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"Influence Of Demographic Factors On Awareness Of Thyroid And Hypertension Management Among Pregnant Women

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Abstract:
Background: *Thyroid dysfunction and hypertensive disorders during pregnancy significantly contribute to maternal and fetal morbidity. Early awareness and preventive strategies can reduce complications, yet awareness levels may be influenced by sociodemographic factors.*
Objectives: *To examine the relationship between pregnant women's awareness of thyroid and hypertension management and selected demographic variables.*
Methods: *A descriptive cross-sectional study was conducted among 200 pregnant women attending antenatal care at selected hospitals in Delhi and Noida. Data were collected using a structured, validated questionnaire with two sections: demographic profile and knowledge-based awareness questions. Descriptive statistics summarized the data, and chi-square tests were used to assess associations between demographic variables and knowledge levels.*
Results: *Out of 200 participants, 51% had moderate knowledge, 30% had high knowledge, and 19% had low knowledge. Education level ($\chi^2 = 22.17$, $p = 0.005$) and family history of hypertension ($\chi^2 = 6.52$, $p = 0.038$) showed statistically significant associations with knowledge levels. Other variables such as age, parity, income, and residence were not significantly associated.*
Conclusion: *Education and family health history play crucial roles in shaping awareness among pregnant women regarding thyroid and hypertension. Targeted health education interventions should be integrated into antenatal care, particularly for women with lower education levels or no family history of related conditions.*
Keywords: *Pregnancy, Awareness, Thyroid Disorders, Hypertension, Demographic Factors, Maternal Health, Chi-square, Health Education*

1. INTRODUCTION

The pregnancies are physiologically challenging times in the lives of women during which there are major hormonal and metabolic changes that facilitate fetal growth (Männistö et al., 2013; Wongrakpanich et al., 2018). These alterations in general augment the vulnerability of pregnant women to some health issues, including mainly thyroid disorders and hypertension disorders. Such complications of the thyroid as hypothyroidism and hyperthyroidism can result in severe unfavorable consequences, in particular, miscarriage, preterm delivery, and neurodevelopmental impediments (Boateng & Ampofo, 2023; Ciccarelli et al., 2013; Gupta et al., 2015). Similarly, hypertensive disorders of pregnancy, especially gestational hypertension and preeclampsia are the most common cause of maternal and newborn morbidity and death in the world (Alanis et al., 2025; Cecchini et al., 2024; Hoshide et al., 2023). Even though these two ailments are a common occurrence during antenatal care, the knowledge on them by the pregnant women with regards to their symptoms, complications, and the measures to address them are erratic and hardly enough (Banerjee & Dwivedi, 2020; Gui et al., 2020; Lai et al., 2020).

Such insufficient awareness can easily be explained by many different sociodemographic variables (Wang et al., 2020). It has also been revealed that pregnant women who have a high education level are better informed about maternal health hazards and are more active proactive in healthy behaviours tactics (King et al., 2024; Sailakshmi et al., 2014). Access to health information and health care services are also influenced by income, occupation and place of living (urban-rural) (Biancardi & Sharma, 2020). However, on the other hand, women in the lower socioeconomic classes might not have anything to do with the resources to act on medical advice or even be literate enough to understand it well and that would result in late diagnosis and the risk of their health complications would rise (WHO, 2021). An understanding of the role of such demographic variables is also vital to centering health education and preventive measures during pregnancy (Dong & Green, 2018).

India is known to have health literacy and service utilization disparities, and therefore, to overcome some of the unfortunate disparities in the use of antenatal care services (Huang et al., 2020; Konukoglu et al., 2018), it should be possible to identify the demographic predictors of awareness to close its gaps. Since thyroid disease as well as hypertension could also be kept under control with some lifestyle adjustments, early diagnosis and proper medical treatment, awareness is one of the most important preventative means (Figueiredo & Lotufo, 2015; Stagnaro-green et al., 2011).

The proposed research is practically significant because it suggests the key population groups at risk of having low awareness to shape maternal health policies and strategies and develop education approaches. Adequately informed pregnant women have better chances of taking control or prevention of such conditions not to mention safer pregnancies in terms of the mother and the child (Alikor et al., 2013; Braunthal & Brateanu, 2019).

