

Examining Prenatal Care Compliance and Its Determinants Among Pregnant Mothers: A Descriptive Correlational Study

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KEYWORDS

Prenatal care compliance

Pregnant mothers

Obstetrical factors

Personal Factors

Abstract

Background: Prenatal care is crucial for the health of mothers and their unborn children. This study explores the compliance of pregnant mothers in Santa Catalina, Ilocos Sur, with prenatal care services from 2022 to 2023.

Objectives: The study aims to assess the level of compliance of pregnant mothers with prenatal care and examine its relationship with personal and obstetrical factors.

Methods: A descriptive correlational research design was used, with data collected from a total enumeration of 156 respondents through a questionnaire adapted from Derige (2019) and the Department of Health's Mother and Child Book (2013).

Results: High adherence to prenatal care was observed, particularly in prenatal visits, laboratory procedures, immunization, micronutrient supplementation, and dental checkups. However, no significant relationship was found between compliance and personal-related factors such as age, education, and number of pregnancies.

Conclusions: Demographic factors did not significantly influence compliance, suggesting other factors may play a role. Recommendations include improving prenatal education and healthcare services.

1. Introduction

Prenatal care (ANC) is vital for the health and well-being of both expectant mothers and their babies. It plays a crucial role in identifying and managing potential complications early, such as anemia, hypertension, and gestational diabetes, which can significantly affect maternal and fetal health [1]. Non-compliance with ANC guidelines can increase the risk of maternal problems, premature labor, low birth weight, and neonatal mortality [2, 3]. Hence, community health centers must carry out planning, advising, and supervising/monitoring activities and make basic health care readily available to manage and promote early detection of high-risk pregnancies [4].

The World Health Organization (WHO) recommends at least four prenatal visits, with regular screenings and health advice, to ensure a healthy pregnancy and reduce maternal and infant mortality rates [5]. Despite this, many pregnant women fail to attend the recommended number of visits, which can lead to adverse health outcomes for both mother and child.

Compliance with prenatal care is influenced by a range of factors, including socio-demographic characteristics such as education, employment, marital status, and access to healthcare facilities [6]. In many low- and middle-income countries, barriers such as affordability, transportation, and cultural beliefs hinder timely access to ANC services. In the Philippines, for example, many pregnancy practices are rooted in traditional beliefs [7]. Furthermore, personal circumstances such as a history of obstetric complications, household income, media exposure, and lack of education and awareness about their condition also play a role in a woman's decision to seek prenatal care [8, 9]. The COVID-19 pandemic further exacerbated these challenges, with some women delaying or avoiding prenatal visits due to safety concerns and logistical difficulties [10]. In Korea, for example, pregnant women expressed significant fears and worries about prenatal care services [11]. These factors highlight the need for comprehensive strategies to improve prenatal care access and adherence.

In the Philippines, the early initiation of prenatal care, particularly during the first trimester, is crucial for addressing complications before they become severe [8]. Despite some progress, statistics show that many women still fail to begin ANC early, with only 63.4% of pregnant women attending their first prenatal visit in the first trimester pre-pandemic [10]. This study in Santa Catalina, Ilocos Sur, Philippines, aims to assess the level of compliance with prenatal care among local pregnant women and identify the factors influencing their adherence. By understanding these factors, the study hopes to offer recommendations for improving maternal health outcomes and provide insights to help healthcare workers design more effective prenatal care programs in the community.

Objectives

This study aimed to determine compliance with prenatal care among pregnant mothers in Sta. Catalina, Ilocos Sur, Philippines, for the calendar year 2022-2023. Specifically, it sought to address several research questions. First, it examined the profile of the respondents in terms of personal-related factors, including age, civil status, educational attainment, occupation, family monthly income, and place of residence. It also explored obstetrical-related factors, such as the number of pregnancies, number of living children, and type of delivery. Second, the study assessed the extent of compliance with prenatal care in terms of the frequency of prenatal visits, laboratory procedures, immunizations, micronutrient supplementation, and dental checkups. Finally, it investigated whether there was a significant relationship between the extent of compliance with prenatal care and both personal-related and obstetrical-related factors.

