

# Contributing Factors of High-Risk Pregnancy among High-Risk Antenatal Mothers Attending Antenatal OPDS

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## ABSTRACT

High-risk pregnancy is a critical public health concern that increases the likelihood of complications affecting both mother and fetus. Timely identification of contributing factors is essential to ensure effective management, reduce maternal mortality, and improve neonatal outcomes. In India, particularly in the northeastern states, high-risk pregnancies remain prevalent due to various socio-demographic and medical factors.

**Methodology:** Data were collected from 141 high-risk antenatal mothers attending antenatal OPDs of Guwahati Medical College and Hospital (GMCH) and Pratiksha Hospital, Guwahati, Assam. A structured checklist based on the Dutta and Das Prenatal Risk Scoring system was used. Purposive sampling technique was employed, and data were analyzed using descriptive and inferential statistics to assess the association between levels of risk with demographic variables and contributing factors.

**Result:** The study revealed that major contributors to high-risk pregnancy and socio-demographic variables such as age, religion and parity were significantly associated with the levels of risk in pregnancy. Statistical analysis confirmed significant associations between contributing factors like miscarriage, pregnancy induced hypertension, anemia, oedema and IUGR with levels of risk in pregnancy.

**Conclusion:** The findings highlight the urgent need for healthcare providers to provide enhanced routine antenatal screening, targeted health education and timely medical interventions in high-risk populations by addressing both medical and socio-demographic factors. This can significantly help to reduce the complications of high-risk in pregnancy and improve outcomes for both mothers and infants.

**Keywords:** High-risk pregnancy, antenatal mothers, levels of risk in pregnancy, antenatal OPDs

## INTRODUCTION

High-risk pregnancy is a major public health concern associated with increased maternal and fetal morbidity and mortality. It refers to a pregnancy in which maternal, fetal, or obstetric conditions increase the likelihood of adverse outcomes for the mother, fetus, or both. Approximately 15–20% of pregnancies

are considered high-risk, with a greater burden in developing countries due to inadequate access to healthcare services.<sup>1</sup>

Several maternal factors such as advanced maternal age, chronic illnesses, obesity, anemia, hypertension, diabetes, thyroid disorders, and adverse obstetric history contribute to high-risk pregnancies. Fetal factors including congenital anomalies, intrauterine growth restriction, and multiple gestations, as well as socioeconomic and environmental factors such as poverty, inadequate antenatal care, and limited healthcare access, further increase pregnancy-related risks.<sup>1</sup>

Despite improvements in maternal healthcare, maternal mortality remains a significant global challenge. According to the World Health Organization, approximately 287,000 maternal deaths occurred worldwide in 2020, with most being preventable. India accounted for a considerable proportion of these deaths, with a maternal mortality ratio of 97 per 100,000 live births during 2018–2020. In the northeastern region, particularly Assam, the burden of high-risk pregnancy remains substantial. Recent studies have reported high prevalence rates of high-risk pregnancies in northeastern states, while many cases remain unidentified during routine antenatal care.<sup>1,2</sup>

Assam has consistently reported higher maternal mortality rates compared with several other Indian states. Major causes of maternal deaths include postpartum hemorrhage, hypertensive disorders, pregnancy-related complications, and unsafe abortions. Early identification of risk factors and timely antenatal interventions are therefore essential to reduce maternal and neonatal complications.<sup>1,6,7</sup>

The conceptual framework of the study is based on the Health Belief Model developed by Rosenstock and later expanded by Becker and Janz. The model explains how individual perceptions and beliefs influence health-related behaviors. It comprises three components: background factors, perception, and action.<sup>11</sup>

Background factors include demographic variables such as age, body mass index, educational status, religion, residence, parity, family type, and income. Perception consists of perceived susceptibility, perceived severity, perceived benefits, and perceived barriers related to high-risk pregnancy. Action includes cues to action such as health education, family support, and information sources, which influence preventive behaviors and adherence to recommended antenatal care practices.

