However, administration and operationalization are some of the critical factors that influence and challenge the ease, of accessing and sharing patients' medical records by healthcare professionals.

The manual passport for healthcare services does not provide sufficient solutions for effective data sharing (Bacelar-Silva et al., 2022). This is attributed to the lack of centralisation and the ease of retrieving patient records. Tuler De Oliveira et al. (2022) suggest that the manual passport approach for healthcare services limits access to patients' data or medical records, and it gets worse in times of emergencies. The challenge does not get easier to resolve because many patients visit or seek care from different facilities, which makes the data relating to their health conditions usually scattered among hospitals and clinics (Tuler De Oliveira et al., 2022). The implications can be detrimental or lead to fatality. Donovan et al. (2020) reported that when healthcare professionals do not have access to patient's medical records, important information about patient's conditions may not be communicated. Thus, medical, processes, examinations, or procedures are often repeated to ensure appropriateness of the services provided to the patient.

A solution different from the manual and electronic approaches is increasingly required, for fundamental rationales, such as ease of access to medical records, and avoiding delay to healthcare service. Bacelar-Silva et al. (2022) asserted delays in healthcare services delivery contribute to worsening health conditions, and sometimes lead to death. Despite an understanding of the challenges and the consequences of the challenges in the limited access and sharing of patients' medical records, many African countries have healthcare facilities (Tom & Iyamu, 2022). According to Banik et al. (2022), across healthcare facilities, the access and sharing of medical records remains a complex process marred by manual medical records. Currently, in South Africa, no system centralises electronic healthcare records (Tom & Iyamu, 2022). In Namibia, the lack of a centralised or virtualised system makes it impossible for patient records to be accessed and shared from any location (Iyamu et al., 2014).

Having faster access to patients' medical records enables healthcare professionals to analyse patient's medical history and have a better understanding of patients' medical conditions (Vimalachandran et al., 2020). Thus, access to patient's medical records for their healthcare history is paramount to ensure correct medical decisions are taken about how one was medically attended to previously. Therefore, this study believes digital information technology (IT) solutions such as medical e-card can be adopted to facilitate faster access to patient's medical records for all healthcare professionals that are involved in patient care.

3.2. Adoption of technology for healthcare

Healthcare organisations are increasingly relying on IT solutions to improve healthcare processes and activities (Gladys & Emmanuel, 2021). According to Syeed et al. (2022), IT solutions for healthcare play a critical role in maximizing limited available resources due to various key challenges such as increasing ageing populations and the prevalence of chronic diseases. As a result, various IT solutions are adopted in hospitals and clinics, to enable and improve the quality of healthcare. This seems to be a growing trend across the world. For example, a web-based electronic health record (EHR) adopted by the Malaysian government allows healthcare institutions to access patient's feedback and comments after their treatments (Nasaruddin et al., 2019). In Australia, the Health eRecord system allows patients to access their summarised information and share it with all healthcare providers involved in their care (Vimalachandran et al., 2020). In China, due to the high volume of medical data being generated, some healthcare organisations are storing and managing their data using the cloud solution (Wu et al., 2022). The implementation of these digital technologies greatly contributes to improving healthcare in many folds.

However, concerning medical records management, the use of electronic health record (EHR) cannot be under emphasised. EHR is the systematic collection of patients' health information using

electronic means, which can go beyond the scope of a single medical facility (Fu et al., 2022). Alolayyan et al. (2022) reported that the emergence of the EHR and other eHealth solutions has significantly changed how healthcare is provided and how medical practitioners perform their duties. Electronic health record improves the safety and quality of healthcare by increasing access to health information and enabling physicians to oversee patient's process of care based on their existing records (Vimalachandran et al., 2020). Therefore, electronic health records serve as healthcare living documents, enabling the continuation and improvement of patients' care.

Despite the significance and improvement of healthcare services brought by IT solutions, challenges remain (Sarwar et al., 2022; DesRoches et al., 2010). None of the existing IT solutions seems to centralise patients' information, in its entirety (Li et al., 2022; Miotto et al., 2018). Even where patients' information is regionally or partially centralised and coordinated, it does not give the patient control over the information (Dang et al., 2022). For example, a patient's health information should be stored in a smart card. This allows the patient to have control over the management of his/her information. Also, it helps healthcare practitioners, to have ease of access to the patient's information, and to reduce uncertainty and ambiguity of the information patients share with medical practitioners (Hajian, Prybutok & Chang, 2023), enabling continuity of treatments, irrespective of where they seek healthcare. Cerchione et al. (2023) argued that there is a need for a solution that eases smooth communications, improves efficient reporting, and manages fragmented health records.

