Patient preferences regarding storage media for medical records

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Abstract

Incomplete patient medical history compromises the quality of care provided to a patient while well-kept, adequate patient medical records are central to the provision of good quality of care. According to research, patients have the right to contribute to decision-making affecting their health. Hence, the researchers investigated their views regarding a paper-based system and an electronic medical record (EMR). An explorative approach was used in conducting a survey within selected general practices in the Nelson Mandela Metropole. The majority of participants thought that the use of a paper-based system had no negative impact on their health. Participants expressed concerns relating to the confidentiality of their medical records with both storage mediums. The majority of participants indicated they prefer their GP to computerize their consultation details. The main aim of this research was to investigate the storage medium of preference for patients and the reasons for their preference. Overall, 48% of the 85 participants selected EMRs as their preferred storage medium and the reasons for their preference were also uncovered.

Keywords:

Electronic medical records, EMR, patient preference, Nelson Mandela Metropole, South Africa.

Introduction

Incomplete patient medical history compromises the quality of care provided to a patient [1]. Well-kept, adequate patient medical records are central to the provision of good quality of care [2]. This substantiates the importance of patient medical records. In modern society, patients have the option to move around from one healthcare provider to the next. This poses a challenge to achieving continuity of care, since the medical history of a patient is vulnerable to defragmentation [3]. Should these records be stored in a paper-based system or in an electronic medical record (EMR)? Do patients have a say in the decision? According to the South African Patient Rights Charter [4], “everyone has the right to participate in decision-making on matters affecting one’s health”. Since there are “clinical benefits” associated with continuity of care [5], it is important that patient views be considered when healthcare providers decide on a storage medium to store patient medical history. However, in the South African context, limited research has been conducted to establish the storage medium patients prefer to be used when storing their health records, and it clearly is important to know what the patient views are.

For this reason, the researchers investigated these views. Surveys were conducted within private general practices in the Nelson Mandela Metropole. The research is of an explorative nature, with the surveys using small samples. Patient participants were asked to state the storage medium they prefer. It was also important to the researchers to find the reasons why a storage medium is preferred. This was established by posing questions that further probed the participants for reasons. Eighty-five patient participants were reached, in their general practice environment, via the use of questionnaires. The collected data was analysed by use of conventional methods of content analysis. This article presents the results regarding which storage medium the participants preferred. The transpired reasons behind their preference are collectively formulated and presented in a tabular format.

Materials and Methods

An explorative approach was used in conducting surveys within selected general practices. The practices were selected using convenience and purposive sam-

pling. Convenience sampling ensured that the practices were within reasonable reach to the researchers. Purposive sampling ensured that the selected practices met the requirements of the research. The selected practices, under study, had to be private general practices that are not part of a group practice.

Permission had to be sought from the practice owner of each practice, to conduct the research. Fifteen general practices were contacted, but only 4 were identified as interested participants. None of the participating practices used an EMR to store patient medical records. Qualitative data collection methods were used to collect the data. Hence, questionnaires were placed in each practice, once permission had been granted. The administrative staff was asked to hand out the questionnaires to the patients when, entering the practice, they approached the front desk. The researchers made it clear that the patients were to be made aware that they were not obligated to participate in the research. However, the researchers also ensured that this was communicated to the participants in the actual questionnaire. A total of 85 of 140 questionnaires were received from the participating general practices, resulting in a 61% response rate. Conventional content analysis was used to analyse the collected data. Ethical approval was received from the NMMU Ethics Committee before the research proceeded.

Findings

Demographic Profile

The demographic profile of the 85 patient participants reveals that 68% are female, 28% are male and 4% of the participants did not specify their gender. The ages of the participants are distributed as: 18-24 years (17%), 25-34 years (29%), 35-44 years (26%), 45-54 years (13%), 55-64 years (9%), 65+ years (1%) and unknown (5%). Therefore the majority of the participants are between 25 and 34 years old. Only 9% of the participants were visiting the general practice for the first time, on the day they completed the questionnaire. Fifty per cent of the participants had been visiting, the practice in question, for more than four years. The rest of the participants had visited the practice as follows: < 1 year (13%), 1-2 years (15%), 3-4 years (9%) and unknown (13%).

