

Effects of Health Education Guidelines on Selfcare Knowledge among Women with Gestational Diabetes Mellitus

Sehrish Ashraf¹, Muhammad Afzal², Adnan Yaqoob³, Sadia Khan⁴

¹ MS Scholar, Lahore School of Nursing, The University of Lahore, Lahore Pakistan

Research idea and write-up

² Professor, Lahore School of Nursing, Faculty of Allied Health Sciences, The University of Lahore, Lahore Pakistan

Critical Review and analysis

³ Assistant Professor, Lahore School of Nursing, Faculty of Allied Health Sciences, The University of Lahore, Lahore Pakistan

Literature Review and data analysis

⁴ Senior Lecturer, Department of Physical Therapy Nursing, The University of Lahore, Lahore Pakistan

Data analysis and interpretation

CORRESPONDING AUTHOR

Sehrish Ashraf

MS Scholar, Lahore School of Nursing, The University of Lahore, Lahore Pakistan
Email: sehrisha681@gmail.com.

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ABSTRACT

Background: Gestational diabetes mellitus (GDM) is a worldwide public health problem Due to the fact that the frequency of GDM is unexpectedly increasing worldwide and that the condition has harmful both a short term and long-term impact between the mother and the unborn child. As a result, adequate self-care knowledge, practices and effective treatment of GDM can help to lower problems and enhance both the mother's and her children's pregnancy outcomes. **Objective:** The present study objective was to assess the effects about health education guidelines on self-care knowledge amongst pregnant women with GDM. **Study Design:** Quasi-experimental study. **Settings:** Obstetric & Gynecological Department's Antenatal units at Sir Ganga Ram Hospital Lahore, Pakistan. **Duration:** March 15, 2022 to December 10, 2022. **Methods:** A purposive sample of 72 pregnant women with GDM were randomly allocated to group A and group B through envelop method. Women's knowledge regarding GDM was assessed through "Assessment of women's self-care knowledge" before and after intervention. Data was entered and analyzed by SPSS 25.0. The assessment of knowledge among both groups before and after intervention was compared by paired sample t test. **Results:** The study results revealed that after the end of the educational sessions, the intervention group reported significant improvement in knowledge regarding GDM ($p=0.00$). **Conclusion:** The intervention group's level of GDM knowledge increased as a result of the nursing intervention, which is indicative of positive consequences.

Keywords: Gestational diabetes mellitus, Self-care knowledge, Health education, Public health problem.

INTRODUCTION

The most common pregnancy-related complication in the world is gestational diabetes mellitus (GDM), along with it is also a major public health issue, roughly one in every six pregnancies worldwide is affected by this.¹ The International Diabetes Federation (IDF) estimates that 223 million women (20-79 years old) already have diabetes, and that number is anticipated to reach 343 million by 2045.²

GDM is a condition of glucose tolerance that develops during pregnancy and is associated with beta cells' failure to secrete enough insulin to match the increased insulin tolerance.³ Diabetes diagnosed during the 2nd or 3rd trimester of pregnancy is known as gestational diabetes mellitus.⁴ The global prevalence of gestational diabetes is increasing, particularly in Asia. It is impacted by a wide

range of environmental and genetic variables, including age, obesity, and a high-fat diet.⁵

GDM can be influenced by various risk factors, such as advanced maternal age, dietary habits, obesity, ethnicity, family history of diabetes, macrosomia, history of spontaneous abortions, and unexplained stillbirths.⁶ Complications for both mothers and newborns accompany GDM, which often goes away after birth.⁷ However, throughout the rest of their lives, both the mother and the kid are at risk of developing type II diabetes. GDM prevalence is increasing, followed by type II diabetes prevalence rising.⁸

Despite receiving little attention, GDM increases maternal mortality and morbidity in low- and middle-income nations.⁹ GDM has severe adverse impacts on women, children, families, regions, and even nations. The third and fourth Sustainable Development Goals

objectives—to reduce maternal, neonatal, and child morbidity and death rates by 2030—are also addressed through addressing GDM concerns.¹⁰ One of the things that prevents pregnant women from seeking or accessing healthcare treatments is a lack of knowledge.¹¹

