ORIGINAL RESEARCH ARTICLE

Clinico-Epidemiological Profile of Women with High-Risk Pregnancies Attending Pradhan Mantri Surakshit Matritva Clinic in A Rural Block of Purba Bardhaman District, West Bengal

Arif Hossain[1], Raston Mondal[2], Pramit Goswami[3], Deepta Dutta[4], Pranita Taraphdar[5*], Suman Sannigrahi[6], Soumik Dandapat[7]

[1-7]Burdwan Medical College and Hospital, Bardhaman, West Bengal, India

DOI: 10.55489/njcm.151220244697

ABSTRACT

Background: High-risk pregnancies (HRPs) significantly contribute to maternal and neonatal morbidity and mortality in India. However, many pregnancies remain unclassified as high-risk. To address this, the Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA) was launched to improve the quality and coverage of antenatal care (ANC). This study aimed to estimate the proportion of HRPs and their correlates among PMSMA beneficiaries in a rural block of Purba-Bardhaman district, West Bengal.

Methodology: A cross-sectional study was conducted over six-month period at Pradhan-Mantri- Surakshit-Matritva (PMSM) Clinic among 190 women were selected by simple random sampling. Data were collected by reviewing records as well as from selected study subjects using a pre-designed schedule and analysed using Jamovi v-2.4.8.

Results: Data analysis revealed that 65.3% of pregnancies were high-risk, with 75% of these involving a single high-risk factor and 25% having multiple factors. The leading contributors were hypothyroidism (19.6%), previous Caesarean-section (14.2%), and pregnancy-induced hypertension (13.7%). Statistically significant associations were found between HRPs and caste, occupation, and ANC-registration status.

Conclusions: The findings highlight the importance of improving antenatal care by enhancing screening and interventions. Future research and healthcare policies should focus on comprehensive strategies to identify and manage risks, improving maternal and infant health outcomes.

Keywords: Antenatal care, High-risk Pregnancy, Maternal mortality, Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA)

ARTICLE INFO

Financial Support: None declared

Conflict of Interest: None declared

Received: 22-09-2024, **Accepted**: 01-11-2024, **Published**: 01-12-2024

***Correspondence:** Dr. Pranita Taraphdar (Email id: publicationah@gmail.com)

How to cite this article: Hossain A, Mondal R, Goswami P, Dutta D, Taraphdar P, Sannigrahi S, Dandapat S. Clinico-Epidemiological Profile of Women with High-Risk Pregnancies Attending Pradhan Mantri Surakshit Matritva Clinic in A Rural Block of Purba Bardhaman District, West Bengal. Natl J Community Med 2024;15(12):1049-1056. DOI: 10.55489/njcm.151220244697

www.njcmindia.com | pISSN: 0976-3325 | eISSN: 2229-6816 | Published by Medsci Publications

INTRODUCTION

Good health is the fundamental right of all human beings and every woman is entitled to have an access to quality healthcare services and enjoy the highest attainable standard of health and well-being. Pregnancy, a pivotal phase in a woman's life, demands meticulous monitoring and care to ensure both maternal and fetal well-being. A high-risk pregnancy is one in which the mother or fetus or both are at high risk of morbidity and mortality by factors that may develop during the antenatal period or even present before conception.[1] As per literature, about 20-30 % of pregnancies belong to high-risk category, which is responsible for 75% of perinatal morbidity and mortality in India. However, only 14% of the pregnancies are currently being classified as 'High Risk', varying from State to State.[2] With 30,000 estimated maternal deaths in a year across the country, high MMR remains a matter of grave concern, and thus it is paramount to ensure quality ANC to each pregnant woman, identify the 'high-risk pregnancies' (HRPs) and track these for counselling, management birth preparedness and referral till the outcome to close the loop.[3-7] Improving the survival of mothers and children and prevention of maternal and child mortality and morbidity are central to achievement of Sustainable Development Goals as well as the goals under the National Health Mission. In continuation with the implementation of Janani Suraksha Yojana (JSY) and Janani Shishu Suraksha Karyakram (JSSK) towards achieving SDGs, the Ministry of Health and Family Welfare has launched 'The Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA)' on 9th June, 2016 to improve the quality and coverage of Antenatal Care (ANC), Diagnostics and Counselling services as part of the Reproductive Maternal Neonatal Child and Adolescent Health (RMNCH+A) Strategy.[8] Under this campaign, a minimum package of antenatal care services are provided to the beneficiaries on the 9th day/ HRP Day (High Risk Pregnancy) of every month at the PMSMA Clinics to ensure that every pregnant woman receives at least one checkup in the 2nd or 3rd trimester of pregnancy by a doctor. Identification and line-listing of high-risk pregnancies based on obstetric/ medical history and existing clinical conditions are done with special emphasis given on early diagnosis, adequate and appropriate management of women with malnutrition conditions like Anaemia as these pregnancies need extra and specialized care.[2]