The home language distribution of participants was Xhosa (60%), English (25%), Afrikaans (9%), Zulu (2%) and unknown (4%) The education profile of participants was Grade 9/Adult Basic Education (5%), Grade 12 (28%), Certificate/Diploma (35%), Bachelor's degree (14%), postgraduate degree (8) and unknown (9%).

Continuity of Care

It was revealed that almost half of the participants (47%) see more than one GP, whilst 51% see only one (1) GP. Two percent of the participants did not complete the question. This makes achieving continuity of care difficult, because their medical information is fragmented between the information systems of the GPs they visit. Continuity of care can be defined as the intersection of three aspects: interpersonal, informational and longitudinal continuity [6]. Interpersonal and longitudinal continuity are, therefore, challenging to achieve. Thus, there is a need for solid informational continuity, to ensure that the storage medium used has a minimum negative impact on the quality of care the patients receive.

Impact on Quality of Care

The researchers wished to establish whether the participants viewed the use of a paper-based information storage system as negatively impacting the quality of care provided to them. The majority of participants thought that the use of a paper-based system had no negative impact on their potential health care, as 32% strongly disagreed and 46% disagreed when asked. This result is presented in Figure 1.

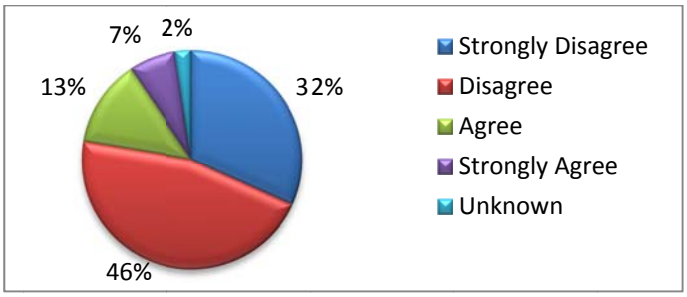

Figure 1: Perception of negative impact on the quality of care (paper-based system)

Tsai and Bond [7] seem to disagree, because they think that illegibility, incompleteness and poor organization linked to notes taken by hand, in the form of medical records, can make it difficult to guarantee quality of care.

Patient Confidentiality

There was a small difference of opinion between concerns of confidentiality for a paper-based system versus an electronic system. Of the participants, 14% (Strongly Agree) and 26% (Agree) expressed concerns about confidentiality with the use of a paper-based system to store their information, whereas 17% (Strongly Agree) and 27% (Agree) expressed concerns about confidentiality with the use of an electronic format. These results are presented in Figure 2 and Figure 3.

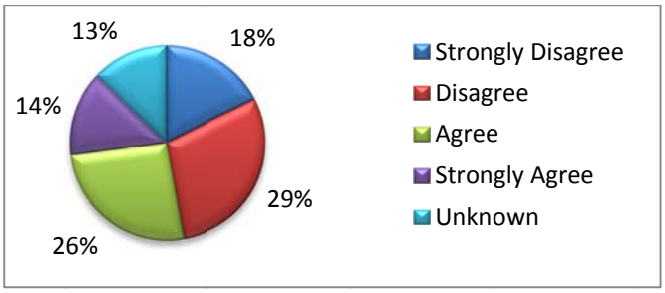

Figure 2: Perception of lack of information confidentiality (paper-based system)

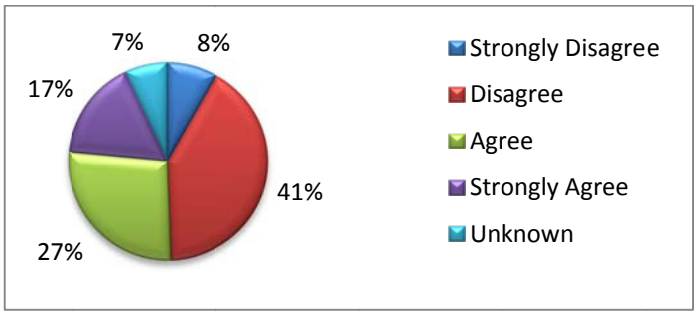

Figure 3: Perception of lack of information confidentiality (EMRs)

The system that is extensively used in each of the practices is a paper-based system. Patient participants displayed the same level of concerns about EMRs and paper-based systems.