2. Methods

2.1. Research Design

This study used a descriptive correlational research design to examine the relationship between prenatal care compliance and personal- and obstetrical-related factors. The descriptive method outlined the respondents' characteristics, while the correlational approach identified relationships between compliance and the variables. The design allowed for efficient data collection from a large sample. The correlational analysis helped determine the strength and direction of associations between compliance and factors like age, education, and obstetrical history. This approach provides valuable data to inform clinical practice and guide interventions aimed at improving prenatal care compliance.

2.2. Population and Sample

The study included all the 156 pregnant women currently receiving prenatal care who met the following criteria: (a) aged 16-49 years during the 2023 calendar year, (b) regardless of civil status, (c) residents of Sta. Catalina, Ilocos Sur, Philippines, (d) who had prenatal visits at the Rural Health

Unit (RHU) or other health facilities, (e) delivered at RHU Sta. Catalina or other health facilities, and (f) delivered either via Normal Spontaneous Delivery or Cesarean Section. Total enumeration was used to identify the respondents.

2.3. Data Gathering Instrument

Data for this study were collected using a questionnaire checklist adapted from Derige [12] and supplemented with items from the Department of Health's Mother and Child Book [13] approved by a technical committee. The survey, which was self-administered, consisted of two main sections. Part I focused on personal-related factors (age, civil status, educational attainment, occupation, and family monthly income) and obstetrical-related factors (number of pregnancies, number of living children, type of delivery, place of delivery, and birth attendant). Part II assessed the extent of compliance with prenatal care, covering areas such as the frequency of prenatal visits, immunization, micronutrient supplementation, and dental checkups. Three field experts validated the instrument to ensure its relevance and accuracy in capturing the necessary data.

2.4. Ethical Considerations

Ethical principles were upheld to protect participants' rights, with informed consent, confidentiality, and voluntary participation ensured. Data was securely stored, and participants could withdraw at any time. No compensation was provided, but snacks and water were offered. Risks were minimal, and harm was minimized, particularly for vulnerable participants. The study aimed to raise awareness of prenatal care compliance and its impact on maternal health, with findings to be shared in community meetings. All sources were properly acknowledged to meet data protection standards.

2.5. Data Analysis

Data analysis used descriptive statistics to describe demographics and prenatal care compliance. Frequency and percentage summarized the respondents' profiles, while the mean assessed compliance levels. Pearson correlation analysis explored the relationships between compliance and personal- and obstetrical-related factors.

3. Results and Discussions

This section presents findings on prenatal care compliance among pregnant women in Sta. Catalina, Ilocos Sur, Philippines, highlighting demographic patterns, compliance levels, and links to personal and obstetrical factors. The results are discussed in the context of existing literature, offering insights to improve maternal health outcomes.

3.1 Profile of the respondents

For personal-related factors, the majority of respondents (73 or 47.79%) were aged 18-27 years. Most respondents were married (91 or 58.3%) and had attained at least a college degree (72 or 46.2%). The majority were housekeepers (124 or 79.5%), and most lived in rural areas (141 or 90.4%).

Regarding obstetrical-related factors, most respondents had 1-2 pregnancies (111 or 71.15%) and 1-2 children (112 or 71.79%). A large percentage had normal deliveries (131 or 84%), while fewer had cesarean sections (25 or 16%).

3.2. Extent of compliance to prenatal care

The extent of compliance with prenatal care was evaluated based on the frequency of prenatal visits, laboratory procedures, immunization, micronutrient supplementation, and dental checkups. These factors were assessed to evaluate respondents' adherence to recommended prenatal care practices essential for the health of both mother and child.

3.2.1. Extent of compliance to prenatal care

in terms of prenatal visits

The analysis of respondents' compliance with prenatal care showed an overall mean score of 3.02, indicating "High" adherence. This suggests that respondents are committed to attending prenatal visits and recognize their importance for both maternal and infant health. Respondents expressed confidence in the care received ($M=3.80$) and the value of scheduled visits ($M=3.70$), aligning with literature that emphasizes prenatal care's role in improving maternal and fetal health outcomes [14].

Most participants adhered to their prenatal visit schedules, which is crucial for enhancing the overall efficacy of recommended care delivery.

