

The implementation of Electronic Medical Records System EQUALI to Improve Patient Care

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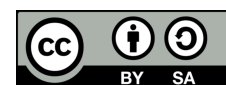
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Abstract

In the present article, where we live a pandemic because of Covid-19, it presents a challenge and a change in the way we live for all, in which a different way of being able to receive medical care must be created. In this research aims to implement the electronic system of medical records to improve patient care, such research is descriptive-explanatory showing a population of 67 patients from a health center, those who were evaluated by the Z-test, the time-to-date measurement of medical appointments and the instrument of patient satisfaction with respect to the time of care that were created and validated by expert trials, obtaining a Cronbach Alpha of 0.894. As results it was obtained $Z_s 33.67 > \text{greater than } 1.96$ for the first variable and $Z_c 2.0742 > 1.96$ respectively. In conclusion, the implementation of the Electronic Medical Records System improved patient administrative care at the Health Center.

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1. INTRODUCTION

Today, the world has found the need to acceleratedly implement technological tools even more in the pandemic context in which people experience fear of contracting COVID-19 [1][2], in Peru, public policies have been implemented to counteract this disease, for example: in education using new forms of education [3] [4] through the use of ICTs, in health through the use of telemedicine, telequeries and electronic clinical history systems (EQUALI). Achieving acutality to have 65.3% of health centers and positions integrated into this system, as a plan of the concept of improvement of patient care [5].

The health center located in the district of San Miguel has some problems manipulating and administering the information of patients who are treated in said nosocomio since they do not have adequate technologies for the management of data in a systemic (ordered) way [6], such information of patients has different addresses of domicile, there is duplicity in medical records, and are archived manually which makes it vulnerable to any loss of information about patients (customers). So, it is necessary to implement an electronic medical records system as part of a process of improvement to a digital health of effectiveness and quality, where the beneficiary is the patient and the workers.

This article discusses the influence of the implementation of the sun electronic medical records system to improve patient care, which will improve administrative processes and in the administration of

patient care [7] [8] [9]. Allowing users to no longer queue from very early hours which generates entropies in the organization. All this analysis will be measured by a stately analysis to users in their delay times from the time they take out their medical appointments until they are taken care of.

2. RESEARCH METHOD

The research method that was used to study the health center was the scientific method, this as they are those that can be objectively tested, based on general laws and theories; be subject to measurements, as they are essentially based on quantitative terms or methods for verification.

The application of the general method leads to a systematic series of procedures, using and applying scientific research for the observation of knowledge extensions. We came up with the idea that the scientific method is like organization, and the framework where consistently related rules and principles were formed.

2.1. SPECIFIC METHOD

2.1.1. OBSERVATION METHOD

This method will allow us in the research to possess the content of being able to point out and manifest the procedure, having obtained appropriate and complete data that are appropriate to the behavior, event and / or realities fully recognized and inserted in the theoretical context.

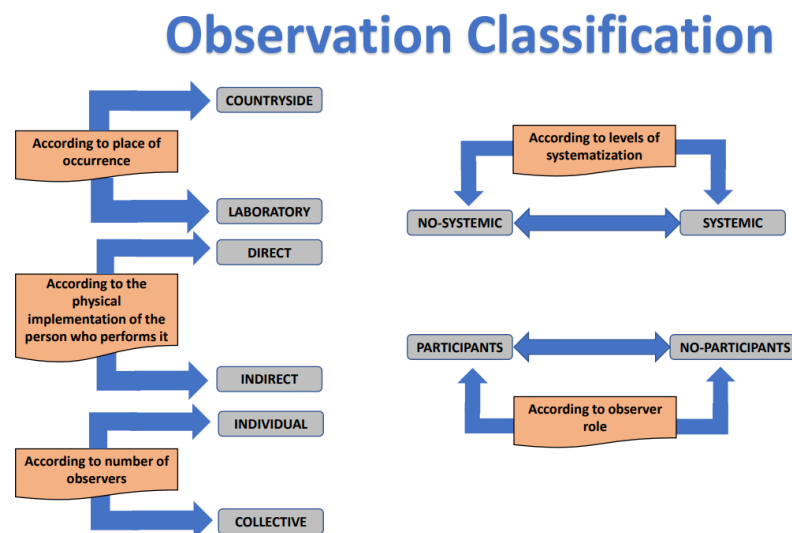


Figure 1 - Observation classification

As shown in Figure 1; this method of observation has as phases the following:

- What can be observed?
- At what time and/or to whom to observe?
- What should it be observed with?
- Where should it be observed?
- Data collection and optimization.
- Interpretation of the results obtained.

