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# Effectiveness of an Interventional Package on Knowledge Regarding Gestational Diabetes Mellitus among Antenatal Mothers in Selected Rural Areas at Udaipur, Rajasthan.

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## ABSTRACT
For more than a century, it has been known that diabetes antedating pregnancy can have severe adverse effects on foetal and neonatal outcome. As early as in the 1940s, it was recognized that women who developed diabetes years after pregnancy had experienced abnormally high foetal and neonatal mortality. By the 1950s the term "gestational diabetes" was applied to what was thought to be a transient condition that affected foetal outcomes adversely, then abated after delivery in the 1980s those cut-off points were adapted to modern methods for measuring glucose and applied to the modern definition of gestational diabetes glucose intolerance with onset or first recognition during pregnancy Globally, gestational diabetes mellitus (GDM) affects a significant portion of pregnant women, with approximately 20.4 million cases of hyperglycaemia during pregnancy recorded in 2019, and 83.6% of these cases attributed to GDM. The global prevalence of GDM has seen a notable rise, especially in low- and middle-income countries due to factors such as changing lifestyles, increasing obesity, and urbanization. Regions like China, India, and other parts of South Asia report particularly high GDM rates, driven by these socioeconomic and lifestyle shifts. As per National Family Health Survey (NFHS), India has witnessed a rising prevalence of gestational diabetes mellitus (GDM), as highlighted in a study analysing data from the prevalence increased from 0.80% in 2019–21. This study, covering a large sample of pregnant women across the country, identified that GDM is more common among older women, particularly those with higher Body Mass Index (BMI), thyroid disorders, or heart disease. Both rural and urban areas have seen increases in GDM cases, with states like Kerala, Meghalaya, and Goa showing significantly higher rates."**Effectiveness of an Interventional Package on Knowledge Regarding Gestational Diabetes Mellitus among Antenatal Mothers in Selected Rural Areas at Udaipur, Rajasthan" Objectives:** To assess the pre-test and post-test knowledge scores regarding gestational diabetes mellitus among antenatal mothers. To evaluate the effectiveness of interventional packages on knowledge scores regarding gestational diabetes mellitus among antenatal mothers. To find out the association between pretest knowledge scores with selected socio demographic variables. The research approach adopted for this Study was quantitative research approach. A one group pre-test post-test research design was used for this study. Formal written permission was obtained from the authorities to conduct the study and informal consent was obtained from the antenatal mothers prior to the data collection process. The investigator selected 80 samples by non probable convenient sampling technique. A structured knowledge questionnaire was used for data collection. The data was analyzed using descriptive and inferential statistics. The finding of the study revealed the pre-test and post-test knowledge scores regarding gestational diabetes mellitus among 40 antenatal mothers in the experimental group and 40 antenatal mothers in the control group. In experimental group In the pre-test 42.5 % antenatal mothers had inadequate knowledge, majority 57.5 % , antenatal mothers exhibited moderately adequate knowledge and none of the mothers (0%) achieved an adequate knowledge level. In the post-test, the number of mothers with inadequate knowledge decreased to 17.5%, while those with moderately adequate knowledge increased to 67.5%. And 15.0 % antenatal mothers had adequate

knowledge after the intervention. While in the control group in the pre-test, 37.5 % antenatal mothers had inadequate knowledge, majority 57.5 %, antenatal mothers had moderately adequate knowledge and only 5.0 % antenatal mothers had adequate knowledge. The calculated t-value for the comparison was 2.638, and the p-value was 0.012, indicating a statistically significant improvement in knowledge after the intervention in experimental group. The calculated t-value was 1.160, and the p-value was 0.253, indicating that the difference in knowledge scores between the pre-test and post-test in the control group was not statistically significant.

***KeyWords**: Effectiveness, Interventional package*, Knowledge, Gestational Diabetes, Antenatal mothers.

***Materials and methods:*** A quantitative research approach was used for this study. The study was carried out in 3 selected health centers of Udaipur district. The sample comprised of 80 antenatal mothers. Sample was selected by non probable convenient sampling technique. The data collection was done from 13/09/2024 to 23/09/2024. Formal written permission was obtained from the authorities to conduct the study and informed consent was obtained from the antenatal mothers prior to the data collection process. A structured knowledge questionnaire was used for data collection. The data was analyzed using descriptive and inferential statistics.

