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# IMPACT OF INTEGRATED AWARENESS PROGRAMME ON BEHAVIOURAL OUTCOMES REGARDING PREVENTION AND MANAGEMENT OF DIABETES IN PREGNANCY WITH REFERENCE TO NATIONAL GUIDELINES AMONG ANTENATAL WOMEN RESIDING AT BHILAI CHHATTISGARH

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## ABSTRACT

Diabetes in pregnancy, particularly Gestational Diabetes Mellitus, is a growing public health concern associated with significant maternal and fetal complications. Limited awareness and inadequate knowledge among antenatal women contribute to delayed diagnosis and poor management. The present study was conducted to assess the effectiveness of an integrated awareness programme on behavioural outcomes regarding prevention and management of diabetes in pregnancy among antenatal women.

A quantitative research approach with a quasi-experimental design was adopted. A total of 400 antenatal women were selected using a non-probability sampling technique and divided into control and experimental groups. Pretest assessment of knowledge and perception was carried out using a structured questionnaire. The integrated awareness programme based on national guidelines was administered to the experimental group, followed by posttest evaluation.

The findings revealed that the majority of antenatal women had inadequate knowledge and negative perception in the pretest. Post-intervention results showed a significant improvement in knowledge and perception scores in the experimental group compared to the control group. Statistical analysis using paired t-test demonstrated a significant difference between pretest and posttest scores in the experimental group ($p < 0.05$), indicating the effectiveness of the intervention. Furthermore, selected socio-demographic variables were found to have a significant association with knowledge and perception levels.

The study concludes that the integrated awareness programme was effective in enhancing knowledge, improving perception, and promoting positive behavioural outcomes among antenatal women regarding prevention and management of diabetes in pregnancy. Implementation of such programmes at community and healthcare settings is recommended to improve maternal and fetal health outcomes.

**Keywords:** Awareness Programme, Antenatal Women, Behavioural Outcomes, Diabetes in Pregnancy, Gestational Diabetes Mellitus.

## INTRODUCTION

Diabetes in pregnancy, particularly Gestational Diabetes Mellitus, is a growing public health concern worldwide. It is defined as glucose intolerance with onset or first recognition during pregnancy and is associated with significant maternal and fetal complications. The global prevalence of GDM has been reported to range between 7% and 27%, depending on diagnostic criteria and population characteristics, with higher rates observed in low- and middle-income countries (McIntyre et al., 2019).[1]

In India, the burden of diabetes in pregnancy is notably high, with prevalence estimates ranging from 10% to 14% among antenatal women (Mohan et al., 2020).[2] Rapid urbanization, sedentary lifestyle, and dietary transitions have contributed to the increasing incidence of GDM. Women with GDM are at higher risk of developing complications such as preeclampsia, cesarean delivery, and type 2 diabetes later in life, while their

infants are at increased risk of macrosomia, neonatal hypoglycemia, and long-term metabolic disorders (Chiefari et al., 2017).[3]

Early detection and appropriate management of diabetes in pregnancy are essential to prevent adverse outcomes. National and international guidelines recommend routine screening, dietary modifications, physical activity, and glucose monitoring as key strategies for effective management (International Diabetes Federation, 2021).[4] However, studies have shown that awareness and knowledge regarding GDM among antenatal women remain inadequate, particularly in developing countries.

Educational interventions and structured awareness programmes play a crucial role in improving knowledge, perception, and self-care practices among pregnant women. Evidence suggests that such programmes can significantly enhance behavioural outcomes, leading to better glycemic control and improved maternal and fetal health outcomes (Carolan-Olah et al., 2018).[5]

Therefore, there is a need to implement integrated awareness programmes based on national guidelines to enhance knowledge and behavioural outcomes regarding prevention and management of diabetes in pregnancy among antenatal women.

## NEED OF THE STUDY

The increasing prevalence of Gestational Diabetes Mellitus has emerged as a significant public health concern, particularly in developing countries like India. Recent evidence indicates that nearly 15–20% of pregnancies worldwide are affected by hyperglycemia, with a substantial proportion attributed to GDM (International Diabetes Federation, 2021).[6] Despite advancements in screening and management, many antenatal women remain unaware of the risk factors, complications, and preventive measures associated with diabetes in pregnancy.

Studies have consistently demonstrated inadequate knowledge and poor awareness among pregnant women regarding GDM. For instance, Bhavadharini et al. (2019) [7]reported that a large proportion of antenatal women in India had insufficient awareness about diabetes in pregnancy, which significantly affected early diagnosis and management. Similarly, Sagar et al. (2020)[8] found that limited knowledge and misconceptions regarding dietary practices, screening, and treatment contributed to poor compliance and increased risk of complications.

