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Original Research Article

Assessment of awareness regarding preconceptional care among women aged 18-25 years

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ABSTRACT

Background: Preconception care (PCC) is a vital component of preventive reproductive healthcare that aims to optimize maternal and neonatal outcomes, yet awareness remains inadequate among young women in developing countries. This study aimed to assess awareness regarding preconception care among women aged 18–25 years and to identify socio-demographic factors influencing awareness.

Methods: This hospital-based cross-sectional study was conducted among 300 women aged 18–25 years attending the Department of Obstetrics and Gynaecology, Chirayu Medical College and Hospital, Bhopal. A predesigned, structured, and pretested questionnaire was administered to assess knowledge, awareness, and practices regarding preconception care. Awareness was scored and categorized as good, moderate, or poor. Data were analyzed using descriptive statistics and the Chi-square test, with $p < 0.05$ considered statistically significant.

Results: Only 38% of participants had heard of preconception care. Overall, 26% demonstrated good awareness, 42% moderate awareness, and 32% poor awareness. Awareness regarding folic acid supplementation (45%), vaccination (39%), and chronic disease control (48%) was suboptimal. Higher education, urban residence, and prior healthcare exposure were significantly associated with better awareness ($p < 0.05$).

Conclusions: Awareness regarding preconception care among young women remains inadequate. Strengthening targeted education and integrating preconception counseling into routine healthcare services are essential to improve maternal and neonatal health outcomes.

Keywords: Preconception care, Awareness, Reproductive health, Young women, Folic acid, Cross-sectional study

INTRODUCTION

Preconception care (PCC) is a vital component of preventive reproductive healthcare that focuses on optimizing maternal and neonatal outcomes by identifying and modifying biomedical, behavioral, and social risk factors prior to conception.¹ It encompasses a wide range of interventions including folic acid supplementation, vaccination, screening and management of chronic medical conditions, genetic counseling, and promotion of healthy lifestyle practices.

The journey toward a healthy pregnancy begins long before conception. The preconception period represents a

unique and often underutilized window of opportunity during which modifiable biomedical, behavioral, social, and environmental factors can be optimized to improve maternal and fetal outcomes. Preconception care encompasses a spectrum of preventive, promotive, and therapeutic interventions aimed at identifying and mitigating potential risks before pregnancy occurs, thereby enhancing the likelihood of a healthy conception, uncomplicated gestation, and favorable neonatal outcomes.

Evidence is growing worldwide on the efficiency of preconception care in preventing poor pregnancy results like neural tube defects, preterm births, low birth weights,

and women's illnesses.^{2,4} According to the WHO, preconception intervention should be incorporated into healthcare services for better results.⁸ Despite these recommendations, implementation remains inconsistent, particularly in low- and middle-income countries. Despite remarkable advances in obstetric care, adverse pregnancy outcomes such as congenital anomalies, preterm birth, low birth weight, maternal morbidity, and perinatal mortality continue to pose significant public health challenges worldwide. A substantial proportion of these complications are influenced by factors that are present before conception, including nutritional deficiencies, chronic medical disorders, lifestyle practices, substance use, inadequate immunization status, and limited reproductive health knowledge. Timely preconception interventions, particularly folic acid supplementation, vaccination, genetic counseling, optimization of chronic diseases, and promotion of healthy lifestyle behaviors, have demonstrated considerable potential in reducing these risks.

In countries like India, awareness regarding preconception care remains significantly low, contributing to preventable maternal and neonatal complications.^{3,7} Studies conducted in South Asia have highlighted gaps in knowledge regarding essential components such as folic acid supplementation, vaccination, and lifestyle modifications.^{2,3} These deficiencies are further compounded by limited access to healthcare services, lack of structured counseling programs, and socio-cultural barriers.

Young women aged 18–25 years represent a crucial target group for preconception interventions, as early awareness can influence long-term reproductive health behaviors and outcomes. Their awareness and understanding of preconception health can profoundly influence future pregnancy outcomes and the health of subsequent generations. However, in many developing countries, including India, awareness regarding preconception care remains suboptimal, with reproductive health education frequently focusing on pregnancy and childbirth rather than preparation for conception itself. However, recent studies indicate that knowledge levels in this population remain inadequate, even among educated groups.^{5,6} A study by Kaur et al reported that less than half of young women had adequate knowledge regarding preconception health practices, indicating a substantial gap in awareness.⁵

Furthermore, awareness of preconception care is influenced by several socio-demographic factors, including educational status, socioeconomic background, urban versus rural residence, and prior exposure to healthcare services.^{1,7} Women with higher education and better access to healthcare are more likely to have adequate knowledge, while those from rural and underprivileged backgrounds often remain unaware of essential preconception practices.