Patient Storage Preferences

Forty per cent (Strongly Agree) and 17% (Agree) of the participants indicated they prefer their GP to use a computerized system to store their consultation details as presented in Figure 4.

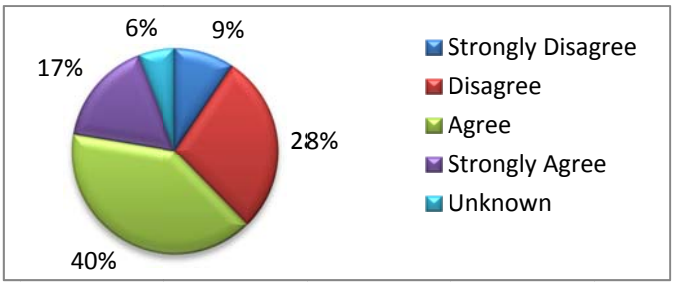

Figure 4: Perception that GP should use a computerised system

This corresponds with the 48% of participants who selected electronic medical records as their preferred storage medium, 8% indicated they preferred any of the two storage mediums while 27% preferred a paper-based storage medium and 17% of the participants did not specify their overall preferred storage medium on the questionnaires as presented in Figure 5.

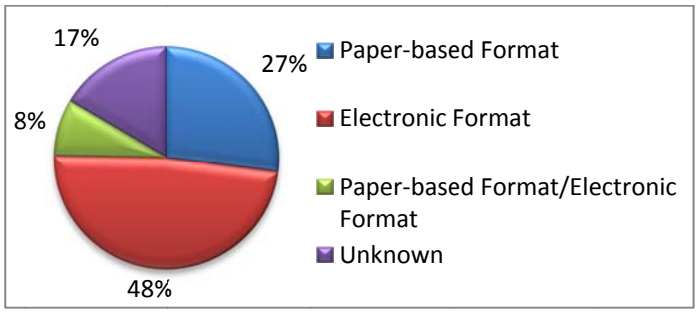

Figure 5: Overall storage medium preference

Discussion

It emerged that of the 85 participants, 27% preferred a paper-based system and 48% preferred EMRs. Prior to any conclusions on whether the patient participants preferred an EMR, it is important to further examine their reasoning. Therefore, this discussion focuses on trying to understand why the participants held their specific views about the two storage mediums, paper-based and electronic medical records.

The participants were provided with a comment field below each question in the questionnaire to acquire the qualitative data necessary to understand the reasoning behind the views of the participants. The researchers analysed this data using content analysis. Key phrases were, therefore, generated to understand why a specific storage medium was preferred. The categories that emerged from the key phrases are: clinical, environmental, social, security and technical as presented in Table 1.

These categories, with key phrases, are listed in alphabetical order. No order of importance is implied. All the categories have columns which respectively represent the positive and negative aspects that the participants associated with the storage medium. Overlapping exists in certain positives and negatives.

The key phrases, within each category shown in Table 1, are further discussed based on the gathered qualitative data (Note: the responses in italics the verbatim written comments by the participants):

Clinical category

Complete medical history: Participants who considered a paper-based folder as capable of accommodating their complete medical history, even though the physical build-up of such a file would make it difficult to manage.

"[Paper] that way you can record each detail."

Continuity of care: The researchers noted that of the participants (85), only 1% mentioned continuity of care as a perceived added benefit, should an EMR be adopted.

"… [EMR] easily accessible if need to consult with other doctors."

Correct diagnosis and treatment: Some participants were under the impression that unlike a paper-based system, an EMR would provide the opportunity of incorrect diagnosis and treatment, due to the record of one of the patients getting mixed up with another patient record.

"… [Paper] can assist doctor to correctly diagnose and treat me accordingly."

"It [EMR] can be mixedup with another patient's file and I could get the wrong medication."

Quality of care: Most patients (32% Strongly Disagreed and 46% Disagreed) were of the view that the current information storage medium used has no negative impact on the quality of care they receive.

"I think that storing my info in this manner [paper] has a positive impact."

Twenty per cent of the participants were in disagreement. However 2%, out of the 20%, gave contradictory justifications for their selection.