2. REVIEW OF LITERATURE

It is demonstrated by an increasing amount of literature that maternal awareness is of utmost importance with regard to the treatment of common conditions related to pregnancy, including thyroid dysfunction and hypertensive disorders (Singh et al., 2014). In absence of recognition or treatment, these conditions may cause multiple unfavorable maternal and neonatal outcomes, such as miscarriage, preeclampsia, intrauterine growth restriction, and premature birth (Mammaro et al., 2009; Vamja et al., 2024). Although being rather widespread and having clinical significance, knowledge levels among pregnant women concerning the prevention, early recognition, and treatment of those disorders are not that high, especially in low-income and middle-income countries (Chiu et al., 2021; Gaillard et al., 2009). Such a partial awareness can be defined by significant sociodemographic factors, including education, income, parity, occupation, and living to urban or rural areas, that affect healthcare service and health information accessibility (Sharma et al., 2017; Teng et al., 2011).

This study is defined by a theoretical framework of the Health Belief Model (HBM) that states that there is a received susceptibility, perceived severity, perceived benefits and perceived barriers to action constituting the health behavior of individuals (Dhanwal et al., 2013; Rajput et al., 2015). Based on this model, the choice of the woman to take preventive measures or receive treatment against thyroid and hypertension associated with pregnancy is not only dependant on the knowledge she has, but also on her demographic situation and personal ideology (Ciccarelli et al., 2013; Hoshide et al., 2023). They are more probable to be able to assess the severity of such conditions accurately and actively address them, including taking medications, making dietary changes, and performing periodic checks of vital parameters, when their education level and access to health resources are higher (Alanis et al., 2025; Cecchini et al., 2024).

Researches in different contexts have chronicled the demographic imbalance in maternal health consciousness. As an example, one study by Banerjee & Dwivedi (2020) reported that those women, who comply less with prenatal care or have low literacy levels, tend to be diagnosed with hypothyroidism during pregnancy. In a similar manner, Hoshide et al. (2023) observed that hypertensive disorders were not managed well in women in rural and under-resourced environments. Banerjee & Dwivedi (2020) and Gui et al. (2020) in the Indian scenario found out education level, income and parity to have a significant impact upon the knowledge and risk perception in respect of hypertensive conditions during pregnancy. Nevertheless, although these studies have been useful, not many of them have actually looked at the strength of relation that exists between these demography variables and the level of knowledge through standardized measures (Ciccarelli et al., 2013; Hoshide et al., 2023).

Moreover, comparatively scanty literature exists which addresses the interplay of various demographic parameters along with the aggregative impact of the same on awareness particularly on urban and semi-urban Indians (Alanis et al., 2025; Banerjee & Dwivedi, 2020). The available literature tends to concentrate on the clinical outcomes without determining pre-existing knowledge or behavioral attitude, vital in the formulation of effective intervention in antenatal programs (Gui et al., 2020; Lai et al., 2020). This evidence-action gap indicates a necessity in organized, evidence-based research capable of evaluating awareness and its predictors with the help of the validated assessment tools (Wang et al., 2020). In assessing the impact of certain demographic factors in knowledge of thyroid and hypertension management among pregnant women, the current study will patch this gap and will serve as a foundation to formulate related issues of health education to target effective health behaviors to enhance the outcome of the mothers.

3. RESEARCH METHODOLOGY

3.1 Objectives of the Study

The present study was conducted with the following objectives:

1. To assess the level of awareness among pregnant women regarding thyroid and hypertension management during pregnancy.
2. To examine the association between selected demographic variables (such as age, education, income, parity, occupation, residence, family type, and family history of thyroid or hypertension) and awareness levels.
3. To identify key demographic predictors that influence knowledge regarding thyroid dysfunction and hypertensive disorders during pregnancy.
4. To provide recommendations for improving antenatal education based on awareness gaps identified through the study.

To evaluate the relationship between awareness levels and demographic factors, the following hypotheses were formulated:

- H_0 (Null Hypothesis): There is no statistically significant association between the selected demographic variables and awareness level regarding thyroid and hypertension management among pregnant women.
- H_1 (Alternative Hypothesis): There is a statistically significant association between the selected demographic variables and awareness level regarding thyroid and hypertension management among pregnant women.

3.2 Research Design and Approach

In this research, a quantitative research design with cross-sectional design was adopted to determine how the elements of the demographic relations with the level of awareness amongst pregnant women concerning the management of thyroid and hypertension. The data were assessed by a structured questionnaire because an individual measurement at one aspect of time enables the statistical analysis of an association between levels of knowledge and sociodemographic characteristics.

