Indonesian Journal of Global Health Research
Volume 6 Number 4, August 2024
e-ISSN 2715-1972; p-ISSN 2714-9749
http://jurnal.globalhealthsciencegroup.com/index.php/IJGHR

USER EXPECTATIONS AND THE WILLINGNESS TO ADOPT ELECTRONIC MEDICAL RECORDS IN PRIMARY HEALTHCARE

Ferry Fadzlul Rahman
Department of Public Health, Universitas Muhammadiyah Kalimantan Timur, Jl. Ir. H. Juanda No.15, Sidodadi, Samarinda Ulu, Samarinda, East Kalimantan 75124, Indonesia
ffr607@umkt.ac.id

ABSTRACT

In the contemporary landscape of primary healthcare, the transition from paper-based systems to electronic medical records (EMRs) is a pivotal advancement aimed at enhancing efficiency and patient care. This study focuses on the intricate relationship between user expectations and the willingness of healthcare professionals to adopt EMRs. By exploring user perceptions, anticipated benefits, and potential challenges, the research aims to provide valuable insights into the dynamics shaping the successful implementation of EMRs in primary healthcare settings. The objective of the study was to investigate the correlation between user expectations and the willingness to utilize electronic medical records at Sidomulyo Primary Healthcare Center in Samarinda City. This research employed an observational analytic approach with a cross-sectional design, conducted in April 2023data was collected using the sampling technique involving stratified random sampling, resulting in a sample size of 48 healthcare professionals at Sidomulyo Primary Healthcare Center in Samarinda City. Inclusion criteria are determined by selecting health workers who have been trained to fill out electronic medical records. Statistical analysis utilized the Chi-Square test to examine the relationship between variables. The research findings revealed a p-value of <0.001 ($p < 0.05$), indicating a significant correlation between user expectations and the willingness to adopt electronic medical records at Sidomulyo Primary Healthcare Center in Samarinda City. This research is implies the importance of addressing user needs and expectations for a successful implementation. Tailoring strategies to enhance user satisfaction and communication about the benefits can contribute to a smoother adoption process in healthcare settings.

Keywords: expectations; electronic medical records; willingness assessment

First Received	Revised	Accepted
10 December 2023	18 December 2023	04 March 2024
Final Proof Received		**Published**
05 Maret 2024		20 February 2024

How to cite (in APA style)
Rahman, F. F. (2024). User Expectations and the Willingness to Adopt Electronic Medical Records in Primary Healthcare. *Indonesian Journal of Global Health Research*, *6*(4), 2317-2324. Retrieved from https://jurnal.globalhealthsciencegroup.com/index.php/IJGHR/article/view/2715.

INTRODUCTION

Information Technology and Communication, commonly known as ICT, was an integral aspect inseparable from human life. ICT rapidly evolved, extending its influence into various domains, including healthcare (Kuncoro, 2021). Numerous findings demonstrated the utility of ICT in health institutions' organization, medical treatment, and the research and development of health sciences (Yani, 2018). An exemplar of ICT application in healthcare organizational management was the electronic-based medical record system. The definition of medical records, as per Minister of Health Regulation No. 209/MENKES/PER/III/2008, encompassed documents containing patient information, examinations, treatments, and other medical interventions in healthcare facilities, whether government-managed or private.

According to Wilcox (2017), electronic medical records had the potential to yield significant benefits for healthcare services, such as improving the availability of patient electronic records, enhancing efficiency in healthcare processes, facilitating access to patient

information for clinical decision-making, impacting a reduction in operational costs, and augmenting revenue in healthcare facilities. Considering the convenience derived from the implementation of electronic medical records, the evolution of medical records shifted from conventional to electronic-based systems.

