

**EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME  
REGARDING GESTATIONAL DIABETES MELLITUS IN TERMS  
OF KNOWLEDGE AND PRACTICE AMONG ANTENATAL  
MOTHERS WITH GESTATIONAL DIABETES MELLITUS  
ATTENDING OUTPATIENT DEPARTMENT AT  
GKNM HOSPITAL, COIMBATORE.**

**Certified Bonafide Project Work  
Done By**

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**A DISSERTATION SUBMITTED TO, THE TAMILNADU  
DR. M. G. R. MEDICAL UNIVERSITY, CHENNAI IN  
PARTIAL FULFILLMENT OF THE REQUIREMENT  
FOR THE DEGREE OF MASTER OF SCIENCE  
IN NURSING**

**2008 – 2010**

## CHAPTER – I

### INTRODUCTION

**“Pregnancy is special,  
Let’s make it safe”**

**WHO (1998)**

#### **BACKGROUND OF THE STUDY:-**

Pregnancy is a period in which lot of metabolic and hormonal changes takes place. Individual women will vary in their expectations and needs during the childbearing process. Pregnancy and child birth are special events in women’s lives and indeed in the lives of their families. This can be a time of great hope and joyful anticipation. It can also be time of fear, suffering and even death. Although pregnancy is not a disease, but a normal physiological process, it is associated with certain risks to health and survival both for the women and for the fetus she bears. These risks represent in every society and in every setting. In developed countries they have been largely over come because every pregnant woman has access to special care during pregnancy and child birth. Such is not the case in many developing countries, where each pregnancy represents a journey into the unknown from which, too many women never return.

**Lowdermilk Leonard, (1994)**

Gestational diabetes mellitus is a form of glucose intolerance diagnosed in some women during pregnancy.

**Centers for Disease Control and Prevention, (2007).**

Gestational diabetes mellitus is defined as any degree of glucose intolerance with onset or first recognition during pregnancy.

**American Diabetes Association, (2003)**

Pregnancy is associated with profound changes in the fat and carbohydrate metabolism. Glucose metabolism is characterized by a lower fasting plasma and elevated postprandial values in the early weeks. In later weeks carbohydrate metabolism is stressed by the rising levels of human chorionic somatotropin (hCS), prolactin, cortisol, and glucagons. These hormones cause decreased glucose tolerance and insulin resistance. A small pregnant population cannot withstand the physiological stresses accompanying pregnancy which result in abnormal glucose tolerance which causes Gestational diabetes mellitus.

**Usha Krishnan, (2004)**

Gestational diabetes mellitus is hyperglycemia or glucose intolerance first detected during pregnancy. It occurs in 2-4% of all pregnancies, but its prevalence varies widely in different population.

**Lowdermilk Leonard, (1994)**

Gestational Diabetes Mellitus occurs when the women's beta cell function is not able to overcome the antagonism created by the anti-insulin hormones of pregnancy and the increased fuel consumption required to provide for the growing fetomaternal unit.

**Alberto L., (2000)**

Classic risk factors for gestational diabetes mellitus include obesity, family history of diabetes, family history of macrosomia and previous poor obstetric history. Thus a mother with any of these risk factors to be identified and treated well.

**Lowdermilk Leonard, (1994)**

**Dawn, CS., (2001)** says that gestational diabetes is the commonest type encountered. (50-80% of all pregnant diabetes) Majority of them are at 20-30 years. Gestational diabetes usually develops during the second or third trimester. There are no standard methods for screening, diagnosing and treating this condition which leads to serious maternal and fetal complications.

Many of the obstetric and gynecological problems arise from gestational diabetes mellitus. Both maternal and fetal complications are included. Maternal complications are obesity which cause resistance to insulin which will results in diabetes after gestational diabetes mellitus,

fasting hyperglycemia (>105 mg/dl), increased frequency of maternal hypertensive disorders, increases the need for cesarean delivery, increased risk for the development of type 2 diabetes in women after pregnancy. Fetal complications are intrauterine fetal death during the last 4-8 weeks of gestation due to maternal hyperglycemia, increased risk of fetal macrosomia, neonatal jaundice, polycythemia in the neonate, hypocalcaemia in the neonate, and fetal growth disorders. Offspring of obese women with gestational diabetes mellitus are at increased risk of obesity, glucose intolerance, and diabetes in late adolescence and young adulthood.

**Lowdermilk Leonard, (1994)**

Prevention of adverse maternal and perinatal outcomes in gestational diabetes mellitus is based on achieving maternal blood glucose as close to normal as possible. The primary prevention is more important as this effort is likely to reverse or halt the epidemic of disease. Women with gestational diabetes mellitus are an ideal group for the primary prevention of diabetes as they are at increased risk of future diabetes, predominantly type II diabetes, as are their children. The timely action taken in screening all pregnant women for glucose tolerance, achieving euglycemia in them and ensuring adequate

nutrition may prevent in all possibility, India becoming the diabetes capital of the world.

**Seshiah, V., (2004)**

According to the “**Centers for Disease Control and prevention (CDC-2007)**” gestational diabetes occurs more common among African American, Hispanic/Latino American and American Indian, common among obese women and women with a family history of diabetes. After pregnancy, 5-10 percent of women with gestational diabetes are found to have type II diabetes. Women who have had gestational diabetes have a 20-50 percent chance of developing diabetes in the next five to ten years. Their offspring are at an increased risk for obesity as well as impaired glucose tolerance and type 2 diabetes. Gestational diabetes mellitus may also be associated with intrauterine fetal death, increased frequency of maternal hypertensive disorders and the need for cesarean delivery.

**Hunter, K et. al., (1989)** observed that gestational diabetic mothers had a threefold risk of giving birth to a baby weighing over 4500 g compared with normoglycemic women. However, a women weighing over 90 Kg had a 26 fold risk of having, a baby heavy compared with normal weight women.

**Kappy, G., (1991)** showed that raised maternal blood sugar level in the first three months of pregnancy lead to congenital abnormalities in the baby. This is particularly true for neural tube defects and cardiac anomalies.

**Miller, C., (1981)** emphasizes that the rate of infant malformation rises to 30% of cases in pregnant women whose diabetes is poorly controlled and high blood sugar level in later pregnancy can contribute to excessive growth of the baby, resulting in macrosomic infants. Jovanovic – Peterson., (1991) found that these babies weigh more than 4kgs at birth or are above the 95<sup>th</sup> percentile and are often born prematurely, making them more likely to die.

**Buchanan, T., (1998)** points out that “the worst complication is essentially the overfeeding of a baby”. That means babies get fat in the womb, especially around their shoulders and abdomen, causing them to get stuck during child birth. Inturn that raises the risk for birth trauma to the baby from 2-3% in a normal birth to 5-6% in a birth involving gestational diabetes.

## **NEED FOR THE STUDY:-**

The prevalence of diabetes is increasing globally and India is no exception. The “fetal origin of disease” hypothesis proposes that gestational programming may cortically influence adult health & disease.

**Seshiah, V., (2004)**

In world, approximately 7% of all pregnancies are complicated by gestational diabetes mellitus, resulting in more than 200,000 cases annually. The prevalence may range from 1 to 14% of all pregnancies, depending on the population studied.

**American Diabetes Association, (2003)**

“**Healthy people 2010**” objective states that – To decrease the proportion of pregnant women with gestational diabetes.

The incidence of gestational diabetes ranges from 0.15% in New Castle to 12.3% among Mexican American (Hadden S., 1985). Friedman (1985) in Tel Aviv has reported an incidence of 3.7%; while Alshavaf (1988) reported an incidence of 1.9% of gestational diabetes and 8.4% of impaired glucose tolerance in Saudi women.



Annual Incidence of gestational diabetes in the state of USA is about 135,000 pregnant women (3-5%). Incidence rate is approximately 1 in 2,014 or 0.05% (or) 135,000 people in USA. Incidence extrapolation for USA for gestational diabetes is 134,999 per year; 11,249 per month, 2,596 per week; 369 per day; 15 per hour.

U.S. birth certificate data (1998) report on prevalence of gestational diabetes per 1000 women in developing countries, and found that 48.3 in India, 27.3 in china & 21.6 in Japan. Other countries like Vietnam and Korea; it is 19.5 & 16%. Among all these Asian countries, the Prevalence rate of gestational diabetes is high in India.

Incidence of gestational diabetes mellitus in India by annually is about 528,619 in the estimated population of 1,065,070,607 in the year 2006.

