A study to determine the effectiveness of planned teaching programme (PTP) on prevention of gestational diabetes mellitus (GDM) among antenatal mothers in selected Hospital, Faridkot.”

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ABSTRACT

A study to determine the effectiveness of planned teaching programme (ptp) on prevention of gestational diabetes mellitus (GDM) among antenatal mothers in selected hospitals at Faridkot, Punjab. The objectives of the study are to determine the knowledge of antenatal mothers regarding the prevention of gestational diabetes mellitus (GDM) measured by structured interview schedule. Develop and validate the ptp on prevention of gestational diabetes mellitus (GDM) among antenatal mothers, determine the effectiveness of ptp in terms of gain in knowledge &find out the association between the pre-test knowledge score among antenatal mothers with selected demographic variables. An evaluatory approach with one group pre-test, post test design was used for this study. The sample consisted of 50 antenatal mothers. Samples are selected by purposive sampling technique. The study was conducted in GGSMC&H, Faridkot, Punjab . Data was collected by administering structured interview schedule prior and after the administration of planned teaching programme. The collected data was analysed by using descriptive and inferential statistics.

Key words: Effectiveness; PTP; prevention; GDM; antenatal mothers.

Background of the study:

Few life events are as wonderful, memorable, and defining as pregnancy. While the process of gestation has many common thread and themes for all women, each mother's experience is unique. Furthermore, the same woman may experience pregnancy differently at each time that she goes through it. The pregnant woman's body undergoes tremendous hormonal and physical changes during the nine months prior to birth, the muscles, joints and tissues are challenged by the changes that occur in the child bearing years. Providing appropriate support for the pregnant client, as well as her partner, significant others and extended family and friends is one of the most important aspects of quality collaborative health care.

"Being pregnant and giving birth is like crossing a narrow bridge; people can accompany you to the bridge. They can greet you on the other side. But you walk that

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bridge an alone………" In the later, part of the 20th century, some countries actually began to limit the number of children; one could have, enforcing deterrents to producing more than one child.[1]

GDM is one of the complications met with in pregnancy and contribute significantly to maternal, perinatal morbidity and mortality. GDM is a type of diabetes that only women get. If a women gets diabetes when she is pregnant, but never had it before then she has GDM. The increasing development of GDM in the mother and glucose tolerance in the offspring set the stages for a perpetuating cycle that must be addressed with effective primary prevention strategies and more effective antepartum interventions. So one of the biggest challenges for nurses and other healthcare providers face the growing number of women developing gestational diabetes as the obesity epidemic escalates. GDM places the mother as well as the baby at increasing risks as pregnancy progresses. If the mother had regular antenatal visits, the complications can be detected as early as possible and treatment can be taken accordingly. So the possible complications can be prevented to some extent and the mother can have a safe confinement and safe delivery without complications or minimized complications.

Problem statement:

"A study to determine the effectiveness of planned teaching programme (PTP) on prevention of gestational diabetes mellitus (GDM) among antenatal mothers in selected Hospital, Faridkot.**"**

Objectives of the study:

The objectives of the study are to:

- determine the knowledge of antenatal mothers regarding the prevention of GDM measured by structured interview schedule.
- develop and validate the PTP on prevention of GDM among antenatal mothers.
- determine the effectiveness of PTP in terms of gain in knowledge.
- findout the association between the pre-test knowledge score among antenatal mothers and selected demographic variables.

Hypotheses: (all hypotheses will be tested at 0.05 level of significance)

- **H$_1$:** The mean post test knowledge score of antenatal mothers attending PTP on GDM will be significantly higher than that of their mean pre test knowledge score.

- **H$_2$:** There will be significant association between the selected demographic variables and knowledge score of antenatal mothers regarding GDM.

Assumptions:

- Antenatal mothers have some knowledge regarding the GDM.

- GDM is a complication of pregnancy.

Operational definitions:

Knowledge:

The information, understanding and skills that will gain through education and experience (Oxford advanced learner's dictionary).In this study, knowledge refers to the correct response from the antenatal mothers regarding the prevention GDM as elicited through structured interview schedule.

Effectiveness:

It is the extent to which an action producing a successful or intended result. (Oxford advanced learner's dictionary).In this study, effectiveness refers to the extent to which the PTP have achieved and the desired effect in improving the knowledge of antenatal mothers regarding GDM.

