IOSR Journal of Nursing and Health Science (IOSR-JNHS)
e-ISSN: 2320–1959.p- ISSN: 2320–1940 Volume 10, Issue 5 Ser. V (Sep. – Oct. 2021), PP 26-32
www.iosrjournals.org

Effect of structured teaching programme on knowledge regarding self care management of gestational diabetes mellitus among gestational diabeticwomen

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Abstract:
Background*: Gestational diabetes mellitus (GDM) is one of the subtypes of diabetes, the prevalence of which is constantly increasing. Diabetes during pregnancy is the one most crucial risk -factor of type 2 diabetes mellitus in future among women. But this risk can be reduced by life style modification during pregnancy. Hence knowledge of self-care management of gestational diabetes mellitus is of utmost importance to women who are diagnosed first time in the present time. The study aim was to assess the effect of structured teaching program on knowledge regarding self-care management of gestational diabetes mellitus among gestational diabetic women.*
Materials and Methods*: A quantitative research approach with one group pre-test post-test design was used among 65 newly diagnosed gestational diabetic women. The sample were selected by convenience sampling method. A pre-test was conducted to assess the knowledge on self-care management on gestational diabetes mellitus and then structured teaching program was given to women through power -point presentation. The main outcomes were measured improvement in knowledge level using post-test after 7-14 days after structured teaching programme.*
Results*: The result shown that pre-test mean was 8.98 while post-test mean increase to 16.75 and it was statistically significant.*
Conclusion:*The study concluded that the structured teaching program is effective in improving the knowledge level of gestational diabetic women regarding self-care management of gestational diabetes mellitus.*
Key Word*: Gestational Diabetic Mellitus; Self Care Management; Structured Teaching Programme.*

Date of Submission: 15-09-2021 Date of acceptance: 30-09-2021

I. Introduction

Pregnancy is a state of insulin intolerance and hyperinsulinemia that may predispose some women to develop diabetes[1]. Gestational diabetes mellitus (GDM) occurs when a woman's pancreatic function is not sufficient to overcome the diabetogenic environment during pregnancy[2]. Gestational diabetes mellitus is a metabolic disorder defined as high blood sugar or glucose intolerance with onset or first identified during pregnancy.Large studies have found that GDM occurs in 2.2% to 8.8% of pregnancies, depending on the mix ethnic of the population and the criteria used for diagnosis [3].The incidence of gestational diabetes is raising day by day. In 2015, there were an estimated 199.5 million women with diabetes. By 2030, this number will expect to 313.3. Two out of five women with diabetes are of reproductive age, accounting for over 60 million worldwide. International Diabetes Federation(IDF) estimates that 20.9 million or 16.2% of live births to women in 2015 had some form of hyperglycemia in pregnancy. The prevalence of hyperglycemia in pregnancy is rapidly increasing with age and is highest in women over the age of 45[4].There are so many factors like older age, diet, obesity, ethnicity, family history, history of GDM in previous pregnancy, macrosomia, essential hypertension or pregnancy-related hypertension, history of spontaneous abortions, and unexplained still births polycystic ovarian syndrome causes an increased risk of hyperglycemia in pregnant women [5]. In developing country, the women with GDM are not meticulously aware of these symptoms. Generally, a significant number of gestational diabetic women also go on to develop type 2 diabetes mellitus causing in further healthcare complications andcosts.During pregnancy, an increase in insulin resistance occurs. Euglycemia is maintained through a compensatory increase in insulin secretion. The key factor which results in the development of gestational diabetes appears to be a failure to compensate with hyperinsulinemia[6]. As the increase in insulin resistance is greatest in thethird trimester, GDM usually develops going into this period. Therefore, screening for GDM usually does around 24–28 weeks into the pregnancy. The diagnosis is made with an oral glucose

tolerance test (OGTT), though the criteria vary around theworld[7].Gestational diabetes mellitus is associated with adverse pregnancy outcomes. Macrosomia, shoulder dystocia with its attendant risks of brachial plexus injury and clavicle fracture, and neonatal hypoglycemia are the fatal complications which most commonly occur[8]. Jaundice, polycythemia, respiratory distress, and hypocalcaemia, fetal malformation and perinatal mortality have also been reported. The above risks can be minimized with good glycemic control and judicious obstetric and midwifery care [9]. Cesarean sections are also more common and GDM is related with a higher risk of pre-eclampsia[10].There are both fetal and maternal complications associated with gestational diabetes mellitus (GDM). Hence, it is imperative that an early identification and management of the disease is done to ensure the obstetric and perinatal outcomes. Administration of self instructional module is an important aspect to improve the knowledge regarding self care management of Gestational Diabetes Mellitus and thus prevent the maternal morbidity and mortality due to gestational diabetes mellitus. In this study we assessed the effects of Structured Teaching Programme on knowledge regarding Self Care Management of GDM.