3.3 Setting and Population

In selecting the research participants, two healthcare institutions; Apollo Hospital Moti Nagar, Delhi; and Motherhood Hospital, Noida were selected. The urban hospitals selected were based on large and heterogeneous populations of patients including different women of different societal and educational classes. The target population was pregnant women who were in the process of attending antenatal care in the duration of the study regardless of the trimester.

3.4 Sample Size and Sampling Technique

This study was done on the sample of 200 pregnant women. It was calculated under the assumption that the prevalence of awareness is as 50 per cent with margin error of 5 per cent and 95 per cent confidence interval based on standard formulas of sample size estimation. The simple random sampling method was used to make sure that none of the available participant was disadvantaged in the sampling process and therefore bias was minimised.

3.5 Inclusion and Exclusion Criteria

The inclusion criteria involved all pregnant women irrespective of the gestational age but who could volunteer and offer informed consent. Women were not included in case of high-risk pregnancy that needed specific care, chronic illnesses with no connections to thyroid or blood pressure problem and took part in other similar interventions in the past. Women who were severely emotionally or physically disabled to the stage they could not complete a questionnaire were also excluded.

3.6 Description of Tool/Instrument

A structured, pre-validated questionnaire was used as the main tool for data collection. It was reviewed by experts from the fields of nursing, gynaecology, and endocrinology to ensure content validity. The tool included:

- **Section A: Demographic Details** – Questions on age, gestational age, education, occupation, monthly income, residence, family type, parity, and family history of thyroid or hypertension.
- **Section B: Knowledge and Awareness Questions** – A set of eight questions assessing general awareness, understanding of symptoms, and perceived preventive strategies related to thyroid and hypertension in pregnancy.

Scoring Key

Participants received 1 point for each correct response in the knowledge section. Questions involving multiple correct options (e.g., symptoms) awarded a point for identifying at least two correct answers. The total score ranged from 0 to 8 and was categorized as follows:

- 0–3: Low knowledge
- 4–6: Moderate knowledge
- 7–8: High knowledge

3.7 Data Collection Procedure

After receiving permission from institutional authorities and ethical approval, the data collection was conducted in the antenatal outpatient departments. Participants were approached during their visits, briefed about the study, and asked to provide informed consent. The questionnaires were either self-administered or verbally administered by the researcher, depending on the literacy level of the respondent. Data were collected over a period of one month.

3.8 Data Analysis Plan

Data analysis was performed using SPSS. Descriptive statistics, including frequency and percentage, were used to summarize demographic variables and knowledge scores. For inferential analysis, the Chi-square test was employed to explore associations between categorical demographic variables and knowledge levels. A p-value of less than 0.05 was considered statistically significant, thereby guiding the acceptance or rejection of the study hypotheses.

4. RESULTS AND ANALYSIS

4.1 Demographic Profile of Participants

A total of 200 pregnant women participated in the study, with their demographic distribution summarized in Table 1 and Figure 1. The age distribution showed that the largest proportion of respondents (39%) were between 26 and 30 years of age, followed by 26% aged 21–25 years, and 19% in the 31–35 age group. A smaller segment of participants fell below 20 years (9%) or above 35 years (7%). In terms of gestational age, nearly half of the women (45.5%) were in their second trimester, while 37.5% were in their third trimester, and 17% were in the first trimester. The educational background of the participants was fairly diverse: 36% had completed secondary education, 29% were graduates, and 15% held postgraduate degrees. On the lower end of the spectrum, 13% had only primary education, and 7% had no formal education at all.

Occupationally, a dominant majority (67%) of the participants were homemakers. This was followed by 19% who were employed, 11% students, and a small proportion (3%) who were unemployed. Regarding monthly household income, the highest proportion (29%) fell in the ₹20,000–30,000 range, followed by 24.5% earning between ₹30,000 and ₹50,000, 21.5% in the ₹10,000–20,000 bracket, 13% with more than ₹50,000, and 12% earning less than ₹10,000.

As for the place of residence, 51% of the participants resided in urban areas, 24% in semi-urban, and 25% in rural settings. The family structure showed that 60.5% lived in nuclear families, while 39.5% belonged to joint families. Regarding parity, 54% of the women were primigravida, experiencing their first pregnancy, and 46% were multigravida.

