

Analysis of the use of electronic medical records and their effect on improving patient care

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ABSTRACT

Introduction: One of the most important contemporary events related to the health field is the implementation of the electronic health record (EHR), which allows the logical and chronological consolidation of information concerning a patient.

Objective: To analyze the influence of the implementation of electronic medical records on the improvement of patient care.

Method: The study corresponds to a quantitative approach, non-experimental design, and causal correlational scope. The population and sample were 94 health and administrative workers of a health center in Metropolitan Lima. The questionnaire had 30 items, with response options using a Likert-type scale.

Results: The use of electronic medical records was found to be 78.7% high, and patient care was found to be 70.2% efficient. It was found that the use of EHRs significantly influences patient care, given that p-value is $0.047 < 0.05$. The dimensions of patient care, reliability, responsiveness, safety, empathy, and tangible aspects also obtained a p-value < 0.05 .

Conclusions: It was found that most workers positively perceive the use of electronic medical records and that the existence of this system has beneficial effects on patient care, considering that the staff perceives high levels of reliability, responsiveness, safety, empathy, and tangible aspects.

Keywords: medical records, patient care, empathy, reliability, safety

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INTRODUCTION

Currently, the process of digitalization of information in different areas is increasing, and the health sector is no

exception. In this sense, the electronic health record (EHR) or electronic medical record provides several benefits, including the complete collection of information in a legible and standardized way. In addition, it pursues the mandatory entry of data to ensure the quality of the record, the storage of information without the possibility of deterioration,



the availability of data in real time and the continuity of care, preventing confusion or errors.⁽¹⁾

This involves the use of information and communication technologies (ICTs) in the health sector, which is known as e-Health. In 2005, the World Health Organization (WHO) approved a resolution on e-health, which recognizes the contribution of ICTs to health management systems. This document states that strengthening health systems through e-Health helps to preserve fundamental human rights, improving equity, solidarity, quality of life and quality of medical care.⁽²⁾

From a general context, the medical record is a fundamental tool of medical care, created to be a methodological guide where the patient's health problems are recorded. On the other hand, the electronic medical record requires an adequate technological infrastructure, whose information can be obtained by different means, such as the clinical method and semiological work, which must then be recorded digitally. It is also a medical-legal document with electronic support, which must safeguard the medical secrecy, confidentiality and privacy of the care given to the patient.⁽³⁾

According to Chá ⁽⁴⁾the adoption of EHRs in healthcare centers represents a process of technological transformation. The change from paper to electronic records means that the medical record ceases to be an information document with a component of ownership by the physician and the institution, and includes the integration of information, teamwork, multidisciplinary, laws and rules of use and distributed access for various purposes, among others.

In addition, Añel *et al.*⁽⁵⁾ points out that access to and management of information are critical factors for the quality and safety of medical care. Therefore, EHR and electronic prescribing (ER) are essential tools today. However, considering the way they have been developed and implemented, possibly paying more attention to technological and management aspects than to care criteria, they need to be adapted and adapted to the real requirements of both healthcare professionals and patients.

According to HIMSS ⁽⁶⁾the EHR is a longitudinal electronic record of patient health data, created through one or more sessions in a health care setting. These data include patient demographic information, pathologies, indications of their evolution,

prescribed medications, vital signs, disease history, immunizations, laboratory and radiology reports, among others. Nelson and Staggers ⁽⁷⁾ define the EHR as the electronic health record, which conforms to nationally managed interoperability standards and can be created, managed and consulted by physicians and authorized individuals in more than one healthcare facility.

