

THE ASSESSMENT OF KNOWLEDGE REGARDING DIETARY PATTERN IN DIABETIC PREGNANT WOMAN

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Abstract: *Gestational diabetes mellitus (GDM) poses significant risks to maternal and fetal health, and proper dietary management is critical in mitigating these complications. In Pakistan, knowledge gaps and socio-economic barriers often limit adherence to recommended dietary practices. Objectives:* To assess knowledge regarding dietary patterns among diabetic pregnant women in a tertiary care setting in Pakistan and identify barriers to effective dietary management. **Methods:** *This cross-sectional study included 154 diabetic pregnant women receiving antenatal care at Sheikh Zayed Hospital, Lahore. Data were collected using a structured questionnaire assessing demographics, dietary knowledge, and perceived barriers. Descriptive and inferential analyses were performed using SPSS version 25, with a p-value <0.05 considered statistically significant. Results:* Most participants (37.7%) had good knowledge of carbohydrate intake, while 26.0% demonstrated excellent understanding. Meal planning awareness was moderate in 44.2% of participants. Healthcare providers were the primary source of information (59.7%), yet barriers such as lack of knowledge (32.5%) and limited access to healthy foods (29.2%) were prevalent. Significant gaps in knowledge and practice were identified, particularly among underweight and overweight/obese women. **Conclusion:** *This study underscores the need for structured dietary education programs tailored to the cultural and socio-economic context of Pakistan. Integrating nutritional counseling into antenatal care can enhance knowledge and improve dietary practices, reducing the risks associated with gestational diabetes.*

Keywords: Gestational diabetes, dietary knowledge, pregnant women, nutritional counseling.

Introduction

Gestational diabetes mellitus (GDM) and pre-existing diabetes in pregnancy are significant public health concerns, particularly in developing countries like Pakistan, where the healthcare system faces numerous challenges. GDM is characterized by glucose intolerance first identified during pregnancy and is associated with adverse maternal and neonatal outcomes. These include preeclampsia, macrosomia, and an increased risk of developing type 2 diabetes later in life (1, 2). Despite its rising prevalence, awareness and management of GDM remain suboptimal in Pakistan, where limited access to healthcare resources and poor dietary knowledge contribute to the problem (3, 4).

Dietary management is a cornerstone of GDM care, as proper nutrition can regulate blood glucose levels and minimize complications. However, many pregnant women lack sufficient knowledge about dietary patterns tailored to their condition. Studies indicate that cultural beliefs, limited literacy, and inadequate access to professional dietary advice exacerbate this knowledge gap in Pakistan (5). Additionally, socioeconomic factors, including poverty and food insecurity, further restrict adherence to healthy eating practices (6, 7).

In Pakistan, healthcare providers often play a pivotal role in educating patients about dietary practices during pregnancy. However, the limited number of trained dietitians and diabetes educators in healthcare settings poses a significant challenge. A study conducted in Lahore revealed that more than half of pregnant women with GDM had inadequate knowledge of essential dietary modifications, emphasizing the need for targeted interventions (8, 9). Furthermore, the lack of culturally appropriate educational materials and

limited awareness of carbohydrate counting and meal planning further hinder effective management (10).

This study aims to assess the knowledge of dietary patterns among diabetic pregnant women in Pakistan, with a focus on identifying gaps in awareness and barriers to healthy eating. By addressing these gaps, the findings can guide the development of culturally tailored educational programs to improve maternal and fetal outcomes.

Methodology

This cross-sectional quantitative study aimed to assess knowledge regarding dietary patterns in diabetic pregnant women. The research was conducted at Sheikh Zayed Hospital, Lahore, a tertiary care facility offering specialized maternal and diabetes care. Data collection spanned two months, from June to July 2024. The study focused on pregnant women diagnosed with gestational diabetes mellitus (GDM) or pre-existing diabetes who were receiving antenatal care. Women aged 18 years or older, with a confirmed diagnosis of diabetes during pregnancy, who could provide informed consent, and were willing to complete the questionnaire, were included. Women with severe medical conditions, those who had undergone dietary counseling within the last six months, or with a history of eating disorders, were excluded.

