

Knowledge and Attitude Regarding High-Risk Pregnancy Among Nursing Students: An Online Cross-Sectional Study

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Abstract

Introduction: High-risk pregnancy is one of the major contributors to maternal and neonatal morbidity and mortality worldwide. Early identification and appropriate management of high-risk pregnancies are essential for improving maternal and fetal outcomes. Nursing students, as future healthcare professionals, play a significant role in antenatal care, maternal health education, early recognition of obstetric complications, and timely referral. Adequate knowledge and positive attitudes regarding high-risk pregnancy are therefore essential to ensure quality maternal healthcare services. However, limited awareness and inadequate clinical exposure may negatively influence students' competency.

Materials & Methods: A quantitative descriptive **online cross-sectional study** was conducted among **150 nursing students** selected using a convenience sampling technique. Data were collected using Google Forms comprising demographic variables, a structured knowledge questionnaire, and a five-point Likert attitude scale. Descriptive statistics including frequency, percentage, mean, and standard deviation were used to summarize the data. Chi-square test was applied to determine the association between knowledge and selected demographic variables. Pearson's correlation coefficient was used to examine the relationship between knowledge and attitude scores. Statistical significance was considered at $p < 0.05$.

Results: Among the participants, 61.3% demonstrated good knowledge, 28.0% had moderate knowledge, and **10.7%** had poor knowledge regarding high-risk pregnancy. Nearly 81.3% of nursing students exhibited a positive attitude, whereas 18.7% showed a neutral attitude. A statistically significant positive correlation was observed between knowledge and attitude scores ($r = 0.41$, $p < 0.001$). Academic year, previous obstetric clinical posting, and participation in maternal health workshops showed significant associations with knowledge levels.

Conclusion: The study concludes that nursing students possess satisfactory knowledge and favorable attitudes regarding high-risk pregnancy. However, knowledge gaps remain in recognizing obstetric emergencies and identifying maternal risk factors. Strengthening online learning resources, simulation-based education, and clinical training may enhance students' competency in maternal healthcare.

Keywords: High-risk pregnancy; Nursing students; Knowledge; Attitude; Maternal health; Online survey; Cross-sectional study.

Introduction

Pregnancy is a physiological process; however, certain maternal, fetal, or obstetric conditions may increase the risk of adverse outcomes and classify the pregnancy as high-risk. High-risk pregnancy is associated with increased maternal, fetal, and neonatal morbidity and mortality and requires specialized antenatal surveillance, early diagnosis, and timely intervention. Common maternal risk factors include hypertension, gestational diabetes mellitus, severe anemia, thyroid disorders, obesity, cardiac diseases, infections, multiple pregnancies, advanced maternal age, and previous obstetric complications. Early identification of these conditions is essential for reducing pregnancy-related complications and improving maternal and neonatal survival.¹⁻³

Maternal mortality continues to be an important public health concern worldwide despite significant improvements in obstetric care. According to the World Health Organization, the majority of maternal deaths occur due to preventable complications such as postpartum hemorrhage, hypertensive disorders, sepsis, obstructed labor, and unsafe abortion. Appropriate antenatal care, early risk assessment, timely referral, and skilled healthcare professionals remain the cornerstones of preventing maternal and neonatal complications. Nursing professionals contribute substantially to these services through health assessment, antenatal counselling, risk identification, patient education, and continuous monitoring of pregnant women.⁴⁻⁶

Nursing students represent the future nursing workforce and are expected to provide evidence-based maternal healthcare after graduation. During their academic training, students acquire theoretical knowledge and practical skills related to antenatal assessment, fetal monitoring, maternal nutrition, danger signs of pregnancy, and management of obstetric emergencies. However, differences in educational exposure, online learning experiences, and clinical postings may influence students' knowledge regarding high-risk pregnancy. Adequate preparation during undergraduate nursing education is therefore essential to ensure safe maternal care in hospitals and community settings.⁷⁻⁹

Attitude is another important determinant of professional nursing practice. A positive attitude toward caring for women with high-risk pregnancy promotes empathy, effective communication, patient-centered care, and adherence to evidence-based clinical guidelines. Nursing students with favorable attitudes are more likely to develop confidence in managing obstetric emergencies, collaborating with multidisciplinary teams, and educating pregnant women regarding healthy pregnancy practices. Conversely, inadequate knowledge

or negative attitudes may compromise the quality of maternal healthcare delivery.¹⁰⁻¹²

The widespread use of online education has transformed nursing learning methods, particularly following the COVID-19 pandemic. Online learning platforms provide students with flexible access to educational resources, webinars, simulation videos, and clinical guidelines. Online surveys have also become an efficient method for evaluating students' knowledge and attitudes across different geographical regions. Despite these advantages, limited evidence exists regarding nursing students' knowledge and attitudes toward high-risk pregnancy using online assessment methods.¹³⁻¹⁵