This study, titled " Clinico-epidemiological profile of Women with High-risk pregnancies Attending Pradhan Mantri Surakshit Matritva Clinic in a Rural Block of Purba Bardhaman district, West Bengal" aims to address this research gap by estimating the proportion and associated factors of high-risk pregnancies among PMSMA beneficiaries in a specific rural block of Purba Bardhaman, West Bengal. This design was chosen for its practicality and feasibility in the given setting, compared to cohort or case-control designs, which require more time and resources. By retrospectively analysing a comprehensive dataset of maternal health records, this study seeks to identify the key socio-demographic, obstetric, and clinical factors that contribute to high-risk pregnancies within this region.

Purba Bardhaman has been chosen for the purpose due to its mostly rural population as well as possible differences in access and use of health care services when compared to urban population. This study will provide evidence of such effectiveness by examining PMSMA beneficiaries who have received antenatal care through a government program for high-risk pregnancies. At the practical level, addressing the specific causes of high-risk pregnancy pillar in the given context will enlight the evidence-based strategies, policies, and health systems management towards improvement of negative maternal and neonatal health. The results of this research activities have the potential to develop strategies that would be based on evidence to provide positive change in quality of antenatal care to help in preventing the occurrence of maternal morbidity and mortality and also promote good mother and infant health outcomes in these areas.

The study aims to estimate the proportion of high-risk pregnancies (HRPs) and their correlates among PMSMA beneficiaries in a rural block of Purba Bardhaman district, West Bengal. Specifically, it seeks to determine the proportion of HRPs in this population, identify the socio-demographic and obstetric factors associated with HRPs, and examine the relationship between these factors and HRPs among the study subjects.

METHODOLOGY

The current study is a descriptive, cross-sectional in design conducted in Bhatar community development block in the Purba Bardhaman district, West Bengal from January to June 2024 (six months). Bhatar, one of the 23 blocks in the district, was selected as the study area as it serves as the rural field practice area for the Department of Community Medicine at Burdwan Medical College.

The study population were pregnant women (in the last 6 months from the initiation of data collection) availing services from the PMSM clinic of the study area.

The inclusion criteria for the study were women in their second and third trimesters of pregnancy, those who availed services within the last six months prior to the initiation of data collection, and those who provided consent for participation. The exclusion criteria include women who were not available at home after two consecutive home visits and those who were critically ill.

Sample Size and Sampling Technique: The sample size is calculated using 12.7% as the prevalence of High-risk pregnancy (HRP) in a study by Dahiya S et

al., 95% as confidence interval, and 5% as absolute precision, by using the formula (n) = (Z^2 x P x Q) / d^2. The prevalence figure of 12.7% was derived from Dahiya et al.'s study, conducted in a similar Indian setting.[9] This figure was relevant to the rural West Bengal context due to shared socio-economic and healthcare characteristics. So, in the equation, the P is Prevalence of HRP (12.7), Z is 95% confidence interval (1.96), and d is Absolute precision (5%). So, the calculated sample size was 170. After adding a 10% non-response rate, final sample size was 170+10% i.e 187.

Bhatar block of Purba Bardhaman district has only one PMSM clinic at Bhatar Rural Hospital. From the 861 registered women in the PMSMA clinic, a list of 450 eligible study subjects was prepared considering selection criteria from the previous six months entries with the help of ASHA and other health staffs. Finally, 190 subjects were chosen from the list of sampling frame by simple random sampling method.

Study Tools: It was a pre designed, pre tested, semi-structured schedule comprising of key socio-demographic, obstetrics, and clinical factors. The semi-structured schedule was developed after thorough literature search and then validated through a pilot study and expert review to ensure its cultural appropriateness for the local population. Minor adjustments were made based on pilot feedback. Data from PMSMA registers and relevant documents were sought, if required.

