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ORIGINAL ARTICLE

# Quality of care and adherence to prenatal check-ups among pregnant women at a public obstetric center in Lima, Peru

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***Keywords:***
*quality of care; pregnant women; adherence; treatment compliance; health centers; prenatal care (Source: MeSH - NLM).*

## ABSTRACT

**Objective.** To determine the relationship between the quality of care and adherence to prenatal check-ups among pregnant women at a public obstetric center in Lima, Peru. **Methods.** A quantitative, correlational study with an observational, descriptive, and cross-sectional design. The sample consisted of all pregnant women who attended the obstetric center from January to April, totaling 100 patients. A questionnaire was used to assess the quality of care, and a checklist was used to evaluate adherence. Data were analyzed using Pearson's chi-square test. **Results.** 61% of the pregnant women perceived good quality of care and were adherent; 23% perceived fair quality of care and were adherent; and 11% perceived poor quality of care and were non-adherent. **Conclusions.** There is a significant relationship between the quality of care and adherence to prenatal check-ups among pregnant women at a public obstetric center in Lima, Peru.

# Calidad de atención y adherencia a los controles prenatales en embarazadas de un centro obstétrico público de Lima, Perú

***Palabras clave:***
*calidad de la atención; embarazadas; adherencia; cumplimiento del tratamiento; centro de salud; asistencia prenatal (Fuente: DeCS - BIREME).*

## RESUMEN

**Objetivo.** Establecer la relación entre la calidad de atención y adherencia a los controles prenatales en embarazadas de un centro obstétrico público de Lima, Perú. **Métodos.** Estudio de enfoque cuantitativo y de diseño correlacional, tipo observacional, descriptivo y transversal. La muestra incluyó a la totalidad de embarazadas que asistieron al centro obstétrico entre los meses de enero a abril, las cuales fueron 100 pacientes. Como instrumento fue empleado el cuestionario para la calidad y una lista de cotejo para la adherencia, analizando los datos por medio de la chi-cuadrado de Pearson. **Resultados.** El 61 % de las embarazadas percibieron buena calidad de atención y fue adherente, el 23 % percibieron regular calidad de atención y fue adherente y el 11 % percibieron mala calidad de atención y no fue adherente. **Conclusiones.** Existe relación entre la calidad de atención y la adherencia a los controles prenatales en embarazadas de un centro obstétrico público de Lima, Perú.

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## INTRODUCTION

Around the world, healthy motherhood remains a serious public health issue in most countries. The Pan American Health Organization (PAHO) [1] reported in 2020 that approximately 8,400 women die each year in Latin America and the Caribbean as a result of pregnancy complications. Many of these deaths could be prevented through timely detection of complications by means of adequate prenatal care. Therefore, all the activities performed by health personnel to achieve universal health coverage for their patients must be considered, as these are directly related to the quality of care. Such care must be efficient, safe, timely, equitable, and integrated [2] to prevent the worsening of the patient's condition during pregnancy, which could increase maternal and neonatal morbidity and mortality. According to the World Health Organization (WHO) [3], the assistance provided by healthcare personnel during pregnancy is crucial to supporting expectant mothers, promoting healthy lifestyles, preventing disease through supplementation, vaccination, and ultrasounds to detect malformations thus contributing to a safe pregnancy.

In this context, several studies worldwide have examined the quality of care during pregnancy. In Madrid, Spain, Caballero [4] observed a continuous decline in birth rates and changing expectations among pregnant women, which made it necessary to assess quality indicators. Findings showed that 65.4 % of women received good treatment, empathy, responsiveness, and safety from healthcare professionals, yet only 31 % rated reliability as low and just 33% felt secure with their provider. In Ethiopia, Kassaw et al. [5] found a high maternal mortality rate of 412 deaths per 100,000 live births, showing that few women experienced adequate quality of care, reliability, or safety from health personnel. In Guanajuato, Mexico, Aguilar et al. [6] reported 83 maternal deaths per 100,000 births; in their study, most pregnant women perceived high reliability, responsiveness, and safety in prenatal care. More recently, Ecuador has undergone changes in its healthcare model, with transformations in the relationship between patients and health professionals. As of 2020, 57.6 maternal deaths were recorded per 100,000 live births. Morales et al. [7] found that many patients reported reliability, safety, and empathy in the quality of care and good tangible aspects of prenatal assistance, but described poor responsiveness from healthcare professionals.