Lack of awareness not only delays diagnosis but also adversely affects maternal and fetal outcomes. Uncontrolled GDM is associated with complications such as preeclampsia, cesarean delivery, macrosomia, and neonatal morbidity (Plows et al., 2018).[9] Furthermore, women with GDM have a higher likelihood of developing type 2 diabetes later in life, emphasizing the need for early preventive interventions.

Educational and awareness-based interventions have been shown to significantly improve knowledge, perception, and self-care practices among antenatal women. Rahman et al. (2021) demonstrated that structured health education programmes led to improved glycemic control and better pregnancy outcomes.[10] However, there is still a lack of integrated, guideline-based awareness programmes at the community level.

Therefore, this study is undertaken to develop and implement an integrated awareness programme based on national guidelines to improve behavioural outcomes regarding

## AIM OF THE STUDY

To evaluate the effectiveness of an integrated awareness programme based on national guidelines on behavioural outcomes regarding prevention and management of Gestational Diabetes Mellitus among antenatal women residing in Bhilai, Chhattisgarh.

## OBJECTIVES

A. To assess the pre-existing knowledge level of antenatal women regarding prevention and management of diabetes in pregnancy at selected areas of Bhilai, Chhattisgarh.

B. To find out the pre-existing perception level of antenatal women regarding prevention and management of diabetes in pregnancy.
C. To design & construct integrated awareness programme based on national guidelines 2020 regarding prevention and management of diabetes in pregnancy.
D. To implement the integrated awareness programme among antenatal women regarding prevention and management of diabetes in pregnancy.
E. To determine the effectiveness of integrated awareness programme on behavioural outcomes among antenatal women regarding prevention and management of diabetes in pregnancy.
F. To compare post test results with pre-test results on behavioural outcomes among antenatal women regarding prevention and management of diabetes in pregnancy.
G. To evaluate the association of integrated awareness programme on behavioural outcomes regarding prevention and management of diabetes in pregnancy among antenatal women with their selected socio-demographic variables.
H. To develop and distribute a concise book for enhancing knowledge on management of diabetes in pregnancy.

## METHODOLOGY

### Research Approach

A **quantitative research approach** was adopted in this study to evaluate the effectiveness of an integrated awareness programme on behavioural outcomes regarding prevention and management of Gestational Diabetes Mellitus among antenatal women. This approach was appropriate as the study involved numerical data and statistical analysis to measure outcomes.

### Research Design

A **quasi-experimental one-group pretest–posttest design** was used. The design involved assessment of participants before (pretest) and after (posttest) the implementation of the integrated awareness programme.

### Schematic representation:

$O_1 \rightarrow X \rightarrow O_2$

Where:

- $O_1$ = Pretest (baseline assessment)
- X = Intervention (Integrated Awareness Programme)
- $O_2$ = Posttest (evaluation after intervention)

### Variables of the Study

- **Independent Variable:** Integrated Awareness Programme
- **Dependent Variables:** Behavioural outcomes (knowledge and perception regarding prevention and management of diabetes in pregnancy)

### Setting of the Study

The study was conducted in selected antenatal clinics of Bhilai, Chhattisgarh, based on administrative approval, accessibility, and availability of participants.

### Population

- **Target Population:** Antenatal women residing in Bhilai, Chhattisgarh

- **Accessible Population:** Antenatal women attending selected antenatal clinics who met the inclusion criteria

**Sample and Sample Size**

A total of **400 antenatal women** were included in the study. The sample size was determined based on statistical calculation and feasibility.

**Sampling Technique**

A **simple random sampling technique (lottery method)** was used to select participants.

**Sampling Criteria**

**Inclusion Criteria:**

- Antenatal women residing in Bhilai, Chhattisgarh
- Willing to participate in the study
- Available during the data collection period
- Diagnosed with diabetes in pregnancy
- Blood sugar levels between 190–250 mg/dl

**Exclusion Criteria:**

- Antenatal women not residing in Bhilai
- Unwilling to participate
- Not available during data collection
- Pregnant women without diabetes
- Blood sugar levels below 190 mg/dl
- Presence of other major medical disorders
- Women affected by COVID-19 or post-COVID complications

**Development and Description of Tool**

Data were collected using the following tools developed through literature review and expert consultation:

- **Section A:** Socio-demographic proforma
- **Section B:** Structured knowledge questionnaire
- **Section C:** Self-administered perception scale

**Validity and Reliability of Tool**

The tools were validated by experts in relevant fields. Reliability of the knowledge questionnaire was established using the **split-half method**, and the perception scale was tested using the **test-retest method**.

**Data Collection Procedure**

Prior to data collection, ethical clearance and institutional permissions were obtained. Written informed consent was taken from participants.

The **pretest** was conducted using structured tools to assess baseline knowledge and perception. This was followed by the **integrated awareness programme**, delivered through lectures, PowerPoint presentations, charts, and posters.