According to **“The National Diabetes Education Program”**, estimated that the national prevalence of gestational diabetes mellitus in 2005 was approximately 7.0 percent in women in child bearing age, 15-44 years.

**Hyperglycemia and Adverse Pregnancy Outcome (HAPO)** study was conducted in mid-2007. The project seeks to create awareness among the public - in particular women's groups - on gestational diabetes and to build capacity in the health care system to prevent, manage and control the problem. The first three years of intervention are considered a pilot phase of the project. In this phase, the project focused on one urban and one rural setting i.e. the city of Chennai and Kanchipuram district in the state of Tamil Nadu

- A total of 12,056 have been screened for gestational diabetes, diagnosing 1,679 women (13.9%). In the rural area of Tiruvallur the prevalence rate was 9.9%; in the semi-urban district of Saidapet Taluk it was 13.8% and in urban Chennai it was 17.8%.
- All 1,679 women diagnosed with gestational diabetes were treated with meal plan to maintain their target blood glucose levels. They were periodically followed up every month and those women who did not achieve control with meal plan alone, were advised insulin.
- Among 8,731 women who were followed up upon, the incidence of birth weight abnormalities was reduced significantly in comparison to the National Health Survey (19% macrosomic

babies nationally compared to 7% among the women in the project).

- In March 2007, the Tamil Nadu Government issued an order making screening for gestational diabetes during pregnancy mandatory.

Awareness has been created among the public, particularly women groups, medical, para medical, non-medical and public health professionals on the implications of abnormal glucose tolerance during pregnancy and about the preventive and control measures to be followed.

**Seshiah, V., (2004 –2008)**

According to all these statistics, it is understood that, the prevalence of gestational diabetes mellitus is increasing and it is necessary to prevent and control it. According to a study conducted by Dr. V. Seshiah in scope for prevention of diabetes “Focus Intrauterine milieu interior” stated that, the primary prevention is more important as this effort is likely to reverse or halt the disease. So women with gestational diabetes mellitus are an ideal group for the primary prevention of diabetes as they are at increased risk of having pregnancy complications.

### **The Australian Diabetes In Pregnant Society (ADIPS) (1998)**

recommends that screening for gestational diabetes should be considered in all pregnant women. However, its resources are limited; screening may be reserved for those at highest risk. Women diagnosed with gestational diabetes have an increased risk of developing diabetes in the future. If they require insulin for their pregnancy, there is a 50% risk of diabetes within 5 years. If dietary control has been sufficient, a 60% risk of developing diabetes within 10-15 year still persists.

**Sullivan, O., (2000)** states that the complication of gestational diabetes is manageable and preventable. The key to prevention is careful control of blood sugar levels just as soon as the diagnosis of gestational diabetes is made .By maintaining normal blood sugar levels; it is less likely that a fetus will, develop macrosomia, hypoglycemia, or other chemical abnormalities. The main rationale for current gestational diabetes management is to reduce the incidence of birth injuries and caesarean section by reducing the incidence of macrosomia.

As pregnancy brings physical as well as emotional changes in a woman's life, it is considered an additional demand on the individual. There are several barriers such as poverty, illiteracy, social status, religious backwardness, socio- cultural custom and beliefs etc., may hinder the mother adherence to the therapeutic regimen which may

give rise to complications of gestational diabetes. The complications of gestational diabetes can be reduced by good glycemic control, through home blood glucose monitoring, dietary modification, exercise, insulin regimen and prevention of maternal and fetal complications of gestational diabetes. A lack of knowledge on gestational diabetes results in exalating cost of GDM both for the country & the family.

As primary care provider and health promoter, nurses play an important role in the education of patients. The basic philosophy underlying nursing is to assist in self care and independence. Therefore it is essential that nurses design, test and implement different approaches to patient's teaching. Individual instruction and group instructions are teaching strategies designed to improve the knowledge of GDM mother to carry out such function as self administration of insulin, monitoring of diet and exercise.

During her clinical posting, the researcher found that most of the gestational diabetic women are lacking knowledge regarding the gestational diabetes mellitus and its management, decided to impart knowledge. It is necessary to impart knowledge regarding gestational diabetes mellitus (GDM), and its treatment mainly administration of insulin and dietary pattern to be followed. It can reduce the incidence of developing maternal and fetal complications. The researcher has

identified that imparting knowledge on mothers with gestational diabetes mellitus will prevent complications arising from it. So it has become the essential need to conduct this study.

**STATEMENT OF THE PROBLEM:-**

A study to evaluate the effectiveness of structured teaching programme on gestational diabetes mellitus in terms of knowledge and practice among antenatal mothers with gestational diabetes mellitus attending outpatient department of GKNM Hospital, Coimbatore.

**OBJECTIVES:-**

1. To assess the pre test knowledge and practice scores regarding gestational diabetes mellitus among the antenatal mothers with gestational diabetes mellitus.
2. To evaluate the post test knowledge and practice scores regarding gestational diabetes mellitus among the antenatal mothers with gestational diabetes mellitus.
3. To compare the pre test and post test knowledge scores regarding gestational diabetes mellitus among the antenatal mothers with gestational diabetes mellitus.
4. To compare the pre test and post test practice scores regarding gestational diabetes mellitus among the antenatal mothers with gestational diabetes mellitus.

5. To find correlation between the post test knowledge scores and practice scores of antenatal mothers with gestational diabetes mellitus.
6. To find association between the posttest knowledge scores regarding gestational diabetes mellitus with their selected demographic variables.

**OPERATIONAL DEFINITIONS:-**

**EFFECTIVENESS:-**

It means producing an intended result.

In this study it refers to determine the extent to which teaching programme has brought about the results intended in terms of significant difference between pretest and posttest knowledge and practice which is measured using statistical measurements.

**STRUCTURED TEACHING PROGRAMME:-**

It refers to a planned series of information to a group of people, so as to help to learn something.

In this study it refers to a planned activity for 45 minutes to create awareness on knowledge regarding the gestational diabetes mellitus -its causes, risk factors, signs and symptoms, and its management by using laptop and compact disc.

**KNOWLEDGE:-**

The information gained through education.

In this study, it refers to the level of understanding and verbal responses of the antenatal mothers regarding the gestational diabetes mellitus, which is measured by structured interview schedule.

**PRACTICE:**

Practice means the way of doing something.

In this study it refers to the knowledge on practice in terms of verbal responses of the antenatal mothers regarding the gestational diabetes mellitus and its management which is measured by structured interview schedule.

**GESTATIONAL DIABETES MELLITUS (GDM):-**

Gestational diabetes mellitus is defined as any degree of glucose intolerance with onset or first recognition during pregnancy.

**American Diabetes Association (2003)**

**ANTENATAL MOTHER:-**

It refers to an expectant mother from the time of conception is confirmed until the beginning of labour.



In this study it refers to primigravida mothers with gestational diabetes mellitus within 20- 34 weeks of gestation.

**RESEARCH HYPOTHESES:-**

- H<sub>1</sub> - The mean post test knowledge scores is significantly higher than the mean pre test knowledge scores.
- H<sub>2</sub> - The mean post test practice score is significantly higher than the mean pre test practice scores.
- H<sub>3</sub> - There will be a significant correlation between the post test knowledge scores and posttest practice scores.
- H<sub>4</sub> - There will be a significant association between the post test knowledge scores of gestational diabetes mothers with their selected demographic variables

**ASSUMPTION:-**

- Antenatal mothers with gestational diabetes mellitus may have less knowledge regarding gestational diabetes mellitus.
- Structured teaching programme enhances the knowledge of mothers regarding gestational diabetes mellitus.

**DELIMITATION:-**

The study is delimited to;

- 30 samples.
- 5 weeks of data collection.

**PROJECTED OUTCOME:-**

Structured teaching programme will help the gestational diabetic mothers, to gain knowledge regarding the gestational diabetes mellitus which will help the mother to take care of herself during her antenatal period like following diabetic dietary pattern, taking insulin and regular exercise, to maintain her blood glucose in the normal range, and to prevent complications to the mother and fetus like preterm labour, polyhydramnios, shoulder dystocia, perineal injuries, puerperal sepsis, fetal macrosomia, congenital malformations, and recurrence of gestational diabetes in future and helps deliver a healthy baby.

## CONCEPTUAL FRAME WORK

### **MODIFIED DANIEL .L. STUFFLE BEAM'S EVALUATION MODEL**

Conceptual framework refers to concepts that offer a frame work of proposition for conducting research.