[15]. Maternal mortality rates are reduced due to these consultations, which offer crucial information regarding warning signs and treatment for any complications [16]. While respondents agreed on the importance of adhering to the recommended visit frequency, some showed slight variation in prioritizing it ($x = 2.31$), indicating a general understanding of its importance in improving maternal and fetal health outcomes. [17]. Confidence in healthcare providers and regular prenatal care contributes to better pregnancy outcomes and institutional deliveries [18, 19, 20].

Hence, consistent prenatal care is essential for both maternal and infant health. Regular visits help identify issues early and improve pregnancy outcomes, as supported by existing research [21].

Table 1

Extent of compliance to prenatal care in terms of prenatal visits

Extent of Compliance to prenatal care in terms of Frequency of Prenatal Visits	Mean	Descriptive Rating
1. I feel confident in the care provided to me during my prenatal visits.	3.80	Strongly Agree
2. I attended all of my scheduled prenatal visits without fail.	3.70	Strongly Agree
3. I consider attending prenatal visits to be very important for my health and my baby's health.	3.40	Agree
4. I am satisfied with the frequency of my prenatal visits.	3.35	Agree
5. I attended most of my scheduled prenatal visits but missed a few.	3.17	Agree
6. I would prefer to have more frequent prenatal visits than what is currently recommended.	2.99	Agree
7. I missed a significant number of my scheduled prenatal visits.	2.77	Agree
8. I missed some prenatal visits due to unforeseen circumstances.	2.40	Disagree
9. I attend prenatal visits only when I experience complications or concerns.	2.31	Disagree
10. I prefer to schedule prenatal visits less frequently than recommended by my healthcare provider.	2.31	Disagree
Overall Mean	3.02	High

3.2.2. Extent of compliance to prenatal care in terms of laboratory procedures

This section examines compliance with prenatal care, focusing on adherence to recommended laboratory procedures essential for maternal and fetal health.

Table 2
Extent of compliance to prenatal care in terms of laboratory procedures

Extent of Compliance to prenatal care in terms of Laboratory Procedures	Mean	Interpretation
1.I am willing to undergo additional laboratory tests if it means ensuring the health and well-being of my baby.	3.56	Strongly Agree
2.I have always followed the recommended laboratory procedures during my prenatal visits.	3.45	Agree
3.I trust my healthcare provider and their recommendations for laboratory procedures during my prenatal visits.	3.44	Agree
4.I believe that having regular laboratory tests during pregnancy is crucial to ensuring the health of my baby.	3.33	Agree
5.I am always willing to comply with the laboratory procedures even if it means having to go through additional tests or procedures.	3.36	Agree
6.I am always willing to provide samples for laboratory tests and understand that this is a necessary part of prenatal care.	3.34	Agree
7.I understand the importance of monitoring my blood pressure and glucose levels during pregnancy and always make sure to have these tests done.	3.33	Agree
8.I make it a point to ask my healthcare provider about any additional laboratory tests that I may need during my prenatal visits.	3.33	Agree
9.I believe that having regular laboratory tests can help detect any potential health problems during pregnancy and can help me make informed decisions about my care.	3.33	Agree
10. I am always willing to schedule additional prenatal visits to accommodate any necessary laboratory tests.	3.32	Agree
Overall Mean	3.38	High

Results on compliance with laboratory procedures during prenatal care revealed an overall mean score of 3.38, indicating "High" compliance. Respondents "Strongly Agree" with the willingness to undergo additional laboratory tests if necessary to ensure the health of their babies ($M = 3.56$) and "Agree" with consistently following the recommended laboratory procedures during prenatal visits ($M = 3.45$). This demonstrates a positive attitude toward compliance with laboratory tests and a strong commitment to maternal and fetal health. Trust in healthcare providers was also a key factor, with respondents expressing confidence in their providers' recommendations for laboratory tests ($M = 3.44$), highlighting the importance of the patient-provider relationship in promoting compliance [22].

