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Awareness and Knowledge About Gestational Diabetes Mellitus Among Antenatal Women

Consciencialização e Conhecimento Sobre Diabetes Mellitus Gestacional em Mulheres Grávidas

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Abstract

Aim: The study examined the awareness and knowledge about gestational-diabetes-mellitus (GDM) among antenatal-women and found its influential factors through three phases.
Method: The sample for phase I was 523 antenatal women. In phases II and III, 33 participants who were identified to be aware of GDM from Phase I were included. Measures used were Gestational-Diabetes-Knowledge-Questionnaire (GDKQ) and an open-ended questionnaire.
Results: Age and “number of Pregnancies to date” significantly predicted awareness. Kruskal-Wallis H test indicated that antenatal-women differed in their ‘knowledge' across the trimesters. Mann-Whitney U showed a difference in ‘knowledge' among participants, ‘with' and ‘without' a history of diabetes. Electronic and print-media were identified to be the significant sources of knowledge.
Conclusion: The study highlights the importance of implementing methods that enhance the awareness and knowledge of GDM among the antenatal women.

Keywords: Gestational Diabetes Mellitus, awareness, knowledge, sources of knowledge, antenatal women

Resumo

Objetivo: Este estudo investigou a perceção e conhecimento sobre Diabetes Mellitus Gestacional (DMG) em mulheres grávidas, bem como os fatores que a influenciam ao longo de três fases.
Método: A amostra utilizada na fase I incluiu 523 mulheres grávidas. Nas fases II e III foram consideradas 33 participantes identificadas na fase I como estando consciencializadas para a DMG. As medidas utilizadas foram o Gestational-Diabetes-Knowledge-Questionnaire (GDKQ) e um questionário de respostas abertas.
Resultados: A Idade e o Número de Gestações foram preditores significativos da perceção. O teste H de Kruskal-Wallis indicou diferenças no “conhecimento” das mulheres grávidas ao longo dos trimestres. O teste U de Mann-Whitney mostrou diferenças ao nível do “conhecimento” entre as participantes com e sem historial clínico de diabetes. Os meios de comunicação social impressos e eletrónicos foram identificados como fontes significativas de conhecimento.
Conclusões: Este estudo salienta a importância de implementar ações com vista a desenvolver a perceção e o conhecimento sobre a DMG, em mulheres grávidas.

Palavras-Chave: Diabetes Mellitus gestacional, consciencialização, conhecimento, fontes de conhecimento, mulheres grávidas

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Gestational Diabetes Mellitus (GDM) is the "glucose intolerance that has the onset during pregnancy" (Mahalakshmi, Stanly, & Vanishree, 2013, p. 146). According to the American Diabetes Association (2013), six million women in India had some form of hyperglycemia, out of which 90% were GDM. The prevalence rate of GDM in India is 16.55% (Seshiah et al., 2006); the lowest in Kashmir (4.4%) and the highest in southern India (16.5%) primarily in urban population (Ramachandran et al., 2001; Seshiah et al., 2006; Seshiah et al., 2014). The prevalence rate of the women with GDM in India is eleven-fold higher than that of Europe (Seshiah et al., 2006). The increase in the prevalence recounts to bio-psycho-social factors which includes maternal age, obesity (Ray, Vermeulen, Shapiro, & Kenshole, 2001), migratory patterns (Carolan, Steele, & Margetts, 2010), hypertension (Villegas & Villanueva, 2007) body mass index, number of abortions and stillbirth, stress (Liu, Zhang, & Li, 2017), a positive family history of diabetes (Nigam, Dwivedi, & Saxena, 2011), and ethnicity (Dabelea, et al., 2005).

Abnormal levels of glucose in antenatal women can adversely affect the health of both mother and baby (Seshiah, Balaji, & Madhuri, 2011; Shivashankar & Mani, 2011). The fetal complications include excessive birth weight (Kim, Sharma, Sappenfield, Wilson, & Salihu, 2014), neonatal hypoglycemia (Cornblath, et al., 2000), perinatal mortality (Al-Hakeem, 2006), congenital malformation, hyperbilirubinemia, polycythemia, hypocalcaemia, respiratory distress syndrome (Setji, Brown, & Feinglos, 2005), and hyperinsulinemia. Long-term complications of the progeny include an increased risk of developing glucose intolerance and obesity (Dabelea et al., 2005; Setji et al., 2005). Maternal complications comprise hypertension, preeclampsia, and an increased risk of caesarean delivery (Al-Hakeem, 2006).