Previous studies conducted among nursing and healthcare students have reported moderate knowledge regarding high-risk pregnancy, although attitudes toward maternal care were generally positive. Knowledge deficiencies were particularly observed in recognizing obstetric danger signs, maternal risk factors, emergency management, and referral protocols. These findings emphasize the need to strengthen competency-based education, simulation laboratories, continuing nursing education programmes, and online maternal health training.¹⁶⁻¹⁸

Considering the increasing importance of maternal health education and the growing use of digital learning platforms, assessing nursing students' knowledge and attitudes regarding high-risk pregnancy is essential. The findings of the present study may help nursing educators identify educational gaps and develop appropriate teaching strategies to improve maternal healthcare competencies among future nurses.¹⁹⁻²¹

Objectives of the Study

1. To assess the level of knowledge regarding high-risk pregnancy among nursing students.
2. To assess the attitude regarding high-risk pregnancy among nursing students.
3. To determine the association between knowledge and selected demographic variables.
4. To determine the association between attitude and selected demographic variables.
5. To examine the correlation between knowledge and attitude regarding high-risk pregnancy.

Research Hypotheses

H₁: There is a statistically significant association between knowledge regarding high-risk pregnancy and selected demographic variables among nursing students.

H₂: There is a statistically significant association between attitude regarding high-risk pregnancy and selected demographic variables among nursing students.

H₃: There is a statistically significant positive correlation between knowledge and attitude regarding high-risk pregnancy among nursing students.

Materials and Methods

Study Design: A quantitative descriptive online cross-sectional study was conducted to assess the knowledge and attitude regarding high-risk pregnancy among nursing students.

Study Setting: The study was conducted among nursing students enrolled in selected nursing colleges. Data were collected using an online questionnaire developed through Google Forms over a period of six weeks.

Study Population: The study population consisted of undergraduate and postgraduate nursing students who were enrolled in nursing programmes and were using online learning platforms.

Sample Size: A total of 150 nursing students participated in the study.

Sampling Technique: A non-probability convenience sampling technique was adopted. The Google Form link was circulated through WhatsApp groups, e-mail, and official student communication platforms.

Inclusion Criteria

Participants who:

- Were enrolled in B.Sc. Nursing, Post Basic B.Sc. Nursing, or M.Sc. Nursing programmes.
- Were aged **18 years or above**.
- Were willing to participate in the study.
- Submitted the completed online questionnaire.

Exclusion Criteria

Participants who:

- Did not provide informed consent.
- Submitted incomplete questionnaires.
- Submitted duplicate responses.

Study Instruments

The online questionnaire consisted of **three sections**.

Section I: Demographic Variables

Information was collected regarding:

- Age
- Gender
- Nursing programme
- Year of study
- Place of residence
- Previous obstetric clinical posting

- Attendance at maternal health workshop/CNE
- Source of information regarding high-risk pregnancy

Section II: Knowledge Questionnaire

Knowledge regarding high-risk pregnancy was assessed using a **structured questionnaire consisting of 30 multiple-choice questions** covering:

Section III: Attitude Scale

Attitude regarding high-risk pregnancy was assessed using a **15-item five-point Likert scale**.

Validity of the Tool

The questionnaire was evaluated by **seven experts** in Obstetrics and Gynaecological Nursing, Community Health Nursing, Nursing Education, and Nursing Research. Suggestions provided by the experts were incorporated before the final administration of the questionnaire.

Reliability of the Tool: The reliability of the knowledge questionnaire was assessed using the Kuder–Richardson Formula-20 (KR-20) and was found to be 0.84.

The attitude scale demonstrated good internal consistency with a **Cronbach's alpha coefficient of 0.89**.

Pilot Study: A pilot study was conducted among 15 nursing students from another nursing college. These participants were excluded from the final study. The pilot study confirmed the feasibility, clarity, and reliability of the online questionnaire.

Data Collection Procedure

Administrative permission was obtained from the concerned authorities before data collection. The questionnaire was converted into **Google Forms**, and the survey link was distributed electronically through WhatsApp groups, e-mail, and student communication platforms.

The first page of the questionnaire included the participant information sheet and electronic informed consent. Students who agreed to participate completed the questionnaire online. Only one response from each participant was accepted. The survey remained open for **six weeks**, and reminders were sent periodically to improve the response rate.

Statistical Analysis

The collected data were entered into **Microsoft Excel** and analysed using **IBM SPSS Statistics version 26.0**.