Electronic medical records involved online activities, similar to telemedicine (Mustikasari, 2021). Telemedicine was defined as the remote delivery of healthcare services using electronic means for diagnosis, treatment, disease and injury prevention, research, education, and healthcare provider education. The implementation of telemedicine influenced the utilization of information systems in healthcare facilities (Adnan et al., 2021). Despite being relatively new in Indonesia, telemedicine had been widely adopted, leading to the digitization of patient data recording processes, as seen in Samarinda, where 10 out of 24 community health centers had implemented telemedicine services. Sidomulyo primary healthcare was one such center that had embraced telemedicine, yet it lacked an electronic-based medical record system.

If the medical record system at Sidomulyo primary healthcare transitioned to an electronic format, it would be influenced by four aspects: human resources (HR), policies and regulations, infrastructure, and costs. According to Sittig and Singh (2018), the first aspect to assess was human resources, which played a pivotal role as the social end of the social-technical spectrum. Human resources, in this context, referred to users or healthcare professionals with the authority to access medical records. Each healthcare professional involved in the implementation of electronic medical records held diverse perceptions, both positive and negative, impacting the implementation process. User motivation significantly influenced the willingness to use electronic medical records. Moreover, one of the determining factors for the successful implementation of electronic medical records was users' attitudes toward the system (Yulida et al., 2021). Given the issues related to user expectations, particularly among healthcare professionals, regarding the willingness to adopt electronic medical records in primary healthcare.

METHOD

This research was conducted at Sidomulyo Primary Healthcare Center in Samarinda City in april, 2023. This research employed an observational analytic approach with a cross-sectional design, the sampling technique employed was stratified random sampling, with a total of 48 samples from 55 healthcare provider. healthcare professionals in the service unit who were willing to participate became respondents and had the authority to fill outpatient medical records were included. The data collection instrument in this study utilized a questionnaire adopted from previous research. It encompassed a user expectations questionnaire adopted from Boonchai Kijsanayotin's (2009) questionnaire and a willingness questionnaire adopted from Akram Hossain's (2019) questionnaire. The user expectations questionnaire's validity, as indicated by correlation coefficients, ranged from 0.537 to 0.971. Meanwhile, the willingness questionnaire obtained correlation coefficients ranging from 0.641 to 0.989. The reliability test for the user expectations questionnaire yielded a Cronbach's Alpha value of 0.82, while the willingness questionnaire had a Cronbach's Alpha value of 0.71.

RESULTS

Tabel 1.
Frequency Distribution of Respondents Based on Age (n=48)

age	f	%
17-25 years	1	2,1
26-35 years	16	33,3
36-45 years	9	18,8
46-55 years	18	37,5
56-65 years	4	8,3

Table 1 displays the categorization of respondents' age based on (Depkes RI, 2009). The highest percentage of respondents falls within the age group of 46-55 years, comprising 18 respondents (37.5%), while the lowest percentage is in the age group of 17-25 years, with only 1 respondent (2.1%).

Tabel 2.
Frequency Distribution of Respondents Based on Gender

Gender	f	%
Male	9	18,8
Female	39	81,3

Table 2 indicates that the majority of respondents were female, comprising 39 respondents (81.3%), while a small portion of respondents were male, totalling 9 respondents (18.8%).

Tabel 3.
Frequency Distribution of Respondents Based on healthcare unit

Unit	f	%
Health Promotion	3	6,3
Environmental Health Promotion	2	4,2
Maternal and Child Health-Family Planning (KIA-KB)	5	10,4
Community Nutrition Health	1	2,1
Disease Prevention and Control	4	8,3
Immunization	3	6,3
Public Health Nursing	1	2,1
Mental Health	1	2,1
Nutrition Health	3	6,3
Dental Health	3	6,3
Sports Health	1	2,1
Sensory Health	1	2,1
Elderly Health	1	2,1
Occupational Health	1	2,1
Adolescent Care	1	2,1
General Examination	2	4,2
Treatment Services	1	2,1
Pharmacy	4	8,3
Laboratory	3	6,3
Tuberculosis and Leprosy	2	4,2
VCT, STD, and Lass Services	2	4,2
Medical Records	1	2,1
Registration	2	4,2

Table 3 indicated that there were 23 health service units at Sidomulyo Primary Healthcare Center, with the highest number of respondents selected from the Maternal and Child Health-Family Planning unit, comprising 5 respondents (10.4%). The distribution of respondents for each unit was based on stratified random sampling calculations, ensuring that all service units had an equal opportunity to become respondents in this study.