Overall, the use of healthcare information technology aims to streamline clinical processes, facilitate the sharing of patient information, reduce healthcare costs, and improve overall quality (Fu et al., 2022; Gladys & Emmanuel, 2021). Thus, in the absence of the adoption of a more appropriate IT solution, providing effective and efficient healthcare services becomes increasingly challenging. The adoption of IT solutions serves as a hub that links and enables many healthcare services (Mahmood et al., 2019), and without them, important information may not be conveyed to healthcare providers (Donovan et al., 2020). According to Nasaruddin et al. (2019), the lack of IT solutions (such as EHR) contributes to poor service because it lacks adequate access to medical data, and can lead to the occurrence of misdiagnosing. Moreover, misdiagnosis and other medical errors that may arise due to inadequate medical data access have serious implications which might lead to ailments such as disabilities or loss of life.

4. Methodology

The mixed method is employed in this study. Substantially, the methods enrich data collection (Schoonenboom & Johnson, 2017). Mixed methods research design combines the strengths of both methodologies and reduces the weaknesses of both approaches (Creswell & Poth, 2017). Questions were formulated based on the objectives of the research and the gaps identified in the literature. The questions and guidelines were used to collect both qualitative and quantitative data. It entails an in-depth process. It began with formulating eighteen questions, covering patients and medical personnel (nurses and doctors). Thereafter, the questions were for patients and medical personnel, respectively. The questions were constructed in a way that suited the participants, for ease of understanding and interaction. In the end, nine and ten questions for patients and medical personnel, respectively, were finalised for data collection. The questions were improved and finalised through an iterative process of verifying whether each question in the guide was linked to the research objectives. The primary data for this study was collected using questionnaires.

The case study approach is most suitable, primarily because it helps with the in-depth investigation (Yin, 2018), required for this study. The AfricanHealth hospital in Cape Town, South Africa was selected, for three reasons: (1) it is one of the oldest, thus, it has gone through the test of time; (2) it is one of the largest hospitals, it comprises of all spheres of medical units, from specialised to general practitioners'; and (3) among other, the management granted access, to use the hospital as a case in the

study. The hospital hosts some of the best specialists in the country. AfricanHealth is a pseudonym assigned to give anonymity to the hospital. This was to comply with the hospital's authority, to avoid identity disclosure owing to the sensitive nature of the healthcare environment.

A set of criteria consisting of three factors was used to select the participants. Firstly, participants were selected from various units, to ensure balance. Secondly, the availability of the participants was key, to avoiding disruption of their practice or hospital duties. Thirdly, because of the sensitivity of the healthcare environment, precautionary measures were taken, to avoid putting pressure on the participants. This confirms that only interested persons participated in the study. The criteria were used for selecting participants in both the interviews and questionnaires. Data was collected using the interviews for the qualitative and questionnaires for the quantitative methods, which makes it a mixed method.

A pilot interview was conducted. This was primarily to assess the strength and suitability of the questions for both interviews and questionnaires. People of diverse groups, medical personnel and patients participated in the pilot. It was important to conduct a trial run to establish the validity and reliability of the data collection technique and the questions. The usefulness of piloting has long been tested, it assists the researcher to determine whether the designed research instrument is effective in fulfilling the purpose of the study (Friesen et al., 2017). The pilot provided feedback on the structure and format of the questions. From the feedback, the researchers amended the questions. The selection of nurses and patients was based on three factors.

The semi-structured interview technique was employed in the collection of qualitative data. The set of criteria presented above was used to select participants. A total of 14 (4 doctors, 3 nurses, and 7 patients) people were interviewed at the point of saturation. Iyamu (2018) describes saturation as a point where there no new information is coming. The study objectives were explained to interested persons, based on which individuals participated in the study. The first set of participants introduced their colleagues to the researchers, which was the mechanism used to garner the interest of more participants.

This study used two sets of questionnaires, one set for doctors and nurses, and another for the patients. The questionnaires aimed to collect the views and perceptions of doctors, nurses and patients regarding the challenges faced by both medical practitioners and patients due to the lack of a system that secures and seamlessly provides patients' data for real-time access to patient's records from any health facilities and locations within South Africa. The questionnaires were mixed questionnaires consisting of both closed and open questions. The questionnaires were distributed through electronic means, using Google Forms. The means of distribution were convenient for the researchers and participants. Also, it enabled more people to participate in the study. Additionally, it was the safest and cheapest way to gather data during the pandemic. A total of 53 people participated in the study of which 7 were doctors, 20 were nurses and 26 were patients.