Data collection Techniques: It Included direct Interview of the study subjects, review of PMSMA registers, and review of relevant documents (OPD tickets, Investigation reports, MCP cards etc)

Data was collected after ethical approval from the IEC. Permission for conducting the study was obtained from the Chief Medical Officer of Health, Purba Bardhaman. Cooperation of the block and peripheral health personnel was sought if required. Study subjects were selected with the help of health personnel as described in the methodology. Data was collected at the household level of the selected subjects using the Pre designed, pre tested, semi- structured schedule. The purpose of the study was briefed to the study subjects before the collection of data. Confidentiality and anonymity were assured and maintained.

A pre-designed, pre-tested schedule was used for interviewing study subjects. Available documents were reviewed as well, if required. The data was collected from the study subjects at their convenient place and time. The high-risk pregnancies in this study were defined according to the guidelines provided by the PMSMA (Table 1)

Ethical Consideration: Ethical clearance (BMC/IEC/011, dated: 1st Feb, 2024) was obtained from the Institutional Ethics Committee of Burdwan Medical College and Hospital, Purba Bardhaman, West Bengal. Permission and cooperation for conducting the study was obtained from the Chief Medical Officer of Health, Purba Bardhaman. Prior to data collection, informed consent was obtained from each study participant. Participants of the study was briefed about the purpose and process of the study. Confidentiality and anonymity of information will also be maintained.

For age 13-18years, informed written assent from the study subject and written consent from the husband was obtained with additional safeguards to ensure comprehension. For age more than 18years, informed written consent from each study subjects were taken.

Data Management and Analysis: Collected data was checked for completeness and consistency and then the data was entered in the computer on Excel Data Sheets. The principles of descriptive statistics were applied to organize and present the data in tables and diagrams. Data was analysed using Jamovi version 2.4.8. Chi-square statistics were used to study the association between qualitative variables. Statistical significance was set at $P<0.05$.

RESULTS

High-risk pregnancies (HRPs) contribute significantly to maternal and neonatal morbidity and mortality in India. Despite this, only a fraction of pregnancies is classified as 'High-risk Pregnancy'. The present study was carried out in a rural block of Purba Bardhaman District, West Bengal among the pregnant women attending the Pradhan Mantri Surakshit Matritva Clinic to estimate the magnitudes and its correlates of high-risk pregnancies (HRPs).

In this section, the findings are presented as per the objectives stated above.

During the study period, 861 pregnant women were registered, of whom 190 were included in the study by simple random sampling technique based on the sample size and inclusion criteria. The proportion of high-risk pregnancies among the antenatal women was 124 (65.3%). A high-risk pregnancy (HRP) was defined as any pregnancy with risk factors that could lead to adverse outcomes for the mother or fetus, as per the PMSMA guidelines.

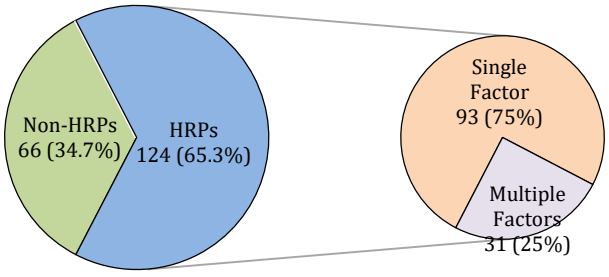

Figure 1: Pie diagram showing high-risk pregnancy profile of antenatal women attending PMSM clinic (N=190)

Table 1: Antenatal women with any of the following conditions were categorized as "high-risk pregnancy"

High-risk factors
a. Severe Anaemia (Hb less than 7gm/dl)
b. Pregnancy induced hypertension, pre-eclampsia, pre-eclampsic toxemia
c. Syphilis/ HIV Positive
d. Gestational Diabetes Mellitus
e. Hypothyroidism
f. Young primi (less than 20 years) or Elderly gravida (more than 35 years)
g. Twin / Multiple pregnancy
h. Malpresentation
i. Previous LSCS
j. Low lying placenta, Placenta previa
k. Positive Bad obstetric history (History of still birth, abortion, congenital malformation, obstructed labour, premature birth etc.)
l. Rh negative
m. Patient with History of any current systemic illness(es)/past history of illness

The risk factors were identified through clinical records, which were cross-verified with self-reports, MCP cards, registers as and when required.

Among these high-risk pregnant women, 93 (75%) had a single high-risk factor, and the remaining 31 (25%) had more than one high-risk factor. (Figure 1) Risk factors included but were not limited to anemia, hypertension, thyroid disorders, and previous cesarean sections, as detailed in Table 1.