2.2. LEVEL OF RESEARCH

The level of research that was applied was the explanatory one, as it allows to treat the problem directly in relation to its causes and effects that arise in its development, Describes and

measures the relationship where the cause is the implementation of a system of electronic medical records and the effect on improving patient care.

2.3. RESEARCH TYPE

It was explanatory. Because it seeks the application or use of the acquired knowledge, while acquiring others, after implementing and systematizing the practice based on research. By solving a problem through the implementation of a Clinical History System and thus improving patient care in the Health Center, the level of research applied here was the explanatory one, as it allows to treat the problem directly in relation to its causes and effects that arise in its development, describes and measures the relationship where the cause is the implementation of a medical history system and the effect on patient care. The possible solution that arises in the hypothesis.

$$G = O1 \times O2$$

- G : Admission service workers, as well as patients requesting appointments. all of them of legal age
- $O1$: The health center's admission service prior to the implementation of the electronic medical records system
- $\times$: The implementation of the electronic medical records system
- $O2$: The health center admission service after implementation of electronic medical records system

The design of this research is experimental because statistical management of the collected information is carried out and the situation is controlled at all times, and it is also of the pre-experimental type, since only the independent variable is handled with pre- and subsequent testing. The research did not use a sampling technique because it is a small population, therefore the census technique was used, with a total of 67 people

2.4. DATA COLLECTION TECHNIQUES AND INSTRUMENTS, VALIDITY AND RELIABILITY

Techniques: The field research technique is the survey. It is a popular research technique because it allows data collection through questionnaires spread among the elements of a given population and is usually used to obtain reliable data about the attitudes, opinions and behaviors of individuals [10].

Instruments: The instrument is the questionnaire. is a methodological means used to collect information from primary sources of research, in addition to being consistent with the approach, level and design of the research used.

Tool data sheet for measuring Patient Satisfaction

Name: Patient Satisfaction with Respect to Care Time

Author: Juan Carlos Cotrina Aliaga

Running time: 5 minutes

Application: Patients being treated at the health center

Management: individual

Meaning: Serves to assess patient satisfaction with care time from entering until medical care ends.

Structure: 5 items

Description: Likert scale

Validity: Validity refers to the effectiveness with which an instrument could collect the attribute or quality of what is being measured [11]. This thesis chose to find out the validity of its instruments through the validity of experts associated with the validity of content [12].

Reliability: Reliability is measured in terms of stability and internal consistency of the research instrument [13]. As a result of a mathematical measurement, the coefficients obtained with the Cronbach alpha are recorded:

Instrument for relational variable: 0.894

Instrument Reliability: Patient Satisfaction

Table 1. Instrument Reliability or Patient Satisfaction

Reliability Statistics	
Cronbach's Alfa	N Elements
0,894	40

3. RESULTS AND DISCUSSION

The "z" test has been used for the hypothesis test. The analyses were also carried out in accordance with the design of the research. With the pre-test and post- test, in order to be able to contrast the hypotheses and thus be able to perform the acceptance or rejection of the hypotheses raised in this investigation. The results obtained are presented below.

3.1. STATISTICAL ANALYSIS

3.1.1. AVERAGE APPOINTMENT DELIVERY TIME

Clarification of variables:

TPECa - Average appointment delivery time with the current system.

TPECp - Average appointment delivery time with the proposed system.