The **posttest** was conducted after 7–11 days using the same tools to evaluate the effectiveness of the intervention.

**Plan for Data Analysis**

Data were analyzed using descriptive and inferential statistics:

- Frequency, percentage, mean, and standard deviation for descriptive analysis
- **Paired t-test** to evaluate effectiveness of the intervention
- **Chi-square test** to determine association with socio-demographic variables

**Ethical Considerations**

- Permission obtained from institutional authorities
- Ethical clearance secured
- Informed consent obtained from participants
- Confidentiality and anonymity of participants maintained

**RESULT**

**Frequency And Percentage Distribution Of Subjects On The Basis Of Socio Demographic Data**

The analysis of age distribution reveals that the majority of antenatal women in both groups belonged to the 21–30 years age group (41% in control and 36.5% in experimental), followed by 31–40 years and above 41 years. Only a small proportion (15%) were below 20 years, indicating that most participants were within the optimal reproductive age group.

With regard to religion, the highest proportion of participants in both groups were Hindu (42.5% in control and 39% in experimental), followed by Sikh, Christian, and Muslim populations, reflecting a diverse demographic composition.

In terms of language, the majority of participants spoke Hindi (49% in control and 55% in experimental), followed by Chhattisgarhi, while a smaller proportion spoke English and other languages.

The distribution of family type shows that most antenatal women belonged to joint families (49% in control and 50% in experimental), followed by extended and nuclear families. Similarly, most families had two members (49% control and 43.5% experimental), with fewer participants reporting larger family sizes.

Regarding educational status, a significant proportion of participants had non-formal education (50% control and 48% experimental), indicating low literacy levels. Only a small percentage had secondary, graduate, or postgraduate education.

In terms of family income, the majority of participants in the control group (50.5%) had a monthly income between Rs. 10,001–20,000, whereas in the experimental group, most (48%) had income below Rs. 10,000, suggesting economic variability between groups.

Occupational distribution indicates that many antenatal women were self-employed or engaged in private jobs, with smaller proportions working as labourers, farmers, or government employees. Similarly, most husbands were self-employed (34% in both groups), followed by private and government jobs.

A large majority of participants resided in urban areas (87% control and 87.5% experimental), with a smaller proportion from rural settings.

Regarding the source of information, most participants reported media as the primary source (42.5% control and 49% experimental), followed by family, friends, and relatives.

A high proportion of participants reported a positive family history of diabetes mellitus (74% control and 87.5% experimental), indicating a strong genetic predisposition.

Dietary habits show that most antenatal women were vegetarian (77.5% control and 83% experimental). The majority had a duration of marriage of less than five years (72.5% control and 84.5% experimental), indicating early marital life.

In terms of contraceptive use, oral pills were the most commonly used method, followed by Copper-T and condoms.

Most participants had no history of abortion (76% control and 60% experimental), although some reported one or more abortions.

Gestational age distribution indicates that the majority of antenatal women were in the second trimester (49% control and 55% experimental), followed by the third trimester.

The majority of participants were primigravida (72% control and 91.5% experimental) and nulliparous, indicating first pregnancy or limited childbirth experience.

Clinical parameters show that most participants had HbA1c levels around 7%, indicating moderate glycemic control. Random blood sugar levels were predominantly around 130 mg/dl in the control group and 100 mg/dl in the experimental group. Similarly, fasting blood sugar levels were mostly around 60 mg in the control group and 100 mg in the experimental group. Oral glucose tolerance test values were commonly observed around 100 mg/dl in both groups.

Overall, the findings indicate that both groups were comparable in terms of socio-demographic and clinical characteristics, ensuring baseline homogeneity for evaluating behavioural outcomes related to prevention and management of Gestational Diabetes Mellitus.

**Area wise assessment of knowledge regarding prevention and management of diabetes in pregnancy among antenatal women**

**TABLE 1: Area wise comparison of mean pretest and posttest knowledge score on prevention and management of diabetes in pregnancy among antenatal women**

| Areas | Pretest | | Post test | | t Value | P Value |
|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | | |
| **Introduction** | 1.7 | 0.96 | 2.12 | 0.94 | -4.45 | > 0.05 |
| **Anatomy** | 2.26 | 1.29 | 3.04 | 1.08 | -6.35 | > 0.05 |
| **Causes and risk factors** | 1.12 | 0.75 | 1.42 | 0.66 | -4.63 | > 0.05 |
| **Symptoms** | 1.66 | 0.78 | 2.1 | 1.01 | -6.313 | > 0.05 |
| **Diagnosis** | 8.86 | 3.31 | 10.15 | 3.64 | -8.28 | > 0.05 |
| **Investigation** | 2.8 | 1.96 | 3.5 | 0.83 | -7.18 | > 0.05 |
| **Risk of mother and baby** | 3.75 | 1.61 | 3.55 | 1.6 | 0.625 | >0.05 |
| **Prevention and Management** | 8.15 | 2.98 | 7.51 | 2.41 | 2.046 | >0.05 |

Table 1 shows the area-wise comparison of mean pretest and posttest knowledge scores among antenatal women regarding prevention and management of diabetes in pregnancy.