The mean age of study participants was 21.8 ± 3.9 years ranging from 16 to 37 years and the mean weight of the study participants was 53.2 ± 6.0 kgs ranging from 42 to 70 kgs. Most of the study participants were in the age group of 20 to 34 years (68.4%) and 30% were adolescent pregnancy (≤19 years). A significant portion of participants (30%) were adolescent pregnancies, which is a known risk factor for adverse maternal and neonatal outcomes. Teenage pregnancies often face higher risks of complications such as preterm birth, low birth weight, and maternal anaemia, which is further exacerbated by limited access to healthcare and nutritional deficiencies in rural settings.

The socio-demographic distribution revealed that a majority of participants from the unreserved caste (72.6%) and a significant Muslim population (53.7%), highlights specific cultural and regional factors that could influence health-seeking behaviours, access to antenatal care, and fertility rates, particularly in a rural setting. Educational status varied, with 44.7% having completed secondary school being the highest category. The high percentage of homemakers (72.1%) and labourers (15.3%) with husbands primarily working as labourers (70.5%) indicates that many families rely on low-income, physically demanding jobs. This can limit financial resources for adequate pregnancy care and contribute to stress, malnutrition, and physical exhaustion during pregnancy. Nuclear families constituted 26.3%, while joint families accounted for 73.7%. The socioeconomic status was primarily lower middle class (74.7%) followed by lower class (21.6%), middle class (3.2%), and Upper middle class (0.5%) as per modified B.G. Prasad scale. (Table 2)

Regarding obstetrics factors, 71.1% were in the 2nd trimester, and ABO grouping showed 44.7% with blood type B. The majority had a positive Rh typing (73.2%). Gravida distribution included 45.3% in the 1st and 50% in the 2nd, while nulliparous and primiparous constituted 45.3% and 51.6%, respectively. A notable percentage of participants had no living children (47.9%). Early registration at ANC was observed among 70% of the pregnant women. (Table 3).

The major risk factor was hypothyroidism (19.6%), followed by previous lower segment Caesarean section (LSCS) (14.2%), Pregnancy induced hypertension (13.7%), anaemia (4.7%), and multiple pregnancies (2.6%). (Figure 2)

Table 2: Distribution of study subjects according to their socio-demographic characteristics (n=190)

Variables	Women (%)
Age group (In years)	
≤19	57 (30)
20-34	130 (68.4)
≥35	3 (1.6)
Caste	
General	138 (72.6)
SC	25 (13.2)
ST	6 (3.1)
OBC	21 (11.1)
Religion	
Hindu	84 (44.2)
Islam	102 (53.7)
Christian	4 (2.1)
Educational status of Study subjects	
Below secondary	105 (55.3)
Secondary and above	85 (44.7)
Educational status of their husband	
Below secondary	118 (62.1)
Secondary and above	72 (37.9)
Occupation of Study subjects	
Labourer	29 (15.3)
Student	24 (12.6)
Homemaker	137 (72.1)
Occupation of their husband	
Labourer	134 (70.5)
Others*	56 (29.5)
Type of family	
Nuclear	50 (26.3)
Joint	140 (73.7)
Socio-economic status†	
Upper middle	1 (0.5)
Middle	6 (3.2)
Lower middle	142 (74.7)
Lower	41 (21.6)

*Business, service, †Modified B.G. Prasad scale (Oct'23)

Table 3: Distribution of study subjects according to obstetric characteristics (n=190)

Variables	Women (%)
Trimester in pregnancy	
2nd	135 (71.1)
3rd	55 (28.9)
ABO grouping	
A	49 (25.8)
B	85 (44.7)
AB	36 (18.9)
O	20 (10.5)
Rh typing	
Positive	139 (73.2)
Negative	51 (26.8)
Gravid status	
1st	86 (45.3)
2nd	95 (50)
3rd or more	9 (4.7)
Parity	
Nulliparous	87 (45.8)
Primiparous	98 (51.6)
Multiparous	5 (2.6)
Living child	
Yes	91 (47.9)
No	99 (52.1)
ANC registration in current pregnancy	
Early	126 (66.3)
Late	64 (33.7)