Planned Teaching Programme:

It is formulated and organized method by which a thing is to be done by systematic information (Oxford advanced learner's dictionary).In this study, planned teaching programme refers to a systematically developed, instructional teaching on GDM.

It includes:

- GDM as a disease (definition, risk factors, signs and symptoms, diagnosis)
- Management
- Complication
- Prevention

Antenatal mothers:

Antenatal means before child birth or during pregnancy (Bailliere's nurses dictionary).In this study, an antenatal mother refers to from the confirmation of pregnancy to 24th weeks of gestation.

Gestational Diabetes Mellitus:

It is a disorder characterized by an impaired ability to metabolize carbohydrate usually caused by a deficiency of insulin occurring in pregnancy (Mosby's Medical, nursing and allied health dictionary).In this study, gestational diabetes mellitus refers to the abnormal or increased glucose level during pregnancy.

Delimitations:

- Antenatal mothers who are below 24th weeks of gestation.

- Antenatal mothers who are visiting to PHCs and hospitals.

- Study is limited to 4-6 weeks.

Conceptual framework:

The conceptual framework used in this study is based on the HEALTH BELIEF MODEL (HBM) presented by Rosenstoch's (1974) and Becker and Maiman's (1975). The present study aims at evaluating the effectiveness of planned teaching programme for antenatal mothers on prevention of GDM in selected Hospital, Faridkot.

Research approach

In the present study, the investigator aimed at evaluating the effectiveness of a planned teaching programme on prevention of GDM among antenatal mothers in terms of gain in knowledge score.

Research Design

The research design selected for the study is pre experimental design, i.e.; one group pre-test post-test design because this study was intended to ascertain the gain in knowledge by the clients who were subjected to planned teaching programme. Here one group is observed twice i.e.; before and after introducing the independent variable. The post-test was carried out on the 7th day following the pre-test. The design did not include any control group.

Pre experimental (one group pre test, post test) design was adopted in this study;

Subject	Pre-test	Treatment	Post test
Antenatal mothers	O_1	X	O_2

O_1: administration of structured interview schedule for assessing knowledge of the antenatal mothers regarding the prevention of GDM.

X: conducting planned teaching programme to the antenatal mothers regarding the prevention of GDM.

O_2: administration of structured interview schedule to the antenatal mothers after the planned teaching programme regarding the prevention of GDM.

The schematic representation of the study design adopted for the evaluative research design is given below. It consists of three phases, they are;

Phase I:

1. Preparation of structured interview schedule and PTP based on the

    (a) Review of literature

    (b) Discussion with experts

2. Preparation of blueprint to determine the area of the structured interview schedule

3. Tool and PTP content were validated by experts

4. Testing the tool for its reliability

Phase II:

1. Pre-test is to assess the knowledge by a structured interview schedule prior to PTP

2. Administration of prepared PTP to the subjects after the pre-test

3. Post-test knowledge assessment on the 7th day with the same structured interview schedule

Phase III:

1. Comparison of pre-test and post-test

2. Analysis and interpretation of collected data.

3. Hypotheses testing

4. Interpretation of data with diagram

Variables under study

Three types of variables are identified in this study. They are independent variable, dependent variable and extraneous variables.

1. **Independent variable:** An independent variable is a stimulus or activity that is manipulated or varied by the researcher to create an effect on the dependent variable.[13] It is the cause of action. In this study PTP was the independent variable.

2. **Dependent variable:** A dependent variable is the outcome or response that the researcher wants to predict or explain.[13] In this study knowledge on prevention of GDM among antenatal mothers was the dependent variable.

3. **Extraneous variables:** It exists in all studies and can affect the measurement of study variables and the relationship among the variables.[13] In this study the extraneous variables are age, education, occupation, education, parity, diet and information.

Setting of the study

The investigator selected GGSMC&H, 500 bedded Hospital, well equipped with modern treatment facilities. GGSMC&H, Faridkot is having antenatal ward, labour rooms, postnatal, neonatal ICU gynecological wards and obstetrics, gynecological operative facilities and also having the OPD. Hence the investigator selected this hospital for the study for the easy availability of samples in the antenatal wards as well as in the OPD.

Population

In this study population consists of all the antenatal mothers who visited to the GGSMC&H,Faridkot

Sample

In this study sample consisted of 50 antenatal mothers who visited to the GGSMC&H,Faridkot

Sampling technique

Purposive or judgemental sampling is based on the beliefs that a researcher's knowledge about the population can be used to handpick the cases to be in the sample.