The framework provides a theoretical basis for understanding how demographic characteristics and health perceptions influence preventive behaviors and contribute to the reduction of complications associated with high-risk pregnancy.

A study to assess the Contributing Factors of High-Risk Pregnancy among High-Risk Antenatal Mothers attending Antenatal OPDs.

### **Objectives of the study**

1. To assess the contributing factors of high-risk pregnancy among high-risk antenatal mothers attending antenatal OPDs.
2. To find out the association between level of risk in pregnancy among high-risk antenatal mothers with selected demographic variables.
3. To find out the association between level of risk in pregnancy among high-risk antenatal mothers with contributing factors.

### **Hypotheses**

The hypotheses of the study are as follows-

$H_1$  = There will be significant association between high-risk pregnancy with selected demographic variables.

$H_2$  = There will be significant association between high-risk pregnancy with contributing factors.

### Assumptions

The study assumes that:

- there is significant relationship between high-risk pregnancy and its contributing factors
- identification of high-risk pregnancy and its contributing factor helps to reduce the risk of complication during delivery.

### METHODS

A quantitative descriptive research design was adopted to assess the contributing factors of high-risk pregnancy among antenatal mothers attending antenatal outpatient departments (OPDs) in Guwahati, Assam. The study was conducted at the antenatal OPDs of Guwahati Medical College and Hospital (GMCH) and Pratiksha Hospital, which were purposively selected based on their high patient load and availability of high-risk antenatal cases.

The target population comprised high-risk antenatal mothers attending the selected hospitals. The sample size was calculated using the Raosoft sample size calculator with a 95% confidence level, 5% margin of error, and 50% response distribution, yielding a required sample size of 141 participants. A purposive sampling technique was employed to recruit eligible antenatal mothers aged 18 years and above who were willing to participate in the study.

Data were collected using a structured checklist adapted from the Dutta and Das Prenatal Risk Scoring System. The tool consisted of two sections: demographic characteristics and contributing factors of high-risk pregnancy. Content validity was established by a panel of eight experts in obstetrics and gynecological nursing and obstetrics and gynecology. The reliability of the tool was assessed using the inter-rater method, yielding a correlation coefficient of 0.98, indicating high reliability.

A pilot study was conducted among 22 antenatal mothers to assess the feasibility and reliability of the study procedures. Ethical approval and administrative permissions were obtained from the respective institutions, and informed consent was secured from all participants.

Data collection was carried out from June 2 to June 30, 2025. Descriptive statistics, including frequencies and percentages, were used to summarize the data, while chi-square tests were applied to determine associations between pregnancy risk levels, demographic variables, and contributing factors.

### RESULTS

#### Socio-Demographic and Obstetric Characteristics of High-Risk Antenatal Mothers (Table 1)

Table 1 presents the demographic and obstetric characteristics of the 141 high-risk antenatal mothers. The highest proportion of mothers belonged to the age group of 24–29 years (34.0%), followed by 30–35 years (26.2%), while 21.3% were aged above 35 years and 18.4% were between 18–23 years.

Regarding body mass index, the majority of mothers had a normal BMI (64.5%), whereas 32.6% were overweight. Only 2.1% were obese and 0.7% were underweight.

With respect to educational status, 34.0% had completed higher secondary education and 31.9% had secondary education. Graduates constituted 15.6% of the participants, while 6.4% had no formal education.

Most of the participants were homemakers (65.2%), followed by private employees (15.6%). Government employees and self-employed women each accounted for 9.2% of the sample.

The majority of participants belonged to the Hindu religion (69.5%), followed by Islam (16.3%), Christianity (9.2%), and other religions (5.0%). Nearly equal proportions of mothers resided in urban (50.4%) and rural areas (49.6%).

All participants reported non-consanguineous marriages (100%). Regarding obstetrical score, more than half of the mothers were primigravida (G1P0) accounting for 50.4%, followed by G2P1 (19.9%) and G2P0 (16.3%).

A higher proportion of participants belonged to joint families (55.3%) compared to nuclear families (44.7%). Concerning monthly family income, nearly half of the mothers (45.4%) had a family income between ₹10,703 and ₹31,977, whereas only 0.7% had a monthly family income of ₹2,13,814 or above.