***Results:*** reveals the pre-test and post-test knowledge scores regarding gestational diabetes mellitus among 40 antenatal mothers in the experimental group and 40 antenatal mothers in the control group. In experimental group In the pre-test 42.5 % antenatal mothers had inadequate knowledge, majority 57.5 %, antenatal mothers exhibited moderately adequate knowledge and none of the mothers (0%) achieved an adequate knowledge level. In the post-test, the number of mothers with inadequate knowledge decreased to 17.5%, while those with moderately adequate knowledge increased to 67.5 %. And 15.0 % antenatal mothers had adequate knowledge after the intervention. While in the control group in the pre-test, 37.5 % antenatal mothers had inadequate knowledge, majority 57.5 %, antenatal mothers had moderately adequate knowledge and only 5.0 % antenatal mothers had adequate knowledge. There was significant association between the knowledge score and socio demographic variables such as age in years ($\chi^2$= 9.02*), Type of family ($\chi^2$= 11.65*), family monthly income ($\chi^2$=11.69) Gestational age ($\chi^2$= 12.58*), Previous history of GDM ($\chi^2$=7.09*) and Source of information ($\chi^2$=12.09) and the chi square value was greater than the table value which indicates that there was significant association between the pre test knowledge score with these demographic variables at 0.001 level of significance. Whereas variables like Gravida status ($\chi^2$=2.06) and Dietary pattern ($\chi^2$= 2.99*) was found non significant as calculated chi square value was less than the table value which indicates that there was no significant association between the pre test knowledge score with these socio demographic variables at 0.32 level of significance.

***Conclusion:*** The findings of this study suggest the need for educating the antenatal mothers about gestational diabetes mellitus. They must be motivated to adapt safety measures to promote and protect their own health and well being of future generation. Interventional package effectively enhance knowledge on complex topics like gestational diabetes mellitus, especially among lay populations. Further studies could examine long-term retention and broader demographic applicability.

***KeyWords**: Effectiveness, Interventional package*, Knowledge, Gestational Diabetes, Antenatal mothers.

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# INTRODUCTION

Gestational Diabetes Mellitus (GDM) is defined as Impaired Glucose Tolerance (IGT) with onset or first recognition during pregnancy. Worldwide, one in 10 pregnancies is associated with diabetes, 90% of which are GDM. Undiagnosed or inadequately treated GDM can lead to significant maternal &foetal complications pregnancy.There are 2 subtypes of gestational diabetes (diabetes which began during pregnancy):Type A1: abnormal oral glucose tolerance test (OGTT) but normal blood glucose levels during fasting and 2 hours after meals; diet modification is sufficient to control glucose levels Type A2: abnormal OGTT compounded by abnormal glucose levels during fasting and/or after meals; additional therapy with insulin or other medications is required.

The presence of fasting hyperglycemia (>105 mg/dl or >5.8 mol/l) may be associated with an increase in the risk of intrauterine fetal death during the last 4–8 weeks of gestation. Although uncomplicated GDM with less severe fasting hyperglycemia has not been associated with increased prenatal mortality, GDM of any severity increases the risk of fetal macrosomia. Neonatal hypoglycemia, jaundice, polycythemia, and hypocalcaemia may complicate GDM as well. Typically women with gestational diabetes exhibit no symptoms but some women may demonstrate increased thirst, increased urination, fatigue, nausea and vomiting, bladder infection, yeast infections and blurred vision.

Diabetes can cause problems during pregnancy for women and their developing babies. Poor control of diabetes during pregnancy increases the chances for birth defects and other problems for the pregnancy. It can also cause serious complications for the woman. Proper health care before and during pregnancy can help prevent birth defects and other health problems Maternal overweight and obesity, later age at childbearing, previous history of GDM, family history of type 2 diabetes mellitus and ethnicity are major GDM risk factors. Diagnosis is usually performed using an oral glucose tolerance test (OGTT), although a non-fasting, glucose challenge test (GCT) is used in some parts of the world to screen women for those requiring a full OGTT. Dietary modification and increased physical activity are the primary treatments for GDM, but pharmacotherapy, usually insulin, is used when normoglycaemia is not achieved. Oral hypoglycaemic agents, principally metformin and glibenclamide (glyburide), are also used in some countries. Treatment improves immediate pregnancy outcomes, reducing excess fetal growth and adiposity and pregnancy-related hypertensive disorders. GDM increases the risk of long-term complications, including obesity, impaired glucose metabolism and cardiovascular disease, in both the mother and infant. Optimal management of mother and infant during long-term follow-up remains challenging, with very limited implementation of preventive strategies in most parts of the world.

The need for educational programs in antenatal care is critical to improving awareness and knowledge about gestational diabetes mellitus (GDM) and its associated risks for both mothers and babies. Many women may not fully understand the implications of GDM or the lifestyle changes required to manage it effectively, leading to preventable complications.