II. Material And Methods

The research design adopted for the present study was pre-experimental one group pre-test and post-test design. The study was conducted at the antenatal out patient department (OPD) in Women and children hospital (WCH), JIPMER from 14.8.2017 to 25.9. 2017.65 women, first time diagnosed with gestational diabetes mellitus attending antenatal OPD were selected based on the inclusion and exclusion criteria.

Study Design:pre-experimental one group pre-test and post-test design.

Study Location: The study was conducted at the antenatal outdoor patient department (OPD) in Women and children hospital (WCH), JIPMER.

Study Duration:from 14.8.2017 to 25.9. 2017.

Sample size: 65 antenatal women with GDM.

Sample size calculation: From past OPD records we found that 85 ante-natal women were diagnosed with GDM during the same time period. Pregnancy is a state of insulin intolerance and hyperinsulinemia that may predispose some women to develop diabetes[1]. Gestational diabetes mellitus (GDM) occurs when a woman's pancreatic function is not sufficient to overcome the diabetogenic environment during pregnancy[2]. d of the previous year. Assuming the confidence level as 90% and a 5% margin of error the sample size was calculated as 65.

Subjects & selection method: study population was drawn from Gestational Diabetic Women who attended to antenatal OPD, WCH, JIPMER. from14.8.2017 to 25.9. 2017. 65 women were selected based on the inclusion and exclusioncriteria through convenience sampling technique.

Inclusion criteria:

- Antenatal women who were newly diagnosed gestational diabetesmellitus
- First time diagnosed gestational diabetes mellitus antenatal women who were willingly to deliver at theJIPMER.

Exclusion criteria:

- First time diagnosed of gestational diabetic women who had other associated comorbidities like hypertension, heart disease, renaldisease.
- First time diagnosed gestational diabetic women who were paramedical professionals**.**

Procedure methodology

The study approved by the Nursing Research monitoring committee, JIPMER and the Institute (JIPMER) ethical committee (Human studies). Data collection period was six weeks from 14.08.2017 to 25.9.2017. The investigators obtained clearance from Departmental HOD, Department of OBG, JIPMER.

To assess the effectiveness of structured teaching program on knowledge regarding self-care management of gestational diabetes mellitus among gestation diabetic women, a structured questionnaire was used. Socio-demographic data including the women's age, education, occupation, residence, type of family, dietary pattern,family history of diabetes, gravida, gestational age were collected using directinterview andfrompatientsrecords.Duringpreteststructuredquestionnairewith25questions related to self-care management of gestational diabetes mellitus. was administered to the first time diagnosed gestational diabetic women. After pretest, structured teaching programme was provided through power-point presentation regarding self-care management of gestational diabetes like risk factors , medical nutrition therapy, exercise, self-monitoring of blood glucose, self-administration of insulin, sign of hypoglycemia, management of hypoglycemia in home .Again after 7 to 14 days interval a post test was taken from same gestational diabetic women on the basis of previous structured questionnaires to evaluate the effectiveness of structured teaching programme.

Statistical analysis

The data collected from the participants were transferred into Excel master sheet and analyzed using statistical package for social science (SPSS).

The distribution of categorical variables such as education, occupation, residence, type of family, dietary pattern family history of diabetes, gravida were expressed in forms of frequency/percentage.

The distribution of continuous variables such as age of first time diagnosed gestational diabetic women, gestational age, level of knowledge were expressed in terms of mean with standard deviation or median with range.

The comparison of continuous date such as age, level of knowledge in relation with categorical variables mentioned above were carried out by using independent t test based on the distribution of data and number of groups.

The change in the level of knowledge as an impact of structured teaching programme was carried out by using paired ttest.