The Statistical Hypothesis

The hypothesis Ho=Average time in the delivery of appointments with the existing application is less than or equal to the average appointment delivery with the proposed application.

$$\bullet \quad H_0 - TPECa - TPECp \leq 0$$

The hypothesis Ha= the average time of delivery of appointments with the existing app is greater than average appointment delivery time with the proposed application.

$$\bullet \quad H_a - TPECa - TPECp > 0$$

Calculating the value of the "Z":

$$Z = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

$$Z = \frac{54.15 - 19}{\sqrt{\frac{5.001}{67} + \frac{2.600}{67}}}$$

$$Z = 33.67$$

Z- 33.67 (calculated z) > 1.96 (z tabular α.95%)

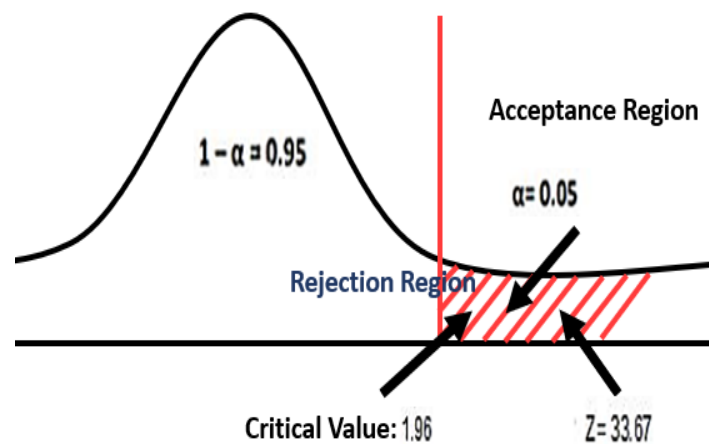


Figure 2 - Average Time acceptance and rejection zone for the delivery of appointments medical care

The calculated Z in the figure 2 is value is $33.67 >$ greater than 1.96, the value being found in the reject region, then H_0 is rejected and by the resulting one is accepted H_a . Stating that if indeed "The average time of delivery of appointments with the existing application is greater than the average time of delivery of appointments with the proposed application".

Table 2. Comparison of pre- and post-test test time

Ta		Tp		Decrement	
Time (Minutes)	Percentage (%)	Time (Minutes)	Percentage (%)	Time (Minutes)	Percentage (%)
54.15	100	19	35.09	35.15	64.91

Table 2 shows that the average delivery time of medical supplies with the current application (T_a) deducting the average delivery time of the inputs using the proposed application (T_p) results in a decrease in the delivery time of medical supplies with support of the application under construction where it offers us a favorable percentage.

The average appointment delivery **time was** reduced by 64.91%, in whose hypothesis test applying to a sample of 67 medical appointments, a Z was obtained by 33.67, the higher being the value of 1.96 with a significance level of 95%, this value being found in the rejection zone of H_0 , accepting the H_a .

This then leads to the average time of the process of transmissions of medical care appointments creating longer than the average time of care in the deliveries of health care appointments with proposed electronic medical history system, arriving at this one, which is within the research at a level of significance with a value of 5% with a level of confidence with a value of 95%. Therefore, it can be evaluated that the average time in deliveries of health care appointments with the current application reaches a time of 54.15 minutes with an average time in deliveries of medical supplies with the proposed Application in a time of 19 minutes, and this represents a decrease in time of 35.15 minutes.

3.1.2. PATIENT SATISFACTION WITH RESPECT TO CARE TIME

The Statistical Hypothesis

H_0 = The implementation of the Clinical History System does NOT intervene in the level of patient satisfaction with respect to care time and responses.

H_a = The implementation of the Clinical Records System is directly involved in the level of patient satisfaction with respect to care time and responses.

Calculating the value of the "Z":

