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A STUDY TO ASSESS THE KNOWLEDGE REGARDING GESTATIONAL DIABETES MELLITUS (GDM) AMONG FEMALE HEALTH WORKERS UNDER SELECTED PRIMARY HEALTH CENTERS AT JAIPUR DISTRICT, RAJASTHAN WITH A VIEW TO DEVELOP AN INFORMATION BOOKLET

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ABSTRACT

Introduction: Gestational Diabetes Mellitus (GDM) is a common pregnancy-related complication that poses serious risks to both maternal and fetal health. Frontline healthcare providers, especially female health workers (FHWs), play a vital role in the early detection, management, and education related to GDM. However, their knowledge level can significantly impact maternal care outcomes. This study was conducted to assess the knowledge regarding GDM among female health workers in primary health centers of Shahpura block, Jaipur district, with the aim of developing an educational information booklet based on identified gaps. **Methodology:** A descriptive cross-sectional study was conducted among 60 female health workers using a structured, self-administered questionnaire. Convenience sampling was used to recruit participants. The tool was validated by experts, and its reliability was confirmed with a KR-20 score of 0.82. Data were analyzed using descriptive statistics (mean, frequency, percentage) and inferential statistics (Chi-square test) at a 0.05 level of significance. **Result:** The findings showed that 50% of participants had average knowledge regarding GDM, 25% had good knowledge, and the remaining 25% had poor knowledge. Significant associations were found between knowledge levels and age ($p < 0.05$), marital status ($p < 0.05$), years of experience ($p < 0.05$), and prior attendance in GDM educational programs ($p < 0.05$). Educational qualification did not show a significant association. **Conclusion:** The study highlights moderate awareness of GDM among female health workers, with key knowledge gaps influenced by experience and training rather than formal education. Developing and disseminating tailored educational materials like information booklets can strengthen the capacity of frontline health workers to manage GDM more effectively, thereby improving maternal and neonatal outcomes.

KEYWORDS: Gestational Diabetes Mellitus, Female Health Workers, Knowledge Assessment, Primary Health Centers, Maternal Health, Educational Intervention, India.

INTRODUCTION

Pregnancy is a unique and critical phase in a woman's life, characterized by complex physiological and hormonal changes. While it is generally a normal biological process, it can be associated with complications that pose significant risks to both maternal and fetal health. One such complication is Gestational Diabetes Mellitus (GDM), a condition defined as glucose intolerance of variable severity with onset or first recognition during pregnancy. GDM typically manifests in the second or third trimester and, if left undiagnosed or poorly managed, can lead to serious short- and long-term consequences for both mother and child.[1]

GDM is associated with a range of adverse outcomes including hypertensive disorders, macrosomia, obstructed labor, neonatal hypoglycemia, and increased risk of cesarean delivery. Moreover, women with GDM have a significantly higher risk of developing type 2 diabetes mellitus (T2DM) later in life, and their offspring are also more susceptible to obesity and glucose intolerance in adolescence and adulthood. Thus, early identification and effective management of GDM are essential not only for improving immediate pregnancy outcomes but also for preventing the transgenerational transmission of metabolic diseases.[2]

Globally, GDM affects approximately 7% of all pregnancies, with prevalence rates varying between 1% and 14% depending on the diagnostic criteria and population studied.[3] In India, where the burden of diabetes is rapidly growing, GDM has become a significant public health concern. A recent systematic review estimated the pooled prevalence of GDM at 13%, with slightly higher rates in urban areas (12%) compared to rural regions (10%).[4] The lack of a universal screening guideline further contributes to variability in detection and underdiagnosis across different settings.

Frontline healthcare providers such as Female Health Workers (FHWs)—including Auxiliary Nurse Midwives (ANMs)—play a pivotal role in India's public health system. They are often the first point of contact for pregnant women, particularly in rural and underserved areas. These health workers are responsible for conducting antenatal visits, providing health education, supporting early screening for pregnancy complications, and facilitating referrals when necessary. Given their proximity to the community and their direct interaction with expectant mothers, FHWs are uniquely positioned to impact GDM awareness, screening, and care delivery.[5]

However, existing studies indicate that knowledge levels among FHWs regarding GDM are often inadequate. For instance, Gosavi and Mhaske (2022) found that 85% of nurses and midwives surveyed had only average or poor knowledge of GDM, especially in areas like diagnosis and nutrition.[6] Similarly, Patel and Vyas (2018) observed significant improvements in GDM awareness among healthcare workers following structured training sessions, underscoring the impact of targeted educational interventions.[7]

Recognizing this gap, the present study was undertaken to assess the existing knowledge regarding GDM among female health workers operating under selected primary health centers in Shahpura block, Jaipur district, Rajasthan. The ultimate goal was to identify key knowledge deficiencies and address them through the development of an informational booklet tailored to the needs of FHWs. By enhancing their understanding of GDM, such interventions can contribute to better health outcomes and support India's broader efforts to combat the rising tide of diabetes and maternal morbidity.