The mean knowledge score in the introduction domain increased from 1.7 (SD = 0.96) in the pretest to 2.12 (SD = 0.94) in the posttest. Similarly, knowledge related to anatomy improved from 2.26 (SD = 1.29) to 3.04 (SD = 1.08). The mean score for causes and risk factors increased from 1.12 (SD = 0.75) to 1.42 (SD = 0.66).

In the domain of symptoms, the mean score increased from 1.66 (SD = 0.78) to 2.1 (SD = 1.01). A notable improvement was observed in diagnosis, where the mean score increased from 8.86 (SD = 3.31) to 10.15 (SD = 3.64). Similarly, knowledge regarding investigations improved from 2.8 (SD = 1.96) to 3.5 (SD = 0.83).

However, a slight decrease was observed in the domain of risk of mother and baby, where the mean score reduced from 3.75 (SD = 1.61) to 3.55 (SD = 1.60). Likewise, in prevention and management, the mean score decreased from 8.15 (SD = 2.98) to 7.51 (SD = 2.41).

The calculated t values indicate that the differences between pretest and posttest scores in all domains were statistically non-significant ($p > 0.05$).

Overall, Table 1 indicates that although there was an improvement in knowledge in several areas, the changes were not statistically significant, suggesting limited effectiveness in enhancing knowledge regarding prevention and management of Gestational Diabetes Mellitus.

**Frequency and percentage distribution of subjects on the basis of knowledge regarding prevention and management of diabetes in pregnancy and comparison knowledge scores on prevention and**

**management of diabetes in pregnancy among antenatal women before and after integrated awareness program**

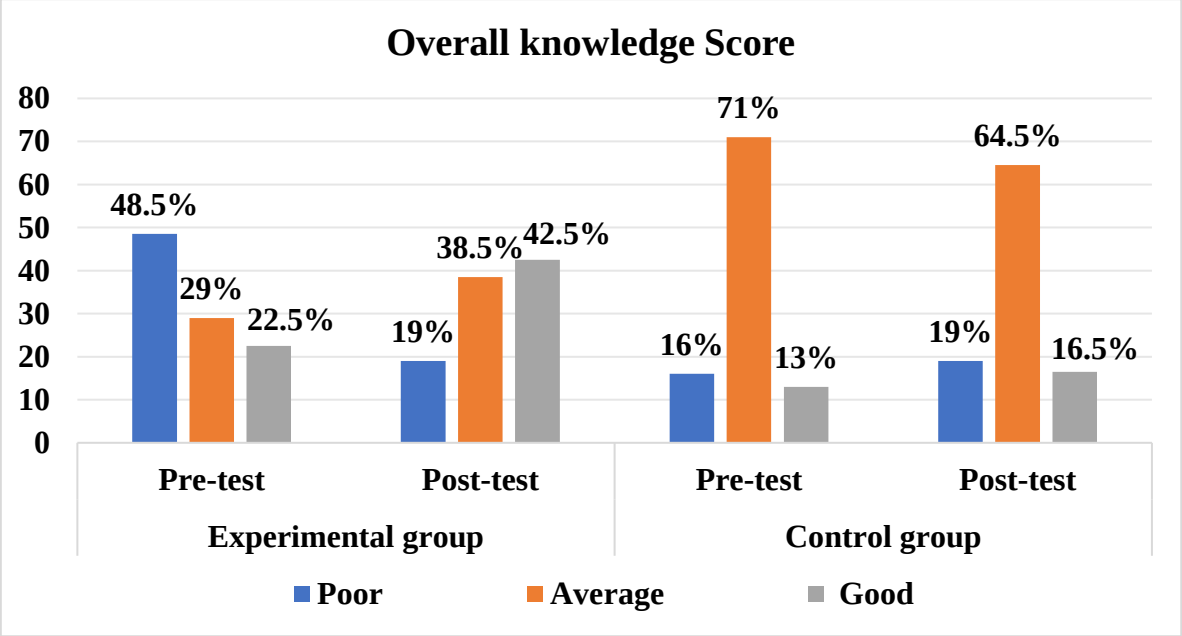


**Figure 1: assessment of overall knowledge regarding prevention and management of diabetes in pregnancy among antenatal women before and after integrated awareness program**

Figure 1 illustrates the assessment of overall knowledge regarding prevention and management of diabetes in pregnancy among antenatal women in both experimental and control groups before and after the intervention.