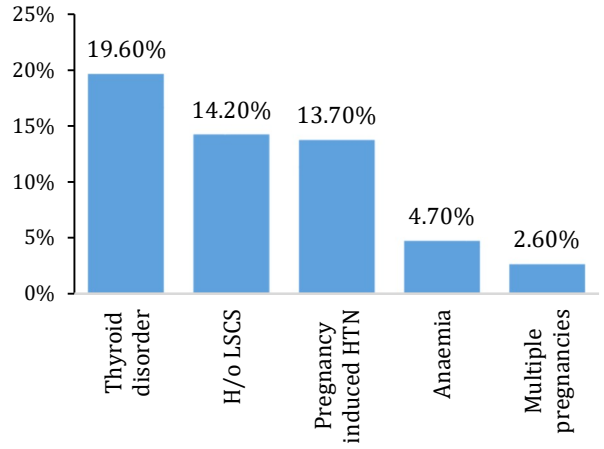

Figure 2: Bar diagram showing the contribution of most common individual risk factors responsible for high-risk pregnancies

These findings in this rural setting could be attributed to several factors, including improved detection mechanisms at the Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA) clinics, where specialized care is provided. Additionally, rural women in West Bengal face higher nutritional deficiencies, and limited access to quality healthcare, which may contribute to the higher observed prevalence.

There was a statistically significant association between high-risk pregnancies (HRPs) and caste ($p = 0.016$), occupation ($p = 0.034$), and ANC registration status ($p < 0.001$). While caste and occupation play a role in determining HRP status, their impact is relatively modest, as indicated by the **small effect sizes** (Phi coefficient for caste = 0.175, Cramer's V for occupation = 0.189). In contrast, the association between HRP and ANC registration is not only statistically significant but also **moderately strong, as reflected by a Phi coefficient of 0.497.**

Caste-related differences in HRPs may stem from socio-economic disparities and varying access to healthcare services, which disproportionately affect marginalized communities. Whereas homemakers were found to have a higher risk of HRPs compared to women engaged in other occupations. This may be related to lower health awareness, reduced mobility among them. On the other hand, women who registered late for ANC were more likely to miss early interventions, increasing their risk of pregnancy complications. This highlights the importance of timely ANC registration for better pregnancy outcomes.

Discussion

Specifically in a rural Purba Bardhaman district in West Bengal, our study adds to the body of knowledge already available on high-risk pregnancies. A more thorough examination of the Clinico-epidemiological profile of women with high-risk pregnancies is made possible by contrasting our results with those of other comparable research, which also helps to better understand regional variations. When there are possible issues that could harm the mother, the unborn child, or both, the pregnancy is deemed high risk. HRPs require specialised management to provide the best possible outcome for the mother and the child.

Our study's prevalence of high-risk pregnancies (65.3%) is consistent with findings from research by Muhammed et al.[10] in Egypt, and Kashani et al.[11] in Iran where prevalence rates ranged from 51.3% to 63.1% and most studies showed that over one-third of pregnancies were high-risk. The necessity for focused interventions and the widespread occurrence of high-risk pregnancies are highlighted by this research's consistency.

Our study found that approximately 25% of pregnancies had more than one high-risk factor, which is higher than what KA Mogan et al.'s study[12] found. Studies by KA Mogan et al., Bharti et al., Jaideep et al., Kumar et al., Kalaivani et al., and others conducted in India, however, revealed a high-risk prevalence of 55%, 37%, 31.4%, 30.7%, and 34.3%, respectively.[12-16] A higher prevalence of high-risk pregnancies was prominent from the study results conducted in the northern part of India.

Our study identified thyroid disorder as the major risk factor, affecting 19.6% of high-risk pregnant women followed by previous LSCS 14.2%. This finding is in concordance with the study conducted by KA Mogan et al, which reported a similar pattern in their cohort.[12] The shared emphasis on thyroid disorders underscores the importance of routine screening and management during antenatal care.

Table 4: Association between selected socio-demographic and obstetrics characteristics of the study subjects and high-risk pregnancy (n=190)