METHODOLOGY

Research Approach: This study adopted a quantitative research approach.

Research Design: A descriptive cross-sectional design was used.

Study Setting and Participants: The study was conducted at selected primary health centers (PHCs) located in the Shahpura block of Jaipur district, Rajasthan, India. The target population comprised female health workers (Auxiliary Nurse Midwives - ANMs) working in these PHCs, who are actively engaged in providing antenatal care services in the community.

Sampling: A non-probability convenience sampling technique was used to select participants. The final sample consisted of 60 female health workers who were available and willing to participate during the data collection period.

Data Collection: Data were collected from 60 female health workers using a structured, self-administered questionnaire developed by the researcher. The tool comprised two parts: demographic information and a 30-item multiple-choice knowledge assessment on gestational diabetes mellitus (GDM). Prior to the main study, the questionnaire was validated by experts in nursing and medicine, and its reliability was established with a KR-20 coefficient of 0.82. After obtaining institutional permissions and informed consent from participants, data collection was carried out over a 10-day period at selected primary health centers in Shahpura block, Jaipur district.

Data Analysis: Descriptive statistics such as frequencies, percentages, mean, and standard deviation were used to summarize demographic characteristics and knowledge scores. Inferential statistics, including the Chi-square test, were applied to identify significant associations between participants' knowledge levels and selected demographic variables. A p-value of less than 0.05 was considered statistically significant.

RESULTS

Table 1: Frequency and Percentage Distribution of Socio-Demographic Variables of Participants (n = 60)

Variable	Category	Frequency (f)	Percentage (%)
Age (in years)	21–30	6	10.00%
	31–40	27	45.00%
	41–50	21	35.00%
	51–60	6	10.00%
Marital Status	Unmarried	3	5.00%
	Married	57	95.00%
Educational Qualification	Senior Secondary	54	90.00%
	Undergraduate	6	10.00%
Total Years of Experience	1–10	6	10.00%
	10–20	48	80.00%

	20–30	6	10.00%
Attended GDM Educational Program	Yes	20	33.30%
	No	40	66.70%

The data in Table 1 highlights the demographic profile of the 60 female health workers who participated in the study:

Age: The largest proportion of participants (45%) were in the 31–40 years age group, followed by 35% in the 41–50 years group. Only 10% each were in the younger (21–30 years) and older (51–60 years) age categories. This indicates that the majority of the health workers were in their mid-career phase.

Marital Status: A significant majority (95%) of the participants were married, with only 5% being unmarried, reflecting a predominantly married workforce.

Educational Qualification: Most participants (90%) had completed senior secondary education, while only 10% held an undergraduate degree. None had education below the senior secondary level, suggesting a basic minimum level of academic qualification.

Total Years of Experience: The majority of respondents (80%) had 10–20 years of work experience, indicating a substantial level of practical field exposure. Only 10% each fell into the lower (1–10 years) and higher (20–30 years) experience brackets.

Attendance in GDM Educational Programs: About one-third (33.3%) of the participants had attended an educational program on GDM, while the remaining two-thirds (66.7%) had not. This suggests a gap in continuous professional education related to GDM among the health workers.

Table 2: Level of Knowledge Regarding Gestational Diabetes Mellitus (GDM) Among Female Health Workers (n = 60).

Knowledge Level	Score Range	Frequency (f)	Percentage (%)
Poor Knowledge	0–15	15	25.00%
Average Knowledge	16–22	30	50.00%
Good Knowledge	23–30	15	25.00%

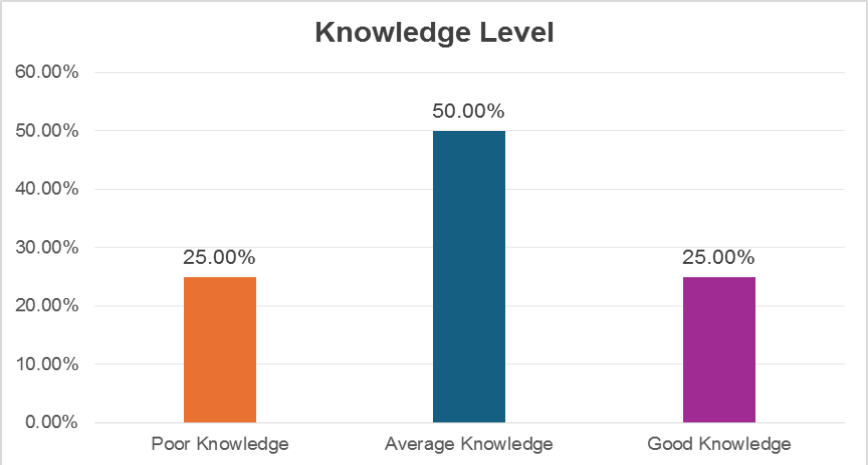

Figure 1: Bar Diagram showing Level of Knowledge Regarding Gestational Diabetes Mellitus (GDM) Among Female Health Workers.