Tabel 4.

Frequency Distribution of Respondents Based on Medical experience (n=48)

Medical experience (years)	f	%
1-3 years	5	10,4
4-6 years	9	18,8
7-9 years	5	10,4
≥ 10 years	29	60,4

Table 4 indicated that the majority of respondents had medical experience exceeding 10 years, totaling 29 respondents (60.4%). The longer the healthcare professionals' tenure, the lower the risk of data input errors, such as incomplete patient medical record data. This aligns with Sayekti's (2014) study, which stated a correlation between a nurse's longer tenure and the completeness of medical record files.

Tabel 5.
Frequency Distribution of Respondents Based on the Types of IT Applications Used by Healthcare Workers (n=48)

Application	f	%
P-Care	21	43,8
E-PPGBM	3	6,3
SIKDA	16	33,3
E-Kohort	2	4,2
ASIK	3	6,3
Selena	1	2,1
SIGA	2	4,2

Table 5 indicates that the majority of respondents have used the P-Care application, totaling 21 respondents (43.8%). In the second position, respondents have used the SIKDA application, totaling 16 respondents (33.3%). This is in line with the efforts to implement electronic medical records, which require healthcare professionals to be prepared in using computer systems. The more healthcare professionals are experienced in using computer applications, the easier it is to adopt a new system. Berihun et al., (2020) also stated that electronic medical records are influenced by the knowledge and skills of healthcare professionals in using computer systems.

Tabel 6.
Frequency Distribution of Respondents Based on User Expectations

Expectation	f	%
Unsatisfied	24	50
Satisfied	24	50

Table 6, it was found that user expectations regarding the implementation of electronic medical records at Sidomulyo Primary Healthcare Center showed results where 50% each were in the satisfied and dissatisfied categories.

Table 7.
Frequency Distribution of Respondents Based on the Willingness to Use Electroni Medical Records

Willingness	f	%
Unwilling	23	47,9
Willing	25	52,1

Table 7, it was known that the majority of respondents were willing, totaling 25 respondents (52.1%), while respondents expressing unwillingness were 23 respondents (47.9%).

Tabel 7.

Cross-tabulation of the Relationship Between User Expectations and Willingness to Use Electronic Medical Records

Variable		Willingness				P-Value
		Unwilling		Willing		
		f	%	f	%	
User Experience	Unsatisfied	20	41,7	4	8,3	<0,001
	Satisfied	3	6,3	21	43,8	

Table 8 based on the data analysis results from the above table, a p-value of <0.001 was obtained, which is less than $p < 0.05$. Therefore, the null hypothesis (H0) is rejected, and the alternative hypothesis (H1) is accepted. This signifies a significant correlation between user expectations and the willingness to use electronic medical records at Sidomulyo Primary Healthcare Center in Samarinda City.

DISCUSSION

User expectations were perceptions that arose, whether positive or negative, from users, in this case, healthcare professionals (Kijsanayotin et al., 2009). User expectation motivation influenced the user's desire to use electronic medical records and affected the implementation of electronic medical records. In Table 6, it was observed that 50% of respondents each expressed good and bad expectations. This proved that healthcare professionals had different perceptions regarding the implementation of electronic medical records. This diversity of perceptions was supported by Yulida et al.'s (2021) research, which found that the implementation of electronic medical records would increase workload due to changes in habits or work culture. Still, some perceived that electronic medical records would ease and be beneficial for their work since it was systematic in the system for exporting data reports, viewing examination histories, and facilitating the payment process. Good or bad expectations would affect user attitudes in using the system, and user attitudes played a role as one of the determining factors for the success of electronic medical records implementation (Rahman, Haris, & Irawati, 2023). This was consistent with Venkatesh et al.'s (2003) research, stating that user expectations influenced the intention to use information technology.