If pregnant women are aware of the illness and use the proper self-care techniques while carrying a child, the prevalence of GDM can be decreased. It is crucial that all expectant women learn about GDM, including its origins, symptoms, consequences, and prevention. The role of knowledge is crucial in shaping individuals' understanding of health concepts, including medical conditions. Research indicates that a lack of awareness about a particular condition contributes to a limited comprehension of medical information. As a result, individuals may not adhere to recommended treatment techniques, leading to unfavorable outcomes during pregnancy. Additionally, cultural influences play a significant role in determining how individuals, particularly pregnant women, seek healthcare services.¹¹

Self-care practices for gestational diabetes encompass a range of actions, including foot inspections and self-monitoring of blood sugar levels. However, women with gestational diabetes often engage in limited self-care, indicating potential inadequacies in training initiatives provided by public health centers and diabetes clinics. The recurring failure in adequately addressing etiological investigations and incorporating them into educational design, regardless of established social cognitive theories as a conceptual framework, is a notable contributing factor.¹²

Community health nurses offer pertinent information to pregnant women with the goal of increasing and correcting their knowledge as well as encouraging positive behavior in gestational diabetic women. Empowering women with diabetes to have a positive attitude. These women will receive advice and support that will enable them to lower their risks of adverse pregnancy outcomes for mother and child as well as prevent the complications of disease through proper disease management. Strategies and skills used by healthcare practitioners can encourage healthy behavioral changes and self-care behaviors among expecting mothers who have gestational diabetes.¹³

The objective of the study was to assess the effects about health education guidelines on self-care knowledge amongst pregnant women with GDM.

METHODS

A quasi-experimental study was carried out in the antenatal units of the obstetric department at Sir Ganga Ram Hospital in Lahore, Pakistan. The researchers employed purposive sampling techniques and

determined a sample size of 72 based on a 95% confidence interval and an 80% test power using the power analysis equation. Pregnant females aged range (18-40) years, Females in 2nd trimester of pregnancy, Females with any gravida, diagnosed with GDM. Females with type 1 or type 2 diabetes mellitus, Pregnancy with more than one fetus, Females with Known major fetal anomaly from March 15, 2022 to December 10, 2022. They were randomly allocated in the group A and group B through envelop method. 36 females were allocated to the intervention group & 36 in the control group. Every pregnant woman with GDM in the interventional group who was admitted to the hospital's obstetric department or who attended an antenatal follow-up appointment following the introduction of the sessions was subjected to it. This was done every two weeks until delivery. Based on information gathered through an interview schedule to gauge women's awareness of the GDM "evaluation phase" of self-care. For the interventional group, the researcher prepared, planned, and carried out suitable health education programs, whereas the control group was given access to standard hospital treatment. Intervention groups was given 4 weeks of intervention in the form of lecture. Each session last for 40 minutes. Intervention was conduct at conference room of hospital

To evaluate women's knowledge of gestational diabetes mellitus (GDM), an assessment tool called "Assessment of Women's Self-Care Knowledge" was utilized before and after the intervention (1). The scoring system for assessing women's GDM knowledge involved assigning a score of 1 for correct answers and 0 for incorrect answers. By summing up the scores for each woman, the self-care knowledge scores ranged from 0 to 18. To obtain a percent score, the maximum score was divided by the total score. Based on the total knowledge score, the levels were categorized as follows: poor level of knowledge (0-49%), fair level of knowledge (50-74%), and good level of knowledge (75-100%).

The data collected was entered into SPSS 25.0 software and analyzed accordingly. The comparison of knowledge assessment between both groups (before and after intervention) was conducted using the paired sample t-test. A p-value of less than 0.05 was considered statistically significant.