We can avoid GDM if proper cautions are taken before the gestation period. Women engaging in regular physical activities before pregnancy are at lower risk (Zhang, Solomon, Manson, & Hu, 2006). Bio-psycho-social factors like genetic conditions, age, lifestyle, personality characteristics, stress levels, social support systems, family relationships, and cultural beliefs play a vital role in the effective management of GDM. Dietary recommendations, self-monitoring of blood glucose, self-administration of insulin and adjustment of insulin doses, identification and treatment of hypoglycemia are the main management strategies (Seshiah, Balaji, & Madhuri, 2011). Some of the factors that motivate self-management include higher educational level, health literacy and psychological support from the partner and family members (Carolan, Steele, & Margetts, 2010). If necessary, effective interventions to enhance self-management competencies may also be recommended (Tabassam, Sadaqat, Mahmood, & Zaka, 2010).

There are several factors that complicate the task of GDM self-management, including time pressure, physical and social constraints, and limited comprehension of what is required to do a proper management (Carolan, Gill, & Steele, 2012). More than this, superficial knowledge and lack of awareness of GDM are the primary hindrances of its self-management (Choi et al., 2000; De Holanda et al., 2012). Researchers have observed inconsistencies in some knowledge-related dimensions. For instance, Gastrich and colleagues (2013) assessed GDM knowledge and beliefs of 85 antenatal women in America, during their first antepartum visit. Fifty percent of the sample lacked the knowledge regarding risks, treatment, causes, and outcomes of GDM. This lack of awareness was highlighted by GDM's cause attribution to inheritance, environment, and hormonal change and demanded medical treatment for the related complications. Another study by Hjelm, Bard, Nyberg, and Apelqvest (2005) found that women from the Middle East did not know the causes of GDM. As so, they got adapted to the disease and perceived the issues as natural during the time of pregnancy (Hjelm et al., 2005). Among the antenatal women who attended a Primary Health Center in Kanchipuram District in India, 28.5%

had poor knowledge about GDM (Shriraam, Rani, Sathiyasekaran, & Mahadevan, 2013). In a cross-sectional study conducted by Mahalakshmi et al. (2013) among 360 antenatal women in Tamil Nadu (India), 88% had an awareness of GDM, but 60% did not know that it could recur, and 56% were not aware of its treatment.

One of the primary sources that helped increasing the knowledge of GDM was mass media. In the study by Shriraam et al. (2013), participants who did not have access to media showed limited knowledge. Exposure to media, however, did not help to have adequate depth of the knowledge and awareness of GDM. For instance, while some women were well-informed considering the risk for the child., other knew that GDM could cause maternal and fetal complications (Choi, Oh, Hur, Lee, & Choi, 2000). A cross-sectional analysis of Malaysian antenatal women (N = 175) by Hussain, Yusoff, and Sulaiman (2015) revealed that knowledge was higher regarding diet/food value domains but lower for the management strategies of GDM. Apart from media, education, age, ethnicity, and family history contributed to the total knowledge level of GDM. Antenatal women who had a history of diabetes in their families seem to have a higher knowledge of GDM (Choi et al., 2000; Huidobro, Prentice, Fulford, Parodi, & Rozowski, 2010; Hussain et al., 2015). The other significant sources of awareness include neighbours/friends, nurses and midwives, and family members (Carolan et al., 2010; Shriraam et al., 2013).

Knowledge can be complete if the individual can comprehend entirely about all the associated factors of this condition. Decreased knowledge can lead to poor preventive and management strategies. In a context of increasing prevalence, knowledge regarding prevention and control has a critical role to play. The present study aims to understand the status of the awareness of GDM among antenatal women in Hyderabad, India. Also, it intends to understand the primary sources, as well as the adequacy of the knowledge about GDM among the participants. As per the available literature, previous history and media interactions are the major sources of knowledge. However, in Hyderabad, state wide screening program and mass media interactions of GDM were not there. According to review of literature only factors such as age, number of pregnancies, months of pregnancy, trimesters, and previous history of diabetes contributed to the knowledge and awareness. In the present study, we (i) assessed the status of awareness of GDM among antenatal women, (ii) studied the effect of age, number of pregnancies, and months of pregnancy on the awareness, (iii) estimated the difference in knowledge across the trimesters, (iv) examined if the participants with and without a history differed in knowledge, and (v) explored the primary sources and the adequacy of knowledge about GDM.

