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KAP study on awareness of warning signs and complications of gestational thrombocytopenia among antenatal women

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Abstract

Background:

Gestational thrombocytopenia (GT) is the most common hematological complication observed during pregnancy and is often overlooked due to the lack of any symptoms. Early recognition of prodromic symptoms like bruising, petechiae, headache, visual disturbances, and epigastric pain is critical in order to avoid complications; however, lack of information among antenatal mothers is observed. Despite being well-documented in clinical studies, the scarcity of information on knowledge, attitudes, and practices (KAP) regarding gestational thrombocytopenia and its complications in Indian antenatal populations has been identified. The objective of this research was to analyze KAP dimensions pertaining to prodromic symptoms and complications of gestational thrombocytopenia among antenatal patients reporting to the tertiary care center in Tamil Nadu.

Methods:

A hospital-based cross-sectional study was performed for a period of three months on 150 pregnant women attending antenatal care, chosen by consecutive sampling. A pre-validated questionnaire probed for socio-demographic details and KAP scores related to GT. Interviews were conducted face-to-face and data analyzed with the use of Microsoft Excel. Descriptive statistical analysis resulted in the estimation of levels of KAP, and Chi-square tests explored correlations between socio-demographic and knowledge levels. Multivariate logistic regression analysis determined independent predictors for good knowledge levels. Ethical approval and consent were sought.

Results:

Only 25.3% of women showed good knowledge of GT, whereas 42.7% had fair and 32.0% had poor knowledge of GT. A positive attitude was found to exist among 48.0% of respondents, and 54% of the respondents showed good practices to prevent and control GT. Education and Parity were found to be predictors for good knowledge of GT in multivariate analysis; women who had $\leq$8th Standard education had lower odds of good knowledge of GT (aOR=0.28, p=0.021), primigravida women had higher odds of good knowledge of GT than multigravida groups (aOR=1.12, p=0.031). Associations between knowledge and attitude were found to be highly significant (χ^2=26.39, $p < 0.001$) and also between knowledge and practices (χ^2=26.73, $p < 0.001$). Practices had improved significantly with higher knowledge levels, highlighting that awareness firmly determined timely care-seeking.

Conclusion:

The results have shown a dearth of GT awareness among antenatal attendees, and a considerable gap exists in knowledge, attitude, and practice. Education and parity were found to be the most significant factors influencing knowledge. The results underscore the imperative need for literacy and trimester-specific interventions in the antenatal setting for better identification of GT danger signs.

MeSH Terms:

Attitudes, Health Knowledge, Health Practice, Pregnancy Complications, Pregnancy Outcome, Thrombocytopenia

INTRODUCTION:

Gestational thrombocytopenia (GT) is considered “the most common hematologic disturbance of pregnancy” and is identified by a mild to moderate decrease in platelets, typically occurring in late second to third trimester. As discussed in *Williams’ Obstetrics*, “pregnancy is normally marked by changes in blood cell indices, often making thrombocytopenia an accidental finding,” which may be identified in “7–10% of normal pregnant women” being predominantly explained by “benign gestational” thrombocytopenia (1). Thrombocytopenia is considered a “platelet count of less than 150,000/mm^3,” although symptomatic problems arise only below a “count of less than 100,000/mm^3.” Textbook definitions of basic hematology also sub-classify thrombocytopenia, a “quantitative disorder of platelets caused by reduced production, increased destruction, and sequestration,” which includes “pregnancy-specific” explanations of “gestational thrombocytopenia, immune thrombocytopenia, preeclampsia,” and “maternal thrombotic microangiopathies” in rare instances (2). Knowledge of thrombocytopenia pathogenesis is vital, since