Sampling criteria

Inclusion criteria:

- Mothers from the confirmation of pregnancy to 24th week of gestation.

- Mothers who are willing to participate in the study.

- Mothers who are able to understand Punjabi.

Exclusion criteria for sampling

- Mothers who are above 24th week of gestation.

- Mothers who are suffering or already diagnosed GDM.

- Mothers who are having previous history of GDM.

Data collection instruments

In this study demographic proforma and structured interview schedule was used for the data collection.

Development of tool:

A structured interview schedule was developed by the investigator for assessing the knowledge of antenatal mothers regarding the prevention of GDM. For development of tool, research and non-research reviews of literature were viewed and suggestions of experts were taken to determine the areas to be included.

The following steps were undertaken to prepare the final tool.

1. **Preparation of the blueprint:** A blueprint was prepared prior to the construction of the structured interview schedule. It depicted the distribution of items according to the content areas in three domains, i.e.; knowledge, application and comprehension.

- Knowledge	18	60%
- Application	7	23.3%
- Comprehension	5	16.7%

2. **Description of the tool:** It consisted of two parts. They are;

Part – I: Baseline proforma with 7 items

Part – II: Structured knowledge interview schedule on prevention of GDM with 30 items

Content validity

To determine the content validity of the data collection tool, the prepared instrument along with the problem statement, objectives, operational definitions, inclusive and exclusive criteria, blue print and content were submitted to 13 experts. Among the experts one is doctor from the field of obstetrics and gynaecology, one from the field of community health nursing and 11 were from the field of obstetrics and gynaecological nursing. The experts were requested to give their opinions on appropriateness and relevance of items in the tool. There was 100% agreement on all items except a few modifications were made in the tool as per the validator's suggestions. The tool was translated to Kannada and validity of translated tool was done by language expert.

Pre-testing the tool

The developed interview schedule was pre-tested on 5 antenatal mothers who fulfilling the sampling criteria. The respondent found it easy to understand the items. The time taken for completing the part-I and part-II was average of 30 - 45 minutes.

Reliability of the tool

The pre-testing and reliability of the tool were carried out among 10 antenatal Mothers in a GGSMC&H Faridkot. The clarity of the items and the time taken to complete the tool were assessed. Split- half method was used to measure the co-efficient of internal consistency. The reliability for the split-half test (r= 0.73) was established using Karl Pearson's correlation co-efficient formula. The reliability co-efficient of the tool was determined using Spearman-Brown prophecy formula. The reliability co-efficient was found to be 0.84 rendering the tool highly effective and reliable.

Development of Planned Teaching Program

The tool consists of two parts. They are;

Part – I: Baseline proforma

Part – II: Structured interview schedule

Part – I: Baseline proforma – It consists of seven items for obtaining information regarding age, education, occupation, income, diet and previous information.

Part – II: Structured interview schedule of knowledge questionnaire – It consists of 30 items in 4 areas of prevention of GDM. It consists of

- GDM as a disease (definition, risk factors, clinical features, diagnosis) – 12 items
- Management of GDM – 6 items
- Complication of GDM – 3 items
- Prevention of GDM – 9 items

The items were of multiple choice type with one correct answer and each question carrying single score.

Development of Planned Teaching Program

The PTP was developed by the investigator, after reviewing literature, seeking opinion of the experts and from the personal experiences. This was developed to teach the antenatal mothers about prevention of GDM. The PTP was 45 minutes duration and covered the following areas;

- Meaning and definition of GDM

- Risk factors of GDM

- Clinical features of GDM

- Diagnostic measures of GDM

- Management of GDM

- Complication of GDM

- Prevention measures of GDM

Flash cards are used for the definition, risk factors, clinical features and diagnostic measures. Charts for diet and other preventive measures. Power Points for complication and exercises and also the exercises are demonstrated by the investigator to the subjects.

The steps followed for the development of the PTP were;

- Preparation of criteria check list

- Preparation of the 1st draft of the teaching plan

- Content validation of the PTP

- Prevention of the final draft of the PTP

Pilot study

Pilot study was conducted in GGSMCH, Faridkot. Formal permission was obtained from concerned authority before conducting the study. The purpose of the study was explained to the sample group and confidentiality was assessed. Informed consent was obtained prior to the interview. The tool was administered to 5 antenatal mothers who fulfilled the criteria of selection.