The data was analysed using the content analysis technique from the perspective of interpretivism and statistical analysis of positivism. For the qualitative data, keywords were identified and organised into categories. Furthermore, the categories were organised into themes, to help derive meaningful insights from the study. For the quantitative data, both numerical and graphical representations were used. The numerical description of the study was represented by statistics, which focuses on frequencies and percentages. The graphical description was presented in the form of tables and charts. These statistics helped to identify meaningful patterns in the data. The findings were reached from the data analysis using the interpretive approach, towards achieving the objectives.

5. Findings and discussion

From the analysis, we found five components that can influence improving the quality of healthcare. The components, as depicted in Figure 1, are (1) data omission, a detrimental challenge that must be addressed; (2) tracing the trend, gaining an understanding of its importance; (3) inter-facilitating, how

to employ this factor; (4) record duality, managing the consequence; and (5) records synchronisation, its use for governance purposes. The arrows in the Figure aim to depict the interdependency and interrelationship of the components. For a better understanding, the Figure should be read with the discussion that follows.

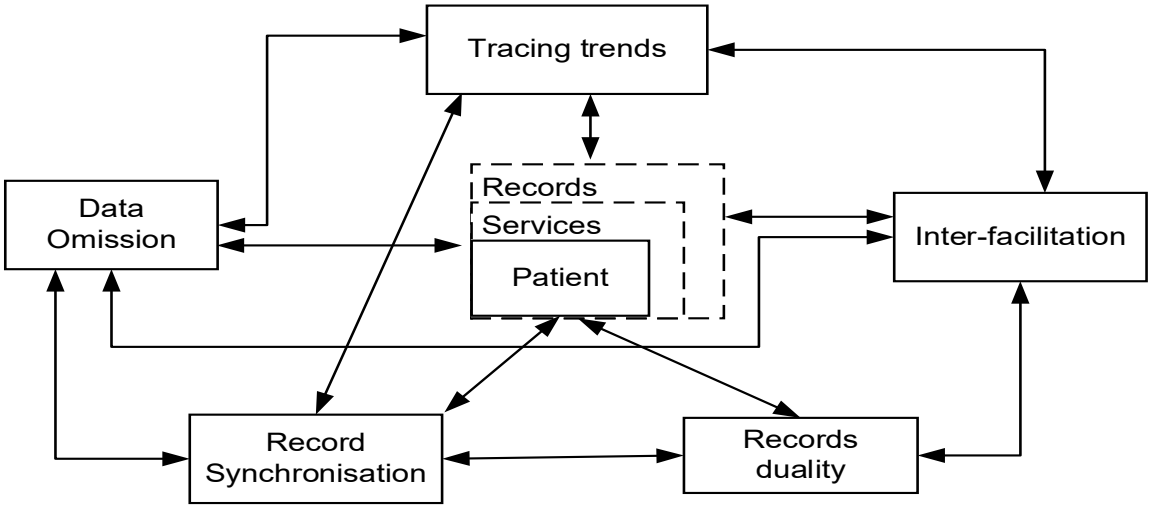

Fig. 1: Factors influencing patients' medical records accessibility.

5.1. Omission of patient data

Persistently, data are omitted, either in the gathering or storing of detailed information about patients. The omission of data happens either consciously or unconsciously. Consciously, the omission of patient data is by the patient or healthcare practitioner. Some patients do not declare their past medical records (medication, prescription, and facility) because they do not know the implications these will have on their medical conditions and treatments. Unconsciously, some patients do not reveal their medical histories because they cannot remember medications and the procedures that were prescribed to them previously. Also, some patients cannot pronounce the names of some medications or medical diagnoses, making it difficult for physicians to comprehend what has been prescribed before. According to Donovan et al. (2023), patient history and pertinent medical information can be extensive and difficult to understand for stakeholders (health practitioners and patients), which often creates knowledge gaps when interpreting or using medical history.

