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## RESEARCH ARTICLE

# EFFECTIVENESS OF INFORMATION BOOKLET REGARDING GESTATIONAL DIABETES MELLITUS ON KNOWLEDGE AMONG PREGNANT WOMEN WITH DIABETES IN QUEEN MARY'S HOSPITAL, LUCKNOW

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### ABSTRACT

**Background:** Gestational diabetes mellitus (GDM) is a serious pregnancy complication, in which women without previously diagnosed diabetes develop chronic hyperglycemia during gestation (Plows, 2018). Along with various adverse maternal and neonatal complications during pregnancy, there are long term consequences like obesity and risk of diabetes mellitus (DM) following diagnosis of GDM. **Objectives:** This study was undertaken to assess the effectiveness of information booklet regarding GDM on knowledge among pregnant women with diabetes. **Material & methods:** The research approach was quantitative and pre experimental with one group pre test post test only design was applied in the study. Samples of the study were the admitted pregnant women who have been diagnosed with GDM, met the inclusion criteria and agreed to participate in the study. In this study, one group of 70 patients were selected by using consecutive sampling technique. After taking informed consent the pre test was taken and later participants were provided with information booklet on GDM. One week later the post test of the participant was taken. The collected data was analyzed by descriptive (frequency distribution and percentage) and inferential statistics. **Result:** Results of the study showed that the pre test knowledge score among study subjects were 28(40%) have good knowledge score, 36 (51.4%) have average knowledge scores score while 6(8.6%) have poor knowledge score. Thus majority of participants had average knowledge level in pre test. There was significant improvement in overall knowledge scores from 13.59 in pre test to 16.69 in post test as well as in all aspects of knowledge regarding gestational diabetes mellitus at  $p < 0.001$  which showed that informational booklet regarding gestational diabetes mellitus was highly effective. There has been significant association was found between pre test knowledge score and area of residence at  $p$  value 0.021 as well as with education level at  $p$  value  $< 0.001$ . **Conclusion:** The study found that imparting information booklet is effective way to improve awareness and understanding about GDM. As nurses play very important role in providing health education to patients they can use these kind of booklets in giving health education as knowledge gained through informational booklet regarding GDM may improve the self care practices among diabetic pregnant women .

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## INTRODUCTION

Pregnancy is a normal physiological process, which constitutes a unique period in the life of the woman and her family. In most cases, pregnancy does not show abnormalities, however, in some cases it could be affected by some complications that impose-stresses in both the woman and the fetus, so pregnancy is a critical event in a woman's life that affects her health and well-being (Avenshine & Enriquez, 2010) (Nafa, 2017). Diabetes mellitus (DM), the most common metabolic complication of the pregnancy,

which illustrates the interaction between the physiologic changes of the pregnancy and the pathophysiology of the disease. Gestational diabetes mellitus (GDM) varies worldwide and among different racial and ethnic groups within a country (Raman). According to International Diabetes Federation (IDF) 16 % of live births had some form of hyperglycemia in pregnancy & an estimated 84 % were due to GDM. 1 in 6 births was affected by GDM. The vast majority of cases of hyperglycemia in pregnancy were in low- and middle income countries, where access to maternal care is often limited.

It is estimated that about 4 million women are affected by GDM in India, at any given time point.<sup>3</sup> The prevalence of gestational diabetes has been reported to range from 3.8% in Kashmir, to 6.2% in Mysore, 9.5% in Western India and 17.9% in Tamil Nadu. In more recent studies, using different criteria, prevalence rates as high as 35% from Punjab and 41% from Lucknow have been reported. The geographical differences in prevalence have been attributed to differences in age and/or socioeconomic status of pregnant women in these regions (Mithal *et al.*, 2015). Recent studies have reported that many women misunderstand GDM, with women reporting that GDM only affects them during pregnancy, and that once the baby is born the complication is no longer a health threat (Sayakhot *et al.*, 2016). Although GDM usually resolves postpartum, along with various adverse maternal and neonatal complications during pregnancy, there are long term consequences of obesity and risk of DM following diagnosis of GDM. The most common fetal adverse outcomes found in pregnancies of women with diabetes are fetal and neonatal loss, a great variety of congenital abnormalities and malformations, premature delivery, fetal growth acceleration and macrosomia, which are associated with several obstetric complications like birth trauma, hypertrophic miocardiopathy, stillbirth, respiratory distress syndrome, neonatal hypoglycemia, hypocalcemia, hyperbilirubinemia and polycythemia; maternal complications are pregnancy induced hypertension, pre-eclampsia, hemolysis, elevated liver enzymes, low platelets (HELLP) syndrome, Cesarean section, hypoglycemia and the worsening of any degree of a pre-existing renal insufficiency and retinopathy (Dhanlakshmi, 2010). Maintaining adequate blood glucose levels in GDM reduces morbidity for both mother and baby which can be achieved by initially diet and exercise followed by medications, if needed (Alfadhli, 2015). There is also strong evidence indicating that promoting healthy lifestyle habits such as weight loss, exercise, and healthy diet will reduce the risk of developing DM.

