

A Study to Assess the Effectiveness of Planned Teaching Programme on Knowledge Regarding Gestational Diabetes Mellitus among B.sc Nursing 3rd Year Students at Baba Educational Society Institute of Paramedical, College of Nursing, Lucknow, U.P.

Priyanka¹, Pritam¹, Nikita¹, Pallavi¹, Rinki¹, Preeti¹, Priyanshi¹, Pooja¹, Radha¹, Sunita Singh²

¹Student, ²Lecturer,

^{1,2}Baba Educational Society Institute of Paramedical College of Nursing, Lucknow, Uttar Pradesh, India

ABSTRACT

Background: Pregnancy and child birth is one of life's major events. It is joyous and rewarding as the women passes through a transitional phase, into a new life of motherhood. The WHO defines GDM as "Carbohydrate intolerance resulting in hyperglycemia or any degree of glucose intolerance with onset or first recognition during pregnancy usually from 24 weeks' gestation onwards" and resolves following the birth of the baby (WHO 2013). **Objectives:** The study aimed to assess the effectiveness of planned teaching programme regarding GDM among B.sc nursing 3rd year students. **Methods:** Pre-experimental one group pre-test post-test design was adopted for study. 40 students were taken by Non probability convenient sampling technique. Structured knowledge questionnaire developed tool comprised of Demographic variable contained 5 items and Structured knowledge questionnaire contained 30 items to assess the knowledge of B.Sc. (N) 3rd year student regarding gestational diabetes mellitus. The reliability of the tool was tested by Karl Pearson's correlation coefficient and it was found to be $r = 0.8$. **Results:** It revealed that in pre-test students had moderate knowledge as compare the post-test. The mean post-test scores of 21.58 was higher than the mean pre-test scores of 12.49 which was significant at P-value of 0.05 level which showed Significant increase in knowledge and thus it proves the effectiveness of the planned teaching programme. **Conclusion:** Hence it can be concluded that the planned teaching programme was effective in improving the knowledge of students regarding gestational diabetes mellitus.

KEYWORDS: Planned teaching programme, Effectiveness, Knowledge, Gestational diabetes mellitus

INTRODUCTION

Pregnancy is a unique experience to every woman. It gives great joy, appreciation and satisfaction to each mother. In some cases, pregnancy can be complicated by any pre-existing or emerging diseases. These impose high risk to the health of the mother and fetus. Gestational diabetes mellitus is one such condition which can affect the pregnancy adversely.

The World Health Organization (WHO) defines GDM as "Carbohydrate intolerance resulting in hyperglycaemia or any degree of glucose intolerance with onset or first recognition during pregnancy

usually from 24 weeks' gestation onwards" and resolves following the birth of the baby (WHO 2013). This definition clearly excludes women who may have undiagnosed pre-existing type 1 or type 2 diabetes mellitus first detected during screening in pregnancy (Nankervis 2013).

Prevalence of GDM is expected to increase exponentially from 171 million in (2000) to 366 million (2030) globally. The prevalence of high blood glucose (hyperglycaemia) in pregnancy increases rapidly with age & is highest in women over the age

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of 45. In 2019 were an estimated 223 million women (20-79 yrs) living with diabetes. This no. is increase to 343 million by 2045. 20 million or 16% of live births had some form of hyperglycaemia in pregnancy. An estimated 84% were due to gestational diabetes. The vast majority of cases of hyperglycaemia in pregnancy were in low & middle income countries, where access to maternal care is often limited.

Several maternal and neonatal complications may be caused by Diabetes in pregnancy. Maternal complications include fasting hyperglycemia, pregnancy-induced hypertension, infections whereas abortion, preterm labor, hydramnios and unexplained fetal deaths are pregnancy complications. Macrosomia, fetal malnutrition, neural tube defects and cardiac anomalies are some of the fetal complications & secondary complications like shoulder dystocia, cesarean delivery & birth trauma.