The association of knowledge status with the categorical variables mentioned above was carried out by using chi-square test/ Fisher's test.

All statistical analysis was carried out by using 5% level of significance with ‚p' value <0.05 was considered as statisticallysignificant.

III. Result

Socio-Demographic and Clinical profile of subjects are described in **Table no.1**

Table no.1 Frequency distribution of study subjects in relation to socio- demographic and clinical variables:

Demographic data	Categories	Frequency	Percentage
Age group	≤20 yrs	4	6.2
	21-30 yrs	33	50.8
	> 30 yrs	28	43.1
Residence	Urban	38	58.5
	Rural	27	41.5
Education	Primary education	4	6.2
	Secondary education	11	16.9
	Higher secondary education	33	50.8
	Graduation	17	26.2
Occupation	House wife	43	66.2
	Working lady	22	33.8
Family H/O DM	Yes	40	61.5
	No	25	38.5
Gravida	Primigravida	40	61.5
	Multigravida	25	38.5
Gestational age	25-28 weeks	30	46.2
	29-32 weeks	28	7
	> 32 weeks	7	10.8

Table no. 2 shows that 63.1% of mothers got inadequate knowledge, 30.8% got moderately adequate knowledge and only 6.2% (n=4) got an adequate knowledge in the pre-test.

Table no. 2:Pre-test level of knowledge regarding self-care management of GDM:

Level of knowledge	Pre-test	
	Frequency (No)	Percentage (%)
Inadequate knowledge	41	63.1
Moderately adequate knowledge	20	30.8
Adequate knowledge	4	6.2

Table no.3 shows that 33.8% of mothers got moderately adequate knowledge, 61.5%got an adequate knowledge and only 4.6% had inadequate knowledge in thepost-test. Post-test mean and standard deviation is 2.569 and .585.

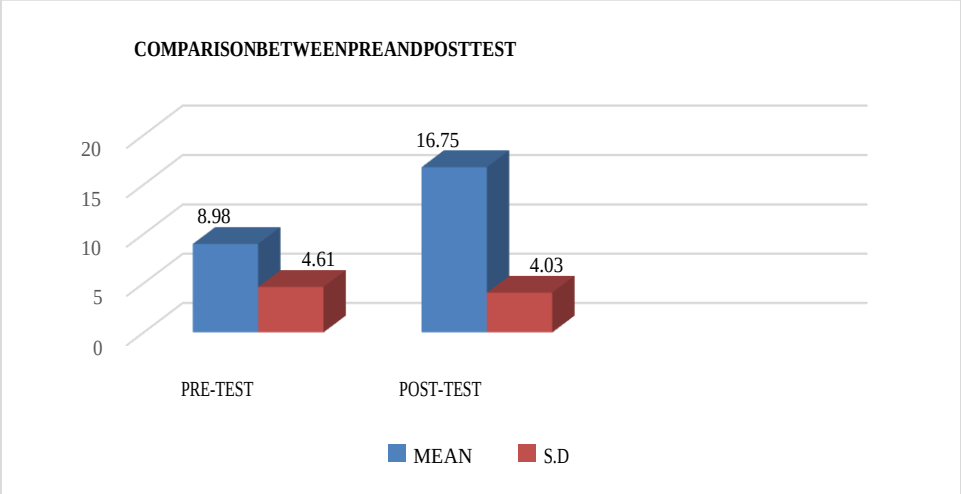
Table no. 3: Post-test level of knowledge regarding Self-Care management of GDM:

Level of knowledge	Post-test	
	Frequency (No)	Percentage (%)
Inadequate knowledge	3	4.6
Moderately adequate knowledge	22	33.8
Adequate knowledge	40	61.5

Comparison of pre-test and post-test level of knowledge regarding self care management of gestationaldiabetesmellitusis shown in **Figure 1** and **Table 4.**

Figure 1: Describes that pre-test and post-test mean and standard deviation.

Table 4:



Knowledge	Mean	Standarddeviation	Paired 't'value	p-value
Pre-test	8.984	4.614	-12.09	0.020**
Post-test	16.75	4.035		

** P< 0.05

Table 4 shows that post-test level of knowledge mean (16.75) was found to be higher than the pre-test level of knowledge mean (8.94) among the mothers of preterm babies and its obtained 't' value is -12.09 which is highly significant at 0.020 level.