### **Contributing Factors of High-Risk Pregnancy Among High-Risk Antenatal Mothers (Table 2)**

#### **Past Obstetrical Factors**

Among the previous obstetric risk factors, caesarean section was the most common factor reported by 23.4% of mothers, followed by miscarriage (17.0%) and abortion (12.8%). Placental complications and abnormal bleeding before delivery were reported by 4.3% of the participants each, whereas prolonged or difficult labour and abnormal bleeding after delivery were reported by 3.5%. Gestational diabetes and low birth weight history were observed in 2.1% of mothers each, while pregnancy-induced hypertension and macrosomia were reported by 1.4%.

#### **Present Pregnancy Factors**

Among the current pregnancy-related factors, low haemoglobin was the most common condition affecting more than half of the participants (53.9%). Oedema was observed in 22.7% of mothers, followed by intrauterine growth restriction (IUGR) (19.9%), pregnancy-induced hypertension (19.1%), and gestational diabetes (17.7%).

Rh-negative blood group was reported by 12.8% of participants, while placental abnormalities and breech presentation were observed in 11.3% and 10.6% of mothers, respectively. Polyhydramnios was reported by 9.9%, and both bleeding before 20 weeks and multiple pregnancy were observed in 8.5% of participants. Albuminuria and bleeding after 20 weeks were reported by 7.8% and 4.3% of mothers, respectively.

#### **Associated Disease Factors**

Among associated medical conditions, thyroid disorders were the most frequently reported condition (23.4%), followed by hypertension (19.1%) and diabetes mellitus (12.8%). Polycystic ovarian disease/syndrome was observed in 9.9% of participants, whereas cardiac diseases and hereditary or genetic disorders each accounted for 7.8%.

Pelvic surgery and hepatitis-A were reported by 7.1% of mothers each, while renal diseases affected 5.0% of participants. Pulmonary tuberculosis and nutritional deficiency were observed in 3.5%, whereas HIV/AIDS was reported by 2.8% of the mothers.

### **Association Between Level of Risk in Pregnancy and Selected Demographic Variables (Table 3)**

Table 3 demonstrates the association between the level of risk in pregnancy and selected demographic variables. A statistically significant association was found between age and level of risk in pregnancy ( $\chi^2 = 25.665$ ,  $df = 6$ ,  $p = 0.001$ ). Mothers aged above 30 years showed a higher proportion of high-risk pregnancies compared to younger age groups.

Religion was also significantly associated with the level of risk in pregnancy ( $\chi^2 = 13.425$ ,  $df = 6$ ,  $p = 0.037$ ). A larger proportion of participants belonging to different religious groups were observed within the high-risk category.

Parity demonstrated a statistically significant association with the level of risk in pregnancy ( $\chi^2 = 23.623$ ,  $df = 12$ ,  $p = 0.023$ ). Higher gravidity and parity were predominantly observed among mothers with high levels of pregnancy risk.

Thus, age, religion, and parity were significantly associated with the level of risk in pregnancy among high-risk antenatal mothers.

#### **Association Between Level of Risk and Contributing Factors of High-Risk Pregnancy (Table 4)**

A significant association was observed between miscarriage and the level of risk in pregnancy ( $\chi^2 = 7.668$ ,  $p = 0.02$ ). Mothers with a history of miscarriage were more likely to belong to the high-risk category.

Pregnancy-induced hypertension showed a statistically significant association with the level of risk ( $\chi^2 = 9.205$ ,  $p = 0.01$ ). Similarly, anaemia was significantly associated with the level of risk in pregnancy ( $\chi^2 = 13.036$ ,  $p < 0.001$ ), indicating that mothers with low haemoglobin levels predominantly belonged to the high-risk group.

Oedema also demonstrated a highly significant association with pregnancy risk levels ( $\chi^2 = 15.272$ ,  $p < 0.001$ ). Intrauterine growth restriction (IUGR) was significantly associated with the level of risk in pregnancy ( $\chi^2 = 6.487$ ,  $p = 0.03$ ).