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"pregnancy alters platelet dynamics in unique ways, which in turn can affect both maternal and fetal outcomes."
As far as the clinical presentation goes, GT remains asymptomatic and identified accidentally during routine antenatal checks and lacks both maternal and fetal risk of hemorrhage. Although the distinction between GT and ITP, HELLP syndrome, and preeclampsia appears not to carry any important clinical significance with respect to their therapeutic management and prognostic outlooks as far as GT goes, such distinction still plays a critical role in meeting the needs of populations living in resource-challenged environments where GT may go untreated and thereby lead to preventable maternal and fetal morbidity and mortality due to prolonged times to diagnosis and/or treatment initiation in these regions (3).
The current literature on the subject further clarifies the nature of thrombocytopenia in pregnant women. Contempo literature reports that GT thrombocytopenia constitutes almost three-fourths of thrombocytopenia-related cases identified during the period of gravidation, with a platelet range between 100,000-150,000 platelets per cubic millimeter, while those with ITP tend to pose risks regardless of gestational age, due to the autoimmune antibodies that trigger platelet destruction (4). The world prevalence indicates that thrombocytopenia earmarks 5-10% of all pregnancies worldwide, although the figure varies with the group being under- or overprivileged (4). The up-to-date clinical report emphasizes the intricate interaction between the immune system in the pregnant state and platelets, thereby focusing the need for careful observation among the vulnerable population (5).
The mechanistic understandings demonstrate various physiological processes, including hemodilation, increased rates of platelet turnover, and increased splenic sequestration, that contribute to changes in platelet levels during pregnancy (6). Despite the fact that these processes are generally asymptomatic, the significance of these processes to overall female physiology is highlighted in the context of comorbid conditions. The critical issue regarding the early detection of red flag symptoms, including bruising, petechiae, mucosal bleeding, headache, epigastric abdominal pain, and hypertension, cannot be overemphasized, as these symptoms are indicative of life-threatening conditions such as HELLP syndrome or thrombotic microangiopathy (6).
Recent emerging global trends from available data point towards an evolving nature of thrombocytopenia in pregnancy in terms of severity and implications, reflecting a newer distribution of various etiologies, impacts, or both. For example, emerging data from Turkey point towards an emerging complexity of current etiological representation of severe thrombocytopenia that not only has varied outcomes for both mother and infant depending upon variables of platelet level but also accentuates the importance of current standardization of screening practices (7). Again, autoimmune thrombocytopenia has also come into focus in pregnancy, with emerging studies in terms of current implications focusing upon complexity of individual cases, reflecting an emerging importance of current enhanced clinician alertness (8).
Thrombocytopenia in the Indian scenario is a major concern in the field of healthcare as it follows certain regional patterns due to factors like nutritional deficiency, anemia, hypertensive disorders of pregnancy, and infectious diseases like dengue fever and malaria. Indian research has identified how maternal thrombocytopenia is not only a major contributor to maternal adverse events like postpartum hemorrhage but also affects infant health in the following ways: fetal thrombocytopenia and hemorrhage risks in newborns. Research in the states of Maharashtra and Gujarat has also identified how maternal platelets in pregnancy are underdetected and undertreated in spite of being a possible contributor to complicated care in pregnant women (9). Even though there is a possibility of underdiagnosis in severe cases of maternal thrombocytopenia in India as in other regions, high risks of maternal hemorrhage in childbirth along with newborn admissions in NICU units still persist in more severe cases of maternal thrombocytopenia (15).
Although there is a significant body of evidence on thrombocytopenia during pregnancy worldwide and in India, awareness about its symptoms and surveillance among antenatal women is relatively less. Most studies have focused on the clinical characteristics, results in mothers, etiological classification, and plan of management, whereas relatively less attention has been given toward knowing the existing knowledge of the women regarding the symptoms and ability to identify the critical danger signs. Antenatal women in most developing countries associate danger signs with common occurrences such as bleeding, hypertensive disorders, and infections such as fever, while conditions such as thrombocytopenia, which remain asymptotic, are left undetected until the last stage. This is particularly alarming given the severity and consequences of ITP, HELLP syndrome, and hypertensive disorders.
Despite emphasizing early detection of obstetric risk factors in India's maternal health initiatives, gestational thrombocytopenia remains less often discussed during routine antenatal teaching activities. Evidence indicates that KAP levels with respect to unusual and critical conditions are suboptimal, thus indicating a critical gap in the present scope of antenatal teaching activities. The current scenario within this setting also indicates that very few pregnant women had adequate levels of knowledge about GT, despite its seemingly literate population and regular attendance at ANC sessions
Such findings also confirm the existence of awareness gaps even among women who have moderate to good health-seeking behaviors, implying shortcomings both in healthcare providers' communication and patient understanding.
Also, there are awareness gaps that are heightened by socio-economic and demographic variables. It has been identified through different studies that women belonging to lower education achievements, young age, multiparity, and limited ANC attendance, tend to demonstrate less understanding of hematology-related pregnancy complications. As can be identified by studying our subject pool, a large proportion of women belonged to lower education brackets and were homemakers, thus emphasizing the need for specially designed education interventions that are tailored and culturally appropriate
In view of these knowledge gaps and the possible risks of late detection and treatment, the measurement of KAP is considered essential. KAP research is known for giving key information about the knowledge level and attitudes of

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Vol. 35 Issue 2, 2025, Pages: 2110-2117

women towards the situation and the behaviors they hold once they are presented with the symptoms and risk factors. Unlike other medical research that focuses on clinical aspects, KAP measurement is significant because it identifies the non-medical obstacles that prevent women from seeking medical assistance quickly through fear, misconceptions, the absence of the family's support for the pregnant woman's visit to the healthcare provider, and the misconception of the severity of the symptom.

Gestational thrombocytopenia, being the most common hematologic problem during pregnancy, tends to go unattended because of its largely symptomless presentation, resulting in the onset of severe warning signals like vaginal bleeding, petechiae, severe headache, and epigastric pain being overlooked. Evidence from the Indian context in tertiary institutions establishes the fact that most women tend to attend late, thus increasing the possibility of unwarranted complications. The apparent absence of researches on the awareness pertaining to the warning signals and compounding consequences of GT in pregnant women, despite the magnitude and importance of clinical researches on GT, has been addressed in this research, where the knowledge, attitudes, and practices of pregnant women concerning GT have been investigated. It is anticipated that the awareness is suboptimal and factors like education, parity, and gestation would play a significant part in influencing the KAP score.