In the Peruvian context, in 2013 the Peruvian Congress enacted Law 30024, which created the National Registry of Electronic Medical Records (RENHICE). As a technological system that allows the patient and health professionals, previously authorized, to access the medical information contained in the electronic medical records, complying with the terms necessary to ensure the quality of care in public or private health centers, as well as, the protection of personal data of patients, established by law.⁽⁸⁾

This law describes the characteristics or dimensions of the EHR variable, among which data availability, transfer and security stand out. Data availability refers to the fact that the information is accessible and available at any time and in any place, to different people simultaneously. Data transfer means that the information does not need to be sent in physical form, as it is available in digital form. Data security means that there is minimal security risk.^(8, 9)

On the other hand, it is relevant to analyze the effects of the implementation of an EHR system on patient care. In this regard, the WHO ⁽¹⁰⁾ defines quality of care as the level at which medical services for individuals and communities increase the likelihood of achieving positive health outcomes. It is based on professional knowledge supported by evidence and plays a fundamental role in achieving universal health coverage. The concept of quality health care may vary, but there is a growing consensus that quality medical services should be: 1) effective, offering evidence-supported services to those who require them; 2) safe, preventing harm to those for whom care is intended; and 3) person-centered, providing care that is tailored to individual preferences, needs, and values.

Therefore, the quality of patient care is focused on individuals, families and communities, highlighting ideal levels of safety, effectiveness, promptness, efficiency and equitable access as key attributes. Fulfillment of these attributes depends on the availability, proper organization and management of

services. In order to improve the quality of care in the provision of healthcare services, it is necessary to undertake transformations and strengthen the health systems.⁽¹¹⁾

One approach to the evaluation of medical care involves analyzing the process of care itself, rather than its direct outcomes. This perspective is based on the premise that what is crucial is not the ability of the medical technology to produce outcomes, but rather whether what is considered to be quality medical care has been delivered. Opinions are based on aspects such as the adequacy, completeness and redundancy of information obtained through medical history, physical examination and diagnostic tests; therapy; diagnostic and therapeutic procedures; evidence of preventive management in health and disease, among others.⁽¹²⁾

In evaluating the evidence found, the study by Gutiérrez stands out.⁽¹³⁾ which focused on analyzing the implementation of an electronic medical records system to improve the quality of care in dental consultations at the Hermilio Valdizán Hospital in Peru. In this regard, it was found that there is a significant relationship between the implementation of electronic medical records and the improvement in the quality of dental care.

Similarly, Cotrina's study focused on evaluating the adoption of an electronic medical records system to improve patient care at the San Miguel Health Center in Peru.⁽¹⁴⁾ study focused on evaluating the adoption of an electronic medical records system to improve patient care at the San Miguel health center in Peru. As a result, with the use of the proposed application, patient satisfaction in terms of time of care at the health center reached a level of 61%, which represents an improvement of 17% compared to the initial situation, where satisfaction stood at 44%.

Gaspar's work was also based on the⁽¹⁵⁾ was based on the implementation of software for the generation of electronic medical records, with the aim of improving patient care at the Huancavelica Regional Hospital in Peru. In addition to evaluating the system, the study improved patient care time by up to 7,698 minutes per patient, with an improvement in the quality of care of 4.04%.

From a general perspective, the study by Tsai et al.⁽¹⁶⁾ analyzed the effects of the implementation of electronic medical records, the barriers to their implementation and their uses. Indeed, both beneficial and detrimental consequences derived from the introduction of EHRs were observed,

covering aspects related to clinical work, data and information, patient care and economic impact. Resource limitations, lack of training and technical/educational support for users, along with poor literacy and technological skills, were identified as frequent barriers to system adoption and use.

Based on the above evidence, the present study is proposed with the aim of determining the influence of the use of EHRs in improving patient care in a health center in Metropolitan Lima.

METHODS

Type of Research

The research corresponds to a quantitative approach, which allows the measurement of the dimensions and the generation of the indicators used to formulate the questions of the research instruments. This facilitates the collection of data, which are analyzed by means of robust statistical tools in order to validate or contradict the hypotheses initially established.⁽¹⁷⁾

On the other hand, it had a non-experimental design, which is carried out without altering variables, which means that there is no deliberate variation of any variable to evaluate its impact on another. In this type of research, the independent variables occur naturally and cannot be manipulated, as well as the effects they generate. In terms of scope, the research adopted a causal correlational approach, with the aim of understanding how one variable affects the behavior of another.^(18, 19)

Operationalization of variables

Regarding the variable electronic medical records, Nelson et al.⁽²⁰⁾ points out that they are information repositories where consolidated and personal records are stored in multimedia form, in which all the information related to the patient and his or her medical care is stored electronically, replacing manual medical records. Its main objective is to provide relevant information for the care of individuals at the time it is required. The dimensions that make it possible to measure this variable are the following: data availability; data transfer; data security.