RESULTS

Illustrates overall standard deviation and mean age for women within the study group were, respectively, 29.69 and 4.427 years in terms of socio-demographic features of individuals. The table also displays the level of education, with 15.3% of the population being illiterate, while 41.7% of them completed secondary education and 26.4% completed intermediate education. However, only 16.7% of them possessed a university degree. Concerning the

occupation 68.1% women of the study group were housewives and the rest of them were working. While 59.8% women's husband were employed, only 40.2% were unemployed. Table 1

Table 1: Shows the socio-demographics characteristics of the study groups

Socio-demographic data	Study group (n=72)	
	n	%
Age (years)		
18-24	2	2.8%
25-29	18	25.0%
30-34	38	52.8%
35-40	14	19.4%
Range	20-38	
Mean +S. D	31.28 ± 4.036	
Education level		
Illiterate	11	15.3%
Secondary	30	41.7%
Intermediate	19	26.4%
University	12	16.6%
Female Occupation		
Housewife	49	68.1%
Working	23	31.9%
Husband occupation		
Employed	43	59.8%
Unemployed	29	40.2%

Table 2 showed the reproductive characteristics of expectant mothers; 4.1% were nulligravida, 63.9% were pregnant twice or less, but none of the expectant mothers had more than five pregnancies. In terms of parity, 58.3% of women have two to three children. In terms of the last birth method, 68.0% of women had a cesarean section as opposed to vaginal delivery, and most of the 61.1% of study group women had had their last pregnancy within the previous two years.

Table 2: Pregnant women are distributed according to their reproductive profile during pregnancy (n=72)

Gravida	n	%
Nulligravida	3	4.1%
1	12	16.6%
2 -3	46	63.9%
>3	11	15.2%
History of parity		
Nullipara	3	4.1%
1	20	27.7%
2 -3	42	58.3%
>3	7	9.7%
Type of previous delivery		
Normal Vaginal delivery	20	27.7%
Caesarean section	49	68.0%
Nulligravida	3	4.1%
Last pregnancy interval		
Less the 2 years	44	61.1%
More than 2 years	25	34.7%
Nullipara	3	4.1%

Table 3 showed the existence of GDM risk factors, indicating that only 2.8% of women's BMIs were considered normal, 19.4% of women were overweight, and the 77.6% were obese had high BMIs BMI>30. In the research group, family history of diabetes mellitus (77.2%) and self-reported GDM (68.0%) were the most frequent risk factors for GDM among women. However, among the women in the investigated groups, additional risk factors for GDM included recurrent miscarriages, a history of pre-eclampsia, PPH, GDM, macrocosmic infants, and polyhydramnios.

Table 3: Distribution of women according to the presence of risk factors of GDM

BMI	Normal weight	2	2.8%
	Overweight	14	19.4%
	Obese	56	77.8%
Family history of diabetes	Yes	49	68.0%
	No	23	31.9%
List of family members	Parents	38	44.9%
	Siblings	5	10.2%
	Grandparents	6	12.2%
Previous history of GDM		25	34.7%
History of pre-eclampsia		3	4.1%
History of polyhydramnios		9	12.5%
History of PPH		5	6.9%
History of abortion		1	2.7%
History of macrosomia		19	26.3%

Table 4 revealed that, prior to the introduction of the health educational guidelines, most of the research group's participants showed significant difference self-care knowledge 11.0+2.59 (P-value <0.05).

Table 4: Paired sample test of the pre-intervention and post-intervention group

	Paired Differences				t	df	P-value
	Mean	SD	95% Confidence interval of the difference				
			Lower	Upper			
Pre and Post-intervention group	-11.00	2.59670	-11.878	-10.121	-25.417	35	.000

SD: Standard Deviation

DISCUSSION

Pregnancy-related gestational diabetes mellitus (GDM) significantly raises both the mother's and the child's risk of negative health consequences. As a result of GDM's negative effects, prenatal care, childbirth, and postpartum recovery all incur increased medical expenditures.