In Peru, regulations and laws have been established to protect pregnant women, their families, and their babies before, during, and after childbirth to ensure their health and well-being, as well as safe and hygienic birth conditions [8]. The National Institute of Statistics and Informatics (INEI, by its Spanish acronym) [9, 10] reported that 98.1 % of pregnant women in the country attended prenatal appointments in 2023, with 65.2 % being attended by obstetric staff. Moreover, 86.7 % of pregnant women received six or more prenatal visits during 2023, compared to 85.1% in the previous year. At the subnational level, several studies have been conducted in different regions. In Chiclayo, Millones [11] found a relationship between the quality of care and adherence to prenatal check-ups. In Cajamarca, Díaz [12] stated that good prenatal care leads to higher adherence among pregnant women. Similarly, Churampi [13] in Huancavelica found a relationship between quality of care and prenatal adherence. In San Juan de Miraflores (Lima), Morocho et al. [14] found an association between prenatal care and adherence, while Franco [15] in Lima observed a relationship between quality of care and adherence, though not with provider responsiveness.

The Social Health Insurance of Peru (EsSalud) [16] reported that 95 % of pregnant women attended prenatal check-ups in 2024; however, only 57 % began care in the first months of pregnancy. It is crucial for patients to attend monthly prenatal visits to detect risks and prevent complications such as diabetes, hypertension, anemia, low fetal weight, and maternal mortality. Pregnant women should also maintain healthy diets, avoid harmful habits, receive vaccinations, and follow healthy lifestyles to ensure a safe pregnancy.

All people including women and mothers have the right to healthcare. Nevertheless, many women still die from preventable causes related to childbirth. In 2022, Peru recorded 291 maternal deaths the lowest ever, representing a 40 % reduction from 2021 yet nearly double the target set for the Sustainable Development Goal [3] by 2030. Therefore, the United Nations Population Fund (UNFPA) [17] emphasizes the importance of collaborating with governments and organizations to strengthen health systems, train providers and healthcare workers, and increase access to comprehensive reproductive health with an intercultural approach.

Accordingly, this research aimed to establish the relationship between the quality of care and adherence to prenatal check-ups among pregnant women attending a public obstetric center, contributing to the reduction of maternal and perinatal morbidity and mortality.

## METHODS

### Study type and area

This was a quantitative, observational, non-experimental, and correlational study conducted at the public obstetric center "Zárate" in Lima, Peru, between January and April 2024.

### Population and sample

The census population consisted of 100 pregnant women who received care at the public obstetric center in Lima and met the inclusion criteria those who attended prenatal check-ups and agreed to participate in the study by signing informed consent. Pregnant minors and those who declined participation were excluded. The sampling technique was non-probabilistic convenience sampling.

### Variables and data collection instruments

The variable "quality of care" evaluated the degree to which health services provided attention that led to positive patient outcomes. It was an ordinal qualitative variable, measured through a questionnaire by Díaz (2023) validated by three experts. The modified SERVQUAL model was used, consisting of 22 items covering quality dimensions: reliability (5 items), responsiveness (4 items), safety (4 items), empathy (5 items), and tangible aspects (4 items). The response scale ranged from 1 ("strongly disagree") to 5 ("strongly agree"). Internal consistency was evaluated using Cronbach's alpha = 0.63, indicating acceptable reliability.

The variable "adherence" assessed the patient's compliance with prenatal care, including attendance at appointments and other required pregnancy-related measures. It was a dichotomous nominal variable, measured through a checklist developed by Díaz (2023) and validated by three experts. The instrument comprised 19 items addressing adherence dimensions: initiation of prenatal care (1 item), prenatal check-ups (5 items), laboratory tests (9 items), supplements and vitamins (3 items), and warning signs (1 item). Responses were coded as "Yes" (1 point) or "No" (0 points). Internal consistency was evaluated using the Kuder–Richardson coefficient = 0.66, also indicating acceptable reliability.