Medical history details revealed that 23% of respondents reported a family history of thyroid disorders, while 34% had a family history of hypertension. These background characteristics provide critical context for analyzing

awareness levels and are essential for understanding how demographic variables may influence knowledge regarding thyroid and hypertension management in pregnancy (Table 1).

Table 1: Distribution of Profile of Participants

Variable	Category	Frequency (f)	Percentage (%)
Age	< 20	18	9%
	21–25	52	26%
	26–30	78	39%
	31–35	38	19%
	> 35	14	7%
Gestational Age	1st Trimester	34	17%
	2nd Trimester	91	45.5%
	3rd Trimester	75	37.5%

Education Level	No formal education	14	7%
	Primary	26	13%
	Secondary	72	36%
	Graduate	58	29%
	Postgraduate	30	15%
Occupation	Homemaker	134	67%
	Working	38	19%
	Student	22	11%
	Unemployed	6	3%
Monthly Family Income	< ₹10,000	24	12%
	₹10,000–20,000	43	21.5%
	₹20,000–30,000	58	29%
	₹30,000–50,000	49	24.5%
	> ₹50,000	26	13%
Residence	Urban	102	51%
	Semi-urban	48	24%
	Rural	50	25%
Family Type	Nuclear	121	60.5%
	Joint	79	39.5%
Parity	Primigravida	108	54%
	Multigravida	92	46%
Family History (Thyroid)	Yes	46	23%
	No	154	77%
Family History (BP)	Yes	68	34%
	No	132	66%