The tool standardized, facilitated, and streamlined healthy lifestyle conversations with families, suggesting its feasibility and potential scalability in the clinic setting. Providers' perceptions of usefulness and usability were associated with their intention to use EMR, indicating the importance of these factors in technology adoption and optimize usefulness, it is recommended to limit the amount of time needed by staff to input data into the tool (Turer et al., 2020). Besides understanding healthcare professionals' expectations regarding electronic medical records, it was essential to assess their willingness. Willingness to use electronic medical records was an assessment conducted on healthcare professionals in the effort for healthcare institution development to provide better care and services to patients (Fadzlul Rahman, Johan, Noorbaya, Khatimah, & Nur Aji Cokro Darsono, 2023). Willingness arose influenced by healthcare professionals' positive or negative attitudes. Positive attitudes facilitated the acceptance of electronic medical records, while negative attitudes restricted the adoption of the electronic medical records system. In Table 7, it was observed that the majority of respondents expressed a willingness to use electronic medical records. Most willing respondents depicted a more significant positive attitude than a negative one among healthcare professionals. This aligned with Onigbogi et al.'s (2018) study, where all respondents had a positive attitude towards accepting computerized health information systems, resulting in most respondents having a high willingness to use electronic medical records. However, Ferraz and Guedes' (2017) research described a negative attitude, with many healthcare professionals expressing concerns about the electronic medical records system, considering it could change work practices and disrupt workflow.

Based on the research results obtained from user expectations and willingness to use electronic medical records, 21 out of 48 healthcare professionals at Sidomulyo Primary Healthcare Center expressed good expectations and a willingness to use electronic medical records. This would affect the implementation of electronic medical records if the Sidomulyo Primary Healthcare Center's medical record system had shifted from conventional to electronic-based. The data analysis results can be seen in Table 8, indicating a significant relationship between user expectations and willingness to use electronic medical records at Sidomulyo Primary Healthcare Center in Samarinda City. This aligned with Andriani et al.'s (2017) research, emphasizing that understanding user perceptions allowed for accurate recommendations to maximize electronic medical records adoption in improving patient service quality. Andriani et al. (2017) also added that users were the primary key to the success or failure of an information system. This statement was also supported by Qureshi et al.'s (2012) research, stating that electronic medical records' success depended on user involvement or healthcare professionals. In their study, healthcare professionals were willing to adopt the electronic medical records system after recognizing the benefits of eHealth. Thus, Qureshi et al.'s (2012) research indirectly aligned with this study. Healthcare professionals who recognized the benefits of eHealth would generate positive and negative perceptions and attitudes, affecting the willingness to use electronic medical records. Similarly, Kijsanayotin et al.'s (2009) research stated that the strongest factor influencing the acceptance and use of health information technology in primary healthcare centers was healthcare professionals' expectations.

CONCLUSION

Based on the research conducted on healthcare professionals at Sidomulyo Primary Healthcare Center in Samarinda City, it is concluded from the identification results that there are differences in perceptions of healthcare professionals' expectations. Out of 48 respondents, 24 expressed good expectations, while another 24 respondents expressed poor expectations. The identification results regarding the willingness to use electronic medical records show that the majority of respondents are willing. This is evident from 25 respondents expressing willingness and 23 respondents expressing unwillingness. The analysis of the relationship between user expectations and the willingness to use electronic medical records resulted in a p-value of 0.000. The p-value is less than 0.05, indicating a significant relationship between user expectations and the willingness to use electronic medical records at Sidomulyo Primary Healthcare Center in Samarinda City. The health department expert team provides socialization and training related to electronic medical records to all healthcare and supporting staff who can access and fill in patient medical records to enhance knowledge and understand the efficiency of implementing electronic medical records. The management, primarily the leadership, can prepare a planned workflow for electronic medical records to facilitate healthcare professionals in the transition from conventional medical record systems to electronic-based systems. Future research could delve deeper into other factors related to the willingness to use electronic medical records, as this study could be expanded further.

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