Omitting patient data has negative implications towards patient care and treatment. One of the challenges is that it becomes difficult to trace trends relating to a patient's previous health conditions. Another challenge that can be associated with this factor is that it makes inter-facilitating a patient's record almost impossible for healthcare purposes. Due to data omissions, many physicians do not have a true reflection of patients' past treatments and thus are limited in prescribing medications, to avoid challenges of overdose. Makeleni and Cilliers (2021) explain that if physicians omit certain details, the quality of the entire medical record will be affected because the contents are interrelated and interdependent. As a result, some physicians are prone to either overprescribing or underprescribing. Either way, it can have severe implications for patients' lives such as paralysis or loss of life, which many patients have suffered for many years. Thus, there is a need for medical record systems that trace medical trends of medical records as patients continuously visit healthcare facilities.

5.1. Traces of medical trends

As patients access services offered by healthcare facilities, past consultations, and medication prescriptions are essential and need to be traced. Primarily, this is to gain a better understanding of the trend in a historical record. The trend in tracing medical records enables practitioners to study patients'

health patterns and track their responsiveness to prescriptions and medications. The use of electronic medical records enables and allows the tracing of the trends in sets of data and increases efficiency in the administration of care, procedures, and review of test results (Ransbotham et al., 2021). Despite the criticality of tracing medical trends, currently, the task remains challenging.

The challenges of tracing trends in historical medicine are caused by two factors. Firstly, in many health facilities, practitioners rely on manual processes. The second factor is dependence on patients to give historical accounts of their medical. Often, it is not easy for a patient to trace the trends in their records. Also, many patients lack knowledge of the trends or how an activity becomes a trend. From the medical practitioner's perspective side, sometimes, the doctor does not remember the smallest details of a patient's visit. It gets worse when the practitioner is not residing in the host facility. This can be attributed to the fact it is nearly impossible to capture every activity or particle of events of each patient. What is more challenging is when patients visit different hospitals and the hospitals are connected and cannot synchronize patient's records. This creates a gap that can sometimes lead to fatality.

5.2. Synchronized medical record system.

Patients visit different healthcare facilities, which are public and private, large and small sized, and in different cities. As a result, medical records of some patients are scattered across healthcare facilities within a country. This makes it difficult to access patient's records, easily. The ethics that guide the practices of healthcare make it even more cumbersome, to access or synchronise medical records. This is the circumstantial situation in many countries, especially developing countries. In South Africa health records are not integrated into a single system and as a result, a new file is opened every time a patient consults in a different hospital (Ngoepe & Marutha, 2021). Hence, a synchronized medical record system that embeds the automation process of ethics is critical, to improve efficiency and effectiveness.

Synchronization of patients' records can be enabled by using a system that allows capturing real-time and instantaneous access to patients' records between healthcare facilities in a country. This is beneficial both to the patients and the doctors. For the patients, it ends the need to travel back and forth between previously visited healthcare facilities, to retrieve medical records. From the doctor's perspective, a holistic and comprehensive view of the patient's medical history can be gained. Masana and Muriithi (2019) asserted that with a synchronised record system patients' information, irrespective of who or where it was created will be readily accessible to relevant and authorized healthcare practitioners. Also, synchronization of patients' records removes the dual use of record systems, which are usually manual processes.

5.3. Dual medical record systems

At the time of this study, in South Africa, there was no single approach used in managing patient medical records. Different healthcare facilities have different systems, especially in the referral of patients (Makeleni & Cilliers, 2021). Two of the challenges in the current approach are (1) patients' information is collected using different approaches, and (2) the information is stored using different formats. Also, some of the facilities use digital records and personal electronic medical records systems to manage patients' real-time medical information, while others employ the manual approach in many facilities. These make the patient's information difficult to align and synchronise.

Mostly, the healthcare facilities in rural areas of many African countries make use of manual medical record systems (Ngoepe & Marutha, 2021). The use of two medical record systems across the facilities means there is no single integrated view of patients' data (or records) but rather, multiple facets to it. Consequently, this leads to repetition of efforts as data are sometimes recorded more than once, which faces consistent challenges. Also, data might not be recorded accurately and consistently in the two systems. This is another major challenge as the records will not be in sync, thus, creating data redundancy. With a dual medical record system, sharing of patient data among healthcare facilities will

continue to be difficult. Thus, synchronization of medical records promotes and enables inter-facilities access to patient records.