Method

Design

The study was conducted in three phases, using an ex-post facto (Salkind, 2010), cross-sectional research design. Phase I was to assess the status of awareness of GDM among antenatal women, and to evaluate the effect of age, number of pregnancies, and months of pregnancy on the awareness. Phase II was to identify the difference across the trimester, as well as between the participants with and without a history of diabetes, in the knowledge about GDM. Phase III was to explore the significant sources and adequacy of knowledge about GDM.

Participants

The total participants for phase I consisted of 523 antenatal women (ages from 17 to 36 years, *M* = 22.79, *SD* = 2.93) who belonged to the three different trimesters of gestation from different hospitals in the state of Telangana, India. Among them, 273 (51.50%) were pregnant for the first time [primigravida] while 250 (47.80%) had already been pregnant before [multigravida-ranging from second pregnancy to fifth pregnancy]. Antenatal women with a personal history of GDM were excluded.

For phase II and phase III, 33 participants (*M* = 25.67) who had the awareness of GDM were chosen from phase I. Among them, 23 (69.69%) were pregnant for the first time, while 10 (30.30%) had been pregnant before. Eight (24.24%) participants were in their first trimester, four (12.12%) were in their second trimester, and 21 (63.63%) were in their third trimester. Regarding employment and economic status, 69.7% were unemployed (*n* = 23) and belonged to middle socio-economic status (*n* = 23). The highest number of participants belonged to urban areas (*n* = 28; 84.8%), had education up to graduation (*n* = 24; 72.8%), and had a family history of either diabetes or GDM (*n* = 15; 45.45%).

Procedure

The data collection procedure for phase I commenced with a detailed briefing about the investigation with each participant. Confidentiality of their responses was assured. All the subsequent doubts were clarified. After receiving the informed consent, the demographic details of each participant for phase I were collected using a demographic response sheet. Responses, either yes or no, to the screening question "Are you aware of gestational diabetes?" was gathered from all the 523 participants. There was no time gap between phase I and II data collection.

Immediately after phase I, 33 participants for phase II were identified who were aware of the GDM. Data were collected using the Gestational Diabetes Knowledge Questionnaire (GDKQ). For phase III, data were gathered from the same 33 participants about the sources and perceived adequacy of their knowledge using an open-ended questionnaire with three questions — (a) “How did you know the information about gestational diabetes?”, (b) “Do you think that your knowledge about gestational diabetes is adequate/inadequate?”, (c1) “If inadequate, what more information do you require?”, and (c2) “If adequate, why do you think so?”.

The institutional research ethics committee of Hyderabad Central University have exempted this study as no human or animal intervention took place.

Measures

Screening Question and Demographic Sheet

For phase I, the participants (*N* = 523) were given the screening question and the demographic sheet. The screening question was "Are you aware of gestational diabetes?”. The demographic sheet contained details about age, months of pregnancy, number of pregnancy, education level, income, and socioeconomic status.

Gestational Diabetes Knowledge Questionnaire (GDKQ)

In phase II, to assess knowledge and awareness of the GDM, a modified version of GDKQ developed by Carolan et al. (2010), was administered. GDKQ is one of the most used measure to gather information

about the participant's knowledge of GDM, its risk factors, diet and food values, treatment and management, complications, and outcomes (Carolan et al., 2010). The modifications were necessary to make it specific and sensitive to GDM knowledge. Therefore, the "*I don't know*" options were removed from every question. For questions 1, 2, 17, 18, and 20, multiple correct answers were replaced with one right answer. Since questions 19 and 21 were attitude-related and questions 22 and 23 were about food substituent, these were removed from the questionnaire. The sentence formation for items 1, 3, 11, and 18 were modified to suit the present sample. After the modifications, an expert committee evaluated the questionnaire. The final form of the questionnaire had 21 multiple choice questions. Each multiple-choice item had one correct answer and three wrong answers. The entire order and number of the questions of the original version were altered based upon nine dimensions, General awareness, Cause, Symptom, Risk, Complications, Food values and substituents, Management, Treatment, and Diagnosis. The score ranged from "0" to "21"; the higher the score, the higher is the knowledge. The internal reliability of the modified scale was analysed using Cronbach's alpha using the present data ($\alpha = .869$).

Open-Ended Questionnaire

In phase III, to inquire the sources of knowledge and perceived adequacy of the participant's knowledge, an open-ended questionnaire with three questions was administered. The questions were (a) "How did you know the information about gestational diabetes?", (b) "Do you think that your knowledge about gestational diabetes is adequate/inadequate?", (c1) "If inadequate, what more information do you require?", and (c2) "If adequate, why do you think so?".