Additionally, a general data questionnaire was used to collect demographic and background information from the pregnant participants, including age, educational level, marital status, occupation, and type of health insurance.

### Data collection techniques and procedures

The information was collected through in-person surveys. Informed consent forms were provided to all participants and signed prior to administering the questionnaire. Once consent was obtained, the instruments were completed, and the collected data were tabulated and organized in an Excel database for storage and analysis. It is worth noting that this process was initiated only after obtaining authorization from the person in charge of the institution.

### Data analysis

The variable "quality of care" was represented as an ordinal qualitative variable, while the variable "adherence" to prenatal care was nominal, categorized as "yes" or "no," depending on whether the pregnant woman complied with the care provided during prenatal attention. Descriptive analysis was performed using frequency and percentage distributions for the variables, summarized and presented through tables, graphs, and statistical estimates. For inferential analysis, Pearson's chi-square correlation coefficient was applied to measure the degree of association between both variables and to determine whether a statistically significant relationship existed.

### Ethical considerations

Throughout the research process, the fundamental rights of the pregnant participants were respected, ensuring the anonymity of patients. The principle of confidentiality guaranteed the protection of all data and information provided, as confirmed through the signed informed consent forms, which ensured data anonymization. The bioethical principles of respect, beneficence, and justice were also applied to guide the study, ensuring the protection of participants and the ethical validity of the research. Furthermore, approval was obtained from both the chief physician and the institution's Ethics Committee.

**Table 1.** General data of pregnant women attending the public obstetric center

| General data | n = 100 | |
|---|---|---|
| | fi | % |
| **Age** | | |
| 18–29 years | 64 | 64.0 |
| 30–39 years | 31 | 31.0 |
| 40–45 years | 5 | 5.0 |
| **Educational level** | | |
| Primary | 2 | 2.0 |
| Secondary | 61 | 61.0 |
| Technical higher education | 17 | 17.0 |
| University higher education | 20 | 20.0 |
| **Marital status** | | |
| Married | 9 | 9.0 |
| Cohabiting | 42 | 42.0 |
| Single | 49 | 49.0 |
| **Occupation** | | |
| Homemaker | 54 | 54.0 |
| Student | 9 | 9.0 |
| Other | 37 | 37.0 |
| **Type of health insurance** | | |
| SIS | 100 | 100.0 |

## RESULTS

Upon examining the general data of the surveyed pregnant women, it was observed that 64% were between 18 and 29 years old; 61 % had completed secondary education; 49% were single; 54 % were homemakers; and 100% were insured under the Comprehensive Health Insurance (SIS) program (see Table 1).

**Table 2.** Overall perceived quality of care among pregnant women at the public obstetric center

| Quality of care | n = 100 | |
|---|---|---|
| | fi | % |
| Poor | 11 | 11.0 |
| Fair | 24 | 24.0 |
| Good | 65 | 65.0 |

When examining the quality of care among pregnant women at the public obstetric center, 11% of patients rated it as "poor," 24 % as "fair," and 65 % as "good." Overall, the quality of care during prenatal check-ups was generally perceived as good (see Table 2).

Analyzing the frequencies by dimensions of quality of care, the pregnant women reported the following: regarding reliability, 49 % perceived it as "fair"; for responsiveness, 53 % considered it "good"; for safety, 68 % rated it "good"; for empathy, 73% stated it was "good"; and for tangible aspects, 62 % rated them as "good" (see Table 3).

Regarding adherence to prenatal care, 84 % of the surveyed patients were adherent, while only 16 % were not (see Table 4).

When exploring adherence dimensions, 75 % of women initiated prenatal care; regarding laboratory tests, 84 % had tests for blood type, hemoglobin,

**Table 3.** Dimensions of quality of care among pregnant women at the public obstetric center

| Dimensions | n = 100 | | | | | |
|---|---|---|---|---|---|---|
| | Poor | | Fair | | Good | |
| | fi | % | fi | % | fi | % |
| Reliability | 21 | 21.0 | 49 | 49.0 | 30 | 30.0 |
| Responsiveness | 14 | 14.0 | 33 | 33.0 | 53 | 53.0 |
| Safety | 11 | 11.0 | 21 | 21.0 | 68 | 68.0 |
| Empathy | 8 | 8.0 | 19 | 19.0 | 73 | 73.0 |
| Tangible aspects | 11 | 11.0 | 27 | 27.0 | 62 | 62.0 |