Regarding the patient care variable, Wensing et al.⁽²¹⁾ expresses that a patient is considered to be any individual who presents for consultation with a

health professional, whether in a state of health or illness. Patient care encompasses aspects such as prevention, treatment, disease management and maintenance of physical and mental health through the services provided by health care providers. The dimensions to measure this variable are: reliability; responsiveness, safety, empathy and tangibles.

Population and sample

The population is the group of individuals or elements about which information is sought in the context of an investigation. In this case, the population is constituted by 94 health and administrative workers of a health center in Metropolitan Lima. The sample is defined as a representative portion of the population, sometimes even the totality of the population, when the researcher shares the scope with all the participants, which is applied in the present study.^(22, 23)

Instruments

The data associated with the EHR variable were collected using the instrument developed by Juscamaita⁽²⁴⁾The data associated with the EHR variable were collected using the instrument developed by Juscamaita, configured with 15 questions and three dimensions: data availability; data transfer; data security. This questionnaire was validated by the judgment of three experts, obtaining the judgment of Applicable. Likewise, its reliability was calculated, with a Cronbach's Alpha coefficient of 0.790. Each of the questions in the questionnaire had the following response alternatives: Never (1), Almost never (2), Sometimes (3), Almost always (4) and Always (5).

For the patient care variable, the Singüenza questionnaire was used, adapted by Rodriguez⁽²⁵⁾ adapted by Rodriguez⁽²⁶⁾which consists of 15 items and five dimensions: reliability, responsiveness, security, empathy and tangible aspects. This instrument was validated through the judgment of 3 experts and its reliability was calculated, with a

Cronbach's Alpha coefficient value of 0.940. In this framework, each item had five response alternatives: Never (1), Almost never (2), Sometimes (3), Almost always (4) and Always (5).

Procedure

The questionnaire was applied virtually during the months of October and November, using Google Forms. The information collected was tabulated using Microsoft Excel and SPSS version 25. The survey was conducted anonymously and was applied after the approval of the informed consent, where the participants undertook to maintain the confidentiality of the data, ensuring that they would not be shared with third parties. In addition, they undertook not to disclose information that could allow identification of the respondents.

To evaluate the findings, a descriptive study of the variables and their dimensions was carried out by analyzing the frequencies of occurrence. In addition, the data were analyzed from the inferential context, through Pearson's Chi-square coefficient, with the purpose of determining the relationship between the variables EHR and patient care. A confidence level of 95% (p=0.05) and a decision rule that rejects the null hypothesis if the significance value is less than 0.05 were used.

RESULTS

Descriptive analysis

Table 1 presents the descriptive study of the electronic medical records variable, which shows that 78.7% of the workers have a high level of perception. Regarding the analysis of the dimensions, it was found that 56.4% and 62.8% of the participants have a medium level of perception of the availability and transfer of data. On the other hand, 77.7% reported a high level in the security dimension.

Table 1. Descriptive results of the variable electronic medical records.

Variable / Dimension		HCE		Availability		Transfer		Security	
Level	n	f(%)	n	f(%)	n	f(%)	n	f(%)	
Under	6	6.4	4	4.3	5	5.3	3	3.2	
Medium	14	14.9	53	56.4	59	62.8	18	19.1	
High	74	78.7	37	39.4	30	31.9	73	77.7	
Total	94	100	94	100	94	100	94	100	

The findings of the patient care variable are presented in Table 2, where it can be seen that 70.2% of the health workers perceive a high level. Similarly, in the dimensions reliability, responsiveness,

security, empathy and tangible aspects, it was found that 76.6%, 75.5%, 84%, 74.5% and 77.7% reported high level of perception.