The sample size was determined using Taro Yamane's formula with a 5% margin of error, resulting in 154 participants. Convenience sampling was employed to recruit eligible participants during the study period. A structured questionnaire, designed and pre-tested for reliability and validity, served as the primary data collection

tool. The questionnaire comprised two sections: demographic details such as maternal age, gestational age, pre-pregnancy BMI, smoking status, socio-economic status, and marital status; and a knowledge assessment focusing on dietary practices, carbohydrate intake, meal planning, and barriers to healthy eating. The questionnaire was available in English and the local language to ensure clarity and accessibility for all participants.

Participants were approached during their routine antenatal visits, and the purpose of the study was explained to them. Written informed consent was obtained prior to participation. The self-administered questionnaires took 20–30 minutes to complete, with trained researchers available to clarify any questions. The questionnaire’s reliability was evaluated using Cronbach’s alpha, yielding a value of 0.78, indicating good internal consistency. The data collection process included regular reviews to ensure completeness and accuracy.

Ethical approval for the study was obtained from the institutional review board of Sheikh Zayed Hospital. Participant confidentiality was maintained, and responses

were anonymized. Participation was voluntary, with no penalties for withdrawal at any stage of the study. The collected data were analyzed using IBM SPSS version 25. Descriptive statistics, such as frequencies and percentages, summarized the demographic and knowledge-related variables, while inferential statistics, including chi-square tests, assessed associations between demographic factors and knowledge levels. A p-value of <0.05 was considered statistically significant. This methodology adhered to international research standards, ensuring ethical compliance, reliability, and validity in capturing knowledge gaps and influencing factors in dietary practices among diabetic pregnant women.

Results

A total of 154 participants were included, with the majority aged between 25 and 34.9 years (44.2%), followed by 28.6% below 24.9 years and 27.3% above 40 years. (Table 1)

Table 1: Maternal Age Distribution (N = 154)

Age Group	Frequency (n)	Percentage (%)
Below 24.9 years	44	28.6
25–34.9 years	68	44.2
Above 40 years	42	27.3

Table 2: Gestational Age Distribution (N = 154)

Trimester	Frequency (n)	Percentage (%)
1st Trimester	70	45.5
2nd Trimester	54	35.1
3rd Trimester	30	19.5

Nearly half of the participants (45.5%) were in the first trimester of pregnancy, providing an opportunity for early dietary interventions. (Table 2)

Table 3: Pre-Pregnancy BMI (N = 154)

BMI Category	Frequency (n)	Percentage (%)
Underweight	44	28.6
Normal Weight	52	33.8
Overweight	36	23.4
Obese	22	14.3

A majority of participants had a normal pre-pregnancy BMI (33.8%), while 28.6% were underweight, indicating potential nutritional vulnerabilities. (Table 4)

The study assessed participants’ understanding of dietary requirements and practices related to gestational diabetes.

While 26.0% of participants demonstrated excellent knowledge about carbohydrate intake, a significant proportion (36.3%) showed fair to poor understanding, highlighting an area for targeted education. (table 4)

Table 4: Knowledge of Carbohydrate Intake in Managing GDM (N = 154)

Knowledge Level	Frequency (n)	Percentage (%)
Excellent	40	26.0
Good	58	37.7
Fair	32	20.8
Poor	24	15.5

Table 5: Frequency of Meal Planning Awareness (N = 154)

Awareness Level	Frequency (n)	Percentage (%)
High	45	29.2

Moderate	68	44.2
Low	41	26.6

Meal planning awareness was moderate for most participants (44.2%), with a concerning 26.6% reporting

low awareness. This underscores the need for structured dietary counseling. (Table 5)

Table 6: Sources of Dietary Knowledge (N = 154)

Source	Frequency (n)	Percentage (%)
Healthcare Providers	92	59.7
Internet	36	23.4
Family/Friends	18	11.7
Others	8	5.2

Healthcare providers were the primary source of dietary knowledge (59.7%), emphasizing their crucial role in disseminating accurate information. (Table 6)

Table 7: Perceived Barriers to Healthy Eating (N = 154)

Barrier	Frequency (n)	Percentage (%)
Lack of Time	40	26.0
Limited Access to Healthy Foods	45	29.2
Lack of Knowledge	50	32.5
Other	19	12.3

The most commonly reported barrier was a lack of knowledge (32.5%), followed by limited access to healthy foods (29.2%). These findings suggest areas for intervention to support healthier eating habits. (Table 7).