Variables	HRPs (%) (N=124)	Non-HRPs (%) (N=66)	Total (%) (n=190)	p value
Age group (In years)				
≤19	39.0 (31.5)	18.0 (27.3)	57.0 (30.0)	0.832
20-34	83.0 (66.9)	47.0 (71.2)	130.0 (68.4)	
≥35	2.0 (1.6)	1.0 (1.5)	3.0 (1.6)	
Caste				
General	83.0 (66.9)	55.0 (83.3)	138.0 (72.6)	**0.016**
Reserved	41.0 (33.1)	11.0 (16.7)	52.0 (27.4)	
Religion				
Hindu	53.0 (42.7)	31.0 (47.0)	84.0 (44.2)	0.807
Islam	68.0 (54.8)	34.0 (51.5)	102.0 (53.7)	
Christian	3.0 (2.4)	1.0 (1.5)	4.0 (2.1)	
Educational status of Study subjects				
Below secondary	65.0 (52.4)	40.0 (60.6)	105.0 (55.3)	0.280
Secondary and above	59.0 (47.6)	26.0 (39.4)	85.0 (44.7)	
Educational status of their husband				
Below secondary	80.0 (64.5)	38.0 (57.6)	118.0 (62.1)	0.348
Secondary and above	44.0 (35.5)	28.0 (42.4)	72.0 (37.9)	
Occupation of Study subjects				
Labourer	13.0 (10.5)	16.0 (24.2)	29.0 (15.3)	**0.034**
Student	18.0 (14.5)	6.0 (9.1)	24.0 (12.6)	
Homemaker	93.0 (75.0)	44.0 (66.7)	137.0 (72.1)	
Occupation of their husband				
Labourer	87.0 (70.2)	47.0 (71.2)	134.0 (70.5)	0.880
Others*	37.0 (29.8)	19.0 (28.8)	56.0 (29.5)	
Type of family				
Nuclear	36.0 (29.0)	14.0 (21.2)	50.0 (26.3)	0.244
Joint	88.0 (71.0)	52.0 (78.8)	140.0 (73.7)	
Socio-economic status				
Upper middle	4.0 (3.2)	3.0 (4.5)	7.0 (3.7)	0.646
Lower middle	120.0 (96.8)	63.0 (95.5)	183.0 (96.3)	
Trimester in pregnancy				
2nd	84.0 (67.7)	51.0 (77.3)	135.0 (71.1)	0.168
3rd	40.0 (32.3)	15.0 (22.7)	55.0 (28.9)	
ABO grouping				
A	33.0 (26.6)	16.0 (24.2)	49.0 (25.8)	0.700
B	53.0 (42.7)	32.0 (48.5)	85.0 (44.7)	
AB	26.0 (21.0)	10.0 (15.2)	36.0 (18.9)	
O	12.0 (9.7)	8.0 (12.1)	20.0 (10.5)	
Rh typing				
Positive	89.0 (71.8)	50.0 (75.8)	139.0 (73.2)	0.555
Negative	35.0 (28.2)	16.0 (24.2)	51.0 (26.8)	
Gravid status				
1st	52.0 (41.9)	34.0 (51.5)	86.0 (45.3)	0.207
2nd or more	72.0 (58.1)	32.0 (48.5)	104.0 (54.7)	
Parity				
Nulliparous	53.0 (42.7)	34.0 (51.5)	87.0 (45.8)	0.248
Parous	71.0 (57.3)	32.0 (48.5)	103.0 (54.2)	
Living child				
1	57.0 (46.0)	34.0 (51.5)	91.0 (47.9)	0.466
2 or more	67.0 (54.0)	32.0 (48.5)	99.0 (52.1)	
ANC registration in current pregnancy				
Early	61.0 (49.2)	65.0 (98.5)	126.0 (66.3)	<**0.001**
Late	63.0 (50.8)	1.0 (1.5)	64.0 (33.7)	

*Business, service, †Modified B.G. Prasad scale (Oct'23); HRP: High-risk pregnancy; Non-HRP: Non-high-risk pregnancy

Studies conducted in various states in India found that the female sex was more predisposed to hypothyroidism.[17] Another study conducted in North India found the prevalence of hypothyroidism to be 14.3%.[18] There are few published studies on this pertinent topic that demonstrates a similar prevalence of hypothyroidism.[19,20] Thyroid dysfunction during pregnancy has been an important research area in public health because thyroid dysfunction has an immense impact on maternal and fetal outcomes that influence maternal indicators. Predominantly, children born to hypothyroid mothers have poor intellectual function during the latter part of their life, which affects mental health.[18]

Strengthening PMSMA clinics with mandatory routine screening for thyroid disorders during antenatal care (ANC) visits and targeted support for adolescent through community outreach programs focused on reproductive health, the risks of early pregnancy, and available maternal health services should be a priority. Targeted interventions like nutritional supplementation, iron-folic acid supplementation, and counselling services could address the specific needs of adolescent mothers.

The mean age of study participants, 21.8 years, signifies a relatively young cohort. Notably, 68.4% of women fell within the age group of 20 to 34 years, with 30% being adolescent pregnancies (<19 years) which shows nearly similar figures with other studies done by Dahiya et al, Bharti et al.[9,15] In this study 1.6% beneficiaries were in age group of >35 years which is similar slightly lower as compared to the study done by Kumar A et al (5%) and Bharti et al (4.2%).[1,15] These observed difference may be due to different in geographic distributions.