The conceptual framework selected for the study is modified model of Stuffle Beam's Evaluation Model (1983). The model is based on the premise that relevant information is foundational to sound judgements about the relative merits of alternatives available in the evaluation process. He proposes four decision types developed by crossing an "ends-means dimension and an intended-actual dimensions". The four elements of the model are context, input, process and product; thus named "CIPP" model.

The model is adopted in a modified form for the present study. According to the model content identifies discrepancies between intended and actual programme outcome and the evaluators can develop casual explanation for the discrepancies.

The core value for present study is enhancing knowledge regarding gestational diabetes mellitus among antenatal mothers with gestational diabetes mellitus.

## **CONTEXT EVALUATION**

The context evaluation is used to define the operational context of programs and to assess needs, problems and opportunities to help decision makers define goals and priorities.

The context evaluation for the present study is to assess demographic variables (mother's age, educational status, occupation, duration of GDM, gestational age, type of family, dietary pattern, and residence) and assessment of pretest knowledge on gestational diabetes mellitus with structured interview schedule.

## **INPUT EVALUATION**

Input evaluation addresses intended means determined by structured decisions. It involves the steps and resources needed to meet the goals and objectives and might include identifying successful external programmes and materials as well as gathering information. The Input evaluation assess alternative approaches, competing action plans, cost effectiveness to meet targeted needs and achieve goals.

The Input evaluation for the present study is to develop and validate the structured teaching programme on gestational diabetes mellitus including definition, risk factors, symptoms, diagnosis and

management; preparation of compact disc; and preparation of pamphlet on menu plan for gestational diabetes mellitus.

## **PROCESS EVALUATION**

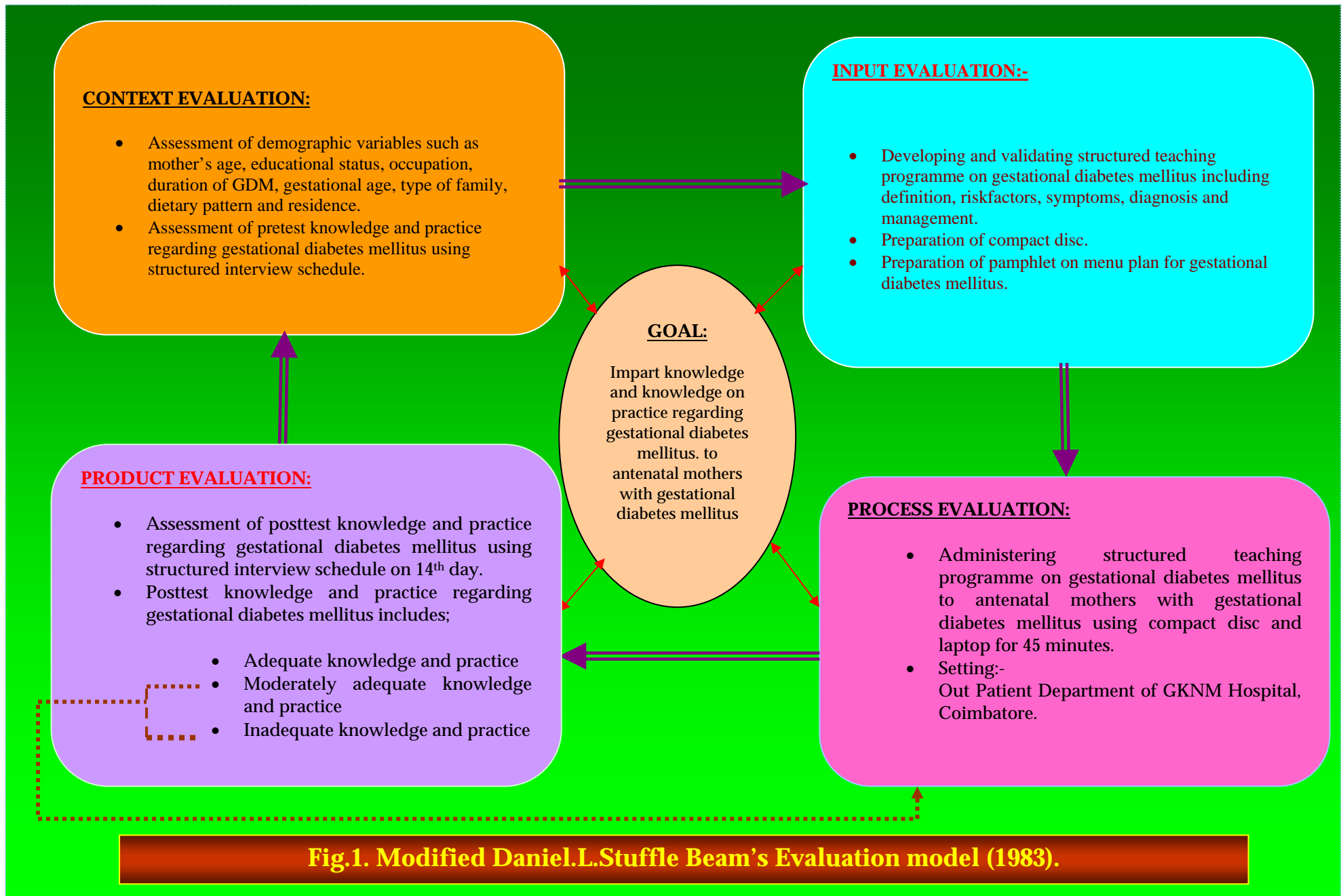
Process evaluation monitors actual means to assess and intervene as needed to maintain congruence between intended and actual means. It provides continuous feedback to decision makers responsible for control and refinement during the implementation phase of the program. The goal of the process evaluation is to identify actual or potential defects in either the program design or its implementation.

In this study, process evaluation is to administer structured teaching programme on gestational diabetes mellitus to antenatal mothers with gestational diabetes mellitus on the day of pretest using compact disc and laptop for about 45 minutes. The setting was in the out patient department of GKNM Hospital, Coimbatore.

## **PRODUCT EVALUATION**

The Product evaluation identifies and assesses outcomes of intended ends and actual ends, which help the investigator, keep an enterprise focused on achieving important outcomes.

In this study product evaluation is the assessment of post test knowledge and practice regarding gestational diabetes mellitus with structured interview schedule on 14<sup>th</sup> day. Here the outcome of knowledge and practice is regarded as adequate knowledge and practice, moderately adequate knowledge and practice and inadequate knowledge and practice. In that moderately adequate and inadequate knowledge & practice needs process evaluation.



## CHAPTER - II

### REVIEW OF LITERATURE

Review of literature consists of the following sub divisions:

#### **PART – I**

Over view of gestational diabetes mellitus.

#### **PART – II**

- a. Studies related to management of gestational diabetes mellitus.
- b. Studies related to complications of gestational diabetes mellitus.
- c. Studies related to structured teaching programme.

#### **PART – I**

### **OVERVIEW OF GESTATIONAL DIABETES MELLITUS**

#### **DEFINITION:-**

Any degree of glucose intolerance with onset or first recognition during pregnancy.

**Lowdermilk Leonard, (1994)**



## **EPIDEMIOLOGY:-**

The frequency of gestational diabetes varies widely by study depending on the population studied and the study design. It occurs in between 5 and 10% of all pregnancies (between 1-14% in various studies).

### **Diabetes Care, (1998)**

**David, N., (1997)** conducted a study 3131 pregnant women to detect gestational diabetes after 50g oral glucose load at 24-28 weeks of gestation in Canada and found that 8.26% of pregnant mothers were diagnosed as gestational diabetes.

**Contage, N et. al., (1979)** conducted a study on 1200 pregnant women to identify the prevalence of GDM among pregnant women and found that it ranges from 1.4% to 12-3% indifferent counties.

## **RISK FACTORS:-**

- A previous diagnosis of gestational diabetes or prediabetes, impaired glucose tolerance, or impaired fasting glycaemia.
- A family history revealing a first degree relative with type 2 diabetes.
- Maternal age - a women's risk factor increases as she gets older (Especially for women over 35 years of age)

- Ethnic background (people originating from the Indian subcontinent, African American, Afro – Caribbean's, Native Americans, Hispanic's Pacific islanders).
- A previous pregnancy which resulted in a child with a high birth weight (>90<sup>th</sup> centile, or >400g).
- Previous poor obstetric history.
- Smoking.
- Polycystic ovarian syndrome.