Data collection procedure

The investigator obtained permission from the Medical Superintendent prior to the data collection period. Data was collected from GGSMC&H,Faridkot and the data collection period extended from 15.02.2022 to 22.02.2022.

The pre-test was conducted by structured interview schedule, which was prepared in Kannada. Prior to the pre-test purpose of the study was obtained and informed consent was taken. The time taken to the pre-test was 30-45 minutes per respodent. The pre-test was conducted on 5 antenatal mothers. PTP was given to the same mothers individually on the same day of pre-test. Investigator used flash cards, chart and power point as well as demonstration to teach the prevention of GDM, ie; is definition and meaning, risk factors, clinical features, diagnosis, management, complications and preventive measures. The post- test was conducted on the 7th day after the administration of PTP with the same tool. All the interviews and

administration of PTP were conducted by investigator herself. The investigator thanked and appreciated all the subjects. The collected data was compiled for analysis.

Plan for data analysis:

Data will be analyzed using both descriptive and inferential statistics on the basis of hypotheses of the study. Baseline proforma containing sample characteristics would be analyzed using frequency and percentage. The knowledge of the mothers regarding the prevention of GDM before and after the administration of PTP would be calculated using mean, standard deviation and mean percentage.

The significance difference between the mean pre-test and post-test knowledge score would be calculated using't' test. Further, statistical significance of the effectiveness of planned teaching program will be analyzed by using tables, graphs and diagrams. Demographic data will be presented using bar, cone, cylinder diagrams and pie charts. Distribution of level of the knowledge of the antenatal mothers and area wise and item wise analyses of the knowledge scores and effectiveness will be presented using tables and diagrams.

Section I: Sample characteristics

Sample characteristics include age, education, occupation, income, gravida, dietary pattern. The sample consisted of 50 antenatal mothers. The characteristics are depicted in table

Table 1: Distribution of antenatal mothers frequency and percentage on the basis of demographic variables. **N=50**

Sl. No.	Variables	Frequency (f)	Percentage (%)
1. Age (in years)	Below 20	1	2.0
	21-25	25	50.0
	26-30	22	44.0
	Above 30	2	4.0
2. Education	Illiterate	-	-
	Primary	19	38.0
	High school	25	50.0
	PUC	3	6.0

	Graduate and above	3	6.0
3. Occupation	House wife	13	26.0
	Coolie	30	60.0
	Private	7	14.0
	Government service	-	-
4. Monthly income	<3000	28	56.0
(in rupees)	3001-4000	20	40.0
	4001-5000	2	4.0
	5000 and above	-	-
5. Gravida / parity	Primi gravida	30	60.0
	2nd gravida	15	30.0
	3rd gravida	4	8.0
	4th and above	1	2.0
6. Dietary pattern	Vegetarian	3	6.0
	Non-vegetarian	47	94.0
7. Previous information	Yes	-	-
	No	50	100.0

Section II: Evaluation of PTP in terms of gain in knowledge score

This section deals with the analysis and interpretation of the data with relevance to effectiveness of PTP on prevention of GDM among antenatal mothers.

The data concerning the effectiveness of PTP was established by analyzing the pre-test and post-test knowledge score of the respondents. It was analyzed by using descriptive and inferential statistics.

Table 2: Frequency and cumulative frequency (cum.freq) distribution of pre-test and post-test knowledge score

N=50

Knowledge score	Pre-test			Post-test		
	Frequency	Percentage	Cum.freq.	Frequency	Percentage	Cum.freq.
11 - 15	7	14	7	_	_	_
16 - 20	33	66	40	1	2	1
21 - 25	8	16	48	10	20	11
26 - 30	2	4	50	39	78	50

Maximum score = 30

Data in table 2 explains that (66%) of the antenatal mothers scored between 16-20, and (16%) of them scored between 21 – 25, (14%) of them scored between 11–15 and (4%) of them scored between 26 – 30 in pre-test. In the post-test only (2%) of them scored between 16 – 20, none of them scored between 11 – 15 and majority (78%) of them are scored between 26 – 30 in post-test.

Section III: Effectiveness of PTP on prevention of GDM

In order to find out the significance of the difference between the pre-test and post-test knowledge score on GDM. Paired 't' test was computed and data is presented in table 6.

The research hypothesis (H_1) was stated to test the statistical difference between pre-test and post-test knowledge score on prevention of GDM.

H_1: There is significant difference between mean pre-test and post test knowledge score of antenatal mothers on prevention of GDM at 0.05 level of significance.