TABLE 5: Association of pre-test knowledge categories with socio-demographic variables.

	Categories	Level of Knowledge						Statistical significance
		Inadequate knowledge		Moderately adequate knowledge		Adequate knowledge		
		N	%	N	%	N	%	
Age	i) ≤20 yrs	3	75	0	0	1	25	$x^2 = 4.64$
	ii) 21-30 yrs	22	66.7	10	30.3	1	3	p = .326
	iii) >30 yrs	16	57.1	10	35.7	2	7.1	
Residence	i) urban	26	68.4	10	26.3	2	5.3	$x^2 = 1.12$
	ii) Rural	15	55.6	10	37	2	7.4	p = .571
Education	i) Primary Education	2	50	1	25	1	25	$x^2 = 7.90$
	ii) SecondaryEducation	7	63.3	2	18.5	2	18.2	
	iii) Higher Education	22	66.7	10	30.3	1	3	p = .246
	iv) Graduation	10	58.8	7	41.2	0	0	
Occupation	i) House Wife	26	60.5	14	32.6	3	7	$x^2 = .409$
	ii) Working Lady	15	68.2	6	27.3	1	4.5	p = .815
Family historyof DiabetesMellitus	i)Yes	23	57.5	14	35	3	7.5	$x^2 = 4.24$
	ii) No	18	72	6	24	1	4	p = .491

Table 5 shows that there is no significant association of pre-test knowledge categories with some of the socio-demographic variables of the women like education, place of residence, family history of diabetes, working regarding self care management of gestational diabetes mellitus.

Table 6 : Association of post-test knowledge categories with socio-demographic variables.

Demographic data	Categories	Level of Knowledge						Statistical significance
		Inadequate knowledge		Moderately adequate knowledge		Adequate knowledge		
		N	%	N	%	N	%	
Age	i) ≤20 yrs	0	0	4	100	0	0	$x^2 = 11.3$
	ii) 21-30 yrs	3	9.1	10	30.3	20	60.6	P = .006***
	iii) >30 yrs	0	0	8	28.6	20	71.4	
Residence	i) urban	3	7.9	9	23.7	26	68.4	$x^2 = .5.62$
	ii) Rural	0	0	13	48.1	14	51.9	P = .060
Education	i) Primary Education	0	0	2	50	2	50	$x^2 = 5.06$
	ii) SecondaryEducation	2	0	5	45.5	6	57.6	P = .009***
	iii) Higher Education	3	9.1	11	33.3	19	57.6	
	iv) Graduation	0	0	4	23.5	13	76.5	
Occupation	i) House Wife	0	0	15	34.9	28	65.1	$x^2 = 6.16$
	ii) Working Lady	3	13.6	7	31.8	12	54.4	P = .046***
Family historyof DiabetesMellitus	i)Yes	3	7.5	13	32.5	24	60	$x^2 = 1.97$
	ii) No	0	0	9	36	16	64	P = .031***

*** $p<0.05$

Table 6 shows that there is highly significant of post-test knowledge categories with some demographic variables of women like age, education and occupation. Also significant of post-test knowledge level with clinical variables like gravida, family history of gestational diabetes mellitus.

IV. Discussion

We conducted the study to assess the effect of structured teaching program on self care management of gestational diabetes mellitus among gestational diabetic women in antenatal OPD, WCH, JIPMER.The investigator obtained an informed consent from the women and data was collected using a validated structured

questionnaire regarding self care management of gestational diabetes mellitus. The responses were analyzed through descriptive and inferential statistics and discussion about the findings were arranged according to the objectives of thestudy.

A total 65 gestational diabetic women participated in this study. The results shows that:

- 6.2% of mothers were in the age group of 20 years or less, 50.8% of mothers were between 21 to 30 years and 43.1% of mothers were above 30years.
- 6.2% of mothers had primary education, 16.9% of mothers had secondary education and 17 of mothers had graduation andabove.
- Regarding occupation 33.8% of mothers were employed and 66.2% were unemployed. Regarding family history of diabetes 61.5% of mothers had family history of diabetes and 38.5% had no suchhistory.
- In view to gravida, it revealed that 38.5% of mothers wereprimigravida.
- 46.2% were between 25 to 28 weeks of gestational age, 43.1% were between 29- 32 weeks, 10.8% were above 32 week and 16.4% were between 35-36 weeks of gestation.