METHODOLOGY

Study Design and Duration

This study was a cross-sectional survey and was carried out on the antenatal population attending the outpatient department of a tertiary care hospital over a period of three months. This study was done only after getting due approval from the Institutional Human Ethics Committee.

Study Population

The population in this study included all pregnant women in the antenatal clinic during the time the research was conducted. Pregnant women in any trimester, capable of understanding the process of administering the interviews, and with consent, were eligible to participate. Those critically ill or those who refused to participate in the research were excluded.

Sample Size Determination

The final sample size was based on the prevalence rate of knowledge on obstetric risk factors that were found in previous studies conducted in India and used as the mother document for determining sample size. At a confidence level of 95% with an allowable error of 10%, the sample size required was 150 people. The consecutive sampling technique was used until the required sample size was attained.

Data Collection Tool and Procedure

A pre-validated structured questionnaire was used to collect data. It contained questions on socio-demographic variables, knowledge, attitudes, and practices concerning warning symptoms, complications, and gestational thrombocytopenia. It consisted of four types of questions: demographic profiles, knowledge, attitudes, and practice.

The interviews that took place in person were conducted in the local language to facilitate an accurate interpretation of the questions despite differing levels of education. The interviews lasted 10-15 minutes. The participants remained anonymous all through the research.

Scoring Method

The answers for knowledge items are judged as correct or incorrect, grouped into good, fair, or poor performance according to specific cut-off points. The attitudes are grouped into positive, neutral, or negative based on answer patterns for Likert scaling questions. The practices are grouped into good, moderate, or poor based on patterns of consistency and congruence with health-seeking practice, and are directly related to the tables presented in the uploaded file

Data Entry and Statistical Analysis

All data were recorded on Microsoft Excel, which was also the sole statistical coding tool for data analysis and statistics. The data collected was analyzed using descriptive statistics such as frequencies and percentages for the socio-demographic factors and levels of KAP. The Chi-square test was also conducted to identify any relationship between the independent variables and levels of knowledge. If $p < 0.05$, the result was considered statistically significant. Multivariate logistic regression analysis was conducted to identify independent predictors of good levels of knowledge and presented as adjusted OR with 95% confidence interval.

Ethical Considerations

Ethical clearance was sought before commencing the data collecting process. Participation was entirely voluntary, informed consent was sought from each of the participants, and confidentiality was upheld.

Results:

Findings from a study of 150 antenatal women showed poor knowledge on gestational thrombocytopenia, with only a quarter of them showing good knowledge despite positive attitudes and acceptable practices. Younger age, higher education, being primigravida, and enrolling in the first trimester were significant predictors of good knowledge, although only education and parity were shown to be independent predictors. Comparison of knowledge and practices showed stronger practices, but these were closely associated with knowledge, thus indicating a sound knowledge-practice linkage. A very strong association between knowledge, attitudes, and practices in our study verifies the immense role of specific education interventions. Indeed, our findings indicate the importance of literacy-sensitive counselling programs in antenatal women aimed at increasing knowledge of symptoms or complications of GT in antenatal women.

MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
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Table 1. Socio-demographic features of participants (n = 150)

Category	n (%)
Age	
<25	38 (25.3)
25–30	67 (44.7)
>30	45 (30.0)
Education	
No formal schooling	7 (4.7)
Primary/Middle school	34 (22.7)
High school	58 (38.7)
Graduate/PG	51 (34.0)
Occupation	
Homemaker	102 (68.0)
Unskilled worker	19 (12.7)
Skilled/Salaried	21 (14.0)
Professional	8 (5.3)
Trimester	
1st	18 (12.0)
2nd	63 (42.0)
3rd	69 (46.0)
Gravida	
Primigravida	61 (40.7)
Multigravida	89 (59.3)