The World Health Organization (WHO) 1999 criteria defined GDM by fasting plasma glucose (FPG) level 7.0 mmol/l (126 mg/dl) or 2-h plasma glucose (PG) levels after a 75 g oral glucose tolerance test (OGTT) 7.8 mmol/l (140 mg/dl). The Indian criteria for GDM use only the 2-h criteria (DIPSI). The prevalence of GDM, when using the WHO 1999 criteria range between 1 and 14% in different populations.

GDM Pregnant women should be managed by Medical Nutrition Therapy (MNT), and Insulin therapy/ Metformin as required. In the postpartum period, OGTT should be repeated at 6 weeks after delivery, if blood sugar $<140 \text{ mg/dl}$, then women should be referred to NCD clinic for Post Prandial Blood Sugar (PPBS) testing annually.

Insulin is historically the first-line treatment because of its safety and effectiveness. Oral hypoglycemic agents, especially metformin, are reliable in the management of blood glucose and are a safe and cheaper alternative. Furthermore, metformin is associated with lower gestational weight gain (GWG), had a reduced risk of hypoglycaemia and showed no compromise of the motor, linguistic and social development in recent studies. Despite all these benefits, in up to 46% of women, adequate glycaemic control is not achieved with metformin alone, requiring insulin supplementation.

NEED OF THE STUDY:

WHO estimated that every year a huge population 51,500 of the women die due to their maternal health cause or maternal illness. The highest rate of maternal death is in India (1,36,000 per year). The Indian women had a greater risk of dying that because of

maternal health in pregnancy & child birth as compared to women in developing countries.

The rationale for antenatal care is essential to screen a health problems of the women to detect early sign of diseases & their complications in women to provide effective knowledge & awareness associated with pregnancy to reduce the child mortality rate & to improve maternal health.

Sharma Priya, Malik Sujeeta, Mathew Jubin, S. Muralee Dharan (2020), Conducted an evaluative research study on effectiveness of STP on knowledge regarding management of DM among patients with type -2 DM in a selected CHC of Dadra & Nagar Haveli Area. A pre-experimental (one group pre-test-post-test) design was used. Total 80 samples were taken. Result showed that post-test score was higher than pre-test score. This study concluded that the STP was effective.

PROBLEM STATEMENT:

A study to assess the effectiveness of Planned Teaching Programme on knowledge regarding Gestational Diabetes Mellitus among B.sc nursing 3rd year students at Baba Educational Society Institute of Paramedical, College of Nursing, Lucknow, U.P.

OBJECTIVES:

- To assess the pre-test & posttest knowledge regarding gestational diabetes mellitus among B.sc nursing 3rd year students.
- To assess the effectiveness of planned teaching programme regarding GDM among B.sc nursing 3rd year students.
- To find out the association between the pre-test knowledge level of B.sc nursing 3rd year students with their selected demographic variables.

HYPOTHESIS:

- **H0-** There is no significant difference between pre-test & post-test scores of knowledge among B.sc nursing 3rd year students.
- **H1-** There is significant difference between pre-test & post-test scores of knowledge among B.sc nursing 3rd year students.
- **H2-** There will be significant association between pre-test knowledge of the B.sc nursing 3rd year students regarding GDM & selected demographic variables.

OPERATIONAL DEFINITIONS:

Effectiveness: Effectiveness means producing and intended result. In this study, it refers to determine the extent to which the planned teaching programme has achieved the Desire effect in improving knowledge regarding gestational Diabetes mellitus among B.sc nursing 3rd year students.

Planned teaching programme: PTP is a systematically instructions developed to help the people to learn. In this study it refers to a planned health education regarding knowledge on definition, risk factors, symptoms and management of Gestational diabetes mellitus by using Audio visual aids to create an improvement knowledge regarding B.sc nursing 3rd year student.

Knowledge: Knowledge refers to awareness for understanding related to causes and symptoms and its management among B.sc nursing 3rd year students.

Gestational diabetes mellitus: Gestational Diabetes mellitus (GDM) defined as carbohydrate intolerance with recognition or onset during pregnancy.

Students: Students are studying in Baba Educational Society, Institute of Paramedical, college of Nursing, Lucknow, U.P, in B.sc nursing 3rd year.