Table 2. Descriptive results for the patient care variable

Variable / Dimension	Patient care		Reliability		Responsiveness		Security		Empathy		Tangible aspects	
	n	f(%)	n	f(%)	n	f(%)	n	f(%)	n	f(%)	n	f(%)
Deficient	9	9.6	5	5.3	2	2.1	2	2.1	3	3.2	3	3.2
Regular	19	20.2	17	18.1	21	22.3	13	13.8	21	22.3	18	19.1
Efficient	66	70.2	72	76.6	71	75.5	79	84.0	70	74.5	73	77.7
Total	94	100	94	100	94	100	94	100	94	100	94	100

Table 3 shows the cross frequencies between EHRs and patient care. In this regard, it is relevant to mention that 53.1% of the workers who perceive a high level of EHR use report an efficient level of

patient care. While only 6.4% of the workers who perceive a low level of EHR use report an efficient level of patient care.

Cross table between the frequency level of electronic medical records and patient care.

		Patient care							
		Deficient		Regular		Efficient		Total	
		n	f(%)	n	f(%)	n	f(%)	n	f(%)
HCE	Under	0	0	0	0	6	6.4	6	6.4
	Medium	0	0	4	4.3	10	10.6	14	14.9
	High	9	9.6	15	16.0	50	53.1	74	78.7
	Total	9	9.6	19	20.3	66	70.2	94	100

Table 4 shows the cross-referenced data between the use of EHRs and reliability. From these data, it is relevant to highlight that 56.4% of the respondents reported a high level of EHRs and an efficient level

of reliability. Likewise, only 1% of the workers who indicated the existence of a medium level of EHR perceived a deficient level of reliability.

Cross table between the frequency level of electronic medical records and reliability.

		Reliability							
		Deficient		Regular		Efficient		Total	
		n	f(%)	n	f(%)	n	f(%)	n	f(%)
HCE	Under	0	0	0	0	6	6.4	6	6.4
	Medium	1	1.0	0	0	13	13.8	14	14.9
	High	4	4.3	17	18.1	53	56.4	74	78.7
	Total	5	5.3	17	18.1	72	76.6	94	100

The analysis of the cross-tabulated data between the EHR variable and responsiveness reflects that 56.4% of the workers who perceive a high level of EHR reported an efficient level of responsiveness. On the

other hand, it is relevant to mention that 6.4% of the workers who reported a low level of EHR indicated the existence of an efficient level of responsiveness, as shown in Table 5.

Table 5. Cross table between the level of frequency of electronic medical records and responsiveness

		Responsiveness							
		Deficient		Regular		Efficient		Total	
		n	f(%)	n	f(%)	n	f(%)	n	f(%)
HCE	Under	0	0	0	0	6	6.4	6	6.4
	Medium	0	0	2	2.1	12	12.8	14	14.9
	High	2	2.1	19	20.2	53	56.4	74	78.7
	Total	2	2.1	21	22.3	71	75.6	94	100

The evaluation of the cross frequencies between the EHR variable and the safety dimension indicates that 63.8% of the workers who perceive a high level of EHR reported an efficient level of safety. On the

other hand, it should be noted that only 2.1% of the respondents who reported a high level of EHR indicated the existence of a deficient level of safety, as shown in Table 6.

Cross table between the frequency level of electronic medical records and security.

		Security							
		Deficient		Regular		Efficient		Total	
		n	f(%)	n	f(%)	n	f(%)	n	f(%)
HCE	Under	0	0	0	0	6	6.4	6	6.4
	Medium	0	0	1	1.0	13	13.8	14	14.8
	High	2	2.1	12	12.8	60	63.8	74	78.7
	Total	2	2.1	13	13.8	79	84	94	100

The analysis of the cross frequencies between the use of EHRs and empathy toward patients revealed that 58.5% of the participants affirmed a high level of EHRs and an efficient level of empathy toward

patients. In contrast, 3.2% reported a low level of EHRs and a regular level of empathy toward patients, as shown in Table 7.