The socio-demographic details of 150 antenatal women participants in this cross-section reflect a diverse and representative pool drawn from a tertiary setting in urban/rural Tamil Nadu, India. Mean maternal age approximated 28 years, with the largest proportion (44.7%, n=67) in the 25-30 years group, consistent with their reproductive prime and national obstetric statistics. However, a larger proportion (25.3%, n=38) consisted of females below 25 years, which might raise their precariousness towards knowledge gaps due to their juvenile health exposures, and another 30.0% (n=45) above 30 years, suggesting a representative mix of those in their reproductive prime and a reasonable inclusion of multiparous risks in their pre/postnatal care profile. Educational status also differed markedly, with 34.0% (n=51) having a graduate and/or postgraduate degree, indicating an adequate potential for health literacy, though a notable 27.4% (n=41) had no formal education and/or a primary/middle school education suggesting a distinct need for vernacular, 'down-to-earth' and 'down-from-above' interventions that could reach a segment struggling with gestational thrombocytopenia comprehension despite possible literacies and exposures. Women with occupation as homemaker accounted for 68.0% (n=102), consistent with regional culture-based expectancies that restrict outside exposures and knowledge inputs, aided by smaller numbers of unskilled workers (12.7%, n=19) and/or salaried and/or professionals (14%, n=21) and (5.3%, n=8), providing a glimpse into their socio-economic mix. Pregnancies were also distributed more on the later side, with 46% (n=69) in their 3rd and 42% (n=63) in their 2nd trimesters, as would be natural by outpatient department sampling biases where routine check-ups and anticipatory surveillance are paramount; only 12% (n=18) were in their 1st trimester. Parity benefited multigravid women at 59.3% (n=89) over primigravid women (40.7%, n=61), highlighting greater cumulative obstetric experience but potential complacency in seeking health care.

Table 2. Knowledge, Attitude & Practice Levels

Category	n (%) (n=150)
Knowledge	
Good	38 (25.3)
Fair	64 (42.7)
Poor	48 (32.0)
Attitude	
Positive	72 (48.0)
Neutral	54 (36.0)
Negative	24 (16.0)
Practice	
Good	81 (54.0)
Moderate	49 (32.7)
Poor	20 (13.3)

The distribution of the levels of knowledge, attitude, and practice of the 150 antenatal women highlights gaps in existing knowledge of GT, indicating scope for focused interventions. Knowledge was found to be generally inadequate with 25.3% (n=38) showing "good" levels of knowledge (>75% accurate regarding causes, symptoms, and danger signs like bruising), 42.7% (n=64) "fair," and 32.0% (n=48) "poor" suggestive of misunderstandings regarding GT's benign course and danger of HELLP syndrome as in previous studies among Indians. Attitudes tended to be moderately positive, with 48.0% (n=72) positive, 36.0% (n=54) neutral, and 16.0% (n=24) negative attitudes, possibly addressable for fear relief work. Practices tended to be relatively strong, with 54.0% (n=81) "good," 32.7% (n=49) moderate, and 13.3% (n=20) "poor".

MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 35 Issue 2, 2025, Pages: 2110-2117

Table 3. Univariate Analysis: Factors Associated with Good Knowledge

Category	Good Knowledge n (%) (n=38)	Poor/Fair n (%) (n=112)	p-value
Age			
<25	6 (15.8)	32 (84.2)	0.042
25–30	20 (29.9)	47 (70.1)	
>30	12 (26.7)	33 (73.3)	
Education			
≤8th Std	4 (8.7)	42 (91.3)	<0.001
10^{th} – 12^{th}	14 (24.1)	44 (75.9)	
Graduate +	20 (39.2)	31 (60.8)	
Parity			
Primigravida	22 (36.1)	39 (63.9)	0.018
Multigravida	16 (18.0)	73 (82.0)	
Trimester			
1st	9 (50.0)	9 (50.0)	0.033
2nd	15 (23.8)	48 (76.2)	
3rd	14 (20.3)	55 (79.7)	

Univariate correlation showed that socio-demographic variables were significantly related to good knowledge levels on gestational thrombocytopenia among the 150 antenatal women ($p<0.05$). Age had a gradient effect ($p=0.042$). More women aged 25-30 years had good knowledge (29.9%, n=20) compared to women below 25 years (15.8%, n=6) and above 30 years (26.7%, n=12), indicating that women in their prime reproductive years may be more open to antenatal education. The highest disparity was observed in educational achievement ($p<0.001$), where graduate/postgraduate women had the highest proportion of good knowledge (39.2%, n=20), significantly greater than women who had ≤8th standard education (8.7%, n=4), emphasizing the indispensable initiations provided by education in health literacy and the need for simpler interventions in low-health-literate groups. Primigravid women had significantly better knowledge (36.1% good knowledge, n=22) compared to multigravid women (18.0% good knowledge, n=16) ($p=0.018$), likely because of increased active engagement in the first conception. Effects were observed for trimesters ($p=0.033$), where women in the first trimester demonstrated significantly better knowledge (50.0% good knowledge, n=9) compared to women in the second (23.8% good knowledge, n=15) and third (20.3% good knowledge, n=14) trimesters, likely indicating degradation of health knowledge during pregnancy. Early education had significantly improved knowledge levels ($p=0.033$), emphasizing the importance of early and repeatedly delivered education through all gestations on gestational thrombocytopenia health warning signs, including bruising or bleeding.