MATERIAL AND METHODS:

Research approach:

Quantitative research approach.

Research design:

Pre-experimental one group pre-test post-test research design.

Variables:

Dependent variable- Knowledge regarding Gestational Diabetes Mellitus.

Independent variable- Planned teaching programme on Gestational Diabetes Mellitus.

Demographic variable- Age, education, religion, type of family, place of stay and dietary pattern of students.

Research setting:

The study was conducted in Baba Educational Society, Institute of Paramedical, College of Nursing, Lucknow, Uttar Pradesh.

Population:

Target population: B.sc nursing 3rd year students.

Accessible population: B.sc nursing 3rd year students of Baba College of Nursing.

Sample:

B.sc nursing 3rd year students at Baba Educational Society, Institute of Paramedical, College of Nursing, Lucknow, U.P.

Sample size: 40 students.

Sample techniques:

Non probability convenient sampling technique.

Criteria for sample selection:

Inclusion criteria:

- B.sc nursing 3rd year students who are willing to participate.
- B.sc nursing 3rd year students who are available at the time of data collection.

Exclusion criteria:

- B.sc nursing 3rd year students who are not willing to participate.
- B.sc nursing 3rd year students who are not present during the study.

Tool and method of data collection:

Section A. Demographic data

Section B. Structured knowledge Questionnaire

Selection and development of tool: Structured knowledge questionnaire was used for the study. Questionnaire is used to get exact & complete information from the subject. It was felt that questionnaire would encourage the subjects to give frank information & help in collecting data from literate subject. A questionnaire schedule was prepared to assess the knowledge level of B.sc nursing 3rd year students regarding Gestational diabetes mellitus. The tool was developed after extensive review of literature, internet search and expert advice.

Description of the tool: The tool comprised of two sections:

SECTION A: Demographic data- consisted of 5 items, which comprised of age, education, religion, type of family place of stay and dietary pattern.

SECTION B: Structured knowledge Questionnaire- It consists of 30 structured questionnaires to assess the knowledge regarding Gestational Diabetes Mellitus. The tool consists of questions related to meaning, causes & risk factors, signs & symptoms, diagnostic evaluation, complications & Management of Gestational Diabetes Mellitus. Demographic variables were coded to assess the background of B.sc nursing 3rd year students and there by subject it for statistical analysis. It consists of 30 items all of which are scored. The total score was 30 and each question contains of four answers out of which one answer is correct. The correct answer is given a score of 'one' and each wrong response a score of 'zero'.

KNOWLEDGE SCORING PROCEDURE: -

Level of knowledge	Score
Adequate knowledge (61-100%)	19 – 30
Moderately knowledge (31-60%)	10 – 18
Inadequate knowledge (Less than 30%)	0 – 9

Based on obtained score subjects are arbitrarily grouped in 3 groups are as given below:

Adequate = 19-30

Moderate = 10-18

Inadequate = 0-9

Reliability of tool: The reliability was computed by using Karl Pearson's correlation coefficient formula. Acceptable cut-off value of coefficients was between 0.8. This indicate that the tool which was used in the study was reliable.

Data collection procedure:-

- The researcher has obtained a formal permission from the principal of Baba Educational Society, Institute of Paramedical, College of Nursing, Lucknow, U.P.
- After getting the permission the nature and purpose of study was explained to the students. The researcher initially obtained an oral consent from each student.
- The researcher provided demographic & structured knowledge questionnaire tool to participants & provided 30-40 minutes to fill it.
- Assessment of pre-test knowledge was done by using structured questionnaire after which PTP was administered. Post-test was conducted using the same structured questionnaire on the fifth day of pre-test. The time taken to complete one questionnaire was 30-40 minutes. The collected data were analyzed using descriptive and inferential statistics.

Ethical consideration:

- A formal written permission obtained from the principal of Baba Educational Society, Institute of Paramedical, College of Nursing, Lucknow, U.P.
- Informed consent was taken from all samples to be a part of the study. The subjects were informed that the participation was voluntary. They were also informed that they can withdrawn from the study at any time. Confidentiality and anonymity of information was maintained.