In the experimental group, the pretest findings show that 48.5% of subjects had poor knowledge, 29% had average knowledge, and 22.5% had good knowledge. Following the intervention, there was a marked improvement, with poor knowledge reducing to 19%, average knowledge increasing to 38.5%, and good knowledge rising to 42.5%.

In contrast, the control group pretest results indicate that the majority of subjects (71%) had average knowledge, while 16% had poor knowledge and 13% had good knowledge. In the posttest, there was minimal improvement, with 19% of subjects having poor knowledge, 64.5% having average knowledge, and 16.5% demonstrating good knowledge.

Overall, Figure 1 indicates a substantial improvement in knowledge levels among antenatal women in the experimental group after the integrated awareness programme, whereas only marginal changes were observed in the control group. This suggests the effectiveness of the intervention in enhancing knowledge regarding prevention and management of Gestational Diabetes Mellitus.

**Mean And SD Of Knowledge Scores On Prevention And Management Of Diabetes In Pregnancy Among Antenatal Women Before And After Integrated Awareness Program In Both Experimental And Control Group**

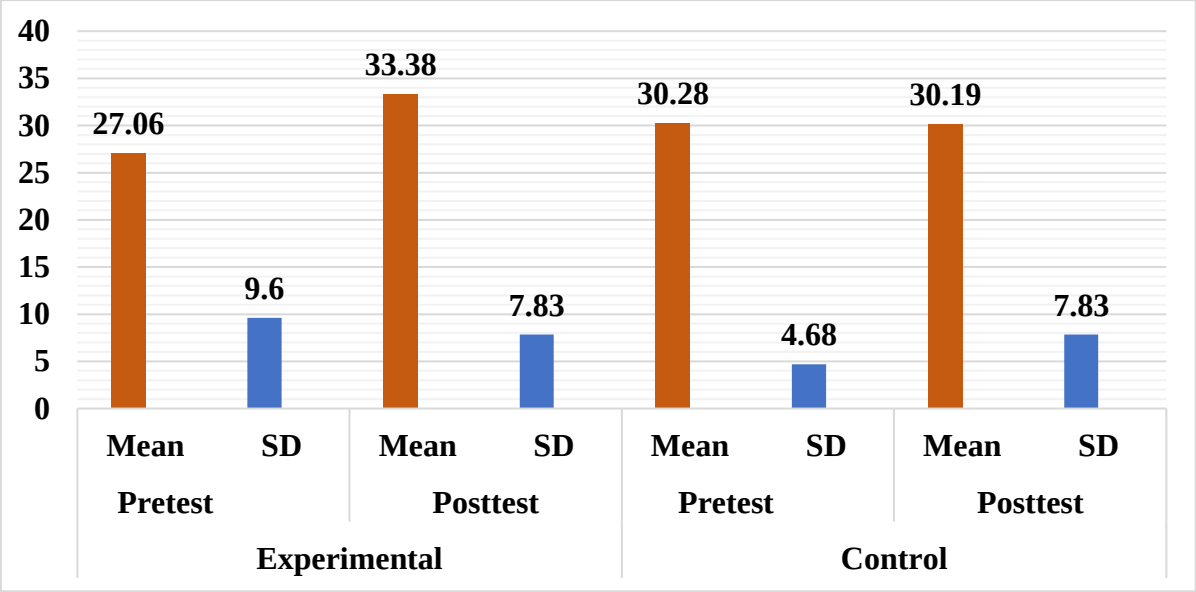


**Figure 2: Simple bar graph showing significance of difference between pretest and posttest knowledge scores and paired t value**

Figure 2 depicts the comparison of mean pretest and posttest knowledge scores along with standard deviation among antenatal women in both experimental and control groups.

In the experimental group, the mean knowledge score increased markedly from 27.06 (SD = 9.6) in the pretest to 33.38 (SD = 7.83) in the posttest. This indicates a substantial improvement in knowledge levels following the intervention, along with a reduction in variability of scores.

In the control group, the mean knowledge score showed only a marginal change from 30.28 (SD = 4.68) in the pretest to 30.19 (SD = 7.83) in the posttest, indicating minimal improvement and increased variability in scores.

Overall, Figure 2 demonstrates that the increase in knowledge scores was more pronounced in the experimental group compared to the control group, suggesting that the integrated awareness programme was effective in enhancing knowledge regarding prevention and management of Gestational Diabetes Mellitus.