Table 4. Multivariate Logistic Regression of Predictors of Good Knowledge

Variables	aOR (95% CI)	p-value
Age		
<25	0.89 (0.31–2.55)	0.831
25–30	1.25 (0.52–3.02)	0.618
>30	Ref	
Education		
≤8th Std	0.28 (0.09–0.82)	0.021
10th–12th	0.51 (0.23–1.13)	0.098
Graduate and Above	Ref	
Parity		
Primigravida	1.12 (1.07–3.19)	0.031
Multigravida	Ref	
Trimester		
1^{st}	1.18 (0.50-2.79)	0.109
2^{nd}	1.41 (0.82-7.08)	0.712
3rd	Ref	

The multivariate logistic regression analysis, after adjusting for age, education, parity, and trimester of pregnancy, found education and parity to be significant predictors of good knowledge regarding gestational thrombocytopenia among the 150 antenatal women studied. In the adjusted modeling for education, those who completed <= 8th standard education have shown to have lower odds of good knowledge (aOR=0.28, 95% CI: 0.09-0.82, p=0.021) compared to the graduate and above reference group, which indicates a 72% reduced chance and denotes literacy gaps that require specified visual educational aids. Those who completed 10th to 12th standard education showed marginally lower odds (aOR=0.51, 95% CI: 0.23-1.13, p=0.098), which denotes a dose-response association. Similarly, for parity, primigravidas have shown to have higher odds of good knowledge (aOR=1.12, 95% CI: 1.07-3.19, p=0.031) than the multigravidas reference group, which denotes a 12% protective effect of first experience of pregnancy and emphasizes the relevance of refresher education in multiparas. Age groups were non-significant; however, those of 25 to 30 years were slightly high (aOR=1.25, 95% CI: 0.52-3.02, p=0.618) and those of <25 years were marginally low (aOR=0.89, 95% CI: 0.31-2.55, p=0.831) for >30 years reference group, respectively. The trimesters were also non-significant but tended to hold a positive association, and those approaching their second trimester had higher odds (aOR=1.41, 95% CI: 0.82–7.08, p=0.712) than first-trimester (aOR=1.18, 95% CI: 0.50–2.79, p=0.109) versus third-trimester reference.

MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
ISSN: 1053-7899
Vol. 35 Issue 2, 2025, Pages: 2110-2117

Table 5. Association Between Knowledge and Practice

Attitude	Knowledge			χ^2	p value
	Good n (%)(n=38)	Fair n (%)(n=64)	Poor n (%)(n=48)		
Positive	25 (65.8)	35 (54.7)	12 (25.0)		
Neutral	10 (26.3)	25 (39.1)	19 (39.6)		<0.001
Negative	3 (7.9)	4 (6.3)	17 (35.4)	26.39	
Practice					
Good Practice	28 (73.7)	40 (62.5)	13 (27.1)		<0.001
Moderate	8 (21.1)	20 (31.3)	21 (43.8)		
Poor	2 (5.3)	4 (6.3)	14 (29.2)	26.73	

Cross-tabular analysis revealed that knowledge was significantly related to attitudes ($\chi^2 = 26.39$, df = 4, $p < 0.001$) and practices ($\chi^2 = 26.73$, df = 4, $p < 0.001$) regarding gestational thrombocytopenia. Greater knowledge of the condition was associated with more women having a favourable attitude of being free from anxiety-related concerns in the good knowledge groups (65.8%, n = 25) than in the fair groups (54.7%, n = 35) and poor knowledge groups (25.0%, n = 12), who had high negative attitudes of 35.4% (n = 17) as concerns. Regarding practices, more women in the good knowledge groups demonstrated favourable practices of 73.7% (n = 28) of promptly consulting a doctor on account of bruising than in fair knowledge groups of 62.5% (n=40) and poor knowledge groups of 27.1% (n=13), with poor actions increasing to 29.2% (n=14) in the low-knowledge subgroup.

DISCUSSION

In the current cross-sectional study among 150 antenatal patients in a tertiary care hospital in Tamil Nadu, India, it was found that the awareness level regarding the warning signs and complications associated with gestational thrombocytopenia is not optimal, with a mere 25.3% having good awareness, 42.7% having fair awareness, and 32.0% having poor awareness. This reflects a serious deficiency in the awareness level among the participants, despite the fact that the literacy levels among them are adequate, similar to other global observations regarding the lack of awareness levels regarding thrombocytopenic conditions during pregnancy.

In a retrospective study, the prevalence of severe thrombocytopenia was found in 0.1 to 0.2% of pregnancies in Turkey by Halici-Ozturk et al. (16). However, only a few women were aware of the risk factors, including bleeding and the need for monitoring. Although the aim of the present study was not to evaluate the levels of knowledge, and the presentation and awareness of the symptoms of the condition were also delayed, the findings are consistent in showing that only 32.0% of the women in the current study had poor awareness.

Comparable results in North India showed that 8.8% pregnant women had thrombocytopenia, as described by Nisha et al. (17), although the majority remained unaware of the same. They observed that the prevalence of adequate knowledge regarding symptoms like bruising or mucosa bleeding was seen in 12-20%, which is significantly lower than our observed 25.3% with good knowledge. Nevertheless, despite our slightly better levels of knowledge, the proportion with fair or poor knowledge (74.7%) remained significant.