Table 1: Likes and dislikes of paper-based system/an EMR (patient views)

Key phrase representing concept identified	**Storage medium (Positive/Negative relationship)**			
Clinical	**Paper**		**ER**	
Complete medical history	+		+	
Continuity of care			+	
Correct diagnosis and treatment	+			-
Quality of care	+	-	+	
Ecological	**Paper**		**ER**	
Costs			+	
Eco-friendliness		-	+	
Wide use			+	
Patient-doctor relationship	+		+	
Patient-other staff relationship	+			
Computer literacy	+			
Familiarity	+			
Human aspect	+			
Satisfaction	+			
Security	**Paper**		**ER**	
Confidentiality	+	-	+	-
Data capturing errors			+	
Computer distrust				-
Record integrity	+			
Record safety	+	-	+	-
System availability and reliability	+		+	-
System security and privacy		-	+	
Technical	**Paper**		**ER**	
Accessibility	+		+	
Backup	+		+	
Convenience	+		+	
Ease of use	+		+	
Efficiency	+		+	
Speed			+	
Less paper work			+	
Long-term storage			+	
Storage space			+	
Timeliness	+	-		-
Structured storage	+		+	
Question replication			+	
Total	**20**	**6**	**23**	**6**

Ecological category

Costs: None of the participants referred to the costs that would be introduced by the use of an EMR, but rather distinguished cost reduction about the paper that would be used.

"…The use of computerised systems cuts down on paper costs"

Eco-friendliness: Participants who were aware of the impact a paper-based system has on the environment. Further research needs to be carried out to determine whether patient awareness in this aspect would positively affect the adoption of EMRs.

"It [paper] doesn't only have a negative impact [on quality of care, but] on the environment as well."

"… [T]he use of computerised systems cuts down on … CO2 emmissions in the long term."

Wide use: Some participants were of the view that migration to EMRs is inevitable and they would support their use.

"*Technology now a days is mostly used*"

Patient–doctor relationship/Patient–other staff relationship: It is possible that the views of the participants were aligned to the satisfactory relationship they had with their GP, which prevents them from disconnecting their feeling towards the current storage medium, from the relationship they have with their GP. However, further research needs to be carried out to verify this statement:

"THIS PRACTITIONER IS THE BEST TO ME"

"…The receptionist welcomes me with a smile and even the doctor…"

Computer literacy: Participants expressed a concern about computer literacy; hence they prefer a paper-based system, since no computer literacy is required.

"Because some people dont know how the computer works"

Familiarity/Human aspect: Research shows that it is human nature to seek familiarity [8]; therefore, it makes sense to reason that some patients preferred what they were already comfortable with a paper-based system.

"…Just used to files in a paper format…"

"I still believe in old human workforce beside, Computers Are taking over in job industry As it is."

Satisfaction: Some participants seemed to be satisfied with the current system. This is reflected by the following:

"I have been consulting my gp for over 10 years and up till now everything was and is ok."

Security category

Confidentiality: Some participants were of the opinion that a paper-based system caters for the confidentiality of their information. Whereas a paper-based system does not have inbuilt security mechanisms, such as access authorization, when compared to EMRs. However, some participants were aware of this.

"[Paper] it kept confidential no one read my folder … [except] my doctor."

"Receptionist or anybody can read your file."

"… [EMR] ATLEAST MY PRIVATE ILLNESS WON'T BE KNOWN TO PUBLIC"

"[EMR] Cause anyone can go through my personal details if they have passport."

Data capturing errors: Some participants were under the impression that data captured in an EMR is always correct:

"*[B]ecause information Stored in an electronic Format has to be inputed Correct[l]y*"

Distrust computers: Some participants had a problem trusting computers, possibly due to past experience or lack thereof.

"*I DONOT TRUST COMPUTERS*"

Record integrity: Some participants were in favour of a paper-based system, because it presented them with an opportunity to sign their record. However, it is unknown whether their preference would be swayed if they knew that the same is possible with EMRs, due to technology advancement.

"[Paper] you have op[p]ortunity to sign and is not easy to tamper with the information"

Record safety: Record safety seems to be a concern, as it was highlighted about in both storage mediums. However, some participants showed confidence in both storage mediums about record safety.

"*The information get stored in a lockable cupboard + Always a reasonable care is being taken*"

"[EMR] To prevent loss of record"

"[Paper] Information can go missing, anything can happen to the practice eg. Fire and all documentation & patient records destroyed"

"Your computer could crash and all Informartion will be lost"

System availability and reliability: Participants were concerned about the unavailability of their record should load-shedding occur, but some made note of the mobility aspect that is introduced by EMRs.