These findings indicate that miscarriage, pregnancy-induced hypertension, anaemia, oedema, and IUGR are important contributing factors significantly associated with higher levels of pregnancy risk among antenatal mothers.

#### **Distribution of High-Risk Antenatal Mothers According to the Level of Risk in Pregnancy (Figure 1)**

Figure 1 depicts the distribution of high-risk antenatal mothers according to the level of risk in pregnancy. The majority of the mothers belonged to the high-risk category, accounting for 73% ( $n=103$ ), whereas 22% ( $n=31$ ) had a moderate level of risk and only 5% ( $n=7$ ) had a mild level of risk. The findings indicate that a considerable proportion of the study participants experienced severe obstetric risk conditions requiring close monitoring and specialized antenatal care.

## **DISCUSSION**

The study was conducted among antenatal mothers attending the outpatient departments of GMCH (Bhangagarh) and Pratiksha Hospital (VIP Road), Guwahati, Assam. A thorough review of literature related to the contributing factors of high-risk pregnancy was undertaken. This review offered in-depth insights, helped identify research gaps, and guided the formulation of study objectives and the selection of an appropriate methodology. The sample consisted of 141 antenatal mothers who were already identified as high-risk cases. Participants were selected using purposive sampling based on predefined inclusion criteria. The study adopted a quantitative descriptive approach with a cross-sectional descriptive design to meet the research objectives.

Data collection was carried out from 2nd June to 30th June 2025 in both hospitals. A structured observational checklist was used to collect data. Relevant details on demographic characteristics, obstetric history, existing medical conditions, and pregnancy-related factors were gathered primarily from hospital records and OPD tickets. When required, brief interactions with participants were

conducted to clarify information. Each participant's data was reviewed and recorded systematically. Body Mass Index (BMI) was calculated using the standard formula based on documented height and weight. Contributing factors such as anemia, hypertension, previous pregnancy complications, and chronic medical conditions were noted to determine the level of risk in pregnancy.

The data were analyzed using both descriptive and inferential statistics. Frequency and percentage distributions were used to assess levels of risk among high-risk antenatal mothers. The Chi-square test was applied to determine associations between the level of risk in pregnancy and selected demographic variables as well as contributing factors, with significance set at the 0.05 level.

#### **To assess the contributing factors of high-risk pregnancy among antenatal mothers**

The current study found that the major contributing factors of high-risk pregnancy included anaemia, previous caesarean section, gestational diabetes, pregnancy-induced hypertension, history of miscarriage, oedema, low birth weight, hypertension and thyroid disorders. Among these, anaemia, previous caesarean section and thyroid disorders were most frequently reported.

These findings are consistent with those of Kuppusamy et al. (2023), who analyzed NFHS data and found anaemia, advanced maternal age, and poor antenatal care as key contributors to high-risk pregnancy in India. Similarly, Sharma et al. (2022)<sup>18</sup> reported anaemia (60%) and hypertension (18%) as the leading factors among 500 antenatal mothers in North India.<sup>37</sup> In a hospital-based study in Tamil Nadu, Rekha and Vijayalakshmi (2016) also found that thyroid disorders, gestational diabetes and previous caesarean delivery were major contributors, aligning well with the present findings.<sup>38</sup>

#### **To find out the association between level of risk pregnancy with selected demographic variables**

The present study found a statistically significant association between the level of risk in pregnancy and maternal age, parity, and religion ( $p < 0.05$ ). The age group 25–35 years had the highest percentage of high-risk pregnancies. Women with higher parity (especially G<sub>2</sub>P<sub>1</sub> and G<sub>3</sub>P<sub>2</sub>) were more likely to be classified as high-risk. A higher number of high-risk cases was observed among Hindu mothers, which may reflect differences in health practices or access to care.