**Table 4.** Overall adherence to prenatal care among pregnant women at the public obstetric center

| Adherence to prenatal care | n = 100 | |
|---|---|---|
| | fi | % |
| Adherent | 84 | 84.0 |
| Non-adherent | 16 | 16.0 |

**Table 5.** Dimensions of adherence to prenatal care among pregnant women at the public obstetric center

| Dimensions | n = 100 | | | |
|---|---|---|---|---|
| | Adherent | | Non-adherent | |
| | fi | % | fi | % |
| Initiation of prenatal care | 25 | 49.0 | 30 | 30.0 |
| Prenatal check-ups | 26 | 33.0 | 53 | 53.0 |
| Laboratory tests | 16 | 21.0 | 68 | 68.0 |
| Supplements and vitamins | 13 | 19.0 | 73 | 73.0 |
| Warning signs | 38 | 27.0 | 62 | 62.0 |

urine, glucose, syphilis, HIV, and ultrasound; 87 % reported taking supplements and vitamins (folic acid, iron, calcium); and 62 % reported being aware of and able to recognize warning signs (see Table 5).

The relationship between quality of care and adherence among the pregnant women yielded a *p*-value of 0.000 < 0.05, establishing a statistically significant association between both variables (see Table 6).

## DISCUSSION

The results are supported by Nightingale's Environmental Theory [18], which emphasizes that, when addressing the quality of care, one must acknowledge the influence of external factors on a person's health. Virtually no element escapes the definition of the environment, which encompasses the patient's physical, mental, and social aspects. Therefore, it is necessary to ensure an adequate environment during prenatal care to promote overall well-being. The findings are also supported by Swanson's Theory of Caring [19], which seeks to understand and improve nursing practice through the description, explanation, prediction, and control of health phenomena. These theories help healthcare personnel enhance their professional and disciplinary skills through continuous learning, as the use of systematic methods tends to yield positive outcomes.

It was observed that, in the variable "quality of care," the "reliability" dimension was perceived as "good" by only a few pregnant women. This result is consistent with the findings of Kassaw et al. [4] and Caballero [5]. Conversely, the findings of Morales et al. [7] in Ecuador differ from this study, as more than half of the interviewed pregnant women reported good reliability during prenatal care. Likewise, in the study by Aguilar et al. [6] conducted in Guanajuato, Mexico, nearly all participants reported good quality of care during prenatal visits. These contrasts demonstrate that the level of quality in healthcare provision can vary significantly between countries.

Regarding the "responsiveness" dimension, the pregnant women perceived it as "good." This aligns with the study by Caballero [3] in Madrid, Spain, and similarly with the works of Aguilar et al. [6] in Guanajuato, Mexico, and Kassaw et al. [4] in Ethiopia, who also reported adequate responsiveness. However, this contrasts with the study by Morales et al. [7] in Ecuador, who found that most participants rated responsiveness as "poor."

**Table 6.** Relationship between quality of care and adherence among pregnant women at the public obstetric center

| Quality of care | Adherence to prenatal care | | | | Total | | $X^2$ | p-value |
|---|---|---|---|---|---|---|---|---|
| | Non-adherent | | Adherent | | | | | |
| | fi | % | fi | % | fi | % | | |
| Poor | 11 | 11.0 | 0 | 0.0 | 11 | 11.0 | | |
| Fair | 1 | 1.0 | 23 | 23.0 | 24 | 24.0 | 45.473 | 0.000 |
| Good | 4 | 4.0 | 61 | 61.0 | 65 | 65.0 | | |
| Total | 16 | 16.0 | 84 | 84.0 | 100 | 100.0 | | |

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In terms of safety, this dimension was also perceived as "good" by the pregnant women. These results are similar to those of Caballero [3] in Madrid, Spain, and parallel to the findings of Morales et al. [7] in Ecuador. Moreover, Aguilar et al. [6] in Guanajuato, Mexico, also reported high safety levels in prenatal care. However, this differs from Kassaw et al. [4] in Ethiopia, where only a minority of pregnant women rated safety as good during their prenatal visits.