Regular prenatal checkups and laboratory screenings are crucial for monitoring maternal and fetal health, identifying potential risks, and providing early interventions [23]. Prenatal tests are essential for detecting health conditions that may affect the mother or fetus, including birth defects, chromosomal abnormalities, and risks like preterm birth [24]. Screening tests often lead to diagnostic tests, which provide more accurate information about the baby's health, underscoring the importance of comprehensive prenatal care throughout pregnancy.

3.2.3. Extent of compliance to prenatal care

in terms of immunization

The assessment of compliance with immunization during prenatal care showed an overall mean score of 3.18, indicating that respondents generally exhibit positive attitudes and behaviors toward immunizations. The respondents "Agree" with receiving all recommended immunizations, adhering to the recommended schedule, and receiving the influenza vaccine during pregnancy, all of which had a mean score of 3.46. This demonstrates strong compliance with immunization guidelines, in line with research emphasizing the importance of patient education and provider communication in ensuring immunization adherence [25, 26].

Table 3

Extent of compliance to prenatal care in terms of immunization

Extent of Compliance to prenatal care in terms of Immunization	Mean	Interpretation
1.I have received all recommended immunizations during my prenatal visits.	3.46	Agree
2.I have followed the recommended schedule for immunizations during my pregnancy.	3.46	Agree
3.I have received the influenza vaccine during my pregnancy.	3.46	Agree
4.I have received the Tdap vaccine during my pregnancy.	3.22	Agree
5.I believe that getting immunized during pregnancy is important for the health of my baby.	3.00	Agree
6.I have discussed the benefits and risks of immunizations with my healthcare provider.	3.00	Agree
7.I believe that receiving immunizations during pregnancy is safe for both me and my baby.	3.00	Agree
8.I am aware of the potential complications that can occur if I do not receive recommended immunizations during my pregnancy.	3.00	Agree
9.I have followed the recommendations of my healthcare provider regarding immunizations during pregnancy.	2.98	Agree
Overall Mean	3.18	High

The lowest mean score of 2.98 was for the statement regarding following healthcare providers' recommendations on immunizations, suggesting a slight variation in compliance but still an overall agreement with healthcare provider guidance. Maternal immunization has been a critical tool for protecting both mothers and infants from preventable diseases, such as influenza, tetanus, and pertussis, with vaccines protecting the infant during the first few months of life [27, 28]. The success of maternal vaccination, particularly the tetanus toxoid vaccine, has led to significant global health improvements, including a more than 95% reduction in neonatal tetanus deaths since the 1980s [27].

3.2.4. Extent of compliance to prenatal care in terms of micronutrient supplementation

Strong adherence to recommended supplementation was indicated by the high overall score of 3.19 obtained from the assessment of compliance with micronutrient supplementation throughout prenatal care. Respondents "Agree" with consistently following healthcare provider instructions on supplement intake ($x = 3.38$), ensuring timely consumption to maximize effectiveness ($x = 3.33$), and continuing supplementation even in the presence of side effects ($x = 3.31$). These findings underscore the importance of following professional guidance to meet the nutritional needs of both expectant mothers and their developing fetuses [29].

Despite side effects, the respondents' commitment to taking supplements as prescribed aligns with the literature emphasizing the significance of addressing side effects while maintaining supplementation for maternal and fetal health. Studies highlight evidence of the benefits of micronutrient supplementation in perinatal results, but indiscriminate use is discouraged due to unknown side effects [30].

Additionally, the findings suggest that pregnant individuals are proactive in prioritizing their nutritional needs, reflecting a positive trend in maternal healthcare practices. This highlights the effectiveness of ongoing education in promoting adherence to supplementation regimens, which is crucial for optimal pregnancy outcomes. Furthermore, this proactive approach underscores the importance of continued support and resources to sustain healthy behaviors throughout pregnancy. Proper nutrition during pregnancy, including folate, iron, calcium, vitamin D, and A supplementation, is essential for fetal growth and maternal well-being [31, 32].