Therefore, educating women with GDM about their health throughout pregnancy is ideal. In order to determine if educational sessions would have an

influence on these variables and how much information women had about gestational diabetes, 72 women were included in the study's sample. Pre and Post tests were performed by every woman to evaluate her knowledge towards gestational diabetes. In order to describe the findings, the following frame of references was used: demographic information; obstetric and reproductive information; 3) the impact of a session on gestational diabetes education on understanding of self-care.

Health education plays a crucial role as an initial step in the management of diabetes, including gestational diabetes mellitus (GDM). It serves as a strategy to assist women in understanding and implementing practical self-care measures for GDM. Moreover, health education aims to improve fetal and maternal outcomes, taking into consideration the socio-demographic information and reproductive background of the female participants within the research group. Based on the findings of the present study, women in the research group had a mean age and standard deviation of 29.69 and 4.427 years, respectively. However, just 41.7% of women completed their secondary education. In terms of occupation, 68.1% of the research group's women were employed outside the home. Only 40.2% of women's husbands were unemployed while 59.8% of them held jobs. 63.9% of women had one or more pregnancies, however none of the pregnant women had more than five.

In terms of parity, 58.3% of women have two to three children. Regarding the type of previous birth, the majority of women—68.0% of them—had cesarean sections. With a mean BMI of 28.95, the majority (52.5%) were overweight while 33.5% were obese. One risk factor for GDM is obesity. The BMI range for overweight is 25 to 29.9 kg/m² and for obesity is over 30 kg/m², respectively.¹⁴ These results are predicted to raise women's risk for gestational diabetes, and education for early, accurate prenatal detection of GDM as well as efficient care for successful outcomes are advised.

On the other hand, it was discovered that polyhydramnios, pre-eclampsia, a prior macrosomic infant, and family history of DM were additional risk factors that appeared to raise women's risk for GDM. These results are corroborated by¹⁵ They discovered that 76.0% and 72.0% of their tested sample had a body mass index that indicated they were fat. Additionally, they noted that women with a family history of diabetes, a BMI above 30, a history of having macrosomic infant, a history of abortion, or a prior diagnosis of GDM had a higher prevalence of the disease. The similarity between these findings and those of the current study may be explained by the association between obesity and the onset of Type 2 DM and GDM, which is brought on by increasing peripheral insulin resistance.¹⁶

The study revealed that a significant portion of the female participants within the study group had a limited understanding of gestational diabetes mellitus (GDM) prior to the health education sessions. This low level of understanding persisted both before and after the implementation of the health education sessions. However, following the health education sessions, an impressive 90% of the research group demonstrated a good level of understanding. The score difference before and after the GDM health education sessions was found to be statistically significant with a p-value of 0.00. These outcomes are similar with that the majority women had low overall scores prior to the education, and after the intervention all research subjects had high overall scores.¹⁷

Additionally, these outcomes coincide with a research by¹⁸ they noted that most of the participants had low levels of knowledge before adopting a program to educate them on GDM, with the study group being significantly more knowledgeable than the pre-self-care knowledge, with a difference between pre and post that is statistically significant (P=0.00).

CONCLUSION

According to the current study's findings, the knowledge level of the study group, were improved after implementation of health education.

LIMITATIONS

In light of the study findings, the following are the limitations of study

The study was conducted in a single public hospital therefore cannot generalize the results.

SUGGESTIONS / RECOMMENDATIONS

The study recommended regular and continuous health educational programs should be conducted for pregnant women to improve the self-care knowledge and complications regarding GDM in different settings

Educational programs including workshops, conferences, training program should be arrange for nurses, especially midwives, so that they can educate pregnant women related to GDM.

CONFLICT OF INTEREST / DISCLOSURE

The authors declare no conflict of interest.