Table 6: Mean, mean difference, standard deviation and 't' value between pre-test and post-test knowledge score

Group	Mean knowledge score						
	Pre-test	Post-test	Mean difference	S.D.	S. D. error difference	df	't' value
Antenatal mothers	18.24	26.9	8.66	2.64	0. 373	49	22.8547*

$t_{49} = 2.008$; $p < 0.05$ * significant

Table value t_{49} at 0.05 level of significance is 2.008. The 't' value (22.8547) is greater than the table value ($t_{49} = 2.008$); hence the research hypothesis (H_1) is accepted.

The above data in the table 6 indicates that mean post-test knowledge score higher ($x_2 = 26.9$) than the pre-test knowledge score ($x_1 = 18.24$). The computed 't' value (22.8547) showed significant difference between the pre-test and post-test knowledge score ($t_{49} = 2.008$; $p < 0.05$). On the basis of this, the research hypothesis (H_1) was accepted. This indicates that PTP is more effective in increasing the knowledge of antenatal mothers regarding the prevention of GDM.

Section IV: Association between the pre-test knowledge score of antenatal mothers with selected demographic variables.

To test the association between pre-test knowledge score and selected variables, the following hypothesis was formulated:

H_0: There will be no significant relationship between pre-test knowledge score of antenatal mothers and selected variables such as age, education, occupation, income and gravida or parity at 0.05 level of significance.

Chi-square was computed to test the hypothesis as shown in table 8.

Table 8: Chi-square (χ^2) value between the level of pre-test knowledge score and selected demographic variables.

Sl. No.	Variables	Knowledge score		df	Chi-square value (χ^2)
		≤Median (≤18)	>Median(>18)		
1.	Age (in years) ≤ 25 ≥ 26	13 14	12 11	1	0.08*
2.	Education High school & below PUC & above	20 7	14 9	1	0.99*
3.	Occupation House & coolie Private & govt. service	9 17	5 19	1	0.01*
4.	Income(monthly) ≤ 4000 ≥4001	20 7	9 14	1	0.03*
5.	Gravida / parity ≤ 2nd gravida ≥ 3rd gravida	22 23	5 0**	1	0.04*

$\chi^2_{(1)} = 3.84$; $p > 0.05$ 　　　　　　　　　　　　　　　 * Not significant

　　　　　　　　　　　　　　　　　　　　　　　　　　　　　 ** Yates correction

The computed chi-square value shows no association between pre-test knowledge score with selected variables such as age, education, occupation, income and gravida or parity at 0.05 level of significance. Therefore, the research hypothesis (H$_1$) was rejected.

CONCLUSION

The following conclusions were drawn based on the findings of the study are;

- A high percentage of antenatal mothers were less than 24 weeks of gestation infers the prominence of early diagnosis of GDM.

- A proportion among various work patterns indicated GDM, antenatal mothers to be a moderate worker and mostly heavy worker.

- Among demographic variables the age, education exhibits its relation with knowledge gain.

- The pre-test finding shows that deficit knowledge regarding prevention and management of GDM among antenatal mothers in all areas of learning.

- The PTP tested in the study was found to be effective in improving the knowledge on prevention of GDM among antenatal mothers.

- The PTP is an effective teaching method for providing information. It is noted that PTP is very much appreciated, encouraging as well as satisfying by the antenatal mothers. The post-test score showed an increase in knowledge in all areas of prevention of GDM among antenatal mothers. They suggest that to give such information regarding the other disease condition during pregnancy and its prevention.

- There is no relationship between the pre-test knowledge scores and demographic variables such as age, education, occupation, gravida, income, dietary pattern and previous information with that of gain in knowledge.

- Antenatal mothers who were exposed to PTP were able to maintain preventive measures within normal limits as compared to others.

- Antenatal mothers could be taught about the GDM and its self care management by administrating PTP.

Thus the finding indicates that PTP on prevention of GDM among antenatal mothers is effective in increasing the knowledge and thus prevention of complications. The tested hypotheses of this study are thus accepted.

Recommendations:

On the basis of the present study, the following recommendations have been made for future study;

- A study could be replicated on a larger sample size and in different settings.

- A similar study can be conducted with a control group.

- A study to be conducted to identify the role of community nurses or nurses in prevention of GDM and its complications, there by promoting safe motherhood.

- A comparative study can be undertaken to compare the findings of the rural and urban community.

- The study could be repeated only on primigravida or multigravida mothers.

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