**Area Wise Assessment Of Perception On Prevention And Management Of Diabetes In Pregnancy Among Antenatal Women**

**Table 2: Areawise Assessment Of Mean Before And After Test Perception Scores On Diabetes In Pregnancy Of Antenatal Women In Study Group**

| Areas | Pretest | | Post test | | | |
|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | t value | P value |
| **PERCEPTION WITH REGARDS TO GENERAL ASPECTS** | 15.95 | 5.45 | 18.35 | 3.04 | -6.23 | < 0.05 |
| **PERCEPTION WITH REGARDS TO ETIOLOGY** | 14.7 | 7.27 | 17.8 | 5.26 | -6.11 | > 0.05 |
| **PERCEPTION WITH REGARDS TO HABITS** | 19.03 | 8.48 | 22.7 | 5.83 | -8.46 | > 0.05 |
| **PERCEPTION WITH REGARDS TO DIAGNOSTIC TESTS** | 13.7 | 5.34 | 16.51 | 3.53 | -7.71 | > 0.05 |
| **PERCEPTION WITH REGARDS TO PRACTICE** | 16.87 | 7.72 | 21.44 | 6.08 | -9.27 | > 0.05 |
| **PERCEPTION WITH REGARDS TO TREATMENT** | 16.04 | 7.38 | 17.75 | 5.17 | -4.92 | > 0.05 |

Table 2 presents the area-wise assessment of mean pretest and posttest perception scores among antenatal women regarding diabetes in pregnancy.

The findings indicate an overall improvement in perception scores across most domains following the intervention. Perception with regard to general aspects increased from a mean of 15.95 (SD = 5.45) in the pretest to 18.35 (SD = 3.04) in the posttest, and this difference was found to be statistically significant ($t = -6.23$, $p < 0.05$).

Similarly, perception related to etiology improved from 14.7 (SD = 7.27) to 17.8 (SD = 5.26), and perception regarding habits increased from 19.03 (SD = 8.48) to 22.7 (SD = 5.83). In the domain of diagnostic tests, the mean score increased from 13.7 (SD = 5.34) to 16.51 (SD = 3.53). Likewise, perception related to practice improved from 16.87 (SD = 7.72) to 21.44 (SD = 6.08), and treatment-related perception increased from 16.04 (SD = 7.38) to 17.75 (SD = 5.17).

However, the calculated t values for etiology, habits, diagnostic tests, practice, and treatment indicate that these differences were statistically non-significant ($p > 0.05$).

Overall, Table 2 demonstrates an improvement in perception scores among antenatal women following the intervention, although statistically significant improvement was observed only in the domain of general aspects. This suggests partial effectiveness of the intervention in enhancing perception regarding prevention and management of Gestational Diabetes Mellitus.

**Frequency And Percentage Distribution Of Subjects On The Basis Of Perception Regarding Prevention And Management Of Diabetes In Pregnancy And Comparison Of Perception Scores Among Antenatal Women Before And After Integrated Awareness Program**