In this study, majority of study subjects were in second trimester (71.1%) in this study and this finding is similar to study done by Dahiya et al(46%), Kumar et al(53%).[1,9] The percentage of Rh-ve participants was 26.8% which is far more than the finding observed by Dahiya et al (15.27%) and Jaideep et al (3.3%).[9,15] Almost half of the study subjects were primigravida in our study which is more than the study done by Dahiya et al (17%), KA Mogan et al (37%), and Mondal et al (34%).[9,12,21] About 48% of the participants have no living children which is almost similar in line with the findings of the study done by KA Mogan et al (46%).[12]

In our study, factors such as caste, occupation, and ANC registration status of the study subjects were found to be significantly associated with high-risk pregnancies which is similar in line with the findings in the study done by Bharti et al. and Jaideep et al.[15,16] The consistency in these associations strengthens the evidence for the multifactorial nature of high-risk pregnancies and emphasizes the importance of addressing a range of socio-demographic and obstetric factors in antenatal care.

Strength and Limitations

The primary strength of the study was the diagnosis of high-risk pregnancies using the PMSMA standards, which facilitates cross-national comparison of results. The current study obtained antenatal data from rural populations and adds value to the limited literature on the high-risk patterns and clinical profiles of antenatal women.

Despite these valuable comparisons, it is essential to acknowledge the limitations of our study, that it is record-based, and the outcomes of high-risk pregnancies were not studied. While associations between certain risk factors and high-risk pregnancies can be identified, causality cannot be firmly established because of the cross-sectional study design. Additionally, this study found a high-risk trend that was trimester-wise. In addition, due to incomplete data, the age at marriage of the pregnant women and the number of antenatal visits were not analysed. The unexpected finding of thyroid disorder mainly hypothyroidism contribution in the present study on high-risk pregnancy signals the need for additional detailed studies.

Future research should consider larger sample sizes and diverse geographic locations to further validate and generalize our findings. Additionally, a systematic review and meta-analysis incorporating our results alongside other relevant studies would provide a more comprehensive overview of the Clinico-epidemiological landscape of high-risk pregnancies

Conclusion

The high rate of high-risk pregnancies in India is concerning as it may be a contributing reason to the high rates of maternal and newborn morbidity and mortality in the nation. Findings of the present study help to conclude that a high proportion of HRPs among the beneficiaries of PMSM clinic of a rural region were thyroid disorder, previous LSCS, high blood pressure, etc. It is widely recognised that these issues can be significantly lessened if they are identified early on. Programs like PMSMA can lower the MMR in our nation by assisting in the early detection of these preventable risk factors. It is proposed that brief, targeted education interventions can raise mothers' understanding, alter their perspective, and encourage them to make use of the healthcare resources already in place.

Acknowledgement

We would like to extend our heartfelt gratitude to all the respondents and especially to the frontline health workers, including ASHAs, ANMs, supervisors for their unwavering support throughout every phase of data collection. We also thankful to the Office of the Block Medical Officer of Health, Bhatar Rural Hospital, Purba Bardhaman, for their invaluable assistance during the study.

References

1. Kumar A, Sharma S, Sindwani P, Jakhu P, Pandey SM, Diksha. Study of profile and factors associated with high-risk pregnancies among PMSMA beneficiaries visiting block Barwala, District Hisar of Haryana. Int J Community Med Public Health 2022;9:1464-8 DOI: 10.18203/2394-6040.ijcmph20220714
2. Ministry of Health and Family Welfare (Maternal Health Division). Guidance Note for Extended PMSMA for tracking High Risk Pregnancies (HRPs). Government of India; 2023. Available at: https://www.nhm.gov.in/New_Update-2022-23/MH/GUIDELINES-%20MH/Guidance_Note-Extended_PMSMA_for_tracking_HRPs.pdf Accessed on: January 10th, 2024