Poor health literacy is associated with limited understanding of disease and may result in limited knowledge of disease management.<sup>6</sup> For these reasons, this study focused on evaluating knowledge of GDM, self-management, healthy diet, exercise and assessing the effectiveness of informational booklet regarding GDM among pregnant women with diabetes. The objectives of this study were to assess the pre test knowledge level on GDM among pregnant women with diabetes, to assess the effectiveness of information booklet regarding GDM among pregnant women with diabetes by post test and to determine the association between pre test knowledge on GDM among pregnant women with diabetes & selected demographic variables.

## MATERIALS AND METHODS

A quantitative, pre-experimental, one group pre test post test only, design was used. The study was carried out between Nov 2018 to Feb 2019 in Queen Mary's Hospital (KGMU), Lucknow, India. The Institutional ethics committee approval and departmental approval was obtained before the study. A pilot study was carried out on 10 admitted pregnant women having GDM & feasibility of the study was assessed. For main study admitted pregnant women, who have been diagnosed with GDM, met the inclusion criteria and agreed to participate in the study were taken as samples.

Consecutive sampling technique was used to select one group of 70 patients. After taking informed consent the pre test was taken using a self structured tool. The tool consisted of 3 parts:- Section A: It included demographic and clinical profile such as age, area of residence, religion, education level, occupation status & dietary pattern, month of pregnancy, present weight, history of previous abortion, history of still birth, history of birth of congenitally deformed baby, family history of diabetes mellitus, parity. The Section B consisted of three close ended questions eliciting details of previous knowledge of GDM, if yes then source of knowledge & history of GDM in previous pregnancy. Section C of the tool consisted of 21 multiple choice questions to assess the knowledge regarding GDM. Scoring method: The scoring criteria had three categories. Good (15-21), Average (8-14) and Poor (1-7). After completion of pre test information booklet on GDM was given to participants. Post test was taken one week after the pre test. The collected data was analyzed by descriptive (frequency distribution and percentage) and inferential statistics.

## RESULTS

In present study data was analyzed using descriptive & inferential statistics based on the objective of the study.

**Organization of the findings:** The result of the study has been organized under three sections.

**Section A- Pre test knowledge level on gestational diabetes mellitus among pregnant women with GDM:** Pre test knowledge level of pregnant women with GDM shows out of total 70, 28(40%) have good knowledge score, 36 (51.4%) have average knowledge scores score while 6(8.6%) have poor knowledge score. Thus majority of them had average knowledge level in pre test.

**Table 1. Pre test knowledge level of pregnant women with GDM**

(n = 70)		
Knowledge level (Max.21)	f	%
Good (15-21)	28	40.0
Average (8-14)	36	51.4
Poor (1-7)	6	8.6
Total	70	100.0

**Section B- Comparison of pre test and post test knowledge score among pregnant women with GDM:** The above table reflects that there was significant increase in post test knowledge scores as compare to pre test knowledge score in all aspects of knowledge regarding GDM. Category wise comparison of pre & post test knowledge scores reflects the number of pregnant women with GDM in pre test knowledge score of good category (15-21) was 28(40%), in average score category (8-14) was 36(51.4%) and in poor score category was 6(8.6%) which changed to 60(85.7%) for good score category, 8(11.4%) for average score category and 2(2.9%) for poor score category. Comparison of pre & post test overall knowledge score reflects the mean pre test knowledge score among the pregnant women with GDM was 13.59±3.29 which was increased to 16.69±2.90 in post test and this increase was highly significant (p<0.001)

**Section C- Association between pre test knowledge scores of pregnant women with GDM & selected demographic variable:** There was significant association found between pre test knowledge and area of residence (p=0.021).

**Table 2. Mean, standard deviation and mean percentage of knowledge regarding aspects of GDM among pregnant women with GDM**

(n = 70)								
S.No.	Aspects of knowledge	Max Score	Pre test		Post test		z-value	p-value
			Mean	SD	Mean	SD		
1	Risk factor of GDM	3	2.16	0.85	2.69	0.58	-4.72	<0.001
2	Sign/symptoms of GDM	2	0.81	0.79	1.26	0.76	-4.21	<0.001
3	Complication of GDM	2	0.99	0.84	1.44	0.77	-4.34	<0.001
4	Diagnosis of GDM	5	2.49	0.86	3.10	0.89	-5.52	<0.001
5	Treatment of GDM	9	7.16	1.47	8.20	1.12	-5.82	<0.001

**Table 3. Category wise comparison of pre & post test knowledge scores pregnant women with GDM**

(n = 70)						
Knowledge Level	Pre test		Post test		chi sq	p-value
	f	%	f	%		
Good (15-21)	28	40.0	60	85.7	31.5	<0.001
Average (8-14)	36	51.4	8	11.4		
Poor (1-7)	6	8.6	2	2.9		
Total	70	100.0	70	100.0		