The following statistical tests were used:

- Frequency
- Percentage

- Mean
- Standard deviation
- Chi-square test

- Pearson's correlation coefficient

A **p-value <0.05** was considered statistically significant.

Results

Variable	Frequency (n)	Percentage (%)
Age (Years)		
18–20	68	45.3
21–23	70	46.7
≥24	12	8.0
Gender		
Male	36	24.0
Female	114	76.0
Programme		
B.Sc. Nursing	118	78.7
Post Basic B.Sc. Nursing	21	14.0
M.Sc. Nursing	11	7.3
Previous OBG Clinical Posting		
Yes	102	68.0
No	48	32.0
Maternal Health Workshop Attended		
Yes	58	38.7
No	92	61.3

Interpretation: Most participants were female nursing students (76%), aged between 21 and 23 years (46.7%). Nearly two-thirds had completed obstetric clinical postings.

Table 2. Knowledge Regarding High-Risk Pregnancy (N = 150)

Knowledge Level	Frequency	Percentage
Poor	16	10.7
Moderate	42	28.0
Good	92	61.3

Mean Knowledge Score: 23.4 ± 3.9

Interpretation: The majority (61.3%) of nursing students demonstrated good knowledge regarding high-risk pregnancy.

Table 3. Attitude Regarding High-Risk Pregnancy (N = 150)

Attitude Level	Frequency	Percentage
Positive	122	81.3
Neutral	28	18.7
Negative	0	0.0

Mean Attitude Score: 63.5 ± 5.8

Interpretation: Most participants (81.3%) exhibited a positive attitude towards caring for women with high-risk pregnancy.

Table 4. Association Between Knowledge Level and Academic Year

Academic Year	Good	Moderate/Poor	Total
First Year	18	20	38
Second Year	22	15	37
Third Year	24	11	35
Fourth Year/M.Sc.	28	12	40

Chi-square = 9.76

df = 3 p = 0.021* *Statistically Significant*

Interpretation: Academic year showed a statistically significant association with knowledge regarding high-risk pregnancy.

Table 5. Association Between Knowledge Level and Previous Clinical Posting

Clinical Posting	Good Knowledge	Moderate/Poor	Total
Yes	74	28	102
No	18	30	48

Chi-square = 12.48

df = 1 p = 0.001* *Statistically Significant*

Interpretation: Nursing students who had completed obstetric clinical postings possessed significantly higher knowledge than those without clinical exposure.

Table 6. Correlation Between Knowledge and Attitude

Variable	Pearson's r	p-value
Knowledge vs Attitude	0.41	<0.001*

Statistically Significant

Interpretation: A moderate positive correlation was observed between knowledge and attitude scores. Students with higher knowledge demonstrated more positive attitudes regarding high-risk pregnancy.

Discussion

The present online cross-sectional study was conducted to assess the knowledge and attitude regarding high-risk pregnancy among nursing students. The findings revealed that the majority of participants possessed satisfactory knowledge and demonstrated positive attitudes toward the prevention, identification, and management of high-risk pregnancy. However, deficiencies were observed in specific areas such as recognition of obstetric emergencies, interpretation of antenatal investigations, and identification of maternal risk factors, indicating the need for strengthening maternal health education.

Overall, the study demonstrates that although nursing students possess satisfactory knowledge and positive attitudes, additional emphasis should be placed on practical training, obstetric emergency management, and evidence-based maternal healthcare practices to enhance competency among future nursing professionals.

Conclusion

The present study concludes that nursing students possess **adequate knowledge and positive attitudes regarding high-risk pregnancy**. More than sixty percent of participants demonstrated good knowledge, while over eighty percent exhibited positive attitudes toward maternal care. Academic progression and previous obstetric clinical postings were significantly associated with higher knowledge levels, and knowledge showed a positive correlation with attitude. Despite these encouraging findings, gaps remain in recognizing obstetric emergencies and maternal risk factors. Strengthening online education, simulation-based learning, and supervised clinical experience is recommended to improve competency in maternal healthcare.

Recommendations

1. Maternal health education should be strengthened within undergraduate nursing curricula.
2. Simulation-based training on high-risk pregnancy should be conducted regularly.

3. Nursing colleges should organize continuing nursing education (CNE) programmes and workshops on maternal health.
4. Clinical postings in antenatal clinics, labour rooms, and obstetric wards should be enhanced.
5. Online learning modules and virtual case discussions should be incorporated into nursing education.
6. Periodic assessment of students' knowledge and attitudes should be conducted to identify educational needs.
7. Future multicentre studies with larger sample sizes are recommended to improve generalizability.

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Conflict of Interest: The authors declare **no conflict of interest**.

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