**Usha Krishnan, (2004).**

**Kaufman, C et.al., (1994)** in their article on increased risk for gestational diabetes , found that maternal age over 30, obesity or pre-pregnancy weight more than 20% over ideal weight, family history of type II diabetes and obstetric history of birth of infant larger than 4kgs , hydramnios or unexplained still birth of infant with congenital anomalies.

## **SYMPTOMS :-**

Frequently women with gestational diabetes mellitus exhibit no symptoms. But sometimes they exhibit symptoms like;

- Increased thirst.
- Increased Urination.
- Fatigue
- Nausea and vomiting.
- Bladder infection.
- Yeast infection
- Blurred vision

**Padubidri, V., (2006).**

## **DIAGNOSIS AND SCREENING:-**

Because gestational diabetes mellitus is asymptomatic in most cases, the diagnosis of gestational diabetes is a process that takes into account a clinical assessment of risk factors, screening tests and diagnostic tests.

The **ADA (American Diabetes Association ) 1990** concluded that all pregnant women, who have not been identified with glucose intolerance earlier in pregnancy be screened with 50g 1 hour glucose challenge test between 24 and 29 weeks of pregnancy.

### **ORAL GLUCOSE TOLERANCE TEST (OGTT):-**

This should be done in the morning after an overnight fast of between 8 and 14 hours. During the three previous days the subject must have an unrestricted diet (containing at least 150g carbohydrate per day) and unlimited physical activity. The subject should remain seated during the test and should not smoke throughout the test.

The test involves drinking a solution containing a certain amount of glucose and drawing blood to measure glucose levels at the start and on set time intervals thereafter.

### **Criteria for diagnosis of gestational diabetes with 100 gm oral glucose tolerance test (GTT)**

<b>Time</b>	<b>Whole blood (mg%)</b>	<b>Plasma (mg %)</b>
Fasting	90	105
1 hour	165	190
2 hours	145	165
3 hours	125	145

If any two or more values are elevated, the glucose tolerance test result must be considered abnormal.

**Criteria for diagnosis of impaired glucose tolerance and diabetes with 75 gm (WHO) oral glucose Plasma (mg%)**

<b>Time</b>	<b>Normal</b>	<b>Impaired glucose tolerance</b>	<b>Diabetes</b>
Fasting	< 105	105 to <140	≥ 140
2 hour post glucose	<160	160 to <200	≥ 200

- Venous whole blood values are 15% less than the plasma.
- $\text{m.mol/L} = \text{mg\%} \times 0.0555$ .

**Contage, N et.al., (1979)** studied 106 women with one abnormal value of oral glucose tolerance to determine the diagnosis of GDM after repeat OGTT and found that 34% were diagnosed with GDM. And concluded that the importance of repeat testing when only one abnormal value is found.

**Reeder Sharoj, (1991)**

**MANAGEMENT :-**

**Diet :-**

- The daily calorie requirement is about 30 – 35K cal per kg of body weight & 200 k cal for fetus.
- Diet should contain carbohydrate 40-60%, protein 20% and fat 25 – 30%.

- Fiber containing diet is increased.
- Three meal and three snacks regimen.
- The mother who is prone to develop hypoglycemia at night should take a snack of complex carbohydrate or protein at night. This helps to slow digestion and prevents hypoglycemia.

**Usha Krishnan, (2004)**

**Walkinshaw, SA., (2000)** conducted a study on 612 GDM mothers to determine the effects of primary dietary therapy in GDM mothers on fetal growth &, neonatal outcomes & concluded that primary dietary therapy is useful in the management of gestational diabetes.

**Wein, K et.al., (1999)** conducted an experimental study on 200 GDM mother to identify the effect of intensive versus routine dietary advice in Australia and concluded that diet and exercise play an important role in the management of GDM.

**Garner, P., (1997)** studied 300 pregnant women diagnosed with GDM between 24 and 32 weeks gestation at university of Ottawa to assess the impact of calorie- restricted diet versus routine diet in the management of gestational diabetes and found that treatment group

achieved statistically significant improvements in glycemic control compared with the control group

**Blood sugar monitoring:-**

- Frequent blood sugar estimation is required.
- Glycosylated haemoglobin at the end of first trimester and three monthly thereafter.

**Sonogram:-**

- Sonographic evaluation in pregnancy is extremely helpful, not only to diagnose fetal malformation but also to detect fetal macrosomia or growth retardation.

**Insulin therapy:-**

When diabetes is first detected during pregnancy and cannot be controlled by diet alone it should be treated with insulin. A post prandial plasma glucose level of more than 140 mg% over on diet control is an indication of insulin therapy. The total dose of insulin should be split as 2/3 in the morning and 1/3 before dinner. Oral antidiabetic drugs should not be used during pregnancy. These drugs cross the placenta and may have teratogenic effect or produce neonatal hypoglycemia.

**Padubidri, V., (2006).**

**Lange, O., (1998)** assessed 58 original studies, spanning the past 20 years addressing criteria for insulin management in gestational diabetes and concluded that mothers with fasting plasma glucose on the oral glucose tolerance test (OGTT) of <96 mg/dl, ideally non obese be assigned to diet therapy. Obese women with fasting plasma glucose >95 mg/dl on the OGTT should be referred to insulin therapy in order to minimize exposure of the fetus to a hyperglycemic environment.

**The American Diabetes Association and American college of obstetrician & Gynecologists (1998)** report that insulin therapy should be initiated if the fasting glucose level exceed 105 mg/dl and if the 2-hour post prandial level exceed 120 mg/dl on two or more occasions within a 2 week interval.

**Dennis, W et. al., (1998)** conducted a study on 108 GDM mother to determine the prevalence rate of macrosmic infants in insulin treated GDM mothers and found that insulin treatment was shown to reduce the rate of macrocosmic infants to 10.3%.



## **COMPLICATIONS:-**

### **MATERNAL:**

#### **1. During pregnancy**

- Abortion
- Preterm labour
- Infection
- Increased incidence of pre eclampsia (25%)
- Polyhydramnios (25-50%)
- Maternal distress

#### **2. During labour**

- Prolongation of labour due to big baby.
- Shoulder dystocia.
- Perineal injuries.
- Postpartum hemorrhage
- Operative interference.

#### **3. Puerperium**

- Puerperal sepsis.
- Failing lactation

## **FETAL HAZARDS:-**

- Fetal macrosomia (30-40%)
- Congenital malformation (6-8%)
- Unexplained fetal death
- Neonatal complication include; hypoglycaemia, respiratory distress syndrome; hyperbilirubinaemia, polycythaemia, hypocalcaemia, hypomagnesemia, cardiomyopathy.

**Padubidri, V., (2006).**

**Moses, K et. al.,(2000)** conducted a retrospective study on 1032 GDM mother over a 9 years period in Australia to determine the rate of indication for caesarean section for women with GDM and found that the caesarean section rate for women with GDM was higher at 19.8 % than the 15.6% for glucose tolerant women.

**Carlotti, J et. al., (2000)** studied 200 cases of GDM in Rennes south hospital to assess the efficacy of a co-program of care in GDM and found that Instrumental extraction and cesarean section were required for 13.5% & 20.5% of the deliveries respectively Shoulder dystocia occurred in 2%; Macrosomia in 19.9% & 5.3% were small for gestational age. Neonatal morbidity required transfer to the paediatric intensive care unit was 2.9% and concluded that systemic screening and Obstetrical & Gynecological care allowed mothers to prevent maternal

& fetal complications in gestational diabetes and to initiate hygiene & dietary habits for the prevention of post partum non- insulin dependent diabetes.

#### **PERINATAL MORTALITY:-**

The neonatal deaths are principally due to hypoglycemia, respiratory distress syndrome, polycythemia and jaundice.

#### **PROGNOSIS:-**

Gestational diabetes generally resolves once the baby is born. The chances of developing Gestational Diabetes Mellitus in a second pregnancy are between 30 – 84%. A second pregnancy within 1 year of the previous pregnancy has a high rate of recurrence.

**Usha Krishnan, (2004)**

## **PART – II**

### **A) STUDIES RELATED TO THE MANAGEMENT OF GESTATIONAL DIABETES:-**

**Mclinda, B et. al., (2009)** conducted an experimental study on dietary therapy for gestational diabetes mellitus at Texas. The objective of the study was to determine the length of time required for dietary therapy. All the gestational diabetic mothers were treated with dietary therapy for 4 weeks. The result shows that women with fasting glucose

at or below 95 mg /dl were significantly more likely to achieve good glycemic control after 2 weeks of dietary therapy than were those with values above 95 mg/dl. The study concluded that women with gestational diabetes mellitus should be prescribed dietary therapy alone for at least 2 weeks before they are prescribed insulin. The author recommended that to provide dietary therapy helps to manage the antenatal mothers having gestational diabetes mellitus.