The first objective was to assess the effect of structured teaching programme on self care management of gestational diabetes mellitus among gestational diabetic women.

The level of knowledge regarding self care management of gestational diabetes mellitus among gestational diabetic women was assessed before and after giving structured teaching programme and it was tabulated in Table 2, 3 &4. Among 65 mothers 63.1% had inadequate knowledge, 30.8% had moderately adequate knowledge and only 6.2% mothers had adequate knowledge regarding self care management of gestational diabetes mellitus in the pre-test. The mean score of pre-test level of knowledge is 8.98 with 4.61standard deviation.

In the post-test among 65 mothers, 33.8% of mothers had moderately adequate knowledge, 61.5% had adequate knowledge and 4.6 % of the mothers had inadequate knowledge. The mean score of post-test level of knowledge is 16.75 with 4.03 standard deviation.

While comparing the pre-test and post-test knowledge of the gestational diabetic women the pretest mean and standard deviation was 8.98 and 4.61 and the post-test mean and standard deviation Thus was 16.75 and 4.03. The obtained p value was p=0.020*** and it showed that it was high statistically significant. it has been proved that structuredteaching programme has been improved adequate knowledge regarding self care management of gestational diabetes mellitus among gestational diabetic women.

The above findings were supported by the following studies:

Pawanpreet (2015) conducted a study to evaluate the effect of structured teaching programme on knowledge regarding gestational diabetes mellitus among antenatal mothers admitted in selected hospital of Jalandhar (Punjab).One group pretest post-test was used. sixty antenatal mothers were selected by non probability sampling method and post-test was conducted on day seven after the effective teaching program. The results inferred that structured teaching program was effective and it enhanced the knowledge regarding gestational diabetes mellitus[11].

Indi (2015) conducted a study to assess the effectiveness of structured teaching programme on knowledge regarding self care activities among antenatal women with diabetes mellitus in a selected PHC at Tumkur. One group pre-test post test study was conducted.Sixty mother was participated through non probability purposive sampling. The findings revealed that 80.0% of them had inadequate knowledge and 20.0 % had moderate knowledge before STP. The mean of post test (29.72) of knowledge was comparably more than the pre test (15.12) and it was seen to be statistically significant at 0.05 level [12].

The second objective was to identify the association of knowledge regarding self care management of gestational diabetes with socio-demographic variables.

The association of knowledge regarding self care management of gestational diabetes mellitus and socio-demographic variables was calculated by using Chi-square test.

It showed that demographic variables like age, education, occupation, family history of diabetes mellitus, gravida, gestational age were associated with the mothers pre-test level and post- test of knowledge regarding gestational diabetes mellitus.

Shriraam (2013) conducted a awareness of gestational diabetes mellitus among antenatal women in primary health center in South India. One hundred and twenty antenatal women were participated. Overall, 17.5% women had good knowledge, 56.7% had fair and 2.8% had poor knowledge. Most of them were housewives (90%).This study showed that only a small proportion of rural antenatal women (17.5%) had good knowledge about GDM[13].

Fatema (2017) conducted a study to assess the knowledge, attitude and practice regarding gestational diabetes mellitus among diabetic and non diabetic antenatal mother in Bangladesh. Knowledge, attitude and

practice were assessed by a pre-structured questionnaire. The proportion of poor average and good knowledge scores among women were 17%, 68% and 15% respectively participants from urban residents, higher educational background and upper socio-economic class demonstrated significantly greater score in terms of knowledge, attitude and practice in both non diabetic and diabetic groups (p=0.001). According to linear regression analysis, knowledge scores correlated strongly with education, residence, diabetic state and attitude[14].

V. Conclusion

Structured teaching program is effective in improving the knowledge on self care management regarding gestational diabetes mellitus. There was a significant association with educational status, occupation, residency and family history of the GDM women with the knowledge score. Providing such type of structured teaching programme on a regular basis in antenatal OPDs will minimize the occurrence of morbidity and perinatal minimize morbidity and perinatal mortality among mother and baby in forthcomingera.

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