In addition, the lack of integration of preconception counseling into routine clinical practice contributes significantly to poor awareness levels. Many healthcare systems continue to focus primarily on antenatal care, overlooking the critical preconception period where preventive interventions can have the greatest impact.² Emerging evidence suggests that both community-based education and digital health interventions can effectively improve awareness and promote healthy behaviors among women of reproductive age.^{6,10} Given the existing gaps in awareness and the significant role of preconception care in improving maternal and neonatal outcomes, it is essential to assess the current level of knowledge among young women. This study was therefore undertaken to evaluate awareness regarding preconceptional care among women aged 18–25 years and to identify the factors influencing their knowledge and practices.

METHODS

Study design

This study was designed as a hospital-based cross-sectional observational study.

Study setting

The study was conducted in the Department of Obstetrics and Gynecology at Chirayu Medical College and Hospital, a tertiary care teaching institute catering to both urban and rural populations.

Study duration

The study was carried out over a period of one month (March 2026 to April 2026).

Study population

The study population comprised women aged 18–25 years attending the outpatient and inpatient departments (OPD/IPD) of Obstetrics and Gynecology.

Sample size

A total of 300 participants were included in the study.

Sampling method

Convenient sampling technique was used in selecting the participants. The eligible participants were enrolled consecutively up to the desired sample size.

Inclusion criteria

Women aged 18 to 25 years who voluntarily agreed to participate and provided written informed consent were included in the study.

Exclusion criteria

Women who were unable to complete the questionnaire, whether due to illness or a language barrier, and those unwilling to participate, were excluded from the study.

Study tool (questionnaire)

Data were collected using a predesigned, structured, and pretested questionnaire consisting of three sections.

The first section recorded socio-demographic details, including age, marital status, education level, occupation, residence, socioeconomic status, and family type.

The second section assessed awareness and knowledge regarding preconception care, folic acid supplementation, vaccination before pregnancy, chronic disease control, nutritional requirements, lifestyle modifications, genetic counseling, and self-blood group.

The third section evaluated practices and sources of information, including prior use of folic acid, consultation before pregnancy, and sources of information such as doctors, the internet, media, and family or friends.¹¹

Scoring system

A score of 1 was given for each correct answer, whereas incorrect answers were given scores of 0.

Awareness scores ranged from 0 to 9 and were classified as good (7–9), moderate (4–6), or poor (0–3).

Data collection procedure

Participants were approached during their visit to the hospital. After explaining the purpose of the study and obtaining written informed consent, the questionnaire was provided. The Participants completed the questionnaire in approximately 10–15 minutes under supervision to ensure completeness.

Outcome measures

The primary outcome was the level of awareness regarding preconception care, while secondary outcomes included the association between awareness and socio-demographic factors and the identification of sources of information.

Statistical analysis

The data were entered into MS Excel and analyzed using statistical package for the social sciences (SPSS) software. Descriptive statistics were expressed as frequency and percentage, while continuous variables were presented as mean±standard deviation. The Chi-square test was used to assess associations among categorical variables, and statistical significance was set at a p value of <0.05.

RESULTS

A total of 300 women aged 18–25 years participated in the study. The mean age of participants was 21.3±2.1 years. The majority of participants belonged to urban areas (58%), while 42% were from rural backgrounds. Nearly half of the participants (46%) had attained graduate or higher education, and 28% were married. The socio-demographic profile indicates a mixed population with varying educational and socioeconomic backgrounds, allowing assessment of diverse determinants of awareness (Table 1).

Table 1: Socio-demographic characteristics of participants (n=300).

Variable	Frequency (%)
Age (mean±SD)	21.3±2.1
Urban	174 (58)
Rural	126 (42)
Graduate and above	138 (46)
Married	84 (28)

Awareness regarding preconception care was found to be suboptimal. Only 38% of participants reported having heard about preconception care, while a relatively higher proportion (62%) acknowledged that planning before pregnancy is important. This indicates that although general understanding of pregnancy planning exists, specific knowledge of preconception care remains limited (Table 2).

Table 2: General awareness regarding preconception care.