**Roden, M et. al., (2008)** conducted a prospective longitudinal study on “The impact of risk factors, outcomes, and diagnostic criteria of gestational diabetes at central European women”. 1466 pregnant women were undergone 75 gm oral glucose tolerance test . The result shows that 46 % of all women had gestational diabetes mellitus. The study concluded that the use of diagnostic criteria is important to detect the neonates with hypoglycemia and mothers with impaired postpartum glucose metabolism. The author recommended that the antenatal mother those who are having family history of diabetes mellitus should go for diabetic screening in order to prevent the complications.

**Teroma, K et. al., (2008)** conducted a retrospective clinical study on “Detection of pregnancy with high risk of fetal macrosomia among women with gestational diabetes mellitus at Finland”. 905 gestational

diabetic mellitus mothers and 805 non diabetic mothers, were undergone 2 hours oral glucose tolerance test. The study result shows that 42.5% were treated with insulin and diet and 57.5% with diet only. Macrosomia occurred more often in the insulin treated group [18.2%] compared with the diet treated group [4.4%] and the controls 2.2%. The study concluded that the 24 hour glucose profile performed after the diagnosis of gestational diabetes mellitus clearly distinguishes between low risk [diet treated] and high -risk [insulin treated] for fetal macrosomia in gestational diabetes mellitus pregnancies. The author recommended that improvement of dietary pattern during pregnancy helps to manage the gestational diabetes mellitus.

**Witkop, CT et. al., (2007)** have conducted a systematic review to estimate benefits and harms of the choice of timing of induction or elective cesarean delivery based on estimated fetal weight or gestational age in women with gestational diabetes mellitus (GDM). Five studies met our inclusion criteria: one randomized controlled trial (RCT) and four observational studies. The RCT (n=200) compared the effect of labor induction at term with expectant management. The proportion of newborns with birth weight greater than the 90th percentile was significantly greater in the expectant-management group (23% compared with 10% with active induction,  $P=.02$ ); there were no

significant differences in rates of cesarean delivery, shoulder dystocia, neonatal hypoglycemia, or perinatal deaths. The four observational studies suggest a potential reduction in macrosomia and shoulder dystocia with labor induction and cesarean delivery for estimated fetal weight indications.

**Symons Downs, D et. al., (2006)** conducted a study on “Understanding exercise beliefs and behaviors in women with gestational diabetes mellitus in Canada”. 28 mothers were selected by mail survey method. The result showed that exercise during pregnancy was controlling the blood glucose level and during postpartum period it was controlling the weight. The study concluded that to increase exercise behavior helps to reduce the risk of type 2 diabetes in women with gestational diabetes mellitus.

**Jacobson, GF et. al., (2005)** undertaken a retrospective study among women with singleton pregnancies who had GDM diagnosed, with fasting plasma glucose 140 mg/dL. Maternal and neonatal outcomes and complications were assessed. Statistical methods included univariate analyses and multivariable logistic regression. In 1999 through 2000, 268 women had GDM diagnosed and were treated with insulin; in 2001 through 2002, 316 women had GDM diagnosed of which 236 (75%) received glyburide. The 2 groups were similar with

regard to age, nulliparity, and historical GDM risk factors; however, women in the insulin group had a higher mean body mass index, was compared with the glyburide group. There were no significant differences in birth weight, macrosomia or cesarean delivery. Women in the glyburide group had a higher incidence of preeclampsia and neonates in the glyburide group were more likely to receive phototherapy and less likely to be admitted to the neonatal intensive care unit (NICU) though they had a longer NICU length of stay. Glyburide was at least as effective as insulin in achieving glycemic control and similar birth weights, but increased risk of preeclampsia and phototherapy in the glyburide group warrant further study.

**Teresa, A Hillier., (2003)** to review evidence about the benefits and harms of screening for gestational diabetes and evaluated at least 1 of the following outcomes: neonatal mortality; brachial plexus injury; clavicular fracture; admission to a neonatal intensive care unit for hypoglycemia, hyperbilirubinemia, or the respiratory distress syndrome; maternal mortality; and preeclampsia or pregnancy-induced hypertension. 2 reviewers evaluated 1607 abstracts, critically appraised 288 articles, and qualitatively synthesized 13 studies. No randomized, controlled trials that directly evaluated the risks and benefits of gestational diabetes screening were found. One good-quality

randomized, controlled trial of treatment of mild gestational diabetes in a screening-detected population supported a reduction in serious neonatal complications and showed that gestational diabetes treatment also reduced the risk for gestational hypertension. Very limited evidence was found to evaluate early screening for gestational diabetes (before 24 weeks' gestation). The literature is limited by lack of a consistent standard for screening or diagnosis of gestational diabetes. Limited evidence suggests that gestational diabetes treatment after 24 weeks improves some maternal and neonatal outcomes. Evidence is even more sparse for screening before 24 weeks' gestation.

**Sanchez-Ramos, L et. al., (2002)** had conducted an observational study and randomized trials. Twenty-nine studies were identified, 11 of which met our criteria for systematic review and meta-analysis. These 11 studies included 3751 subjects. Of these, 2700 were managed expectantly, and 1051 underwent labor induction. Statistics for the nine observational studies showed that, compared with those whose labor was induced, women who experienced spontaneous onset of labor had a lower incidence of cesarean delivery and higher rates of spontaneous vaginal delivery. However, significant differences in these outcomes were not noted when the two randomized trials were assessed.



**Boulvain, M et. al., (2001)** a study conducted to assess the effect of a policy of elective delivery, as compared to expectant management, in term diabetic pregnant women, on maternal and perinatal mortality and morbidity. All available randomized controlled trials of elective delivery, either by induction of labour or by elective caesarean section, compared to expectant management in diabetic pregnant women at term. The reports of the only available trial were analysed independently by the three co-reviewers to retrieve data on maternal and perinatal outcomes. Results are expressed as relative risks (RR) and 95% confidence intervals (CI). The participants in the one trial included in this review were 200 insulin-requiring diabetic women. Most had gestational diabetes. The trial compared a policy of active induction of labour at 38 completed weeks of pregnancy, to expectant management until 42 weeks. The risk of caesarean section was not statistically different between groups (relative risk (RR) 0.81, 95% confidence interval (CI) 0.52 - 1.26). The risk of macrosomia was reduced in the active induction group (RR 0.56, 95% CI 0.32 - 0.98) and three cases of mild shoulder dystocia were reported in the expectant management group. No other perinatal morbidity was reported.

**Jennifer, C Dempsey et. al., (2001)** conducted a prospective study on gestational diabetes mellitus risk in relation to maternal recreational physical activity before and during pregnancy. The authors examined the relation between recreational physical activity before and during pregnancy and risk of gestational diabetes mellitus in a prospective cohort study. In 1996-2000, 909 normotensive, nondiabetic women in Seattle and Tacoma, Washington, were questioned during early gestation about physical activity performed during the year before and 7 days prior to the interview during pregnancy. Compared with inactive women, women who participated in any physical activity during the year before experienced a 56% risk reduction (relative risk RR=0.44, 95% confidence interval(CI): 0.21, 0.91). Women spending more than 4.2 hours/ week engaged in physical activity experienced a 76% reduction in gestational diabetes mellitus risk (RR= 0.24, 95% CI: 0.10, 0.64), and those expending 21.1 metabolic equivalent-hours/week experienced a 74% reduction (RR= 0.24, 95% CI: 0.10, 0.65) compared with inactive women. Physical activity during pregnancy was also associated with reduction in gestational diabetes mellitus risk. Women who engaged in physical activity during both time periods experienced a 69% reduced risk (RR= 0.31, 95% CI: 0.12, 0.79). Findings suggest that efforts to increase maternal physical activity may contribute to substantial reduction in gestational diabetes mellitus risk.

## **B) STUDIES RELATED TO COMPLICATION OF GESTATIONAL DIABETES MELLITUS.**

**Yun, S et. al., (2007)** conducted a cross sectional study on “Modifiable risk factors for developing diabetes among women with previous gestational diabetes mellitus at USA”. The objective of this study was to assess the prevalence of modifiable risk factors among three groups –pregnant women with previous gestational diabetes mellitus only, pregnant women with current diabetes, and pregnant women with out diabetes. The result showed that women with previous gestational diabetes mellitus only had higher prevalence because of no leisure – time physical activity. The study concluded that women with previous gestational diabetes mellitus are more prone to develop diabetes mellitus than women without gestational diabetes. The author recommended that health care providers and public health officials encourage the mothers to promote the healthy life styles during and after pregnancy.