Plan for data analysis:

The plan for data analysis includes-

- Demographic variables would be analyzed by using Frequency and percentage.
- 't-test' will be used for the significance.
- Chi square test used for association between the pre-test knowledge of the B.sc nursing 3rd year students regarding GDM & selected demographic variables.

RESULTS**Table-1: Distribution of subjects according to their demographic variables****n = 40**

S.NO	DEMOGRAPHIC VARIABLES	FREQUENCY (f)	PERCENTAGE (%)
1.	Age (in years)		
	a) 18 – 21	32	80
	b) 22 – 25	8	20
	c) 26 – 30	0	0
	d) 30 & above	0	0
2.	Religion		
	a) Hindu	40	100
	b) Muslim	0	0
	c) Sikh	0	0
	d) Christian	0	0

3.	Type of family		
	a) Nuclear	29	72.5
	b) Joint	11	27.5
4.	Place of stay		
	a) Home	25	62.5
	b) Rent	7	17.5
	c) Hostel	8	20
5.	Dietary pattern		
	a) Vegetarian	29	72.5
	b) Non – vegetarian	11	27.5

Table 1 described about the frequency, percentage distribution of demographic variable.

Distribution of the subject by age revealed that majority of the subject, i.e. 32 were between 18-21 (80%), 8 were between 22-25 (20%) years of the age group. As per the findings of the study, the majority of subjects i.e. 40 were hindu. As per the findings of the study, the majority of belongs to nuclear family (72.5%) and only 27.5% belongs to joint family. As per the findings of the study, the majority of subject i.e. 25 belongs to home (62.5%), 7 belongs to rent (17.5%) & 8 belongs to hostel (20%). As per the findings of the study, the majority 29 (72.5%) have vegetarian and 11 (27.5%) have non-vegetarian.

Table 2: Pre-test & post-test knowledge level of b.sc (n) 3rd year students

Knowledge level	Pre test (f)	Pre test (%)	Post test (f)	Post test (%)
A. Inadequate knowledge	7	17.50	0	0
B. Moderate knowledge	33	82.50	12	30
C. Adequate knowledge	0	0	28	70
Total	40	100	40	100

Table 2 shows that 82.50% of participants had moderate knowledge and only 17.50% had inadequate knowledge in pre-test and in post-test 70% had adequate knowledge and 30% had moderate knowledge respectively.

Table 3: Mean, Mean percentage and Standard deviation of pre-test knowledge regarding aspects of GDM among B.sc (N) 3rd year students

n = 40

S.NO	Aspects of knowledge	No. of items	Max. score	Mean	Mean (%)	SD
1.	Meaning	5	5	2.78	55.60	0.35
2.	Causes & risk factors	6	6	1.67	27.83	0.68
3.	Sign & symptoms	5	5	2.02	40.40	0.47
4.	Investigations	3	3	1.1	36.67	0.3
5.	Complications	2	2	0.27	13.50	0.27
6.	Management	9	9	4.65	51.67	0.69
	OVERALL	30	30	12.49	225.67	2.76

Table 3- The above table shows that the maximum mean percentage obtained by the subjects is found in the aspect of meaning (55.60%) followed by management (51.67%), Sign & symptoms (40.40%), investigations (36.67%), causes & risk factors (27.83%), and least mean score (13.50%) found in the aspect of complications. The overall knowledge scores of respondents were found to be 225.67 with standard deviation 2.76 in pre-test.

Table 4: Mean, Mean percentage and Standard deviation of post-test knowledge regarding aspects of GDM among B.sc (N) 3rd year students

S.NO	Aspects of knowledge	No. of items	Max. score	Mean	Mean (%)	SD
1.	Meaning	5	5	4.07	81.40	0.14
2.	Causes & risk Factors	6	6	4.27	71.16	0.27
3.	Sign & symptoms	5	5	3.37	67.40	0.26
4.	Investigations	3	3	1.85	61.67	0.18
5.	Complications	2	2	1.20	60	0.13
6.	Management	9	9	6.82	75.78	0.34
	OVERALL	30	30	21.58	417.41	1.30

Table 4- The above table shows that the maximum mean percentage obtained by the subjects is found in the meaning (81.40%) followed by management (75.78%) causes & risk factor (71.16%), sign & symptoms (67.40%), investigations (61.67%), and least mean score (60%) found in the aspect of complications. The overall knowledge scores of respondents were found to be 417.41 with standard deviation 1.30 in post -test.