Table 4

Extent of compliance to prenatal care in terms of micronutrient supplementation

Extent of Compliance to prenatal care in terms of Micronutrient Supplementation	Mean	Interpretation
1. I strictly followed the instructions given by my healthcare provider regarding the intake of micronutrient supplements.	3.38	Agree
2. I made sure to take my prescribed micronutrient supplements at the recommended time to ensure its effectiveness.	3.33	Agree
3. I was consistent in taking my prescribed prenatal supplements even if I experienced side effects.	3.31	Agree
4. I always replenished my supply of prescribed micronutrient supplements before it ran out.	3.31	Agree
5. I always complied with my healthcare provider's advice and recommendations regarding micronutrient supplementation during my prenatal care.	3.24	Agree
6. I took my recommended daily dose of folic acid as prescribed during my prenatal care.	3.22	Agree
7. I regularly took my prescribed iron and calcium supplements during my prenatal checkups.	3.07	Agree
8. I took my prescribed vitamin D supplements as recommended during my prenatal care.	3.00	Agree
9. I always discussed with my healthcare provider my concerns about the effects of the micronutrient supplements on my health and pregnancy.	3.00	Agree
10. I always brought and took my prescribed micronutrient supplements during my prenatal visits.	2.99	Agree
Overall Mean	3.19	High

3.2.5. Extent of compliance to prenatal care in terms of dental checkup

The respondents demonstrated a relatively high level of compliance with dental checkups during pregnancy, as indicated by an overall mean score of 2.95. This suggests that expectant mothers generally value the importance of dental care as part of prenatal health. The respondents "Agree" that they feel confident in maintaining good dental health and attending regular dental checkups ($M = 3.28$), recognize the connection between oral hygiene and overall health during pregnancy ($M = 3.14$), and

are comfortable discussing dental concerns with their healthcare provider ($M = 3.04$). These findings highlight a proactive approach to dental care, with respondents showing a strong sense of responsibility for their oral health during pregnancy.

Table 5
Extent of compliance to prenatal care in terms of dental checkup

Extent of Compliance to prenatal care in terms of Dental Checkup	Mean	Descriptive Rating
1.I feel confident in my ability to maintain good dental health and attend regular dental checkups during pregnancy.	3.28	Agree
2.I understand the importance of good oral hygiene and its connection to overall health during pregnancy.	3.14	Agree
3.I am comfortable discussing any dental concerns with my healthcare provider during my prenatal visits.	3.04	Agree
4.I am aware of the importance of dental checkups during pregnancy for the health of my baby.	3.00	Agree
5.I make sure to follow the recommended schedule for dental visits during pregnancy.	3.00	Agree
6.I am aware of the potential risks to my baby's health if I don't have regular dental checkups during pregnancy.	3.00	Agree
7.I make sure to follow my dentist's recommendations for dental care during pregnancy.	2.84	Agree
8.I prioritize getting my teeth cleaned regularly during my prenatal care appointments.	2.79	Agree
9.I prioritize dental care during pregnancy to maintain good oral health for me and my baby.	2.74	Agree
10. I regularly schedule dental checkups during my prenatal care appointments.	2.71	Agree
Overall Mean	2.95	High

This confidence in managing oral health is crucial, as it encourages proactive behaviors such as seeking timely dental care and adhering to checkup schedules. Furthermore, the comfort in discussing dental issues with healthcare providers reflects positive patient-provider communication, which is essential for effective prenatal care [33]. Research has also emphasized the significance of maintaining good oral health during pregnancy, as hormonal changes can increase susceptibility to oral health issues, which may impact both maternal and fetal health [34, 35]. By prioritizing dental care, expectant mothers can reduce the risk of complications such as preterm birth, low birth weight, and gum disease, ensuring the well-being of both mother and baby [36].

3.3. Relationship between the extent of compliance to prenatal care, personal-related factors, and obstetrical-related factors

No significant correlations were found in the statistical study examining the relationship between personal and obstetrical-related factors and compliance with different prenatal care components. Specifically, respondents' personal characteristics, including age, civil status, educational attainment, occupation, and place of residence, as well as obstetrical factors like the number of pregnancies, number of living children, and type of delivery, did not significantly impact their adherence to prenatal care guidelines.

Regarding age, the results showed no significant relationship with prenatal care compliance across various components such as checkups, laboratory procedures, immunizations, micronutrient supplementation, and dental care ($r=0.057$; $p>0.480$). This suggests that age may not be a key factor in determining prenatal care practices in this study, contradicting findings from previous research that highlighted age as a significant determinant, with younger women facing more challenges in adhering to prenatal care [37, 38].