Parameter	Frequency (%)
Heard about PCC	114 (38)
Aware pregnancy planning is important	186 (62)

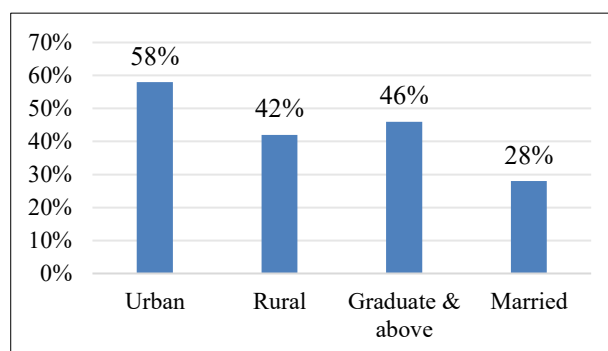


Figure 1: Socio-demographic characteristics of participants (n=300).

With respect to specific components of preconception care, awareness varied across different domains. Knowledge regarding lifestyle modification (52%) and nutritional requirements (50%) was relatively higher

compared to other components. However, awareness regarding folic acid supplementation (45%) and vaccination before pregnancy (39%) remained inadequate. Awareness about the need for control of chronic diseases prior to conception was observed in 48% of participants. These findings suggest partial awareness, with critical gaps in essential preventive measures (Table 3).

Table 3: Awareness of specific components of preconception care.

Component	Awareness (%)
Folic acid supplementation	135 (45)
Vaccination before pregnancy	117 (39)
Chronic disease control	144 (48)
Lifestyle modification	156 (52)
Nutritional requirements	150 (50)

Overall awareness was assessed using a scoring system and categorized into good, moderate, and poor levels. Only 26% of participants demonstrated good awareness, while the majority had moderate (42%) or poor (32%) awareness. This highlights that a significant proportion of young women lack adequate knowledge regarding preconception care (Table 4).

Table 4: Overall awareness grading.

Awareness level	Frequency (%)
Good	78 (26)
Moderate	126 (42)
Poor	96 (32)

Analysis of factors associated with awareness revealed that education, place of residence, and prior healthcare exposure were significantly associated with awareness levels. Participants with higher education demonstrated significantly better awareness compared to those with lower education levels ($p<0.001$). Similarly, urban participants had higher awareness compared to rural participants ($p=0.02$). Women who had prior interaction with healthcare services or counseling also showed significantly better awareness ($p<0.001$) (Table 5).

Table 5: Association of socio-demographic factors with awareness.

Factor	P value	Significance
Education level	<0.001	Significant
Residence (urban/rural)	0.02	Significant
Healthcare exposure	<0.001	Significant

Regarding sources of information, healthcare professionals were the most common source, followed by the internet and media. However, a notable proportion of participants reported lack of exposure to any reliable source of information, which may contribute to poor awareness levels.

In terms of practices, only a small proportion of participants reported having taken folic acid supplements or consulted a doctor prior to planning pregnancy, indicating a gap between awareness and actual health behavior.

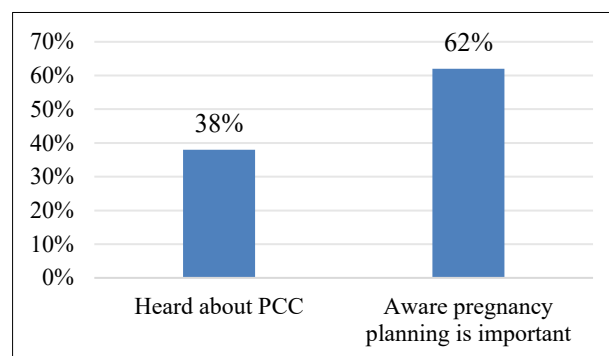


Figure 2: General awareness regarding preconception care.

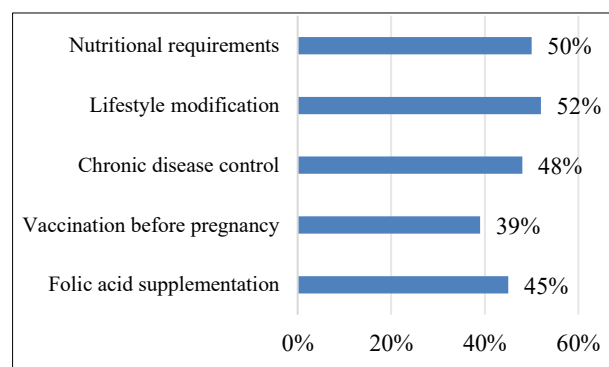


Figure 3: Awareness of specific components of preconception care.