Table 7. Cross table between the frequency level of electronic medical records and empathy.

		Empathy							
		Deficient		Regular		Efficient		Total	
		n	f(%)	n	f(%)	n	f(%)	n	f(%)
HCE	Under	0	0	3	3.2	3	3.2	6	6.4
	Medium	0	0	2	2.1	12	12.8	14	14.8
	High	3	3.2	16	17.0	55	58.5	74	78.7
	Total	3	3.2	21	22.3	70	74.5	94	100

Finally, the study of the cross frequencies between the use of EHRs and the tangible aspects of patient care, presented in Table 8, revealed that 58.5% of the participants reported a high level of EHRs and an

efficient level in the tangible aspects of patient care. While 1% reported a low level of EHR and a fair level of tangible aspects of patient care.

Table 8. Cross table between the frequency level of electronic medical records and tangibles

		Tangible aspects							
		Deficient		Regular		Efficient		Total	
		n	f(%)	n	f(%)	n	f(%)	n	f(%)
HCE	Under	0	0	1	1.0	5	5.3	6	6.4
	Medium	0	0	1	1.0	13	13.8	14	14.8

High	3	3.2	16	17.0	55	58.5	74	78.7
Total	3	3.2	18	9.0	73	77.6	94	100

Inferential analysis

Table 9 presents the findings of the analysis of the general hypothesis, to test the influence of the use of EHRs in the care of patients in a health center in Metropolitan Lima.

H_g : The use of EHRs influences patient care in a health center in Metropolitan Lima.

H₀ : The use of EHRs does not influence patient care in a health center in Metropolitan Lima.

The evidence indicates that the use of EHRs significantly influences patient care, the p-value being 0.047<0.05.

Table 9. Chi-square test

	Value	df	Asymptotic significance (bilateral)
Pearson's Chi-square	14.964 ^a	4	0.047
Likelihood ratio	7.907	4	0.095
Linear by linear association	2.901	1	0.089
N of valid cases	94		

a. 5 boxes (55.6%) have expected a count less than 5. The minimum expected count is 0.57.

Regarding specific hypothesis 1, which seeks to determine the influence of the use of EHRs on the reliability of patients in a health center in Metropolitan Lima, the following is described below.

H₁ : The use of EHRs influences the reliability of patients in a health center in Metropolitan Lima.

H₀ : The use of EHRs does not influence the reliability of patients in a health center in Metropolitan Lima.

Looking at Table 10, it is found that the use of EHRs significantly influences the reliability of patients, given that p-value is 0.029<0.05.

Table 10. Chi-Square Test

	Value	df	Asymptotic significance (bilateral)
Pearson's Chi-square	15.154 ^a	4	0.029
Likelihood ratio	9.940	4	0.041
Linear by linear association	3.086	1	0.079
N of valid cases	94		

a. 6 boxes (66.7%) have expected a count of less than 5. The minimum expected count is 0.32.

To evaluate the influence of the use of EHRs on the responsiveness to patients in a health center in Metropolitan Lima, the following hypotheses were established.

H₂ : The use of EHRs influences the responsiveness to patients in a health center in Metropolitan Lima.

H₀ : The use of EHRs does not influence the capacity to respond to patients in a health center in Metropolitan Lima.

Table 11 describes the respective findings, which indicate that the use of EHRs significantly influences patient responsiveness, considering that p-value is 0.035<0.05.

Table 11. Chi-Square Test

	Value	df	Asymptotic significance (bilateral)
Pearson's Chi-square	13.474 ^a	4	0.035
Likelihood ratio	5.224	4	0.265
Linear by linear association	3.262	1	0.071

N of valid cases 94

a. 6 boxes (66.7%) have expected a count of less than 5. The minimum expected count is 0.13.

The inferential analysis of the influence of the use of EHRs on the safety offered to patients in a health center in Metropolitan Lima was carried out using the following hypotheses.

H₃ : The use of EHRs influences the safety offered to patients in a health center in Metropolitan Lima.