These findings align with those of Yadav et al. (2022)<sup>12</sup>, who also found maternal age and parity significantly associated with high-risk pregnancy in a rural tertiary hospital. Behera et al. (2023)<sup>14</sup> in Odisha similarly reported that advanced maternal age, poor antenatal care, and reproductive history were associated with high-risk status. In contrast, socioeconomic variables such as education, income, and area of residence did not show significant association in this study, which is also consistent with findings from Bansal et al. (2021)<sup>11</sup>, where risk was not significantly linked with education level.

#### **To find out the association between level of risk pregnancy with contributing factors**

The study examined several obstetrical and medical histories such as previous caesarean section, miscarriage, gestational diabetes, hypertension, infertility, and other contributing risk factors. Among these, a significant association was found between high-risk pregnancy and factors like previous history of miscarriage, PIH, anaemia, oedema, and IUGR, all of which contributed to an elevated risk level.

Supporting this, Goyal et al. (2020)<sup>13</sup> in a retrospective hospital-based study in Delhi found that women with a history of C-section, gestational diabetes, and thyroid disorders had poorer pregnancy outcomes and were more frequently categorized as high-risk. Similarly, Rekha and Vijayalakshmi (2016) reported that past obstetric history including caesarean delivery, stillbirth, and thyroid abnormalities were significantly associated with high-risk categorization.

#### **Limitations**

- The study was conducted on a smaller sample which may not represent the entire population of ante-

natal mothers in the region.

- Data was collected from only two selected hospitals in Guwahati, which may limit the generalization of the findings to other areas.
- The study was conducted within a limited period, which might have influenced the depth of data collection.
- Since purposive sampling was used, there is a chance of selection bias, which may affect the validity of the results.

### **Suggestions for Future Research:**

- Multi center for the studies should be conducted across different regions to generalize the findings.
- Comparative studies can be done to assess the difference in high-risk pregnancies between rural and urban populations.
- Comparative studies can be done to assess the difference in high-risk pregnancies between primigravida and multigravida.
- Intervention-based research should be encouraged to evaluate the effectiveness of specific strategies to reduce high-risk pregnancies.
- Include male partners and family members in future studies to assess their role in contributing to or preventing high-risk pregnancies.

### **Recommendations**

On the basis of findings of the study following recommendation have been formulated:

- Routine screening for high-risk factors should be integrated into all antenatal check-ups.
- Health education and awareness programs should be strengthened to inform women about risk factors and the importance of early antenatal registration.
- Strengthen referral systems to ensure timely management and care of high-risk cases.
- Nutritional and psychological support should be incorporated into ANC services to address modifiable risk factors.
- Use of digital tracking systems or mobile apps for better follow-up of high-risk pregnancies can be implemented in hospital settings.

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## DECLARATIONS

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*Conflict of interest: The authors declare that there is no conflict of interest.*

*Ethical approval: Ethical approval for the study was obtained from the Institutional Ethics Committee of PEWS Group of Institutions, Guwahati (Ref. No. PEWS/EC/1672/24). Administrative permission was obtained from the concerned authorities of the selected hospitals prior to data collection. Written informed consent was obtained from all participants before their inclusion in the study, and confidentiality and anonymity of the participants were maintained throughout the study.*