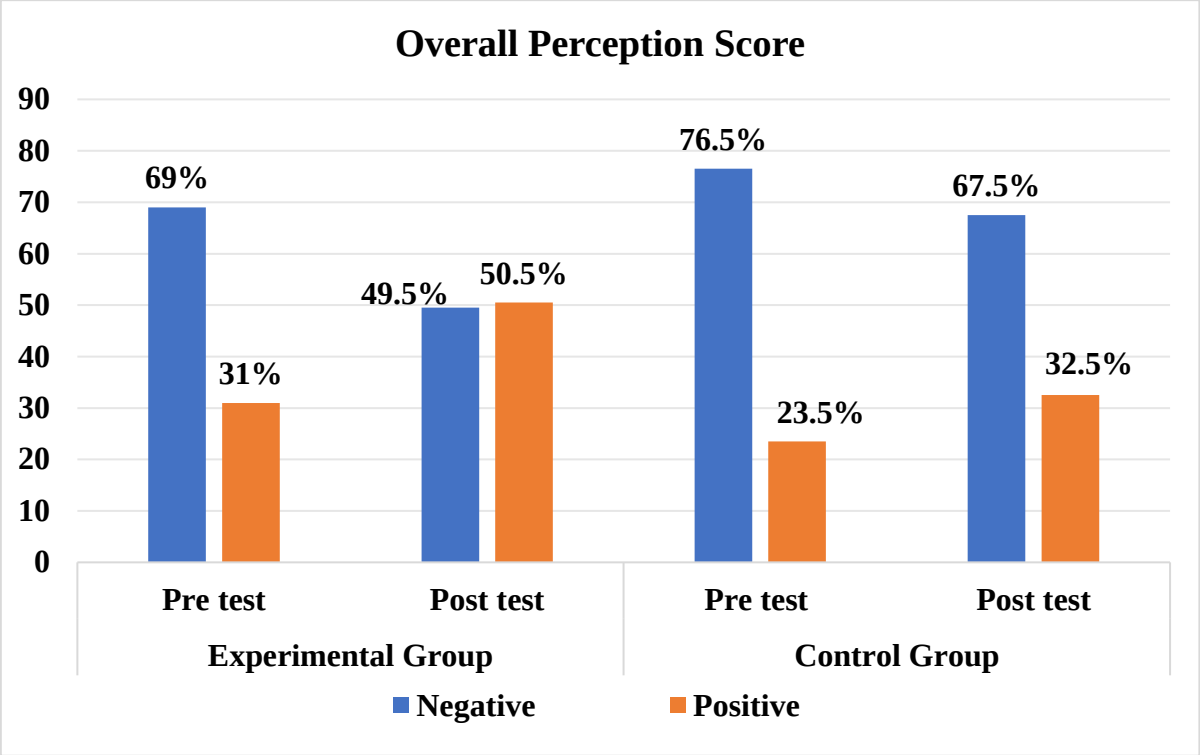


**Figure 3: Simple bar graph showing assessment of perception score on prevention and management of diabetes in pregnancy before and after intervention**

Figure 3 illustrates the assessment of overall perception scores regarding prevention and management of diabetes in pregnancy among antenatal women in both experimental and control groups before and after the intervention.

In the experimental group, the pretest findings show that a majority of subjects (69%) had negative perception, while 31% demonstrated positive perception. Following the intervention, there was a noticeable improvement, with positive perception increasing to 50.5% and negative perception decreasing to 49.5%.

In the control group, the pretest results indicate that 76.5% of subjects had negative perception and only 23.5% had positive perception. In the posttest, a slight improvement was observed, with positive perception increasing to 32.5% and negative perception decreasing to 67.5%.

Overall, Figure 3 indicates that the improvement in perception was more pronounced in the experimental group compared to the control group. This suggests that the integrated awareness programme was effective in enhancing positive perception regarding prevention and management of Gestational Diabetes Mellitus among antenatal women.

**Mean and SD of perception scores on prevention and management of diabetes in pregnancy of antenatal women before and after integrated awareness program in both experimental and control group**

**TABLE 3: Significance of difference between pretest and posttest perception scores and paired t value**

| Parameter | | Experimental | | | | Control | | | | df | | Paired t test | | Table Value | | Inference | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Pretest | | Posttest | | Pretest | | Posttest | | | | | | | | | |
| Perception | | Mean | SD | Mean | SD | Mean | SD | Mean | SD | Experimental | Control | Experimental | Control | Experimental | Control | Experimental | Control |
| | | **95.94** | 25.45 | 114.61 | 18.64 | 94.71 | 21.68 | 104.20 | 22.20 | **199** | **199** | **0.97** | **4.17** | **1.646** | **1.6** | **S** | **S** |

Table 3 presents the significance of difference between pretest and posttest perception scores among antenatal women in both experimental and control groups.

In the experimental group, the mean perception score increased markedly from 95.94 (SD = 25.45) in the pretest to 114.61 (SD = 18.64) in the posttest, indicating a substantial improvement in perception following the intervention. In the control group, the mean perception score also increased from 94.71 (SD = 21.68) to 104.20 (SD = 22.20), but the improvement was comparatively lesser.

The calculated paired t value for the experimental group was 4.17, which is higher than the table value of 1.646 at 199 degrees of freedom, indicating that the difference is statistically significant. Similarly, in the control group, the obtained t value (0.97) also indicates statistical significance at the same level.

Overall, the findings demonstrate that there was a statistically significant improvement in perception scores in both groups; however, the magnitude of improvement was greater in the experimental group. This suggests that the integrated awareness programme was effective in enhancing perception regarding prevention and management of Gestational Diabetes Mellitus among antenatal women.

**Association Of Knowledge Regarding Integrated Awareness Programme On Behavioural Outcomes Regarding Prevention And Management Of Diabetes In Pregnancy Among Antenatal Women With Their Selected Demographic Variables**

**Chi square test for the association of knowledge regarding integrated awareness programme among antenatal women (In Control group) on prevention and management of diabetes in pregnancy with their selected demographic variables**

The findings indicate that knowledge levels (poor, average, and good) among antenatal women were analyzed in relation to selected demographic variables using the chi-square test. Variables such as religion, language, family monthly income, source of information, and gestational age showed a statistically significant association with knowledge scores ($p < 0.05$).

However, variables including age, type of family, total family members, educational status, occupation, husband's occupation, place of residence, dietary habits, obstetric history, and laboratory parameters were found to be statistically non-significant ($p > 0.05$).

Overall, only selected socio-demographic variables significantly influenced knowledge regarding prevention and management of Gestational Diabetes Mellitus among antenatal women in the control group.

**Association of Knowledge regarding prevention and management of diabetes in pregnancy among antenatal women with their selected socio-demographic variables in experimental group**

The findings indicate that religion, family monthly income, occupation, husband's occupation, family history of diabetes, and gestational age showed a statistically significant association with knowledge scores ($p < 0.05$).

However, variables such as age, language, type of family, total family members, educational status, place of residence, source of information, dietary habits, obstetric history, and laboratory values were found to be statistically non-significant ($p > 0.05$).