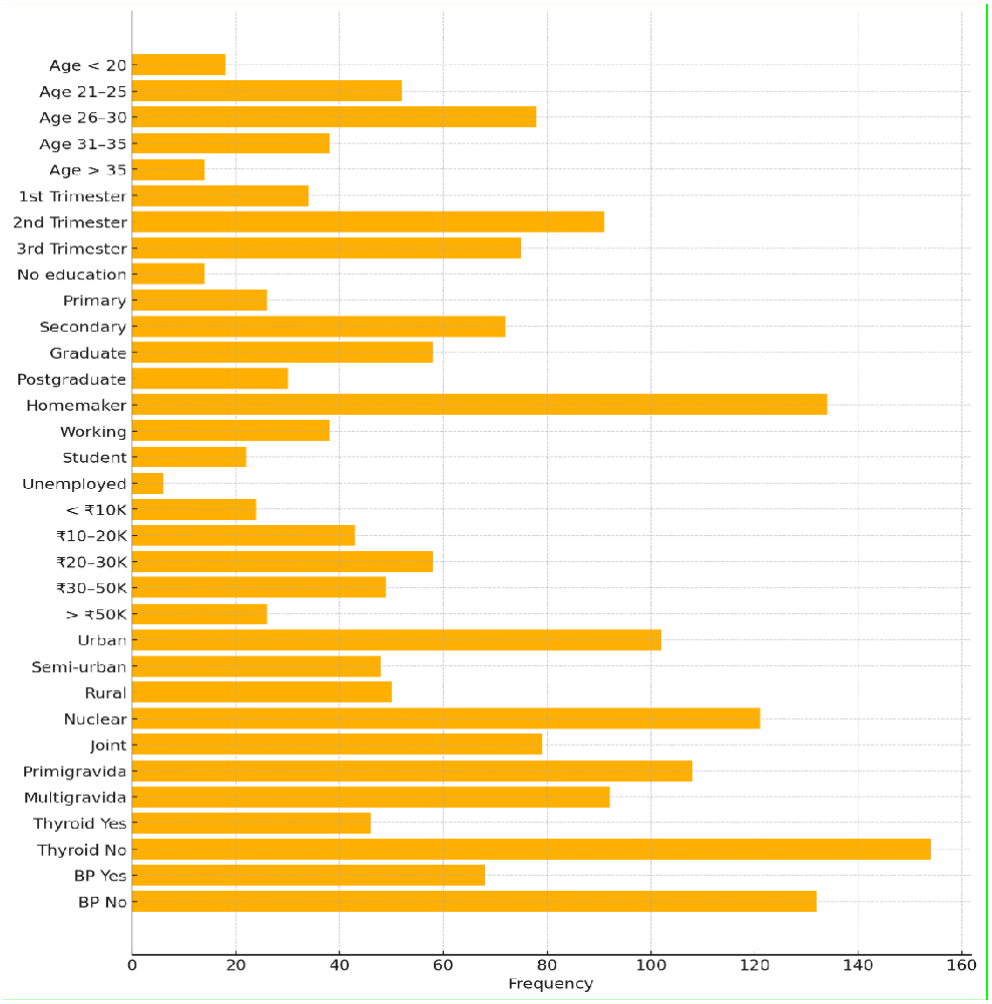

Figure 1. Demographic Information of Respondents

4.2 Awareness and Knowledge Distribution

The responses to knowledge and awareness questions regarding thyroid and hypertension in pregnancy are detailed in Table 2. The data revealed that a significant majority of participants (73%) had heard of thyroid disorders occurring during pregnancy, whereas 27% reported no prior awareness. Furthermore, when asked if untreated thyroid issues could negatively affect pregnancy outcomes, 61% responded affirmatively, while 16% believed it could not, and 23% were unsure.

Regarding awareness of hypertension during pregnancy, 79% of respondents acknowledged familiarity with the condition, whereas 21% had never heard of it. When questioned on whether high blood pressure could cause complications during pregnancy, 68.5% correctly responded "yes," while 13% answered "no" and 18.5% remained unsure. This reflects a generally high level of basic awareness of hypertension but highlights some gaps in understanding potential complications.

In terms of lifestyle modification as a preventive measure, 64% of participants agreed that lifestyle changes could help in managing or preventing thyroid and hypertension issues during pregnancy. However, 17% disagreed, and 19% were uncertain. Additionally, when asked whether symptoms of thyroid or hypertension are always visible, only 33% believed they were, while 42% disagreed and 25% were unsure—indicating varied perceptions about symptom visibility.

Participants were also assessed on their knowledge of specific symptoms. For thyroid-related symptoms (Q7), 61% identified fatigue, 49% noted weight gain, 36% mentioned cold intolerance, and 19% selected palpitations. However, 22% of participants responded with "Don't know," suggesting gaps in symptom recognition. For signs of high blood pressure (Q8), the most frequently identified symptom was headache (59%), followed by swelling (42%), blurred vision (38%), and chest pain (13%). Notably, 26% of respondents admitted to not knowing any signs of hypertension.

These results indicate that while general awareness of thyroid and hypertension conditions during pregnancy is relatively high, there remains a notable proportion of participants who lack specific knowledge about symptoms and consequences. This underscores the need for targeted educational interventions to bridge knowledge gaps and support early detection and management of these conditions among expectant mothers (Table 2).

Table 2: Frequency of Responses to Awareness Questions

Question	Response Options	Frequency (f)	Percentage (%)
Heard of thyroid disorders in pregnancy?	Yes	146	73%
	No	54	27%
Can untreated thyroid affect pregnancy?	Yes	122	61%
	No	32	16%
	Not Sure	46	23%
Heard of hypertension in pregnancy?	Yes	158	79%
	No	42	21%
Can high BP cause complications?	Yes	137	68.5%
	No	26	13%
	Not Sure	37	18.5%
Can lifestyle changes help prevent/manage?	Yes	128	64%
	No	34	17%
	Not Sure	38	19%
Are symptoms always visible?	Yes	66	33%
	No	84	42%
	Not Sure	50	25%
Symptoms of thyroid (multiple options)	Fatigue	122	61%
	Weight Gain	98	49%
	Cold Intolerance	72	36%
	Palpitations	38	19%
	Don't know	44	22%
Signs of high BP (multiple options)	Headache	118	59%
	Swelling	84	42%
	Blurred Vision	76	38%

	Chest Pain	26	13%
	Don't know	52	26%

4.3 Knowledge Score Categorization

The overall distribution of knowledge levels among participants regarding thyroid and hypertension management during pregnancy is presented in Table 3. Knowledge scores were computed based on a structured set of awareness questions, with each correct answer in questions awarding one point. Additional points were allocated for identifying at least two correct thyroid symptoms and two correct signs of hypertension, bringing the maximum possible score to 8.

Based on their total scores, participants were categorized into three knowledge levels: low (0–3), moderate (4–6), and high (7–8). The results indicated that a majority of the respondents (51%) fell into the moderate knowledge category, demonstrating a fair understanding of thyroid and hypertension-related issues in pregnancy. About 30% of the participants exhibited high levels of knowledge, scoring between 7 and 8 points. However, 19% of the women were categorized as having low knowledge, highlighting a significant knowledge deficit among nearly one-fifth of the sample **(Table 3)**.