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REFERENCES

1. Goyal A, Gupta Y, Singla R, Kalra S, Tandon N. American Diabetes Association "Standards of Medical Care—2020 for Gestational

- Diabetes Mellitus": A Critical Appraisal. *Diabetes Therapy*. 2020; 11(8):1639-44.
2. Craig L, Sims R, Glasziou P, Thomas R. Women's experiences of a diagnosis of gestational diabetes mellitus: a systematic review. *BMC pregnancy and childbirth*. 2020; 20(1):1-15.
3. Solis-Herrera C, Triplitt C, Reasner C, DeFronzo RA, Cersosimo E. Classification of diabetes mellitus. *Endotext* [Internet]. 2018.
4. Fuller H. The Role of the Metabolome in the Development of Gestational Diabetes Mellitus in High-Risk Minority Women: A Causal Investigation: University of Leeds; 2022.
5. Giannakou K, Evangelou E, Yiallourous P, Christophi CA, Middleton N, Papatheodorou E, et al. Risk factors for gestational diabetes: An umbrella review of meta-analyses of observational studies. *PLoS One*. 2019; 14(4):e0215372.
6. Myers CA, Slack T, Martin CK, Broyles ST, Heymsfield SB. Change in obesity prevalence across the United States is influenced by recreational and healthcare contexts, food environments, and Hispanic populations. *PloS one*. 2016; 11(2):e0148394.
7. Deputy NP, Kim SY, Conrey EJ, Bullard KM. Prevalence and changes in preexisting diabetes and gestational diabetes among women who had a live birth—United States, 2012–2016. *Morbidity and Mortality Weekly Report*. 2018; 67(43):1201.
8. Kapur A, Hod M. Maternal health and non-communicable disease prevention: An investment case for the post COVID-19 world and need for better health economic data. *International Journal of Gynecology & Obstetrics*. 2020; 150(2):151-8.
9. Sandsaeter HL, Horn J, Rich-Edwards JW, Haugdahl HS. Preeclampsia, gestational diabetes and later risk of cardiovascular disease: Women's experiences and motivation for lifestyle changes explored in focus group interviews. *BMC pregnancy and childbirth*. 2019; 19(1):1-10.
10. Organization WH. WHO recommendations on antenatal care for a positive pregnancy experience: summary: highlights and key messages from the World Health Organization's 2016 global recommendations for routine antenatal care. World Health Organization; 2018.
11. Mahmoud NM, yousef Mohammed N, Essa RM. The relationship between health belief model and compliance with therapeutic regimen among diabetic pregnant women. *International Journal for Research in Health Sciences and Nursing*. 2018; 4(2):40-63.
12. Naghizadeh S. Comparison of pregnancy self-care, perceived social support and perceived stress in low-risk and high-risk groups. *Journal of Health and Care*. 2019; 21(1):16-25.
13. Ibrahim RES, Saber NM. Impact of self-care program for gestational diabetic women on pregnancy outcomes. *American Journal of Nursing Research*. 2019; 8(1):122-31.
14. Yen I-W, Lee C-N, Lin M-W, Fan K-C, Wei J-N, Chen K-Y, et al. Overweight and obesity are associated with clustering of metabolic risk factors in early pregnancy and the risk of GDM. *PLoS One*. 2019; 14(12):e0225978.
15. El-Nagar AE, Ahmed MH, Abo-Freikha A, El Welely MZ. Effect of Implementation of Health Educational Guidelines on Maternal and Neonatal Outcomes among Women with Gestational Diabetes Mellitus. *Tanta Scientific Nursing Journal*. 2019; 17(2):148-82.
16. Savita M, Rastogi MS, Shokhandia MS. Effectiveness of Structured Teaching Program on Self-Care Management of Antenatal Mothers with Gestational Diabetes Mellitus in Terms of Knowledge and Practice in Safdarjung Hospital: A Quasi Experimental Study.
17. Mukona DM. Knowledge of Gestational Diabetes Mellitus and Self Care Practices in Pregnancy. *EC Diabetes and Metabolic Research*. 2018; 2:18-45.
18. El Toony LF, Khalifa WA, Ghazaly OM. Assessing the effectiveness of an educational program for patients with gestational diabetes in Assiut University. *Egyptian Journal of Obesity, Diabetes and Endocrinology*. 2018; 4(1):17.