5.4. Inter-facilities medical records sharing

Patients seek healthcare services from different facilities around the country for various reasons. Some of the reasons are referral, second opinion, and nomadic. As it stands in many countries, healthcare practitioners in a facility do not have access to patients' records in another facility. This often delays the treatment process when an understanding of the medical history of a patient is required to make critical decisions. In such circumstances, a special request is tendered to the host facility, to grant access to the patient's records. In cases where the facilities use manual records, sharing such records becomes more difficult or impossible. According to Msomi et al. (2021), sometimes, there is poor or unclear handwritten text in patients' manual records, which can be difficult to read and contributes to challenges in sharing data.

The essential nature of sharing medical records between practitioners makes the adoption of electronic systems critical. Primarily, two factors can be attributed to its criticality. Firstly, the electronic system improves record completeness. Secondly, the adoption of the system enhances speedy up response time, to attend to patient medical conditions. To promote effective inter-facilities medical record sharing it is critical that the facilities adopt synchronized medical records systems. To achieve this there is a need for the medical records from different healthcare institutions to be stored and accessed centrally from the national database by all involved healthcare practitioners (Ngoepe & Marutha, 2021).

6. Implication of practice

There are four main implications: (1) design and development of a system; (2) transfer of data; (3) training of medical practitioners; and (4) review of policy.

6.1. Design and development of a system

There is a need for a digital system, which can be used to capture, store, and provide update of the medical information of patients, for completeness and real-time purposes. There seems to be no system that stores real-time, up-to-date patient records in many South African health facilities. In practice, a digitalised system can assist in conducting and managing more accurate diagnoses and treatments of patients. The DNPs view the contribution of a computerised system from the perspective of real-time access to patients' medical information. This is purposely to increase response time and improve accurate view of patients' health conditions, by both patients and medical personnel. This is not new, countries like New Zealand, Australia and the United Kingdom have systems that store real-time medical information of patients, which has assisted in improving the quality of their healthcare system (Allin & Rudoler, 2017; Andargoli, 2021).

6.2. Transfer of data

Furthermore, the DNPs stated that extensive efforts are involved in transferring the data to an electronic system which is an additional burden for them. In practice, two factors are critical importance, technology enablement and validity of the data. Technology solutions enable and support the transfer of patients' data from manual to digital systems. The implications include the cost of the IT solutions, architecture redesign of the environment, and human efforts. This increases the capacity of health practitioners and improves the quality of care to patients because it increases timeous access to patient's information, which increases response time. The validity ensures the protection, classification, and certification of the data (Hallinan et al., 2021).

6.3. Training of medical practitioners

Many health practitioners, particularly the older general, find it difficult to learn or use digital systems. Many of the practitioners continue to employ the manual approach. This implication is critical in that the use of new (or emerging) IT solutions to enable and support healthcare services increases access to patients' information, enhances response time and improves care. The training increases the automaticity of the health practitioners. Through training and staff turnover, a complete and up-to-date record management system will be improved, which in turn, assists in providing quality healthcare services in the country (Marutha, 2011).

6.4. Review of Policy

This implication leads to a review of healthcare policy in the country. Fundamentally, policy contributes to improved governance of healthcare services. This is to promote best practices, by ensuring specifics, priorities, and timeliness of responses to patients' care in the facilities. Ralston et al. (2021) emphasised the significance of policy, on divergence and implications for health governance. In practice, the policy helps to define (or redefine) and manage the sharing of patients' health information by health practitioners including patients' relations. This aspect of policy should align with the South African Protection of Personal Information Act of 2021. It sets the standard, to evaluate and quantify the efficiency and effectiveness of the services provided by health facilities in the country.

7. Conclusion

This study highlights the critical challenges faced by healthcare providers and patients in South Africa due to the lack of a centralized system for accessing and sharing patient medical records. The findings reveal that data omission, difficulty tracing medical trends, lack of record synchronization, and the use of dual record systems are major barriers to effective healthcare delivery. The proposed e-card solution has the potential to address these challenges by enabling real-time access to patient records across different health facilities. However, the implementation of such a system would require significant efforts in terms of system design, data transfer, staff training, and policy development. The study has important implications for healthcare practice and policy in South Africa, highlighting the need for digital solutions to improve the efficiency and effectiveness of healthcare delivery. However, the study also has some limitations, such as the focus on a single hospital and the relatively small sample size. Future research should aim to validate the findings in other healthcare settings and explore the feasibility and impact of implementing e-card systems on a larger scale.

Acknowledgements

We would like to extend our appreciation and gratitude to: (1) CPUT Ethical Committee; (2) AfricanHealth hospital management; and all the hospital staff who took part in this study. Without their support and dedication, this research would not have been possible.

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