3. Maternal health. UNICEF India. Available at: https://www.unicef.org/india/what-we-do/maternal-health Accessed on: January 10th, 2024
4. Park K. Text Book of Preventive and Social Medicine, Chapter 09, Preventive Medicine in Obstetrics, Paediatrics and Geriatrics. 26th Ed. Jabalpur, Bhanot Publishers. 2021. p 608.
5. Seema P, Sangeetha S, Phukan P. A retrospective study on high-risk pregnancy and their outcome in a teaching hospital in South India. Medica Innovat. 2014;3(1):122-6.
6. Mufti S, Mufti S. Identification of high-risk pregnancy by a scoring system and its correlation with perinatal outcome. Indian J Pract Doctor. 2008;5(1):1-7. DOI: 10.4236/oalib. 1104162
7. Vijay BK, Amandeep K, Sumit C, Manisha M. Prevalence and correlates of high-risk pregnancy in rural Haryana: a community-based study. IJBAMS. 2013;3(2):212-7.
8. Ministry of Health and Family Welfare (Maternal Health Division). Pradhan Mantri Surakshit Matritva Abhiyan, Operational framework. Nirman Bhawan, New Delhi, India. Available at: https://pmsma.mohfw.gov.in/wp-content/uploads/2016/09/Pradhan_Mantri_Surakshit_Matritva_Abhiyan.pdf
9. Dahiya S, Anand S, Rani V, Gautam S, Nanda S. A study of high-risk factors in ante-natal women at a tertiary care centre. Int J Reprod Contracept Obstet Gynecol. 2020 Jun 25;9(7):2959. DOI: https://doi.org/10.18203/2320-1770.ijrcog20202740
10. Muhammed OA, Khalil NA, Omara MA, Khattab MA. Risky pregnancy among women attending a rural, family healthcare unit. Menoufia Med J 2017;30:1093-7. DOI: https://doi.org/10.4103/mmj.mmj_3_17
11. Kashani E, Hassanzad A, Ameri MA. The rate of the prevalence of high-risk pregnancies and the results on pregnant mothers and the effect on parameters after the birth. Adv Environ Biol 2012; 6: 1319–1324. DOI: 10.4236/ oalib.1103224
12. Ka M, Venkatesh U, Kapoor R. Clinico-epidemiological profile of women with high-risk pregnancy utilizing antenatal services in a rural primary health center in India. J Rural Med. 2023 Jan;18(1):15-20. DOI: 10.2185/jrm. 2022-018
13. Kalaivani.S, Saradhambal. M and Revathy. D; Prevalence of high-risk pregnancy - a descriptive study. Int. J. of Adv. Res. 4 (Sep). 1220-1224. DOI: 10.21474/IJAR01/1605
14. Kumar MP, Gnanadeep TNV, Dixit UR, et al. Prevalence of high-risk pregnancy in rural Dharwad. IOSR J Dent Med Sci. 2015; 14: 2279-2861.
15. Bharati KV, Kaur A, Chawla S, et al. Prevalence and correlates of high-risk pregnancy in rural Haryana: a community-based study. Int J Basic Appl Med Sci. 2013; 3: 212–217.
16. Jaideep KC, Prashant D, Girija A. Prevalence of high risk among pregnant women attending antenatal clinic in rural field practice area of Jawaharlal Nehru Medical College, Belgavi, Karnataka, India. Int J Community Med Public Health 2017; 4: 1257. DOI: https://doi.org/10.18203/2394-6040.ijcmph20171359
17. Unnikrishnan AG, Kalra S, Sahay RK, et al. Prevalence of hypothyroidism in adults: an epidemiological study in eight cities of India. Indian J Endocrinol Metab 2013; 17: 647–652. DOI: https://doi.org/10.4103/2230-8210.113755
18. Dhanwal DK, Prasad S, Agarwal AK, et al. High prevalence of subclinical hypothyroidism during first trimester of pregnancy in North India. Indian J Endocrinol Metab 2013; 17: 281–284. DOI: https://doi.org/10.4103/2230-8210.109712
19. Pillai NS, Bennet J. Prevalence of hypothyroidism amongst pregnant women: a study done in rural set up. Int J Reprod Contracept Obstet Gynecol 2018; 7: 1586. DOI: https://doi.org/10.18203/2320-1770.ijrcog20181360
20. Singh KP, Singh HA, Kamei H, Devi LM. Prevalence of Hypothyroidism among Pregnant Women in the Sub Mountain State of Manipur. Int J Sci Stud 2015;5(5):143-146.
21. Mandal P, Mandal J. Pregnancy outcome study between Pradhan Mantri Surakshit Matriva Abhiyan service utilization group and Pradhan Mantri Surakshit Matriva Abhiyan service non-utilization group: a comparative study. Int J Reprod Contracept Obstet Gynecol 2021;10:2651-5. DOI: 10.18203/2320-1770.ijrcog20212645