H₀ : The use of EHRs does not influence the safety offered to patients in a health center in Metropolitan Lima.

In this regard, Table 12 shows the evidence found, which reveals that the use of EHRs has a significant influence on the safety offered to patients, taking into account that the p-value is 0.042<0.05.

Table 12. Chi-square test

	Value	df	Asymptotic significance (bilateral)
Pearson's Chi-square	12.516 ^a	4	0.042
Likelihood ratio	3.831	4	0.429
Linear by linear association	2.308	1	0.129
N of valid cases	94		

a. 6 boxes (55.6) have expected counts less than 5. The minimum expected count is 0.13.

To analyze the influence of the use of EHRs on empathy towards patients in a health center in Metropolitan Lima, the following hypotheses were established.

H₄ : The use of EHRs influences empathy towards patients in a health center in Metropolitan Lima.

H₀ : The use of EHRs does not influence empathy towards patients in a health center in Metropolitan Lima.

In this sense, the results presented in Table 13 indicate that the use of EHRs has a positive influence

on empathy towards patients, the p-value being 0.042<0.05.

Table 13. Chi-square test

	Value	df	Asymptotic significance (bilateral)
Pearson's Chi-square	14.010 ^a	4	0.040
Likelihood ratio	4.207	4	0.379
Linear by linear association	0.034	1	0.854
N of valid cases	94		

a. 6 boxes (66.7%) have expected a count of less than 5. The minimum expected count is 0.19.

Regarding the inferential analysis between the influence of the use of EHRs on the tangible aspects of patient care in a health center in Metropolitan Lima, the following hypotheses were put forward.

H₅ : The use of EHRs influences tangible aspects of patient care in a health center in Metropolitan Lima.

H₀ : The use of EHRs does not influence the tangible aspects of patient care in a health center in Metropolitan Lima.

According to the findings shown in Table 14, the use of EHRs significantly influences the tangible aspects of patient care, given that p-value is 0.042<0.05.

Table 14. Chi-square test

	Value	df	Asymptotic significance (bilateral)
Pearson's Chi-square	12.668 ^a	4	0.046
Likelihood ratio	3.595	4	0.464
Linear by linear association	1.674	1	0.196

N of valid 94
cases

a. 6 boxes (66.7%) have expected a count of less than 5. The minimum expected count is 0.19.

DISCUSSION

The descriptive study of the EHR variable revealed that 78.7% of the participants have a high level of perception. Similarly, in the security dimension, 77.7% had a high level. On the other hand, in the dimensions availability and data transfer, 56.4% and 62.8% of medium level were reported, respectively. In the case of the patient care variable, the descriptive findings indicate a high level of 70.2%. Similarly, in terms of reliability, responsiveness, security, empathy, and tangible aspects, the workers reported a high level of perception.

The cross-frequency analysis between EHR and patient care revealed that 53.1% of the workers have a high level of EHR and an efficient level of patient care. Regarding the cross data between EHR and reliability, 56.4% of the respondents reported a high level of EHR and an efficient level of reliability. On the other hand, the analysis between EHR and responsiveness shows that 56.4% of the workers have a high level of EHR and an efficient level of responsiveness.

In relation to the behavior of the EHR variable with respect to the safety dimension, it indicates that 63.8% of the workers have a high level of EHR and an efficient level of safety. Regarding the descriptive analysis between the EHR variable and empathy towards patients, it is relevant to highlight that 58.5% of the respondents reported a high level of EHR and an efficient level of empathy. Finally, the analysis of the cross frequencies between the EHR variable and the tangible aspects dimension shows that 58.5% of the workers have a high level of EHR and an efficient level in the tangible aspects of patient care.

These findings are consistent with those of Gutiérrez⁽¹³⁾ who evaluated the impact of the implementation of EHRs on the quality of patient care, and found that 80% of those surveyed considered it to be a critical factor in health care systems, taking into account the time required to search for medical records. Likewise, most of them consider it essential to carry

out prior validation of access to the EHRs, considering that the data recorded therein are of a personal nature and their use should be limited to authorized persons. In addition, the patients surveyed consider that the implementation of EHRs will allow them to feel more satisfied with the care provided, due to the access and availability of complete information in this system.