"k/Hh power cuts these days [paper] it's a much better option. You can still be seen by dr even if there is no electricity"

"INFORMATION SHOULD BE READILY AVAILABLE AT ALL TIMES AND ANYWHERE (USE OF LAPTOPS, TABLETS, ETC)."

System security and privacy: Some participants emphasised the advantage of the user control mechanisms introduced by EMRs, such as password use.

"[Paper] NOT STRONG ENOUGH TO HOLD SUCH PRIVATE AND CONFIDENTIAL DOCUMENTS."

"[P]asswords created stored with fire walls enabled no need for concern"

It was clear that the area that presented the most insecurity for the participants was security. Hence, in
The key phrases, within each category shown in Table 1, are further discussed based on the gathered qualitative data (Note: the responses in italics the verbatim written comments by the participants):

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"… [EMR] easily accessible if need to consult with other doctors."

Correct diagnosis and treatment: Some participants were under the impression that unlike a paper-based system, an EMR would provide the opportunity of incorrect diagnosis and treatment, due to the record of one of the patients getting mixed up with another patient record.

"… [Paper] can assist doctor to correctly diagnose and treat me accordingly."

"It [EMR] can be mixedup with another patient's file and I could get the wrong medication.", the category with the most negative aspects was the security category regardless of the storage medium in discussion.

Technical category

Accessibility: Participants displayed comfort with both storage mediums about accessibility.

"I feel that the storing of my information on a paper based folder makes it possible to access it if I want to"

"[EMR] It is easier to retrieve by the clerk when I visit the Doctor."

Backup: Participants were aware of the option to back up information. They were of the view that both systems cater for information back up.

"[Paper] It helps as a back-up sytem when computer is down."

"Computer system is safe for backup."

Storage space: Storage space was indicated as an advantage of using EMRs.

"[I]nformation can be stored electronically also to have the storage space"

Timeliness: Only 2% of participants mentioned that the use of a paper-based system results in longer waiting times. This is supported by the following quote:

"[Paper] Every time I come to see the doctor, the receptionist welcomes me with a smile and even the doctor, u don't even wait for long and a special[l]y when u are getting serious they Ask the person (NO 1) to put u in 1st."

Structured storage: The participants were of the view that a paper-based system stored records in a neat and organized manner:

"[M]y patient folder is kept neat at all times"

"[T]hings are kept neat and information is saved well"

Question replication: The use of EMRs was related to the elimination of the replication of questions when visiting the practice again.

"So that when, I come again, they mustn't ask me some stuff."

The following few concepts were mention, but were not elaborated on. Hence no quotes are provided:

Convenience: Convenience is one of the concepts that emerged and both storage mediums were associated with this concept.

Efficient and ease of use: Efficiency and ease of use were linked to both storage mediums.

Speed: None of the respondents linked speed to a paper-based system, but the association was made with EMRs.

Less paper work: Another perception that emerged was that the use of EMRs results in less paper work.

Long-term storage: One of the positives linked to EMRs was the perception that they cater for long-term storage.

Few (6) negative aspects were identified from the qualitative data, about a paper-based system or an EMR. However, a number of positive aspects were identified about both systems, regardless of the fact that the participants were unfamiliar with EMRs in the participating practices.

As mentioned, in the method section of this article, the surveys in this research yielded small samples. However, it satisfied the explorative nature of the research, identifying a number of areas requiring further research.

Conclusion

The patient record storage medium used within a general practice (medical) can have an impact on the quality of care provided to patients, and patients have the right to contribute to decision-making affecting their health; therefore, it was important to establish their views about the storage medium they saw suitable for storing their medical history. Hence, the main aim of this research was to investigate patient preferences and the reasons for their preference. It was found that about half of the participants preferred an EMR. The reasons for their preference were also uncovered. Further investigation, with a larger sample, needs to be conducted to verify the findings of this research, with expectation of the ability to generalise. Such research would have to investigate patient confidentiality concerns with storage mediums, their perceptions on quality of care as well as, but not limited to, patient storage preferences. However, the positive responses from participants used in this research led the researchers to think that one might safely analyse this as implying that patients could be open to the introduction of EMRs within the respective practices.

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