**Odar, E et. al. (2004)** conducted the cohort study on “Maternal and fetal outcome of gestational diabetes mellitus in mulago hospital, Uganda”. 90 mothers were selected, in that 30 mothers with a 2 hours postprandial capillary blood sugar more than 140 mg /dl in the exposed group and 60 mothers with less than 140 mg/dl were the

unexposed group. The study result showed that the mothers with gestational diabetes mellitus were 4 times more likely to have hypertensive disease, and 9 times more likely to have vaginal candidiasis, the mode of delivery is similar in both groups, the babies for mother with gestational diabetes mellitus were more likely to be macrosomic, still born, and have shoulder dystocia than those of normal mothers. The study concluded that gestational diabetes mellitus is associated with adverse maternal and fetal outcomes. The author recommended that routinely we need to screen the mothers for gestational diabetes mellitus.

**Kwak, SH et. al., (2003)** the purpose of this study was to determine the frequency of recurrent gestational diabetes mellitus (GDM) and to find risk factors that can predict the recurrence of GDM in Korean women with previous GDM. An oral glucose tolerance test (OGTT) was performed during the index pregnancy and 2 months postpartum. The recurrence rate of GDM was assessed among 111 women who had a subsequent pregnancy. Multivariate logistic regression analysis was used to identify independent predictors of recurrent GDM. The frequency of recurrent GDM in subsequent pregnancies was 45.0% (95% CI 35.6-54.4%). Women with impaired fasting glucose and/or impaired glucose tolerance 2 months

postpartum were at increased risk for recurrent GDM (relative risk 2.31, 95% CI 1.24-4.30). GDM recurred in nearly half of subsequent pregnancies in Korean women.

**Kim, C et. al., (2002)** had conducted a study to examine factors associated with variation in the risk for type 2 diabetes in women with prior gestational diabetes mellitus (GDM). The subjects underwent testing for GDM and then testing for type 2 diabetes after delivery. Diagnostic criteria for GDM and type 2 diabetes, cumulative incidence of type 2 diabetes, and factors that predicted incidence of type 2 diabetes were abstracted. A total of 28 studies were examined. Cumulative incidence of type 2 diabetes increased markedly in the first 5 years after delivery and appeared to plateau after 10 years. An elevated fasting glucose level during pregnancy was the risk factor most commonly associated with future risk of type 2 diabetes. Conversion of GDM to type 2 diabetes varies with the length of follow-up and cohort retention. Adjustment for these differences reveals rapid increases in the cumulative incidence occurring in the first 5 years after delivery for different racial groups. Targeting women with elevated fasting glucose levels during pregnancy may prove to have the greatest effect on future.

**MacNeill, S et. al., (2001)** undertaken a study to determine the recurrence rate of gestational diabetes (GDM) during a subsequent pregnancy among women who had GDM during an index pregnancy and to identify factors associated with the probability of recurrence. A retrospective longitudinal study was performed in Nova Scotia, Canada, of women who were diagnosed as having GDM during a pregnancy. The recurrence rate of GDM in the pregnancy after the pregnancy with the initial diagnosis of GDM was determined. In this large cohort of women, slightly more than one-third of the subjects had diabetes in a subsequent pregnancy, which is consistent with recurrence rates in other predominately white populations.

**Dabelea, D et. al., (2000)** in a study to determine the role of the intrauterine diabetic environment per se, the prevalence of diabetes and the mean BMI were compared in siblings born before and after their mother was recognized as having diabetes. Nuclear families in which at least one sibling was born before and one after the mother was diagnosed with type 2 diabetes were selected. Consequently, the siblings born before and after differed in their exposure to diabetes in utero. A total of 58 siblings from 19 families in which at least one sibling had diabetes were examined at similar ages (within 3 years). The risk of diabetes was significantly higher in siblings born after the mother

developed diabetes than in those born before the mother's diagnosis of diabetes (odds ratio 3.7,  $P = 0.02$ ). In 52 families, among 183 siblings without diabetes, the mean BMI was 2.6 kg/m<sup>2</sup> higher in offspring of diabetic than in offspring of nondiabetic pregnancies ( $P = 0.003$ ). In contrast, there were no significant differences in risk of diabetes or BMI between offspring born before and after the father was diagnosed with diabetes. Intrauterine exposure to diabetes per se conveys a high risk for the development of diabetes and obesity in offspring in excess of risk attributable to genetic factors alone.

**Pallardo, F et. al., (1999)** conducted study of early postpartum metabolic assessment in women with gestational diabetes mellitus (GDM), to determine predictive factors for subsequent diabetes, and to investigate the association of postpartum glucose tolerance with other components of the metabolic syndrome. A total of 788 women were evaluated 3-6 months after a GDM pregnancy. A 75-g oral glucose tolerance test (OGTT) was performed. Cholesterol, HDL cholesterol, triglycerides, blood pressure, BMI, and body fat distribution were assessed. Clinical and obstetric history, baseline variables at the diagnosis of GDM, metabolic control during pregnancy, and index pregnancy outcome were compared in women with diabetes and women without diabetes. The association of postpartum glucose

tolerance with triglyceride levels, blood pressure, obesity, and regional distribution of body fat suggests that postpartum glucose intolerance anticipates a high-risk cardiovascular profile that comprises other risk factors besides diabetes.

### **C) STUDIES RELATED TO TEACHING PROGRAMME:-**

**Mandelson, SG et. al., (2007)** studied to examine the effects of a parish Nurse Intervention program on maternal health behaviors, glycemic control, and neonatal outcomes among Mexican American women with gestational diabetes. A randomized controlled trial comparing care as usual with a supplementary 1 hour education session for diabetes education reinforcement by a parish nurse. 100 samples were taken, were 49 as parish nurse intervention and 51 as care as usual. Two measures of glycemic control pre and post intervention were done. Outcome indicate significantly improved health promoting profile scores in the parish nurse Intervention program group post intervention compared with the care as usual group.

**Bard, K et. al., (2007)** conducted an explorative study on “Management of gestational diabetes from the patient perspective in Sweden, and middle Eastern born women”. 13 were selected in Sweden and 14 were selected in Middle East, they were undergone semi-structured interview .The result shows that Swedish women were



problem focused and information seeking. Women from Middle East this felt cared, had been given necessary information and claimed to follow advice. The study concluded that the clinic needs to be further improved by adopting educational programmes and focused by giving adequate information immediately. The author recommended that need to provide adequate information those who are working in health care setting.

**Hjelm, K et. al., (2006)** conducted an explorative qualitative study using semi – structured interviews, two groups were taken. Clinic A – a specialist diabetic clinic with regular contact with a diabetologist and antenatal care provided by a midwife, clinic B – a with a midwife, a structured programme for self monitoring of blood glucose and insulin treatment, and a 1 day diabetes class. Finding shows, that respondents from clinic A expressed fear about fetus development of type 2 diabetes, respondents from clinic B discussed different causes of GDM, and they claimed health care staff informed them GDM was a transient condition during pregnancy.

**Anitha, S., (2003)** in her study to assess the effectiveness of structured teaching programme on knowledge regarding self care management of GDM among primigravida mothers in out patient department of CSI rainey multispeciality hospital at Chennai. One

group pre-test design was used to achieve the objectives of the study. The study was conducted with a size of 35 primigravida mothers were selected by using non-probability convenient sampling technique. The method of data collection was by structured interview schedule, followed by STP was given to the mother. Post test was conducted on the 8<sup>th</sup> day. The overall mean for knowledge of self care management of GDM were 50.10 in pretest and 65.14 in post test. Paired 't' test showed that there was a significant improvement between the pretest and post test scores at the level of  $P < 0.001$ . Chi-square showed significant association of knowledge with religion at the level of  $P < 0.05$  ( $P = 9.49$ ) and with family income at the level of  $P < 0.01$  ( $p = 16.81$ ).