Overall, selected socio-demographic and clinical variables significantly influenced knowledge regarding prevention and management of Gestational Diabetes Mellitus among antenatal women in the experimental group.

**Chi square test for the association of perception regarding integrated awareness programme among antenatal women (control group) on prevention and management of diabetes in pregnancy with their selected demographic variables in control group.**

The findings indicate that among all selected variables, family history of diabetes mellitus showed a statistically significant association with perception scores ($p < 0.05$).

However, variables such as age, religion, language, type of family, total family members, educational status, family income, occupation, husband's occupation, place of residence, source of information, dietary habits, obstetric history, and laboratory parameters were found to be statistically non-significant ($p > 0.05$).

Overall, only family history of diabetes significantly influenced perception regarding prevention and management of Gestational Diabetes Mellitus among antenatal women in the control group.

**Association of Perception regarding prevention and management of diabetes in pregnancy among antenatal women (experimental group) with their selected socio-demographic variables**

The findings reveal that age, religion, total family members, educational status, family monthly income, and source of information showed a statistically significant association with perception scores ($p < 0.05$).

However, variables such as language, type of family, occupation, husband's occupation, place of residence, family history of diabetes, dietary habits, obstetric history, and laboratory parameters were found to be statistically non-significant ($p > 0.05$).

Overall, selected socio-demographic variables significantly influenced perception regarding prevention and management of Gestational Diabetes Mellitus among antenatal women in the experimental group.

## DISCUSSION

The present study assessed the effectiveness of an integrated awareness programme on knowledge and perception regarding prevention and management of diabetes in pregnancy among antenatal women. The findings revealed a significant improvement in knowledge and perception in the experimental group compared to the control group, indicating the effectiveness of the intervention.

The improvement in knowledge observed in the present study is supported by findings from **Dissassa et al. (2023)**, who reported that a large proportion of pregnant women had inadequate knowledge regarding

Gestational Diabetes Mellitus, emphasizing the need for structured educational interventions.[11] Similarly, **Nguyen et al. (2024)** found that only 36.5% of antenatal women had adequate knowledge about GDM, indicating a significant knowledge gap.[12] The present study demonstrated a marked increase in posttest knowledge scores, which aligns with these findings and confirms that awareness programmes can effectively improve maternal knowledge.

In terms of perception, the present study showed a significant improvement following the intervention. This is consistent with the findings of **Chikeme et al. (2024)**, who reported that antenatal women had varying levels of perception and awareness regarding GDM, and that educational interventions significantly improved perception levels ($p < 0.05$).[13] Similarly, **Alenezi et al. (2025)** reported that only a moderate level of awareness and perception was observed among women, highlighting the importance of targeted health education programmes.[14] These findings are in agreement with the present study, where perception improved significantly after the implementation of the integrated awareness programme.

The association between socio-demographic variables and knowledge and perception observed in the present study is also supported by previous research. **Alenezi et al. (2025)** found that factors such as education level, income, and gestational age were significantly associated with awareness of GDM. [14]This supports the present findings, where selected demographic variables showed significant association with knowledge and perception scores.

Furthermore, the minimal improvement observed in the control group highlights the importance of structured educational interventions. **Magon et al. (2018)** reported that without proper health education, knowledge and awareness regarding diabetes in pregnancy remain inadequate among antenatal women.[15] This reinforces the importance of implementing structured awareness programmes in antenatal care settings.

Overall, the findings of the present study are consistent with existing literature, demonstrating that integrated awareness programmes are effective in improving knowledge and perception regarding prevention and management of gestational diabetes mellitus. Such interventions play a vital role in promoting early detection, improving self-care practices, and reducing maternal and fetal complications.

## CONCLUSION

The present study was conducted to assess the effectiveness of an integrated awareness programme on behavioural outcomes regarding prevention and management of Gestational Diabetes Mellitus among antenatal women. The findings of the study revealed that there was a significant improvement in knowledge and perception among antenatal women in the experimental group as compared to the control group following the intervention.

The study demonstrated that prior to the intervention, most antenatal women had inadequate knowledge and negative perception regarding diabetes in pregnancy. However, after implementation of the integrated awareness programme, there was a marked increase in knowledge levels and a positive shift in perception among participants. The statistical analysis further confirmed that the improvement in the experimental group was significant, while minimal or no significant changes were observed in the control group.

Additionally, selected socio-demographic variables were found to have a significant association with knowledge and perception levels. This indicates that factors such as education, income, and access to information play an important role in influencing behavioural outcomes.

Overall, the study concludes that the integrated awareness programme was effective in enhancing knowledge and perception, thereby promoting better preventive and management practices among antenatal women.

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**Conflict of Interest:** The authors declare no conflict of interest.

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