Educational programs can equip pregnant women with essential information about blood sugar monitoring, diet management, physical activity, and the importance of regular check-ups to reduce immediate risks such as preeclampsia and caesarean sections. Moreover, such programs can provide knowledge on long-term health risks, including type 2 diabetes and cardiovascular diseases, allowing women to take proactive steps toward reducing these risks after pregnancy. This, in turn, can help reduce complications for the new-born. Early intervention through antenatal education plays a vital role in preventing and managing GDM, ensuring better health outcomes for both mother and child. Such initiatives are essential in fostering a deeper understanding of GDM and encouraging long-term health improvements.13

In conclusion the findings of this study suggest the need for educating the antenatal mothers about GDM. They must be motivated to adapt safety measures to promote and protect their own health and well being of future generation. Structured interventional package may effectively enhance knowledge on complex topics like GDM, especially among lay populations. Further studies could examine long-term retention and broader socio demographic applicability.

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**MATERIALS AND METHODS**

The research employs a quantitative research approach, utilizing one group pre-test post-test research design. Conducted over 2 weeks in the selected areas of Udaipur district (Raj.), the study targets antenatal mothers of selected health centers of Udaipur district (Raj.). The target population encompasses selected areas of Udaipur (Raj.) while the accessible population specifically includes antenatal mothers getting services at health centers in these areas. A sample size of 80 antenatal mothers from selected areas of Udaipur district (Raj.) was selected using non probable convenient sampling technique. This approach allows for a focused investigation into the knowledge and adoption of preventive measures by antenatal mothers regarding GDM, providing appropriate strategy, discipline and knowledge regarding healthy lifestyle is essential in order to retain the health of the antenatal mothers as well as future generation. Interventional package is considered as an important and powerful tool a nurse would possess to give comprehensive health care services to the antenatal mothers and promoting sustainable practices in the region.

## RESULTS

Based on socio demographic data findings, Majority of the respondents (37 %) were in the age group of 22-25 years in experimental group and (40 %) were in the age group of 22-25 years in control group. In the variable Type of family majority of respondents (47.5 %) were from extended family in experimental group and (40 %) were from extended family in control group. Equally respondents (50 %) had family monthly income of Rs.5001 to Rs. 10000. In the variable gravid status equally respondents (62.5 %) were from multi gravida. In the variable gestational age majority of the respondents (32.5 %) were from 25-28 weeks in experimental group and (30 %) were from 21-24 weeks in control group, Equally respondents (62.5 %) had mixed type of dietary pattern both in experimental group and control group. In the variable previous history of GDM equally (75 % ) respondents had no previous history of GDM both in experimental group and control group and in the variable source of information equally (50 % ) respondents had information form friends & relatives both in experimental group and control group. Result findings reveals the pre-test and post-test knowledge scores regarding gestational diabetes mellitus among 40 antenatal mothers in the experimental group and 40 antenatal mothers in the control group. In experimental group In the pre-test 42.5 % antenatal mothers had inadequate knowledge, majority 57.5 %, antenatal mothers exhibited moderately adequate knowledge and none of the mothers (0%) achieved an adequate knowledge level. In the post-test, the number of mothers with inadequate knowledge decreased to 17.5%, while those with moderately adequate knowledge increased to 67.5 %. And 15.0 % antenatal mothers had adequate knowledge after the intervention. While in the control group in the pre-test, 37.5 % antenatal mothers had inadequate knowledge, majority 57.5 %, antenatal mothers had moderately adequate knowledge and only 5.0 % antenatal mothers had adequate knowledge. There was significant association between the knowledge score and socio demographic variables such as age in years ($\chi^2$= 9.02*), Type of family ($\chi^2$= 11.65*), family monthly income ($\chi^2$=11.69) Gestational age ($\chi^2$= 12.58*), Previous history of GDM ($\chi^2$=7.09*) and Source of information ($\chi^2$=12.09) and the chi square value was greater than the table value which indicates that there was significant association between the pre test knowledge score with these demographic variables at 0.001 level of significance. Whereas variables like Gravida status ($\chi^2$=2.06) and Dietary pattern ($\chi^2$= 2.99*) was found non significant as calculated chi square value was less than the table value which indicates that there was no significant association between the pre test knowledge score with these socio demographic variables at 0.32 level of significance. These findings underscore the importance of demographic factors in understanding knowledge levels regarding certain aspects of GDM among antenatal mothers.

## CONCLUSION

Socio demographic data reveals significant insights in antenatal mothers characteristics and knowledge levels. The majority of respondents were aged 22-25 years and modest family monthly income and majority had no previous information on GDM. After implementation of interventional package most of the antenatal mothers had moderate adequate knowledge on various aspects of GDM. These findings of the study could be made use by all nursing personnel, medical, allied science as well as employees of health industry. The health team members could arrange health assessment camps in the certain rural areas in the region to assess the risk of related consequences periodically. The nursing students could organize health education programme for the antenatal mothers about safety measures during their community visit. The knowledge gained from this study may be utilized while conducting health awareness programs. Development of educational intervention on safety and certain preventive measures regarding GDM will reduce negative consequences among high risk group. The community leaders, health workers and mass media to be used to impart knowledge on GDM related complications and essential early preventive measures for the population.

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