## REFERENCES

1. World Health Organization. Trends in maternal mortality 2000 to 2017: estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division. Geneva: World Health Organization; 2019.
2. Office of the Registrar General of India. Sample Registration System (SRS) Special Bulletin on Maternal Mortality in India 2017–19. New Delhi: Office of the Registrar General; 2022.
3. World Health Organization. Targets of Sustainable Development Goal 3. Available at <https://www.who.int/aesar/about-us/our-work/sustainable-development-goals/targets-of-sustainable-development-goal-3>. Accessed 13 June 2023.
4. Kalita K. Maternal mortality ratio in Assam highest in country. Times of India. 2022 Dec 1. Available at <https://timesofindia.indiatimes.com/city/guwahati/maternal-mortality-ratio-in-assam-highest-in-country/articleshow/95900812.cms>. Accessed 7 May 2024.
5. Oxford Learner's Dictionaries. Definition: high-risk pregnancy. Available at <https://www.oxfordlearnersdictionaries.com>. Accessed 29 Apr 2024.
6. Cleveland Clinic. High-risk pregnancy: risk factors, complications and treatment. Available at <https://my.clevelandclinic.org/health/diseases/22190-high-risk-pregnancy>. Accessed 9 May 2024.
7. Cambridge Dictionary. Antenatal – English meaning. Available at <https://dictionary.cambridge.org>. Accessed 9 May 2024.
8. Park K. Preventive and Social Medicine. 24th ed. New Delhi: Reed Elsevier India Pvt Ltd; 2019:512.
9. Centers for Disease Control and Prevention. What are contributing factors? Available at <https://www.cdc.gov/nceh/ehs/news/what-are-contributingfactors.htm>. Accessed 29 Apr 2024.
10. Sharma S, Singh R, Gupta M. Prevalence and contributing factors of high-risk pregnancy in antenatal women: a hospital-based study in North India. Int J Reprod Contracept Obstet Gynecol 2022;11(3):845-50.

11. Bansal P, Kaur T, Kaur N. A descriptive study to assess the risk factors contributing to high-risk pregnancy among antenatal mothers in selected health care facilities of Punjab. *Int J Nurs Educ Res* 2021;9(4):435-38.
12. Yadav P, Choudhary S, Mishra V. High-risk pregnancy and its correlates among women attending antenatal clinic in rural Uttar Pradesh. *J Family Med Prim Care* 2022;11(1):65-70.
13. Goyal P, Mangal S, Sharma R, Singh P. A retrospective study to assess maternal outcomes in high-risk pregnancies at a tertiary care center in Delhi. *Int J Med Sci Public Health* 2020;9(5):270-74.
14. Behera S, Tripathy R, Dash R. High-risk pregnancy and associated sociodemographic and obstetric factors in Odisha: a hospital-based study. *Asian J Obstet Gynecol Res* 2023;10(2):100-05.

**Table 1. Frequency and Percentage Distribution of High-Risk Antenatal Mothers According to Demographic Variables (N = 141)**

Variables	Categories	Frequency (f)	Percentage (%)
Age (years)	18–23	26	18.4
	24–29	48	34.0
	30–35	37	26.2
	>35	30	21.3
BMI	Underweight	1	0.7
	Normal	91	64.5
	Overweight	46	32.6
	Obese	3	2.1
Level of Education	No formal education	9	6.4
	Primary education	13	9.2
	Secondary education	45	31.9
	Higher secondary	48	34.0
	Graduate	22	15.6
	Postgraduate	4	2.8
Occupation	Government employee	13	9.2
	Private employee	22	15.6
	Homemaker	92	65.2
	Self-employed	13	9.2
	Daily wager	1	0.7
Religion	Christianity	13	9.2
	Hinduism	98	69.5
	Islam	23	16.3
	Others	7	5.0
Area of Residence	Urban	71	50.4
	Rural	70	49.6
Type of Marriage	Consanguineous	0	0.0
	Non-consanguineous	141	100.0
Obstetrical Score	G1P0	71	50.4
	G2P0	23	16.3

	G2P1	28	19.9
	G3P0	8	5.7
	G3P1	6	4.3
	G3P2	4	2.8
	G5P3	1	0.7
Type of Family	Nuclear	63	44.7
	Joint	78	55.3
Monthly Family Income	≤ ₹10,702	16	11.3
	₹10,703–31,977	64	45.4
	₹31,978–53,360	33	23.4
	₹53,361–80,109	6	4.3
	₹80,110–1,06,849	15	10.6
	₹1,06,850–2,13,813	6	4.3
	≥ ₹2,13,814	1	0.7

**Table 2: Frequency and percentage distribution of contributing factors of high-risk pregnancy among high-risk antenatal mothers**