Data Analysis

We used percentage analysis to assess the status of awareness of GDM among the antenatal women. We used binary logistic regression to understand if age, number of pregnancy, and months of pregnancy were significant predictors of the dichotomous dependent variable, awareness about GDM. Logistic regression was used as the assumptions (binary dependent variable, independent observations, lack of multicollinearity, linearity of independent variables and large sample size) were met. This analysis was performed with the sample from the phase I. As the data for the phase II did not meet the parametric assumptions (concluded based on Shapiro Wilk test), non-parametric tests were used for the analysis. Kruskal Wallis H test was used to identify the difference in the participants' knowledge about GDM across the three trimesters. Mann Whitney U test showed whether the participants with a history of diabetes differed in knowledge about GDM from those who had no history of diabetes. Quantitative content analysis was used to understand the primary sources and the adequacy of knowledge about GDM from the data collected in phase III. Statistical analyses were developed using the Statistical Software Package for Social Sciences (SPSS; IBM SPSS Statistics. Version 25.0, Armonk, NY: IBM Corp.). Statistical significance was established at $p < .05$ (two-sided).

Results

Status of Awareness of GDM Among Antenatal Women

Percentage analysis reveals the status of awareness of GDM among antenatal women. As per the results of percentage analysis, 33 (6.30%) had awareness of GDM whereas 490 (93.69%) participants were unaware of the condition.

Effect of Age, Number of Pregnancy, and Months of Pregnancy on the Awareness

Table 1 summarises the result of binary logistic regression showing the effect of age, number of pregnancy and months of pregnancy on the awareness of GDM.

Table 1

Summary of Binary Logistic Regression Analysis for Predicting Age, Number of Pregnancy, and Months of Pregnancy Among Antenatal Women (N = 523) for Predicting Awareness

Variable	β	Wald	Exponential (β)
Age	0.31	32.20*	1.36
NOP	-1.05	9.34*	0.35
MOP	-0.13	2.31	0.88

Note. NOP = Number of pregnancy; MOP = Months of Pregnancy; $\chi^2 = 42.82$; Cox & Snell $R^2 = .08$; Nagelkerke $R^2 = .21$.

*$p < .01$.

Only two of the independent variables made a unique, statistically significant contribution to the model (cf. Table 1). The most potent predictor of awareness was age (Exp (β) = 1.36, Wald = 32.2, $p < .01$). Older respondents were 1.36 more likely to report awareness than younger respondents, controlling all the other factors in the model. The number of pregnancy was also a predictor of awareness, recording an odds ratio of 0.35 (Wald = 9.34, $p < .01$). The respondents who had a higher number of pregnancy were 0.35 more likely to report awareness than those who had less number of gestations. The full model containing all predictors was statistically significant ($\chi^2 = 42.82$, $p < .01$), indicating that the model could distinguish between respondents who were aware and unaware. The model as a whole explained between 8% (Cox and Snell R^2) and 21% (Nagelkerke R^2) of the variance in awareness and correctly classified 93.7% of the cases.

The Difference in Knowledge Across Trimesters

The Shapiro Wilk test indicated that the data was not normally distributed ($W = .656$, $p < .01$) for trimesters. Hence, non-parametric equivalent Kruskal Wallis test was conducted. Table 2 summarises Kruskal Wallis H test that presents the differences in the knowledge about GDM across trimesters.

Table 2

Descriptive Statistics and Summary of Kruskal Wallis H Test on Knowledge Dimensions Among the Antenatal Women Across Three Groups (n = 33)

	Mean Rank			
Variable	**Group I *n* = 8**	**Group II *n* = 4**	**Group III *n* = 21**	***H***
General Awareness	7.50	16.00	20.81	11.84**
Cause	15.19	13.13	18.43	1.84
Symptom	12.06	18.25	18.64	3.76
Risk	16.63	20.75	16.43	1.15
Complications	12.00	21.13	18.12	3.76
Food value	9.19	19.13	19.57	7.67*
Management	8.19	22.63	19.29	9.46**
Treatment	15.19	17.25	17.64	0.50
Diagnosis	15.56	21.75	16.64	2.33
Knowledge	6.56	19.88	20.43	12.41**

Note. Group I = first trimester; Group II = second trimester; Group III = third trimester; *H* = represents the variance of ranks among groups. *$p < .05$. **$p < .01$.