These findings suggest that while awareness is present among most pregnant women, there remains considerable scope for improvement, particularly in converting general awareness into deeper, symptom-specific understanding. The moderate level of knowledge held by the majority indicates that educational interventions could be highly effective in shifting this group toward higher awareness and preventive engagement. The segment with low knowledge especially underscores the necessity of targeted health education and counseling during antenatal visits.

Table 3: Knowledge Score Categorization

Score Range	**Level of Knowledge**	**No. of Respondents (f)**	**Percentage (%)**
0–3	Low	38	19%
4–6	Moderate	102	51%
7–8	High	60	30%
Total		**200**	**100%**

4.4 Association Between Demographics and Knowledge

To explore the relationship between pregnant women's demographic characteristics and their level of knowledge regarding thyroid and hypertension management, a cross-tabulation and chi-square test were conducted.

Table 4 presents a cross-tabulation between education level and knowledge scores. The results show a clear trend: as education level increases, so does the proportion of participants with higher knowledge. Among women with no formal education, the majority (8 out of 14) had low knowledge, and only one participant had high knowledge. In contrast, among graduates, 26 participants demonstrated high knowledge, while a similar number had moderate awareness. Notably, among postgraduates, 10 out of 30 participants achieved high knowledge scores. This trend underscores the potential influence of formal education on health literacy related to pregnancy-associated conditions.

Table 4: Cross-tabulation of Education vs. Knowledge Score

Education Level	**Low Knowledge (0–3)**	**Moderate Knowledge (4–6)**	**High Knowledge (7–8)**	**Total (f)**
No Formal Education	8	5	1	14
Primary	7	15	4	26
Secondary	13	40	19	72
Graduate	6	26	26	58
Postgraduate	4	16	10	30
Total	**38**	**102**	**60**	**200**

To statistically validate these associations, chi-square tests were applied across all major demographic variables, as detailed in Table 5. The test confirmed a significant association between education level and knowledge level ($\chi 2 = 22.17$, df = 8, $p = 0.005$), leading to the rejection of hypothesis H1c. This supports

the inference that higher education contributes to better awareness of thyroid and hypertension-related risks and management strategies in pregnancy.

In addition, family history of hypertension showed a significant relationship with knowledge levels ($\chi 2$ = 6.52, df = 1, p = 0.038), indicating that women with a familial background of hypertension may be more aware or better informed about the condition during pregnancy. Hence, hypothesis H1j was also rejected. Other demographic variables—including age, gestational age, occupation, income, residence, family type, parity, and family history of thyroid disorder—did not show statistically significant associations with knowledge levels ($p > 0.05$ in each case). Consequently, the corresponding null hypotheses for these variables were accepted.

These findings suggest that education and personal or family exposure to hypertension are the strongest predictors of awareness regarding thyroid and blood pressure conditions in pregnancy. Such insights can be instrumental in guiding health education campaigns and prenatal counseling strategies toward less educated and at-risk groups.

Table 5: Chi-square Test Results

Hypothesis No.	Statement	Chi-square (χ^2)	df	p-value	Significance	Status
H1a	There is no significant association between Age and knowledge level.	8.34	4	0.080	Not Significant	Accepted
H1b	There is no significant association between Gestational Age and knowledge level.	5.12	2	0.077	Not Significant	Accepted
H1c	There is no significant association between Education Level and knowledge level.	22.17	8	0.005	Significant	Rejected
H1d	There is no significant association between Occupation and knowledge level.	4.62	6	0.592	Not Significant	Accepted
H1e	There is no significant association between Monthly Family Income and knowledge level.	11.90	8	0.155	Not Significant	Accepted
H1f	There is no significant association between Residence and knowledge level.	3.02	2	0.221	Not Significant	Accepted
H1g	There is no significant association between Family Type and knowledge level.	0.73	1	0.393	Not Significant	Accepted
H1h	There is no significant association between Parity and knowledge level.	5.21	1	0.073	Not Significant	Accepted
H1i	There is no significant association between Family History of Thyroid Disorder and knowledge level.	3.88	1	0.143	Not Significant	Accepted
H1j	There is no significant association between Family History of Hypertension and knowledge level.	6.52	1	0.038	Significant	Rejected

5. DISCUSSION

This study aimed to examine the influence of demographic factors on awareness of thyroid and hypertension management among pregnant women. The findings revealed a varied distribution of knowledge levels across the study population, with 30% of participants exhibiting high knowledge, 51% moderate, and 19% low, indicating that while general awareness exists, there remains a significant gap in comprehensive understanding of the conditions. It is worth noting that the majority of the subjects knew that there was such a disease as thyroid and hypertension during pregnancy, however, there were less people who knew more about the symptoms, risks, and the preventive power of a lifestyle change.