RISK FACTORS	YES		NO	
	f	%	f	%
<b><u>I. Past obstetrical history</u></b>				
Abortion	18	12.8	123	87.2
Miscarriage	24	17	117	83
Abnormal bleeding before delivery	06	4.3	135	95.7
Abnormal bleeding after delivery	5	3.5	136	96.5
Pregnancy induced hypertension	2	1.4	139	98.6
Gestational diabetes	3	2.1	138	97.9
Macrosomia	2	1.4	139	98.6
Low birth baby	3	2.1	138	97.9
Infertility	4	2.8	137	97.2
Placental complications	06	4.3	135	95.7
Caesarean section	33	23.4	108	76.6
Prolonged/difficult labour	05	3.5	136	96.5
Still birth/Neonatal death	04	2.8	137	97.2
<b><u>II. Present pregnancy</u></b>				
Gestational diabetes	25	17.7	116	82.3
Pregnancy induced hypertension	27	19.1	114	80.9
Placental abnormality	16	11.3	125	88.7
Bleeding before 20 <sup>th</sup> weeks	12	8.5	129	91.5
Bleeding after 20 <sup>th</sup> weeks	06	4.3	135	95.7
Low haemoglobin	76	53.9	65	46.1

Oedema	32	22.7	109	77.3
Albuminuria	11	7.8	130	92.2
Multiple pregnancy	12	8.5	129	91.5
Breech presentation	15	10.6	126	89.4
Rh negative	18	12.8	123	87.2
Polyhydramnios	14	9.9	127	90.1
IUGR	28	19.9	113	80.1
<b>III. Associated disease factors</b>				
Diabetic	18	12.8	123	87.2
Hypertensive	27	19.1	114	80.9
Thyroid disorders	33	23.4	108	76.6
Cardiac diseases	11	7.8	130	92.2
Renal diseases	07	5	134	95
Hepatitis-A	10	7.1	131	92.9
Pulmonary tuberculosis	05	3.5	136	96.5
HIV/AIDS	04	2.8	137	97.2
Hereditary or genetic diseases	11	7.8	130	92.2
Nutritional deficiency	05	3.5	136	96.5
PCOD/PCOS	14	9.9	127	90.1
Pelvic surgery	10	7.1	131	92.9

**Table 3: Association Between Level of Risk in Pregnancy and Selected Demographic Variables Among High-Risk Antenatal Mothers (N = 141)**

Variables	Categories	Mild n	Moderate n	High n	$\chi^2$ value	df	Table value	p value	Inference
Age (years)	18–23	3	11	12	25.665	6	12.592	0.001	*S
	24–29	1	16	31					
	30–35	1	4	32					
	>35	2	0	28					
Religion	Christianity	0	0	13	13.425	6	12.592	0.037	*S
	Hinduism	7	28	63					
	Islam	0	2	21					
	Others	0	1	6					
Parity	G1P0	7	24	40	23.623	12	21.026	0.023	*S
	G2P0	0	2	21					
	G2P1	0	5	23					
	G3P0	0	0	8					
	G3P1	0	0	6					
	G3P2	0	0	4					
	G5P3	0	0	1					

Note:  $\chi^2$  = Chi-square value; df = Degree of freedom; S = Significant.  
 Statistical significance was considered at  $p < 0.05$ . G = Gravida; P = Para.

**Table 4: Chi- square value showing association between level of risk in pregnancy with contributing factors of high-risk antenatal mothers.**

Contributing factors	Level of risk factors			$\chi^2$ Value	df	Tabulated Value	p value	Inference
	Mild	Mode rate	High					
Miscarriage Yes No	0 7	1 30	23 80	7.668	2	5.991	0.02	*S
Pregnancy induced hypertension Yes No	0 7	1 30	26 77	9.205	2	5.991	0.01	*S
Anemia Yes No	2 5	9 22	65 38	13.03 6	2	5.991	0.00	*S
Oedema Yes No	0 7	0 31	32 71	15.27 2	2	5.991	0.00	*S
IUGR Yes No	4 3	6 25	18 85	6.487	2	5.991	0.03	*S

**Figure 1: Bar diagram showing percentage distribution of high-risk antenatal mothers according to the level of risk in pregnancy**