The analysis of knowledge levels among the 60 female health workers revealed that half of the participants (50%) had an average level of knowledge regarding gestational diabetes mellitus (GDM), scoring between 16 and 22. One-fourth of the respondents (25%) demonstrated poor knowledge, with scores ranging from 0 to 15, indicating a considerable gap in awareness and understanding of GDM. Conversely, only 25% of the participants achieved good knowledge scores (23–30), reflecting a satisfactory level of competence. These findings suggest that while a moderate level of awareness exists among most health workers, a significant portion still lacks essential knowledge. This highlights the need for structured training programs and continuous professional education to enhance the overall capacity of frontline health workers in the early identification and management of GDM.

Table 3: Chi-Square Values Showing Association Between Knowledge Levels and Demographic Variables (n = 60).

Demographic Variable	df	Chi-Square Value (χ^2)	Table Value (p = 0.05)	Significance
Age	6	40.952	12.59	Significant
Marital Status	2	9.474	5.99	Significant
Educational Qualification	2	3.333	5.99	Not Significant
Years of Experience	4	39	9.488	Significant
Attended GDM Program	2	14.4	5.99	Significant

The Chi-square analysis revealed significant associations between knowledge levels and several demographic variables. Age showed a statistically significant relationship with knowledge scores ($\chi^2 = 40.952$, $p < 0.05$), indicating that knowledge levels varied significantly across different age groups. Similarly, marital status was also significantly associated with knowledge ($\chi^2 = 9.474$, $p < 0.05$), suggesting that personal life context may influence awareness. Years of experience in the field demonstrated a strong association with knowledge levels ($\chi^2 = 39.000$, $p < 0.05$), implying that longer service may contribute to increased exposure and understanding of GDM. Additionally, participation in GDM-related educational programs was significantly associated with higher knowledge scores ($\chi^2 = 14.400$, $p < 0.05$), highlighting the effectiveness of such training interventions. However, educational qualification did not show a significant association ($\chi^2 = 3.333$, $p > 0.05$), suggesting that formal academic level alone did not predict knowledge about GDM. These results emphasize the importance of practical experience and continuous professional training over formal education in enhancing knowledge among female health workers.

DISCUSSION

The present study aimed to assess the knowledge regarding Gestational Diabetes Mellitus (GDM) among female health workers working in selected primary health centers of Shahpura block, Jaipur district. The key finding revealed that 50% of the participants had average knowledge, 25% had good knowledge, and the remaining 25% had poor knowledge. A statistically significant association was observed between knowledge levels and demographic variables such as age, marital status, years of experience, and attendance in GDM training programs, emphasizing the importance of continuous professional exposure and education in enhancing GDM awareness.

In our study, we observed that years of experience had a significant impact on knowledge levels, with most health workers in the 10–20 years experience range demonstrating better understanding. This finding is consistent with the study by Khanom et al. (2022), which found that nurses with greater professional experience exhibited higher levels of knowledge and better management practices related to GDM.[8] Similarly, Langarcia et al. (2022) found that healthcare professionals with a previous history of GDM or longer exposure had significantly better knowledge scores.[9] These findings affirm that prolonged professional engagement contributes positively to understanding maternal health complications like GDM.

The current study also found a strong association between participation in GDM educational programs and knowledge scores. Participants who had attended training showed higher levels of understanding than those who had not. This is strongly supported by the work of Patel and Vyas (2018), who found that healthcare workers' knowledge improved significantly after structured training sessions.[7] A similar conclusion was drawn by Stan et al. (2023), whose longitudinal study demonstrated that targeted education programs improved not just knowledge but also attitudes and practices among midwives and nurses, with these gains sustained over time.[10] These studies reinforce the importance of implementing periodic, formal training programs to bridge knowledge gaps among frontline health workers.

Our study also identified age and marital status as significantly associated with knowledge levels. Most participants with better knowledge were in the 31–50 years age group and were married. This aligns with the findings of Dissassa et al. (2023), who reported that younger, better-educated, and married women had higher GDM awareness scores in a study conducted in Ethiopia.[11] Saad et al. (2023) observed that personal and family history of diabetes, typically more common in older and married women, was associated with greater GDM awareness in their sample of women in Sohag Governorate, Egypt.[12] These correlations suggest that both personal life experiences and social context play roles in shaping maternal health awareness.

This study has several strengths, including the use of a validated and reliable structured questionnaire (KR-20 = 0.82) and a focus on frontline health workers who are key in managing antenatal care. However, limitations include the small sample size (n = 60) and non-random convenience sampling, which restrict the generalizability of findings. An unexpected outcome was that educational qualification did not significantly correlate with knowledge level, suggesting that field experience and training may be more influential than formal education alone. The study successfully met its objective of assessing knowledge and developing an information booklet tailored to the needs of female health workers. The hypothesis that demographic variables influence knowledge levels was supported for most variables. This highlights the necessity of continuing education and targeted interventions to strengthen GDM-related

competencies in rural primary health settings. Future research could assess the long-term effectiveness of such information booklets and explore their impact on actual maternal and neonatal health outcomes.

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