**García, A Patterson et. al., (2003)** conducted a study to compare the rate of insulin treatment and perinatal outcome in women with gestational diabetes mellitus (GDM) under endocrinologist-based versus diabetes nurse-based metabolic management. In a retrospective analysis, maternal characteristics, rate of insulin treatment, and perinatal outcome of patients with GDM delivering between 1 January 1995 and 30 June 1997 ( $n = 244$ ) receiving endocrinologist-based care were compared with those delivering between 1 July 1997 and 31 December 1999 ( $n = 283$ ) who received diabetes nurse-based care. Maternal characteristics (age, BMI, family history of diabetes, prior

glucose intolerance, gestational age, and blood glucose at diagnosis of GDM) did not differ between groups treated during the two periods. Rates of insulin treatment and perinatal outcome were also similar in both groups. Comparison of periods of endocrinologist-based and diabetes nurse-based metabolic management of women with GDM showed no differences in the rate of insulin treatment and perinatal outcome. This supports a more active role of nurses in the management of women with GDM.

**Rose Mary Obanye, et. al., (2002)** conducted a retrospective study on “Risk factors for gestational diabetes mellitus associated with abnormal postpartum glucose tolerance at Bronx”. 159 gestational diabetes mellitus mothers were selected through retrospective chart review. Result showed that 45 [28%] women had a follow up glucose tolerance test [GTT]. The study concluded that 7 [18%] showed abnormal postpartum glucose tolerance test. He recommended that education regarding postpartum follow up and postpartum glucose tolerance test to the antenatal mothers helps to reduce the risk factors during post partum period.

## CHAPTER – III

### **METHODOLOGY**

This chapter deals with the methodology adopted for this study. It includes the research approach, research design, criteria for sample selection, sample, sampling technique, tool, research setting, data collection procedure and analysis.

#### **RESEARCH APPROACH:-**

The approach selected for this study is evaluative approach.

#### **RESEARCH DESIGN:-**

The research design for the study is pre experimental one group pre test post test design.

<b>Group</b>	<b>Pre test</b>	<b>Intervention</b>	<b>Post test</b>
I	O <sub>1</sub>	X	O <sub>2</sub>

#### **The symbols used:**

- Group 1 - The antenatal mothers with gestational diabetes mellitus.
- O<sub>1</sub> - Pre test - Collection of demographic data, assessment of knowledge and practice scores regarding the gestational diabetes mellitus

- X - Structured Teaching Programme on gestational diabetes mellitus by using laptop and compact disc.
- O<sub>2</sub> - Post test - Assess the knowledge and practice scores regarding gestational diabetes mellitus after the structured teaching programme.

### **SETTING OF THE STUDY:-**

The study was conducted in GKNM Hospital, Coimbatore. It is a private hospital. It has 3 floors and it is 580 bedded hospital. It consists of the specialties such as ENT, Neurology, Cardiac, Cardiothoracic, Endocrinology, Eye, Oncology, Pediatric and specially Obstetrics and Gynecology departments. Obstetrics and Gynecology department has the service of out patient department, inpatient department and labour theatre. It consists of 60 beds in inpatient department.

The setting of this study was in the outpatient department. The census of the outpatient department in 2008 was about 300 cases of antenatal mothers every month, among that around 40 mothers were diagnosed to have gestational diabetes mellitus.

**POPULATION:-**

Antenatal mothers who have gestational diabetes mellitus.

**SAMPLE:-**

Primi mothers with gestational diabetes mellitus who are attending out patient department at GKNM Hospital were selected as samples.

**CRITERIA FOR SAMPLE SELECTION:-****Inclusion Criteria:-**

1. Antenatal mothers with gestational diabetes mellitus who are between 20- 34 weeks of gestation.
2. Antenatal mothers with gestational diabetes mellitus who are willing to participate in the study.

**Exclusion Criteria:-**

1. Antenatal mothers with gestational diabetes mellitus who have other associated problems.
2. Antenatal mothers with gestational diabetes mellitus who are paramedical professionals.

**SAMPLE SIZE:-**

A sample of 30 antenatal mothers with gestational diabetes mellitus who met the inclusion criteria were selected for the study.

**SAMPLING TECHNIQUE:-**

Purposive sampling technique was used to select the samples.

**DESCRIPTION OF THE TOOL:-**

The tool consists of three parts.

**Part – i**

It is a structured interview schedule which consists of demographic variables such as age, educational status, occupation, gestational age, duration of gestational diabetes mellitus, dietary pattern, type of family, and residence.

**Part – ii**

It consists of structured interview schedule which contains 30 multiple choice question regarding gestational diabetes mellitus. Each question has four options, out of which one is the correct answer.

**Part – iii**

It consists of structured interview schedule to assess the practice regarding gestational diabetes mellitus. It has 10 dichotomous questions with the alternative response of YES and NO. It has 6 positive questions and 4 negative questions.

## SCORING PROCEDURE:-

### Part – ii

The questionnaire contains 30 multiple choice question to evaluate the knowledge regarding gestational diabetes mellitus. For each right answer the score “ONE” is given and for wrong answer the score “ZERO” is given.

<b>Level of knowledge</b>	<b>Score</b>	<b>Percentage (%)</b>
Adequate knowledge	21 - 30	(67-100)
Moderately adequate knowledge	11 - 20	(34-66)
Inadequate knowledge	0 -10	(0-33)

### Part – iii

Structured interview schedule to assess the practice regarding gestational diabetes mellitus. It consists of 10 dichotomous questions. There are two responses YES or NO. A score of one (1) is allotted to the correct response and zero (0) to the wrong response.

<b>Level of practice.</b>	<b>Score</b>	<b>Percentage (%)</b>
Adequate	7-10	67 - 100
Moderately adequate	4-6	34 -66
Inadequate	1-3	0- 33



## **VALIDITY AND RELIABILITY:-**

### **Validity:-**

The validity of the tool was established in consultation with four nursing experts, one obstetrician, one diabetologist and one nutritionist. Modifications suggested by the experts were incorporated in the final version of the tool.

### **Reliability:-**

The reliability of structured knowledge questionnaire was established by testing the stability and internal consistency. Stability was assessed by test retest method and Karl Pearson coefficient formula used. The value was found to be reliable ( $r=0.88$ ). Internal consistency was assessed by split half method using Spearman's Brown Prophecy formula. The value was found to be reliable ( $R=0.86$ ).

The reliability of the practice was computed by test-retest method where Karl Pearson correlation of co-efficient formula was used and the value was found to be reliable ( $r=0.87$ ). Internal consistency was assessed by split half method using Spearman's Brown Prophecy formula. The value was found to be reliable ( $R=0.94$ ). Hence the structured knowledge and practice questionnaire was found to be reliable.

## **PILOT STUDY:-**

The pilot study was conducted in Ganga Hospital, Coimbatore, for a period of 15 days .The investigator obtained written permission from the medical officer and oral permission was obtained from each participant prior to the study. The purpose of the study was explained to the subjects prior to the study. The study was conducted on 5 antenatal mothers with gestational diabetes mellitus, who met the inclusion criteria and selected by using purposive sampling technique, 1-2 samples were taken per day. The knowledge and practice of gestational diabetes mother regarding gestational diabetes mellitus was assessed by conducting pretest. On the same day structured teaching programme was given to the mothers, individually for 45 minutes using compact disc and laptop. Post test was conducted on the same mothers on the 14<sup>th</sup> day by using same questionnaire and the effectiveness was evaluated. Data were analyzed and findings of the pilot study showed that mean post test knowledge score (20.4) was significantly higher than the mean pretest knowledge score (7.4). The mean post test practice score (6.8) was significantly higher than the mean pretest practice score (5.2). It was found that it is feasible and practicable to conduct the main study.

## **DATA COLLECTION PROCEDURE:-**

The study was conducted at GKNM Hospital, Coimbatore. The data was collected for the period of 5 weeks in the month of August. Before conducting the study, written permission was obtained from Dean, Nursing superintendent, HOD of the obstetric and gynecology department, and HOD of Endocrinology department and oral consent was obtained from the antenatal mothers with gestational diabetes mellitus.

The purpose of the study was explained to the subjects prior to the study. The samples were interviewed and those who met the inclusion criteria were selected by using purposive sampling technique. The investigator introduced about the study and rapport was established.

The first day, demographic variables were collected and the pre test was conducted by structured interview schedule on knowledge and practice items. After pre test of the same day, the individual structured teaching programme was given to the antenatal mothers with gestational diabetes mellitus by using compact disc and laptop for about 45 minutes. About 2-3 samples were taken per day. The effectiveness was assessed by conducting post test on 14th day by using

the same questionnaire for the same samples. The same procedure was continued to obtain data from 30 samples.

**PLAN FOR DATA ANALYSIS:-**

The collected data was tabulated and analyzed using descriptive and inferential statistical method.