The results of the interrelation of the variables of demographic nature and knowledge levels may be outlined as one of the most important findings. The level of education was significantly and also, strongly correlated with level of awareness where the level of education increases the knowledge score ($p = 0.005$). This is in line with current medicine, which focuses on the contribution of formal education to health literacy and disease prevention conduct in pregnant women (Kavitha et al., 2019; Sharma & Singh, 2021). Likewise, strong correlation was also found with family history of hypertension ($p = 0.038$) in that having either been exposed to health problem or that of a family member due to chronic health conditions might make them more open-minded about this issue and even further develop an inclination to learn more. Conversely, age, gestational age, income, occupation, residence and parity did not show any significant relationships with the level of knowledge. The results of this paper correspond to those presented in previous studies stating that sociodemographic attributes do not always determine health awareness in a consistent way unless accompanied by access to healthcare services or health-related information (Nair et al., 2020).

These findings support the efficacy of specific antenatal education, particularly on women with the lower educational status or those who lack family history of the same disorders. Prenatal counselling must not only concentrate on the normal observation procedures but also grant some forms of empowerment to pregnant mothers concerning any form of expected complications and lifestyle adjustments. Although there is this awareness among many women, there is still misconception and poor understanding of the early signs which has been indicated by the majority of the respondents giving the answer that the signs are not always noticeable.

The study also contributes to public health knowledge by emphasizing the importance of integrating structured health education into routine antenatal care, particularly in urban and semi-urban settings where such services are accessible but underutilized for health literacy improvement. However, the study's limitations include its confinement to a specific geographic area and its reliance on self-reported data, which could be influenced by recall bias or social desirability.

Overall, this research highlights the need for continuous education and tailored interventions to bridge knowledge gaps, especially in vulnerable subgroups. Future studies should explore the effectiveness of intervention programs and longitudinal changes in awareness, ultimately contributing to improved maternal and fetal health outcomes.

6. CONCLUSION

The study concludes that awareness of thyroid and hypertension management during pregnancy is significantly influenced by two key demographic factors: the level of education and a family history of hypertension. Pregnant women with higher educational attainment demonstrated better knowledge regarding the risks, symptoms, and management strategies for these conditions. Similarly, those with a familial history of hypertension appeared more informed, possibly due to prior exposure or experiences within the household. While a general level of awareness was present among most respondents, a considerable portion lacked detailed understanding of the early warning signs, health risks, and necessary lifestyle modifications associated with thyroid dysfunction and hypertensive disorders during pregnancy. This knowledge gap poses a potential risk to both maternal and fetal health, especially considering that these conditions can often present with subtle or non-specific symptoms. The findings underscore the importance of integrating structured health education into routine antenatal care, with special emphasis on reaching women who have lower levels of formal education or no family background of such conditions. Empowering expectant mothers through targeted information and counseling can facilitate early detection, timely treatment, and adoption of preventive behaviors, ultimately improving health outcomes for both mother and child.

Limitations

This study was limited to two urban hospitals, which may not reflect the knowledge levels of pregnant women in rural or less-resourced settings. The cross-sectional design restricts causal interpretation, and reliance on self-reported data could introduce recall or social desirability bias. Additionally, the sample size, while adequate, may not capture the full diversity of pregnant populations across India.

Recommendations

Health authorities and practitioners should prioritize structured antenatal education focusing on thyroid and hypertension awareness. Customized materials using visuals and local languages can enhance understanding, particularly for less-educated women. Brief counseling sessions, community awareness drives, and training for healthcare workers should be implemented to bridge the knowledge gap and empower women to make informed health decisions during pregnancy.

Suggestions for Future Research

Future research should adopt longitudinal or interventional designs to assess changes in awareness and behavior over time. Including qualitative approaches can help uncover cultural or psychological barriers to knowledge uptake. Expanding the study to diverse geographic areas and involving family members could also offer deeper insights into how awareness and support systems interact in influencing maternal health outcomes.

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