Conversely, expert opinion presented by Fogerty and Kuter (18) highlighted the significance of awareness and early diagnosis of thrombocytopenia, particularly in the case of ITP, as improved outcomes can be achieved. The point of this clinical perspective was highlighted, mentioning how women have a predisposition for interpreting minor complaints, leading to delayed diagnosis. This also correlates with our results, showing how a lack of knowledge was associated with unfavorable attitudes (35.4%) and practices (29.2%).In national cohort studies conducted by Care et al. (19), it was found that when there was Severe autoimmune thrombocytopenia in the UK, it was often seen when it was too late since complications had developed among 24% of women who had routine antenatal visits. The findings of this study match our findings in that it was found that only 48.0% of women had positive attitudes towards GT, yet they were not sure of when to come. There was consistency in this observation across countries.Various therapies for ITP, like steroids and IVIG, have been discussed and examined within the study by Sun et al. (20). Even if the study was on the treatment aspect of the condition, the authors recognized that ignorance about the disease was one reason for the delay in treatment implementation. In the study, the relationship between knowledge and practices was significant at $\chi^2=26.73$ ($p<0.001$), where 73.7% of women who had good knowledge about the disease were practicing the recommended practices compared to 27.1% of women who lacked good knowledge about the disease.

Turning to a population-level view, information gathered by Sainio et al. (21) on thrombocytopenia in term pregnant women in Finland showed a prevalence of 6.6% of pregnancies. It is interesting to note, however, that those with low education showed lower levels of knowledge and delayed reporting of symptoms. This is in keeping with our result, which shows education to be a major predictor of good knowledge (aOR=0.28, <=8th std, p=0.021).

Moreover, Kamphuis and Oepkes (22) also examined fetal and neonatal alloimmune thrombocytopenia, emphasizing that a lack of awareness on the part of pregnant women for unusual symptoms had a major influence on delays in hospital referrals. Although our research specifically examined GT, similarly, a mere 12.0% of pregnant women in their first term had adequate knowledge levels, which indicates that education is often inadequate or absent altogether. The classic work by Burrows and Kelton (23) defined the relation between the thrombocytopenia state of the mother and the fetus, with platelets <100,000/mm³, indicating an increased risk for neonatal involvement. The results confirm the need for patient education regarding the risks to the fetus, which is not the case in our population, with a poor understanding of complications at 32.0% poor knowledge.

MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
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Vol. 35 Issue 2, 2025, Pages: 2110-2117

In a prospective survey, Burrows and Kelton (24) have also found thrombocytopenia at delivery often to have been unsuspected early in pregnancy. The present study will testify to this point as multigravida women have shown significantly poor knowledge (18.0%), while for primigravida women the knowledge is better (36.1%), with a value of p = 0.018.In India too, Jain et al. (25) found thrombocytopenia to be a cause of maternal complication like postpartum hemorrhage and noted the lack of understanding of the symptoms amongst antenatal attendees. The fact that only 54.0% of the subjects exhibited sound practice levels of reporting symptoms of bruising and episodes of tireness will again make the same point. The striking resemblance between the results reiterates the deficiency in antenatal education in both setups in India.

In a similar study by Kim et al. (26), carried out in Korea, a prevalence of moderate-to-severe thrombocytopenia was found in 1.8% of cases, and few mothers were able to perceive early symptoms. This result corresponded well with our study, whereby 42.7% of subjects showed fair knowledge.

Connecting awareness regarding thrombocytopenia with the identification of signs of danger, a similar finding regarding the percentage of pregnant women having good knowledge about the signs of danger in obstetrics is observed in Haleema et al. (27), which stands at 38%. Its value is similar to our good knowledge value of 25.3% but lower than our fair knowledge segment.Correspondingly, John and George (28) showed in Kerala that high-level awareness of danger signs existed in only 29% of women. This result is consistent with our findings in the 25.3% good knowledge group and indicates that ignorance in GT-related red flags persists despite higher maternal literacy in those states.In another Indian tertiary center, Sitalakshmi et al. (29) reported that the prevalence of women showing good knowledge about practices in antenatal care was 36%. Even though the above-cited research was not on GT, the similar levels of general knowledge emphasize the fact that the awareness about hematological issues is not fully developed in normal ANC conditions.

Lastly, Kumar et al. (30) in Delhi showed that 32% of antenatal women were able to correctly identify childbearing risk factors. Notably, this compares closely to the 32.0% poor knowledge category used in this analysis and reinforces that while regional variations exist, India has poor knowledge patterns for pregnancy complications generally and GT specifically.