Similarly, the participants in the present study perceived good empathy in prenatal care. This finding agrees with Caballero [3] in Madrid, Spain, where pregnant women reported receiving good treatment and empathy, and with Kassaw et al. [4] in Ethiopia, who also found positive perceptions of empathy. However, it slightly differs from Morales et al. [7] in Ecuador, where only about half of the participants described empathy in their care as good.

Regarding tangible aspects, the pregnant women noted that the institution possessed the necessary equipment and resources to support their care. These results are very similar to those reported by Morales et al. [7] in Ecuador; however, they differ from those found by Kassaw et al. [4] in Ethiopia, where nearly all participants indicated that the tangible aspects of their healthcare facility were adequate. In reality, healthcare centers strive to maintain appropriate facilities and equipment as part of the process of ensuring quality care.

It was also observed that, regarding adherence dimensions, most of the pregnant women at the public obstetric center began prenatal care in a timely manner. This finding aligns with the results of Martínez et al. [20] in Colombia; however, it contrasts with Kassaw et al. [4] in Ethiopia, where only a small group of pregnant women attended prenatal check-ups during the first trimester, while most did so later, in the second or third trimester.

When asked about completing laboratory tests, most participants in the present study complied with the recommended evaluations. These results are consistent with Martínez et al. [20] in Colombia but differ from Kassaw et al. [4] in Ethiopia, where only some participants completed the required prenatal tests. Therefore, when a pregnant woman fails to complete her laboratory examinations, it delays the identification of potential complications during pregnancy.

Regarding adherence to supplements and vitamins, some pregnant women reported consuming the required nutrients during pregnancy. These results are very similar to those found by Kassaw et al. [4] in Ethiopia; however, they differ from those of Martínez et al. [20] in Colombia, where all participants, without exception, received supplements and vitamins. Lastly, when asked about recognition of warning signs during pregnancy, only about half of the women were adherent in recalling danger signs. This finding contrasts with the study by Dandona et al. [20], who found that all participants were knowledgeable about warning signs—an essential factor in preventing maternal health complications.

Finally, this study demonstrates the existence of a relationship between quality of care and adherence among pregnant women at the public obstetric health center in Lima. These results are consistent with those of Millones [11] in Chiclayo, Peru, who suggested implementing improvements in obstetric consultation services, which would benefit pregnant women given the observed weak participation in prenatal care. Similarly, they align with the findings of Díaz [12] in Cajamarca, Peru, who reported that, when evaluating quality of care, it was generally perceived as average or insufficient, indicating dissatisfaction with the services received. Furthermore, when analyzing adherence, most participants showed regular or insufficient compliance, which is concerning since adherence is crucial to preventing pregnancy-related risks. Comparable results were observed by Churampi et al. [13] in Huancavelica, Peru, who found a relationship between all quality-of-care dimensions and prenatal care adherence, as well as by Morocho et al. [14] in San Juan de Miraflores, Lima. Conversely, within the same jurisdiction, Franco [15] reported different findings, showing only slight differences between quality of care and adherence, suggesting that both variables are interrelated and essential for preventing perinatal maternal mortality.

It is important to note that the limitations of this study occurred mainly during the data collection phase, as pregnant women had limited availability for interviews. This extended the process of completing the surveys; however, all necessary measures were implemented to ensure the successful completion of this stage, even when requiring additional time at the obstetric center.

It is recommended to develop new programs aimed at improving the quality of care in all public health

institutions in Peru, including initiatives to strengthen essential skills that enhance the professional–patient relationship, thereby increasing adherence to prenatal care.

## Conclusions

Based on the results, it is concluded that there is a significant relationship between quality of care and adherence to prenatal check-ups among pregnant women at a public obstetric center in Lima, Peru ($p < 0.05$).

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## Authorship contribution

**KRKK:** Formal analysis, discussion, and funding acquisition.

**PGLE:** Investigation, project administration, supervision, and resources.

**CRCG:** Conceptualization, writing, original draft, and writing, review & editing.

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## Conflict of interest statement

The authors declare no conflicts of interest.