Table-5: effectiveness of PTP on knowledge of GDM among b.sc (n) 3rd year students

Knowledge	Mean	Standard Deviation	Mean difference	Sd	't'-value	Sifnificance
PRE-TEST	12.5	3.09	9.1	3.09	8.20	P<0.001
POST-TEST	21.6	6.18				

Table 5- The above table revealed with the pre-test and post-test knowledge score which were obtained by the use of structured questionnaire on of gestational diabetes mellitus. Pre-test mean value (12.5) and post-test mean value (21.6) were obtained. 't' test was 8.20, P<0.001. That shows effectiveness of PTP in term of knowledge increased. Therefore, the null hypothesis is rejected and research hypothesis H1 is accepted.

Table-6: Association of pre-test knowledge regarding GDM with selected demographic variables.

N=40

S. No.	Demographic variables	Pre-test			Df	Chi-square value χ^2	Level of significance
		Inadequate	Moderate	Adequate			
1.	Age (in years)				6	0.389	NA
	a) 18 – 21	5	27	0			
	b) 22 – 25	2	6	0			
	c) 26 – 30	0	0	0			
	d) 30 & above	0	0	0			
2.	Religion				6	0	NA
	a) Hindu	7	33	0			
	b) Muslim	0	0	0			
	c) Sikh	0	0	0			
	d) Christian	0	0	0			
3.	Type of family				2	0.743	NA
	a) Nuclear	6	23	0			
	b) Joint	1	10	0			
4.	Place of stay				4	2.399	NA
	a) Home	5	20	0			
	b) Rent	2	5	0			
	c) Hostel	0	8	0			
5.	Dietary pattern				2	0.743	NA
	a) Vegetarian	6	23	0			
	b) Non-vegetarian	1	10	0			

The above table shows that the obtained χ^2 value is less than the table value at 0.05 levels of significance. Therefore, there is no significant association between pre-test knowledge scores with selected demographic variables of participants. Therefore, the null hypothesis is accepted and research hypothesis H2 is rejected.

DISCUSSION:

Findings related to the effectiveness of structured teaching programme

The obtained 't' value 8.20 was greater than the table value at 0.05. Hence the research hypothesis which stated there will be significant difference in pre and post level of knowledge on Gestational Diabetes Mellitus among B.Sc. (N) 3rd year students was accepted. This showed that the structured teaching programme was effective in increasing the knowledge of B.Sc. (N) 3rd year students regarding Gestational Diabetes Mellitus.

These findings were accordance to the study conducted by Wani. N, Bashir. M, Akhter.K,(2019), Conducted a pre-experimental study to assess the effectiveness of structured teaching programme on knowledge regarding management of gestational diabetes mellitus among pregnant women. A pre-experimental one group pre-test post-test design with non-probability purposive sampling technique used. Total 60 samples were taken. The result finding indicates the effectiveness of STP in increasing the level of knowledge of pregnant women regarding management of GDM at 0.05 level of significance.

Conclusion: GDM is the most common medical and metabolic complication seen in pregnancy. Women who are at high risk of developing GDM should be appropriately screened to reduce maternal and fetal morbidity. The method of screening and diagnosis of GDM has been outlined.

Recommendations:

- An experimental study can be undertaken with a control group for effective comparison of the result.
- A study can be conducted by including additional demographic variables.
- The study can be replicated on a large sample to validate the findings and make generalizations.
- A similar study can be conducted using pre-test post-test with control group design.
- A comparative study can be done to evaluate the effectiveness of the structured teaching programme with other methods of teaching like a self-instructional module or video-based method.

Conflict of interest: No

Financial support: Self

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