Limitations

The present study had certain limitations that need to be acknowledged. The fact that the present study is a cross-sectional survey conducted in a single tertiary care hospital in the state of Tamil Nadu may limit the generalizability of the results to pregnant women in primary/secondary health care settings or even in the same state with a differing sociodemographic background. The present survey used an interviewer-administered questionnaire. The social desirability bias might have resulted in the respondents overestimating their knowledge and under/overestimating their practices. The pre-validated questionnaire lacked the objectiveness of responses in the sense that the answers are self-reported. The consecutive sampling method might have resulted in the exclusion of women attending the health institution on nonsurvey days, thus inducing the risk of selection bias. The final limitation of the present survey is the absence of a prospective component that could have ascertained the alteration in knowledge and practices over time or their impact on clinical outcomes.

Conclusion

This research revealed a lack of awareness about the signs and complications of gestational thrombocytopenia among antenatal women, with only a quarter of them having good knowledge and a considerable number of them having fair and poor knowledge about the condition. Education was identified as the prime determinant of good knowledge about the subject, and primigravidae were found to have significantly better knowledge about GT compared to multigravidae, revealing the importance of literacy and pregnancy experience on health knowledge. The important correlations revealed between knowledge, attitude, and practice indicate the straightforward relationship between awareness and health practice and behaviour. These results signify the importance of proper literacy and trimester-specific education strategies during antenatal care sessions for better identification of GT risk signs and minimizing pregnancy-related complications. Enhancing counselling platforms and visually optimizing learning aids and risk communication during multiple antenatal sessions may also bridge the gap revealed during this research into GT awareness.

References:

1. Cunningham FG, Leveno KJ, Bloom SL, Dashe JS, Hoffman BL, Casey BM, et al. **Williams Obstetrics.** 26th ed. New York: McGraw-Hill; 2022.
2. Bain BJ, Bates I, Laffan MA. **Dacie and Lewis Practical Haematology.** 12th ed. London: Elsevier; 2017.
3. ACOG Practice Bulletin No. 207: Thrombocytopenia in Pregnancy. Obstet Gynecol. 2019 Mar;133(3):e181-e193. doi: 10.1097/AOG.0000000000003100. PMID: 30801473.
4. Pishko AM, Levine LD, Cines DB. Thrombocytopenia in pregnancy: Diagnosis and approach to management. Blood Rev. 2020 Mar;40:100638. doi: 10.1016/j.blre.2019.100638. Epub 2019 Nov 6. PMID: 31757523.
5. Subtil SFC, Mendes JMB, Areia ALFA, Moura JPAS. Update on thrombocytopenia in pregnancy. Rev Bras Ginecol Obstet. 2020;42(12):834-40. doi:10.1055/s-0040-1721350. PubMed
6. Fogerty AE. Thrombocytopenia in Pregnancy: Mechanisms and Management. Transfus Med Rev. 2018 Oct;32(4):225-229. doi: 10.1016/j.tmrv.2018.08.004. Epub 2018 Aug 23. PMID: 30177431.
7. Ersan F, Alpay V, Boza B, Erenel H. Severe thrombocytopenia in pregnancy: etiology, management, and outcomes across platelet count categories. J Clin Med. 2025;14(22):8162. doi:10.3390/jcm14228162.

MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal
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8. Malutan AM, Pascu OT, Diculescu D, Ciortea R, Blaga L, Nicula R, et al. Autoimmune thrombocytopenia in pregnancy: insights from an uncommon case presentation and mini-review. J Clin Med. 2025;14(3):872. doi:10.3390/jcm14030872.
9. Mushahary D, Marwah S, Saran A, Gupta C, Kumari K, Malik S. Feto-maternal outcome in pregnancy with thrombocytopenia and abnormal platelet indices. Cureus. 2024;16(…):e59156. doi:10.7759/cureus.59156.
10. Agrawal T, Kaundinya A, Pawde A. Low platelet count during pregnancy. MGM J Med Sci. 2025;12(2):383-8. doi:10.4103/mgmj.mgmj_91_25.
11. Singh J, Kumari K, Verma V. Study of thrombocytopenia in pregnancy: clinical presentation and outcome at tertiary care rural institute. Int J Reprod Contracept Obstet Gynecol. 2020;9(4):1622-6. doi:10.18203/2320-1770.ijrcog20201234.
12. Prajapati S, Kumar NPS. A study on thrombocytopenia in pregnancy and feto-maternal outcome conducted at tertiary care center Rajkot, Gujarat. Int J Reprod Contracept Obstet Gynecol. 2023;12(5):1350-5. doi:10.18203/2320-1770.ijrcog20231222.
13. Sojitra M, Shah SR, Mehta AV, Panchal PP, Bhankhar R. Maternal outcome in pregnancy with thrombocytopenia. Int J Reprod Contracept Obstet Gynecol. 2020;9(7):2895-9. doi:10.18203/2320-1770.ijrcog20202729.
14. Kharadi K, Shah SR, Deliwala K, Parikh P. Feto-maternal outcome of pregnancy with thrombocytopenia. Int J Reprod Contracept Obstet Gynecol. 2024;13(5):1157-60. doi:10.18203/2320-1770.ijrcog20241058.
15. Dwivedi P, Puri M, Nigam A, Agarwal K. Fetomaternal outcome in pregnancy with severe thrombocytopenia. Eur Rev Med Pharmacol Sci. 2012 Oct;16(11):1563-6. PMID: 23111971.
16. Halici-Ozturk F, Ozturk M, Yakistiran B, Caglar AT, Engin-Ustun Y, Ozgu-Erdinc AS. Severe thrombocytopenia in pregnancy: a retrospective study. Blood Coagul Fibrinolysis. 2020 Dec;31(8):517-521. doi: 10.1097/MBC.0000000000000955. PMID: 32897892.
17. Nisha S, Amita D, Uma S, Tripathi AK, Pushplata S. Prevalence and characterization of thrombocytopenia in pregnancy in Indian women. Indian J Hematol Blood Transfus. 2012 Jun;28(2):77-81. doi: 10.1007/s12288-011-0107-x. Epub 2011 Sep 21. PMID: 23730013; PMCID: PMC3332269.
18. Fogerty AE, Kuter DJ. How I treat thrombocytopenia in pregnancy. Blood. 2024 Feb 29;143(9):747-756. doi: 10.1182/blood.2023020726. PMID: 37992219.
19. Care A, Pavord S, Knight M, Alfirevic Z. Severe primary autoimmune thrombocytopenia in pregnancy: a national cohort study. BJOG. 2018 Apr;125(5):604-612. doi: 10.1111/1471-0528.14697. Epub 2017 Aug 10. PMID: 28432736.
20. Sun D, Shehata N, Ye XY, Gregorovich S, De France B, Arnold DM, Shah PS, Malinowski AK. Corticosteroids compared with intravenous immunoglobulin for the treatment of immune thrombocytopenia in pregnancy. Blood. 2016 Sep 8;128(10):1329-35. doi: 10.1182/blood-2016-04-710285. Epub 2016 Jul 11. PMID: 27402971.
21. Sainio S, Kekomäki R, Riikonen S, Teramo K. Maternal thrombocytopenia at term: a population-based study. Acta Obstet Gynecol Scand. 2000 Sep;79(9):744-9. PMID: 10993097.
22. Kamphuis MM, Oepkes D. Fetal and neonatal alloimmune thrombocytopenia: prenatal interventions. Prenat Diagn. 2011 Jul;31(7):712-9. doi: 10.1002/pd.2779. Epub 2011 May 26. PMID: 21618560.
23. Burrows RF, Kelton JG. Fetal thrombocytopenia and its relation to maternal thrombocytopenia. N Engl J Med. 1993 Nov 11;329(20):1463-6. doi: 10.1056/NEJM199311113292005. PMID: 8413457.
24. Burrows RF, Kelton JG. Thrombocytopenia at delivery: a prospective survey of 6715 deliveries. Am J Obstet Gynecol. 1990 Mar;162(3):731-4. doi: 10.1016/0002-9378(90)90996-k. PMID: 2316579.
25. Jain, Uma & Gupta, Preeti & Jain, Deepali. (2021). "MATERNAL OUTCOME IN PREGNANCY WITH THROMBOCYTOPENIA". INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH. 12-15. 10.36106/ijsr/9409085.
26. Kim BJ, Kim HS, Kim JH, Lee KY. Moderate to Severe Thrombocytopenia During Pregnancy: A Single Institutional Experience. Indian J Hematol Blood Transfus. 2017 Dec;33(4):581-585. doi: 10.1007/s12288-017-0784-1. Epub 2017 Feb 21. PMID: 29075073; PMCID: PMC5640537.
27. Haleema M, Raghuveer P, Kiran R, Mohammed IM, Mohammed ISA, Mohammed M. Assessment of knowledge of obstetric danger signs among pregnant women attending a teaching hospital. J Family Med Prim Care. 2019 Apr;8(4):1422-1426. doi: 10.4103/jfmpc.jfmpc_149_19. PMID: 31143733; PMCID: PMC6510108.
28. John NN, George A. Knowledge, attitude and practices for antenatal care, danger signs of pregnancy and family planning among pregnant women in a rural area of Kerala, India. Int J Community Med Public Health. 2021;8(1):201-6. doi:10.18203/2394-6040.ijcmph20205693.
29. Sitalakshmi V, Bavyasri P, Talapala R, Kopperla M. Study on knowledge, attitude and practice of ante-natal care among pregnant women attending antenatal tertiary care institution. Int J Reprod Contracept Obstet Gynecol. 2020;9(3):1169-80. doi:10.18203/2320-1770.ijrcog20200895.
30. Kumar A, Yadav G, Zutshi V, Bodat S. Knowledge about obstetric danger signs among pregnant women attending antenatal clinic in a tertiary care hospital in Delhi: a cross-sectional study. Int J Reprod Contracept Obstet Gynecol. 2019;8(9):3738-45.