Kruskal-Wallis test showed a significant difference in the knowledge about GDM among the antenatal women across the three trimesters (H =11.84, $p < 0.01$), with a mean rank of 7.50 for the first trimester, 16.0 for second trimester and 20.81 for the third trimester. The third trimester participants showed better knowledge compared to first and second. There is a significant difference in food value knowledge across the three trimesters (H = 7.67, $p < .05$), with a mean rank of 9.19 for the first trimester, 19.13 for the second trimester and 19.57 for the third trimester. The third trimester showed better knowledge than the first and the second trimesters. There is a significant difference in the knowledge about GMD management across the three trimesters (H = 9.46, $p < .01$), with a mean rank of 8.19 for the first trimester, 22.63 for the second trimester and 19.29 for the third trimester. The second trimester was characterised by a better knowledge than the first and the third trimesters. When we considered the total knowledge across the three trimesters, there is a significant difference (H = 12.41, $p < .01$), with a mean rank of 6.56 for the first trimester, 19.88 for the second trimester and 20.43 for the third trimester. The third trimester was related to better knowledge than the first and the second trimesters. However, there was no significant difference across the three trimesters considering the cause, symptom, risk, complications, treatment, and diagnosis.

History Versus Knowledge

The Shapiro Wilk test indicated that the data was not normally distributed (W = 0.635, $p < .01$) for family history. Hence, non-parametric equivalent Mann-Whitney U test was conducted. Table 3 summarises the result of Mann Whitney U test that shows whether the participants with a history of diabetes differed in knowledge about GDM from those who had no history.

Table 3

Descriptive Statistics and Summary of Mann Whitney U test on Knowledge Dimensions Among Antenatal Women Across Two Groups (n = 33)

Variable	Mean rank		*U*	*Z*
	Group I *n* = 18	Group II *n* = 15		
General Awareness	14.69	19.77	93.5	-1.55
Cause	16.33	17.80	123	-.501
Symptom	17.33	16.60	129	-.253
Risk	16.17	18.00	120	-.703
Complications	14.89	19.53	97	-1.50
Food value	11.94	23.07	44	-3.47**
Management	14.53	19.97	90.50	-1.63
Treatment	14.50	20.00	90	-1.87
Diagnosis	15.33	19.00	105	-1.53
Knowledge	13.28	21.47	68	-2.43*

Note. Group I = Participants without a family history of Diabetes; Group II = Participants with a family history of Diabetes; *U* = represents the coefficient for the difference across groups; *Z* = compares the standard normal quantiles to obtain *p* value.
*$p < .05$. **$p < .01$.

As per Mann Whitney *U* test, there is a significant difference in the knowledge among participants with and without a history of diabetes ($U = 68$, $Z = -2.43$, $p < .05$). Participants with a history had higher knowledge (Mean rank = 21.47) than those who had no history (Mean rank = 13.28). There is a significant difference in the dimension of food value knowledge among participants with and without a history of diabetes ($U = 44$, $Z = -3.47$, $p < .01$). Participants with a history scored higher in food value knowledge (Mean rank = 23.07) than those who had no history (Mean rank = 11.94). There is no significant difference between the participants with and without a history of diabetes in general awareness, cause, symptom, risk, complications, food value substituents, management, treatment, and diagnosis.

Sources of Knowledge

Quantitative content analysis of the data gathered in phase III shows that the primary source of knowledge was written/electronic media as indicated by 23 out of 33 participants (69.7%). Other major sources of knowledge were the family history of diabetes and GDM (12, 36.4%), social interactions (10, 30.3%) and educational/professional experiences (7, 21.2%).

Adequacy of Knowledge

Twenty-two participants (67%) revealed inadequate knowledge about GDM. Out of these twenty-two participants the majority of the participants ($n = 16$; 48.48%) require more knowledge regarding management. Eight participants (24.24%) reported the need to have more knowledge about GDM in general. Six participants (18.18%) said that they require more knowledge about physical symptoms and causes of GDM.

Eleven participants (33.3%) felt that they have adequate knowledge about GDM. Electronic and printed media, educational qualifications, and family history have contributed to the adequacy of the knowledge as perceived by the participants.