**Table 4. Comparison of pre & post test overall knowledge score among pregnant women with GDM**

(n = 70)					
Total Score (Max 21)	Mean	SD	Mean Diff	t-value	p-value
Pre Test	13.59	3.29	-3.10	-14.02	<0.001
Post Test	16.69	2.90			

**Table 5. Association of pre test knowledge level with area of residence**

(n = 70)								
Area of Residence	Pre Test Knowledge Score						chi sq	p-value
	Good (15-21)		Average (8-14)		Poor (1-7)			
	f	%	f	%	f	%		
Rural	2	13.3	11	73.3	2	13.3	11.536	0.021
Urban	24	49.0	23	46.9	2	4.1		
Suburban	2	33.3	2	33.3	2	33.3		
Total	28	40.0	36	51.4	6	8.6		

**Table 6. Association of pre test knowledge level with education**

(n = 70)								
Education	Pre Test Knowledge Score						chi sq	p-value
	Good (15-21)		Average (8-14)		Poor (1-7)			
	f	%	f	%	f	%		
Informal	0	0.0	2	40.0	3	60.0	42.497	<0.001
Primary	0	0.0	6	85.7	1	14.3		
High School	0	0.0	1	33.3	2	66.7		
Intermediate	8	44.4	10	55.6	0	0.0		
Graduate	13	56.5	10	43.5	0	0.0		
Post Graduate	6	50.0	6	50.0	0	0.0		
Others	1	50.0	1	50.0	0	0.0		
Total	28	40.0	36	51.4	6	8.6		

There was significant association found between pre test knowledge and education ( $p < 0.001$ ).

## DISCUSSION

In present study majority of study subjects were within the age group 25–29 years (35.7%), residing in urban area (70%) & were Hindus (81.4%). Most of them were graduated (32.9%) and were housewives (88.6%). Among the study subjects most of them were vegetarian. Majority have 9<sup>th</sup> month of pregnancy (45.7%), there were 7.1% cases who have present weight more than 80 kg. 25.7% cases have history of abortion, 4.3% cases have history of still birth, 5.7% cases have history of congenital birth and 31.4% cases have family history of diabetes.

Most of the cases (72.9%) have multigravida parity. Among study subjects only 15.7% of the study subjects heard about the GDM previously and their source of knowledge were mainly Doctors/health professionals (10.0%). 10% subjects already have GDM in previous pregnancies. On assessment of pre test knowledge level of study subjects majority of them 36 (51.4%) were having average knowledge on GDM. These findings were consistent with study conducted by Dhanlaxmi J (2019) conducted a pre experimental one group pre test post test design study to evaluate the effectiveness of structured teaching programme (STP) on GDM in terms of knowledge and practice among antenatal mothers with GDM attending outpatient department of GKNM Hospital, Coimbatore among 30 primigravida mothers with GDM selected through purposive sampling technique.

In pre test majority 28 (93.3%) had inadequate knowledge, 2(6.75) had moderately adequate knowledge (Dhanlakshmi J, 2010). On comparison of pre test & post test overall knowledge scores there was significant improvement with pre test mean scores of 13.59 to post test mean scores of 16.69 at  $p < 0.001$  as well as in all aspects of knowledge regarding GDM at  $p < 0.001$ , which shows that information booklet regarding GDM was effective. The above findings were similar to the findings of the study conducted by KR Smitha 2014 to assess the effectiveness of self instructional module (SIM) on knowledge regarding self care management of gestational diabetes among antenatal women visiting antenatal clinics at Mangalore. A sample of 30 was taken. The analysis of the pre test knowledge revealed that, (26.66%) of the women had poor knowledge whereas (20%) of them had good knowledge about self care management of gestational diabetes mellitus whereas in post-test, majority (63.33%) of women had good knowledge, remaining (36.67%) average knowledge and none of them had poor knowledge which reflected that self instructional module was effective (Smith's K. R, 2015). There was significant association found between pre test knowledge scores & area of residence ( $p= 0.021$ ) among which most of them were residing in urban area (70.0%) and education level ( $p= <0.001$ ) among which most of them were graduates (32.9%).

## Conclusion

The main conclusion drawn from the present study is that the information booklets are one of the effective ways to create awareness and improve knowledge of patients regarding any particular subject. As nurses play very important role in providing health education to patients they can use these kind of booklets or similar designed teaching programs in giving health education as knowledge gained through informational booklet or teaching materials regarding GDM may improve the self care practices among diabetic pregnant women and reduce the chances of complications.

**Implications:** Health education is one of the important function of the nurse and they can use these kind of booklets in providing health education to the OPD and IPD patients as knowledge gained through informational booklet regarding gestational diabetes mellitus may improve the self care practices among diabetic pregnant women & reduce the chances of complications. These booklets can be imparted at different levels of health care setting like peripheral health care centers, district hospitals and medical colleges. It is easy to use as it provides a readymade & concise information tool to the patients which they can study whenever they get leisure time.

**Conflict of interest:** There is no conflict of interest.

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