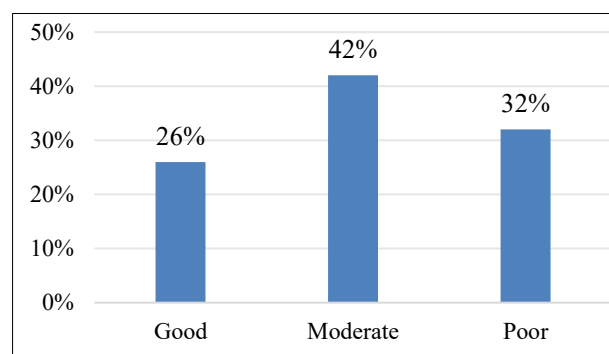


Figure 4: Overall awareness grading.

Overall, the findings demonstrate that awareness regarding preconception care among women aged 18–25 years is inadequate, with significant influence of socio-demographic factors and healthcare exposure. These results underscore the need for targeted educational interventions and improved integration of preconception counseling into routine healthcare services.

DISCUSSION

The present study evaluated the level of awareness regarding PCC among women aged 18–25 years and identified associated socio-demographic determinants. The findings demonstrate that awareness in this population remains suboptimal, with only 38.7% of participants having heard about preconception care and only 26% demonstrating good awareness. These results are consistent with existing literature indicating low levels of awareness globally, particularly in low- and middle-income countries.^{2,3}

Awareness of specific components such as folic acid supplementation (45%), vaccination (39%), and chronic disease control (48%) in the present study highlights significant gaps in essential preventive measures. These findings are in agreement with previous studies conducted in India and other South Asian countries, where awareness of folic acid and vaccination prior to pregnancy was found to be particularly low.^{3,7} Given that folic acid supplementation is crucial in preventing neural tube defects, such gaps in awareness are of considerable public health concern.⁴

In the current study, although 62% of participants recognized the importance of planning before pregnancy, specific knowledge regarding key components of preconception care was inadequate. This discrepancy between general perception and detailed knowledge has been reported in previous studies, suggesting that while the concept of planned pregnancy is somewhat understood, comprehensive awareness of preconception interventions remains limited.^{5,8} Similar findings were observed by Kaur et al, where less than half of young women demonstrated adequate knowledge regarding preconception health practices.⁵

Interestingly, awareness related to lifestyle modifications (52%) and nutritional requirements (50%) was relatively higher compared to other components. This may reflect the increasing dissemination of general health information through media and public health campaigns. However, the lack of comprehensive understanding of specific medical interventions indicates the need for structured and targeted educational strategies.⁶

The overall awareness grading in this study revealed that the majority of participants had either moderate (42%) or poor (32%) awareness, with only a minority demonstrating good knowledge. These findings are comparable to recent cross-sectional studies reporting that only 30–45% of women possess adequate awareness regarding preconception care.^{5,8} A recent cross-sectional study from Saudi Arabia by Edris et al reported that 44.2% of women demonstrated high knowledge and positive attitudes toward preconception care, which is considerably higher than the proportion of women with adequate awareness (26%) observed in the present study. These differences may be attributed to variations in educational attainment,

accessibility of healthcare services, and the effectiveness of public health awareness programs between the two populations.⁹

Similarly, Alkhatib et al conducted a large cross-sectional study among Jordanian women and reported that 48.6% had good knowledge, 48.1% had positive attitudes, and 47.0% demonstrated good preconception care practices. These findings were substantially higher than those observed in the present study, further highlighting the need for strengthening preconception health education and awareness initiatives among young women in India.¹⁰

Comparable findings were reported by Sabr et al in Saudi Arabia, where 51.9% of women exhibited good knowledge regarding preconception care. The higher awareness observed in their study may be attributable to greater healthcare exposure, higher educational status, and increased access to preconception counseling services in a tertiary care setting.¹¹

This persistent gap suggests that current healthcare systems may not be effectively addressing preconception health education.

A key finding of this study is the significant association between awareness and socio-demographic factors. Higher educational status was strongly associated with better awareness ($p < 0.001$), which aligns with multiple previous studies identifying education as a major determinant of health knowledge.^{1,7} Educated women are more likely to access health information, understand medical advice, and adopt preventive practices.