Discussion

Findings reflected that there is a lack of awareness of GDM among antenatal women. The scenario in Hyderabad seems to be different from Chennai. The Chennai based findings of Mahalakshmi and colleagues (2013) reported that the majority of the antenatal women had awareness of GDM (i.e. 85%). The state-wide screening program of GDM in Tamil Nadu and the mass media interactions related to it can be a reason for such awareness in Chennai (Shriraam, Rani, Sathiyasekaran, & Mahadevan, 2013). However, previous inquiries in various places outside India showed that most antenatal women usually lack awareness of GDM (Carolan et al., 2010; Choi et al., 2000; De Holanda et al., 2012; Gastrich et al., 2013; Hjelm et al., 2005; Shriraam et al., 2013). There may be more than one cause for this lack of awareness; one of the major reasons can be the absence of promotion of education about GDM. Target oriented awareness programmes for the public shall be recommended to increase alertness about this condition.

The role of age in enhancing GDM awareness has been previously mentioned by Choi, Oh, and Park (2001), who stated that women above 30 years of age have a higher knowledge than younger women (Choi et al., 2000). In the study by Gastrich and colleagues (2013), women over 35 years of age answered questions about GDM more accurately than females who had less than 25 years. The present inquiry shows that age and number of pregnancy are predictors of the awareness of GDM. Thus, the awareness of GDM in women might be getting broadened with the increase in age. Likewise, experiences from multiple pregnancies might have become a resource in attaining better health information. However, the findings contrast with that of Carolan and colleagues (2010) and Shriraam et al. (2013), who stated that age and number of pregnancy have no relationship with the awareness of GDM.

Knowledge about GDM differs across the trimesters. General awareness, food value substituent knowledge, and management knowledge increase with the advancements of the months of pregnancy. According to Mahalakshmi and colleagues (2013), the information seeking behaviour of the antenatal women increases with the progression of gestation. Information seeking behaviour gradually helps in getting acquainted and adjusted to the food habits they are expected to follow. All the participants in the third trimester were more educated than those in the second and first trimesters. A higher level of education is a significant predictor of knowledge about GDM (Choi et al., 2000; Choi et al., 2001; Gastrich et al., 2013). Education among the participants might have acted as an extraneous variable for the difference across trimesters.

History of diabetes demonstrated to make a difference in the knowledge about GDM among the antenatal women. Individuals with a family history might have got the chance to listen to the directions and guidelines by the healthcare professionals about the risks and care associated with GDM. Hence, they were more aware than those who had no history. They might know more about the dietary patterns that would have contributed to the dimension, food value substituent knowledge. Findings by Choi and colleagues (2000), Huidobro and colleagues (2010), and Hussain and colleagues (2015) also supported that history of diabetes contributed to knowledge.

The most important source of knowledge is the written/electronic media. Written/electronic media includes books, the internet and magazines. According to Mahalakshmi and colleagues (2013), antenatal women usually seek information through the media to maintain their well-being. Other sources of knowledge were the family history of diabetes and GDM, social interactions, and educational/professional experiences.

Limitations

Our results should be considered in the light of certain limitations of our design. First, the factors used to assess the knowledge and awareness was limited to the dimension considered in GDKQ. These factors are general awareness, awareness and knowledge about causes, symptoms, risks, complications, food substituents, diagnosis, management, and treatment. The study did not give importance to assess the effectiveness of information sources that helped the mothers to enhance the knowledge and awareness. Moreover, the study was limited with its small sample size and was restricted to one of the major cities in India. Further, information regarding the socioeconomic status was not considered. Notwithstanding the limitations, the findings are indication about the current status of the antenatal women regarding the knowledge and awareness of a potential health risk, in the urban areas of India.

Conclusion and Future Directions

The majority of the participants appear to have an inadequacy of the knowledge regarding management, physical symptoms, and causes of GDM. Even the participants who were aware of the condition lacked the skills for its effective management. This study highlights the importance of implementing methods that enhance the awareness and knowledge about GDM among the antenatal women. As media is one of the essential sources, we can use them as devices to achieve that goal. Providing health education programs through media can help the targeted population to be more educated in effective prevention/management. This can reduce the burden of GDM among mother and the foetus. Healthcare professionals may advocate and conceptualise simple and clarified GDM educational programmes to enhance health-seeking behaviours through psycho-education programmes, counselling, and teaching.

Furthermore, universal screening programmes to all antenatal women, especially in rural regions, can identify cases at early stages, to reduce the global burden of the illness. The findings of this study also provide a guideline to fellow researchers who wish to pursue further research in this area. A qualitative study can be used to understand the reasons for such disparity in the awareness of GDM. A randomized control trial can ascertain the effectiveness of the educational training module among the sample. Furthermore, using a larger sample in future GDM studies, considering the socioeconomic status and place of residence as variables, is recommended.

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Competing Interests

The authors have declared that no competing interests exist.

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