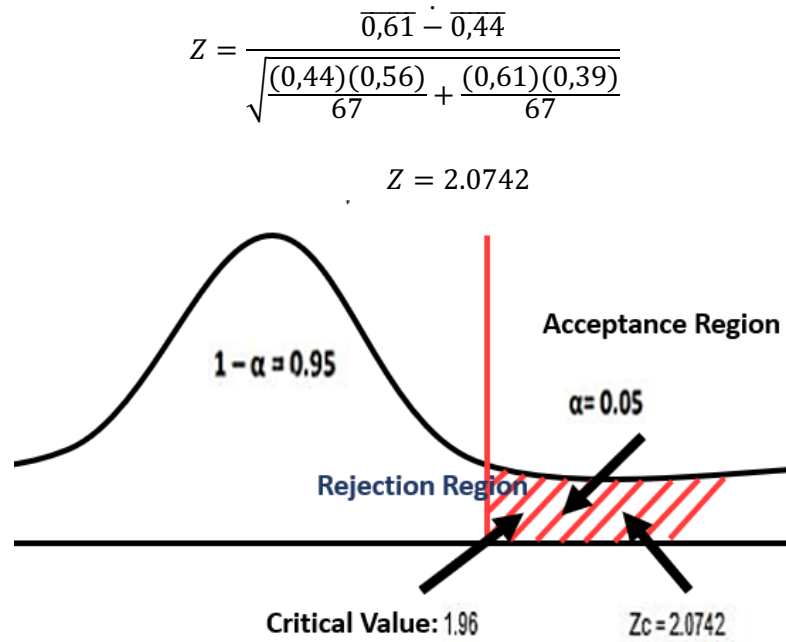


Figure 3. Region of acceptance and rejection of the level of patient satisfaction cared for at the health care center

Since: $Z_c - 2.0742 > 1.96$, being in the region of acceptance H_a , and rejection of H_0 , therefore the hypothesis is approved: The implementation of the System of Clinical Records intervenes directly in the level of patient satisfaction with respect to the time of care and responses.

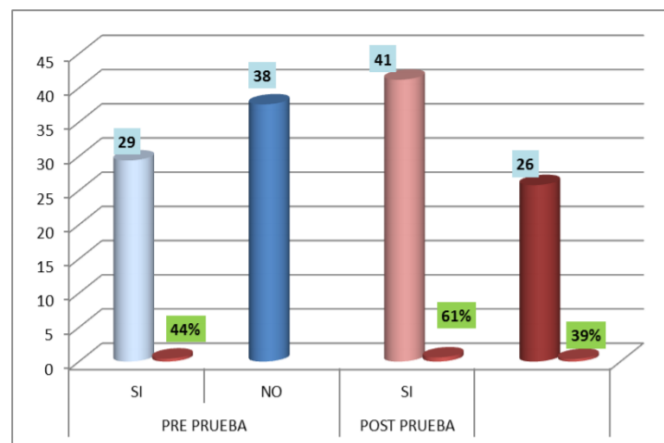


Figure 4 - Pre- and post-test contrast, patient satisfaction with care time

Figure 4 shows that 61% corresponds to the "SI" dimension of the post-test compared to 44% of the previous "SI" test. Evidence of a 17% improvement in patient satisfaction with respect to care time with the use of the proposed system.

This research shows a 17% improvement in patient satisfaction **with respect to** attention time with the use of the proposed system post, this is evidenced by obtaining 61% in SI dimension 51 in the post-test, thus improving the SI value of the pre-test where 44% was obtained.

Concluding that the H_0 hypothesis is rejected and H_a is accepted, then it is confirmed that the implementation of the system influences patient satisfaction as far as care time is concerned. What was checked with an error level of 0.5% (0.05), resulting in the execution of the proposed application as one of the most optimal solution alternatives for solving the research problem raised.

4. CONCLUSION

This article concludes that:

1. It is concluded that the average time for deliveries of the different medical care appointments with the current application comes to make 54.15 minutes and with the average time in deliveries of health care appointments with the proposed application is 19 minutes, resulting in a decrease of 35.15 minutes, with a valuation percentage of 64.91%, this is similar to the research carried out at a conde la vega health center in 2018 [14].
2. With the existing application the level of Patient Satisfaction with respect to the time of care in the health center has with the proposed application a satisfaction of 61% thus improving by 17% compared to the initial situation where a level of satisfaction of 44% was obtained, this improvement is due to the patient and the administrative staff who have been adapting to the use of the proposed system. So similar was it in the implementation carried out in a northern health network [15].
3. Finally, after having obtained satisfactory results from the indicators of studies, it is concluded that the research that was received has optimized the administrative care of patients of the San Miguel Health Center, this by implementing an application of electronic medical records.

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