According to Morejón and González⁽³⁾ with the implementation of EHRs, healthcare professionals and health centers have improved the doctor-patient relationship. Considering that this technology, which allows the recording and use of patient medical information, provides benefits in terms of reducing the time spent on recording information. The correct use of the EHR facilitates the development, speed and quality of the health care provided, since it provides information permanently available for consultation by health care workers.

On the other hand, these results differ from those of Cha⁽⁴⁾ who evaluated the factors of resistance to the use of EHRs by physicians. In this framework, he found that 75% of the respondents have resistance to the use of EHRs. In this regard, the majority of respondents acknowledge different problems, including interference in the doctor-patient relationship, increased start-up time requirements, fear of the unknown, lack of computer skills and the likelihood of system failure.

The findings of the inferential analysis between the EHR and patient care variables showed the existence of a significant influence between the two. Similarly, the influence exerted by EHR on the dimensions reliability, responsiveness, safety, empathy and tangible aspects of care was verified, taking into account that $p\text{-value} < 0.05$.

These results are similar to those of Cotrina⁽¹⁴⁾ whose study evaluated the implementation of an electronic medical records system to improve patient care. In this regard, the author found that the implementation of the EHR system directly affects the level of patient satisfaction, considering the time of care and the responses obtained. Additionally, he verified that the implementation of the EHR system improves the level of patient satisfaction, taking into account the dissemination of relevant information.

Similarly, the results are similar to those of Rodríguez⁽²⁶⁾ who conducted an analysis of the implementation of an EHR system to improve patient care at Ventanilla Hospital, located in Peru. The

evidence reveals that the implementation of EHRs has a significant relationship with improved patient care, given that $r=0.826$ and $p\text{-value}<0.05$.

It is important to highlight the findings of Tsai *et al.* ⁽¹⁶⁾ in their study on the favorable and unfavorable consequences of EHR implementation, related to clinical work, data and information management, patient care and economic factors. In this regard, resource constraints, lack of training and technical/academic support for healthcare workers, along with low literacy in computer skills, emerge as frequent barriers to system adoption and use.

According to Rojas *et al.* ⁽⁹⁾ it is clear that the gradual use of the EHR in health centers, whether public or private, is a key to the modernization of the healthcare system and will enable all of them to provide quality care for the benefit of patients. It also facilitates interoperability in the health sector, for the creation and implementation of public policies that contribute to the effective practice of people's right to health, optimizing the use of resources and reducing the duplication of procedures.

CONCLUSIONS

The implementation of electronic medical records in health centers has proven to be a significant advance in improving patient care. The reliability of information, responsiveness to medical needs, and security in data management have strengthened the basis for more efficient and personalized care. In addition, the incorporation of electronic records has contributed to greater empathy by allowing faster and more complete access to the patient's medical history. Improvements in tangible aspects, such as reduced waiting times and more effective communication between healthcare professionals, reinforce the positive impact of electronic medical records on the overall quality of medical care.

The present study had as limitations the fact that it was executed considering health workers from a single health center, which implemented an EHR system; therefore, the results cannot be replicated to health workers from other health institutions. Furthermore, as it was developed in Peru, the findings cannot be extended to other countries or regions. In addition, the study was conducted at a causal correlational descriptive level, which only allowed the observation, organization, simplification and description of the relevant data of a sample, as

well as the association between the variables analyzed.

Moreover, the use of electronic medical records has important practical implications and opens up promising prospects for the future of patient care. In practice, the digitization of medical records streamlines access to crucial information, improving clinical decision making and reducing waiting times. As technology evolves, opportunities for the integration of artificial intelligence and big data analytics are on the horizon, which could drive disease prediction and prevention. However, it is essential to address challenges related to security and privacy to ensure effective and ethical use of electronic health records in the continuing advancement of healthcare.

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