Similarly, civil status was found to have no significant influence on prenatal care compliance ($r=0.019$; $p>0.816$). This finding aligns with previous studies highlighting that socio-economic and educational factors play a more significant role in prenatal care utilization than civil status [39, 40].

For educational attainment, the analysis revealed no significant association with prenatal care compliance. This is contrary to other studies that revealed greater utilization of antenatal care for those with higher education level [41]. Other studies emphasized that factors like socio-economic status and residence, such as those that reside in areas with higher demands of public transportation, were more influential in prenatal care practices [42, 43].

The analysis on occupation revealed no significant relationship with prenatal care compliance ($r=0.095$; $p>0.237$), suggesting that occupation does not significantly affect adherence to recommended care practices. A possible reason for this could be that factors other than occupation, such as access to healthcare or personal health beliefs, may strongly influence adherence to recommended prenatal care practices. Regarding residence, there was no significant relationship with compliance ($r=0.015$; $p>0.853$). Although previous studies acknowledged regional differences in prenatal care utilization, they highlighted that factors such as income and education, rather than geographical location, were more influential [44].

Table 7. Relationship between the extent of compliance to prenatal care, personal-related factors, and obstetrical-related factors

Personal-Related Factors	Prenatal visit	Lab procedures	Immunization	Micro-nutrients Supplementation	Dental Check up	Overall
Age	0.041	0.050	0.106	0.035	0.136	0.057
Civil Status	0.034	0.051	0.001	0.050	0.077	0.019
Education	0.108	0.000	0.044	0.056	0.026	0.048
Occupation	0.015	0.112	0.099	0.063	0.131	0.095
Residence	0.065	0.036	0.095	0.022	0.013	0.015
Number of Pregnancy	0.098	0.072	0.008	0.003	0.061	0.102
Number of living children	0.081	0.073	0.001	0.017	0.048	0.095
Type of delivery	0.034	0.042	0.101	0.089	0.093	0.071

The number of pregnancies was also found to have no significant impact on prenatal care compliance ($r=0.102$; $p>0.204$), which supports findings from another study, indicating that the number of pregnancies alone was not a determinant of care adherence [45]. Similarly, there was no significant association between the number of living children and prenatal care compliance ($r=0.095$; $p>0.238$), echoing findings from other studies that education and socio-economic status, rather than the number of children, were more influential in determining compliance [33, 31]. Finally, the type of delivery

(vaginal or cesarean) showed no significant relationship with prenatal care compliance ($r=0.071$; $p>0.561$), which implies that prenatal care is independent of delivery method. Prenatal care typically focuses on monitoring the health of the mother and fetus throughout pregnancy, while the mode of delivery is determined closer to labor and is often influenced by factors like maternal or fetal health, labor progression, or complications. This suggests that prenatal care adherence is driven by factors other than the anticipated mode of delivery. Furthermore, this finding highlights the importance of focusing on improving prenatal care access and quality, regardless of the eventual delivery method.

4. Conclusions and Recommendations

The pregnant mothers in the study are strongly committed to maintaining optimal health during pregnancy, with mothers actively engaging in practices that promote their own well-being and the health of their babies. Demographic characteristics and obstetrical factors may not be this population's primary determinants of prenatal care adherence. Instead, factors beyond personal and obstetrical characteristics—such as socio-economic status, access to healthcare services, cultural attitudes, and healthcare provider communication—may significantly influence the extent to which expectant mothers comply with prenatal care guidelines. This highlights the need for a more nuanced understanding of the factors that shape prenatal care utilization.

The Department of Health (DOH) may explore investing in comprehensive prenatal education programs to help empower expectant mothers with knowledge about timely prenatal visits, lab tests, immunizations, supplementation, and dental care. Second, healthcare providers could consider intensifying community health education efforts to encourage adherence to prenatal care services, emphasizing the benefits of prenatal care and offering continuous support for healthier pregnancies. Lastly, local government units (LGUs) could look into supporting healthcare workers by providing resources, facilitating outreach, and fostering environments where pregnant women can access quality care.

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