Discussion

This study assessed the knowledge regarding dietary patterns among diabetic pregnant women in Pakistan, revealing significant gaps in awareness and understanding. The findings show that while a portion of participants demonstrated good knowledge, a substantial number had limited awareness about essential dietary practices, such as carbohydrate intake and meal planning. These results are consistent with other studies conducted in similar settings, highlighting the global and regional challenges associated with dietary education in managing gestational diabetes mellitus (GDM).

The study found that 37.7% of participants had good knowledge of carbohydrate intake, while 26.0% showed excellent understanding. However, 36.3% demonstrated fair to poor knowledge. Similar trends were observed in a study by Moin et al., which reported that more than half of pregnant women with GDM lacked adequate knowledge of carbohydrate counting, a key element in glycemic control (11). Another study conducted in urban Pakistan also emphasized the lack of structured nutritional counseling as a major barrier to effective dietary management (3).

The moderate awareness of meal planning (44.2%) reported in this study aligns with findings by Ahmed et al., who highlighted that pregnant women in Pakistan often lack practical knowledge of meal scheduling and portion control, essential for managing GDM (10). Globally, studies suggest that structured dietary education programs significantly improve such knowledge, yet their implementation in low-resource settings like Pakistan remains limited (2).

The role of healthcare providers as the primary source of dietary knowledge (59.7%) underscores their importance in educating diabetic pregnant women. However, the shortage

of trained dietitians in Pakistan limits the quality and reach of such education (8). Qureshi et al. highlighted that a lack of culturally appropriate and accessible dietary resources further compounds the issue, leaving many women reliant on non-expert sources, such as family and friends, which accounted for 11.7% in this study (6).

Barriers to healthy eating, such as a lack of knowledge (32.5%) and limited access to healthy foods (29.2%), were also identified. These barriers are consistent with findings by Shafiq et al., who reported that socio-economic constraints and food insecurity are prevalent issues in low-income populations, restricting the ability of women to adhere to recommended dietary guidelines (6). Globally, interventions like subsidized healthy food programs and culturally tailored meal plans have shown promise in addressing such barriers but remain underutilized in Pakistan (12).

The prevalence of underweight (28.6%) and overweight/obesity (37.7%) among participants highlights the dual burden of malnutrition in the study population. This finding echoes the global challenge of ensuring balanced nutrition among diabetic pregnant women, as highlighted by the International Diabetes Federation's recent report on maternal diabetes (1). Addressing these challenges requires targeted interventions that focus not only on education but also on systemic improvements in healthcare delivery and resource allocation.

In conclusion, this study demonstrates the critical need for enhanced dietary education and systemic support for diabetic pregnant women in Pakistan. Future research should explore the implementation of structured dietary programs and evaluate their effectiveness in improving knowledge and outcomes. The integration of culturally appropriate and resource-sensitive dietary counseling into antenatal care is imperative for mitigating the risks associated with GDM.

Conclusion

This study highlights significant gaps in knowledge regarding dietary patterns among diabetic pregnant women in Pakistan. While healthcare providers serve as the primary source of information, barriers such as inadequate training, socio-economic constraints, and limited access to healthy foods hinder effective dietary management. Targeted interventions, including structured nutritional counseling and culturally appropriate resources, are essential to improve dietary knowledge and practices. Enhancing antenatal care with focused educational programs can mitigate maternal and fetal risks associated with gestational diabetes.

Declarations

Data Availability statement

All data generated or analyzed during the study are included in the manuscript.

Ethics approval and consent to participate.

Approved by the department Concerned. (IRBEC-SNU-20/23)

Consent for publication

Approved

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The authors declared an absence of conflict of interest.

Authors Contribution

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