Similarly, urban residence was significantly associated with higher awareness compared to rural residence ($p = 0.02$). This urban–rural disparity has been widely reported and is often attributed to better access to healthcare facilities, higher exposure to media, and improved health literacy in urban populations.^{3,8} Women residing in rural areas often face barriers such as limited healthcare access, lower educational levels, and socio-cultural constraints, contributing to reduced awareness.

Another important determinant identified in this study was prior healthcare exposure. Women who had previous interaction with healthcare services demonstrated significantly better awareness ($p < 0.001$). This finding is supported by Mitchell et al, who observed that only a small proportion of reproductive-aged individuals received preconception health information from healthcare providers, emphasizing the crucial role of healthcare professionals in improving awareness and promoting preconception health behaviors.¹² This finding emphasizes the vital function of healthcare providers in disseminating information about preconception care. However, it also highlights missed opportunities within healthcare systems, where preconception counseling is not routinely integrated into clinical practice.²

The findings of this study also reveal a gap between awareness and actual practices. Despite moderate awareness levels, only a small proportion of participants reported taking folic acid supplements or seeking medical consultation prior to pregnancy. This gap between knowledge and practice has been documented in earlier studies and may be influenced by factors such as accessibility, cultural beliefs, and perceived importance of preconception care.^{6,13}

Akinajo et al similarly reported a substantial disconnect between awareness and utilization of preconception care services among pregnant women in Nigeria. Although 76% of participants were aware of preconception care, only 34.2% had actually received such care before pregnancy, highlighting that awareness alone may not necessarily translate into positive health-seeking behavior.¹⁴

From a public health perspective, these findings emphasize the need for integrating preconception care into existing reproductive and primary healthcare programs. The World Health Organization recommends incorporation of preconception interventions into routine healthcare to improve maternal and neonatal outcomes.⁸ Additionally, recent evidence suggests that innovative approaches such as digital health interventions and web-based counseling can significantly improve awareness and promote healthy behaviors.¹⁵

Strengths

The strengths of this study include its focus on a critical and often under-researched age group (18–25 years), the use of a structured and comprehensive questionnaire, and the identification of key socio-demographic determinants of awareness.

Limitations

The limitations of this study include its hospital-based design, which limits generalizability to the wider community, the relatively short study duration, and the potential for recall or reporting bias inherent in self-reported data.

In general, the current study shows major deficiencies in awareness about preconception care among young women. The findings are consistent with global and regional literature, reinforcing the need for early, targeted, and structured interventions. Strengthening education, improving healthcare access, and integrating preconception counseling into routine services are essential steps toward improving reproductive health outcomes.

CONCLUSION

Awareness about preconception care among women aged 18-25 years is insufficient, with significant gaps in

knowledge of essential components such as folic acid supplementation, vaccination, and risk factor management. Educational status, residence, and healthcare exposure significantly influence awareness levels. Strengthening targeted education and integrating preconception counseling into routine healthcare services are crucial to improve maternal and neonatal health outcomes.

The findings of the present study illuminate a crucial yet often overlooked aspect of reproductive healthcare—the awareness of preconception care among young women in their formative reproductive years. While the participants demonstrated varying degrees of knowledge regarding certain components of preconception health, significant gaps persisted in their understanding of the comprehensive measures necessary to optimize maternal and fetal well-being prior to conception.

These observations underscore the pressing need to strengthen awareness and education regarding preconception care among women aged 18–25 years. As future mothers and custodians of the next generation's health, young women must be empowered with accurate knowledge that enables informed reproductive choices and proactive health-seeking behavior. The transition from reactive obstetric care to preventive reproductive healthcare can only be achieved when preconception health becomes an integral component of routine health education and community outreach programs.

The study further highlights the responsibility of healthcare professionals, educational institutions, and public health policymakers in fostering a culture of preconception preparedness. Strategic interventions, including targeted awareness campaigns, incorporation of preconception counseling into primary healthcare services, and dissemination of evidence-based reproductive health information, may substantially bridge existing knowledge gaps.

Ultimately, preconception care is not merely a preparatory phase preceding pregnancy; it is an investment in the health of women, the well-being of future offspring, and the prosperity of society as a whole. By nurturing awareness before conception, we lay the foundation for healthier pregnancies, safer motherhood, and stronger generations to come.

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