<b>S. No.</b>	<b>Data Analysis</b>	<b>Methods</b>	<b>Remarks</b>
1.	Descriptive statistics	<ul style="list-style-type: none"> <li>• Frequency</li> <li>• Percentage</li> <li>• Mean,</li> <li>• Standard Deviation.</li> </ul>	<p>To describe the demographic variables.</p> <p>To assess the knowledge, and practice scores of pre and post test among antenatal mothers with gestational diabetes mellitus.</p>
2.	Inferential statistics	Paired 't' test.	To evaluate the effectiveness of structured teaching programme of knowledge and practice among antenatal mothers with gestational diabetes mellitus.
		Karl Pearson's Correlation r-value.	To correlate the post test knowledge score and practice scores of antenatal mothers with gestational diabetes mellitus.

		Chi-Square test.	To find out the association between posttest knowledge scores of gestational diabetes mellitus with their selected demographic variables.
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**PROTECTION OF HUMAN SUBJECTS:-**

The research proposal was approved by the dissertation committee. Written permission from Dean, Nursing Superintendent and Head of the department of Obstetrics and Gynecology were obtained and oral consent was obtained from each gestational diabetic mother. The researcher maintained confidentiality throughout study, the researcher was conscious about the ethical issues, and full disclosure was maintained.

## CHAPTER – IV

### DATA ANALYSIS AND INTERPRETATION

This chapter deals with the analysis and interpretation of the data collected to assess the effectiveness of the structured teaching programme on gestational diabetes mellitus among antenatal mother with gestational diabetes mellitus in terms of knowledge and practice.

Data were collected from 30 antenatal mothers who met the inclusive criteria in GKNM Hospital, Coimbatore. Knowledge and practice were measured using structured interview schedule. The data thus obtained were analyzed and presented under the following headings.

#### **ORGANIZATION OF THE DATA:-**

The data has been tabulated and organized as follows;

**Section A:** - Distribution of demographic variables.

**Section B:** - Comparison between pretest and posttest knowledge and Practice scores regarding gestational diabetes mellitus among antenatal mothers with gestational diabetes mellitus.

**Section C:-** Correlation of posttest knowledge score with practice scores regarding gestational diabetes mellitus among antenatal mothers with gestational diabetes mellitus.

**Section D:-** Association between post test knowledge score regarding gestational diabetes mellitus with their selected demographic variables.

**SECTION – A : Distribution of demographic variables.**

**Table -1 : Frequency and percentage distribution of demographic variables of antenatal mothers with gestational diabetes mellitus.**

**n=30**

<b>S. No</b>	<b>Demographic variables</b>	<b>Frequency (f)</b>	<b>Percentage (%)</b>
<b>1.</b>	<b>Mother's Age ( in years)</b>		
	a) 18-21	-	-
	b) 22-25	10	33
	c) 26-30	13	43
	d) >30	7	24
<b>2.</b>	<b>Educational status</b>		
	a) No formal Education	1	4
	b) Primary Education	6	20
	c) Secondary Education	7	23
	d) Higher Secondary Education	7	23
	e) Graduate	9	30
<b>3.</b>	<b>Occupation</b>		
	a) House wife	4	13
	b) Self employee	11	37
	c) Daily wages	10	33
	d) Private employee	5	17



<b>4.</b>	<b>Duration of GDM</b>		
	a) One month	8	27
	b) Two months	9	30
	c) Three months	7	23
<b>5.</b>	<b>Gestational Age( in weeks)</b>		
	a) 20-23	8	27
	b) 24-27	8	27
	c) 28-30	9	30
<b>6.</b>	<b>Dietary Pattern</b>		
	a) Vegetarian	4	13
	b) Non Vegetarian	26	87
<b>7.</b>	<b>Type of family</b>		
	a) Joint Family	15	50
	b) Nuclear Family	15	50
<b>8.</b>	<b>Residence</b>		
	a) Rural	11	37
	b) Urban	19	63

**Table: 1.** showed the distribution of demographic variables age, educational status, occupation, duration of GDM, gestational age, dietary pattern, type of family and residence.

The majority of the mothers who participated in the study were between the age group of 26-30 years (43%). (Fig.2)

With regard to educational status, 30% were graduates, 23% were having higher secondary education, 23% were having secondary education, and rest of them was below primary education. (Fig.3)

The majority of the mothers who participated in the study were self employee. (Fig.4)

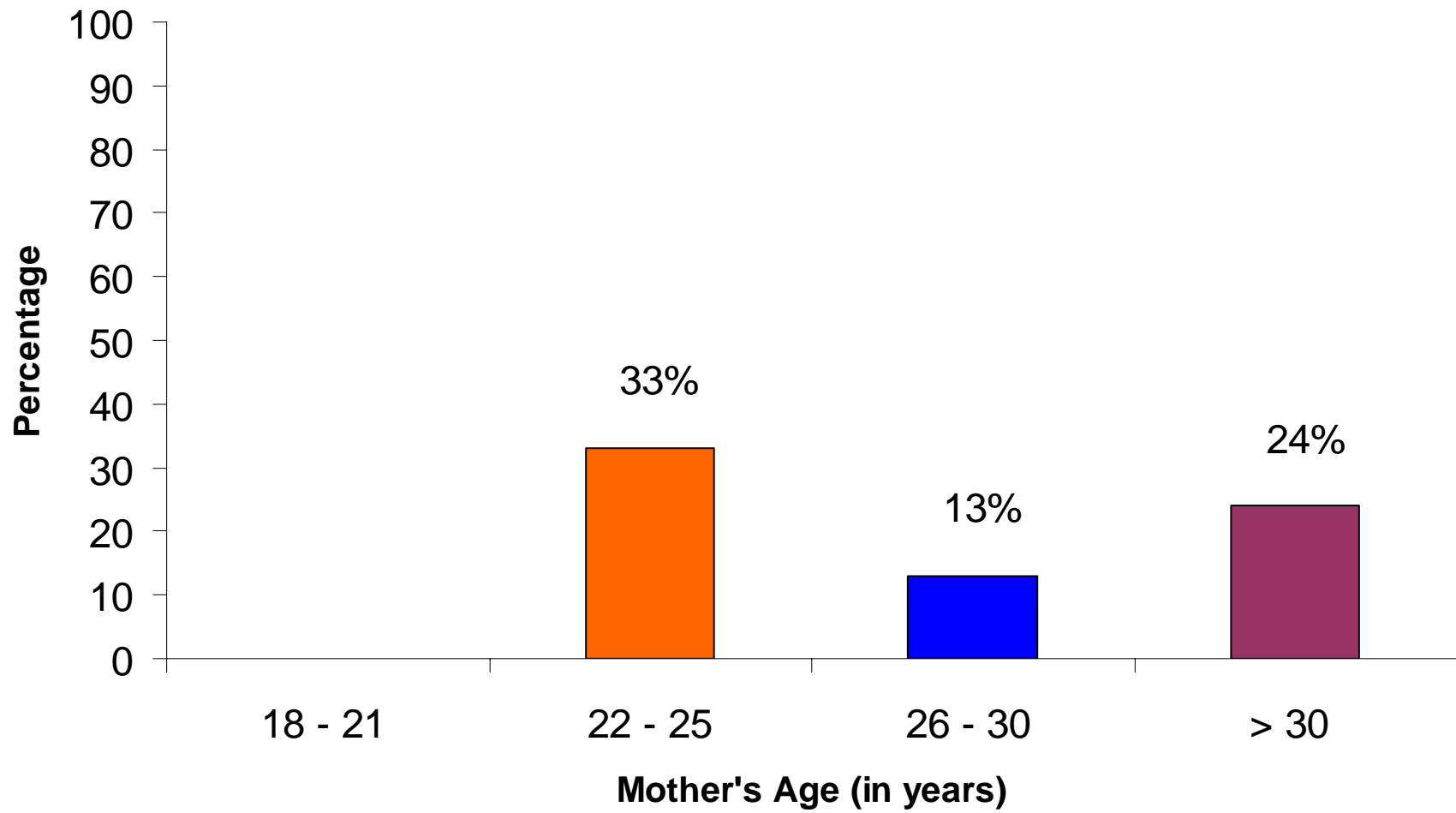
With regard to the duration of GDM 27 % were under one month, 30% were below two months, 23% were below three months and 20 % were below four months. (Fig.5)

With regard to gestational age, the majority (30%) of the mothers were between 28-30 weeks of gestation. (Fig.6)

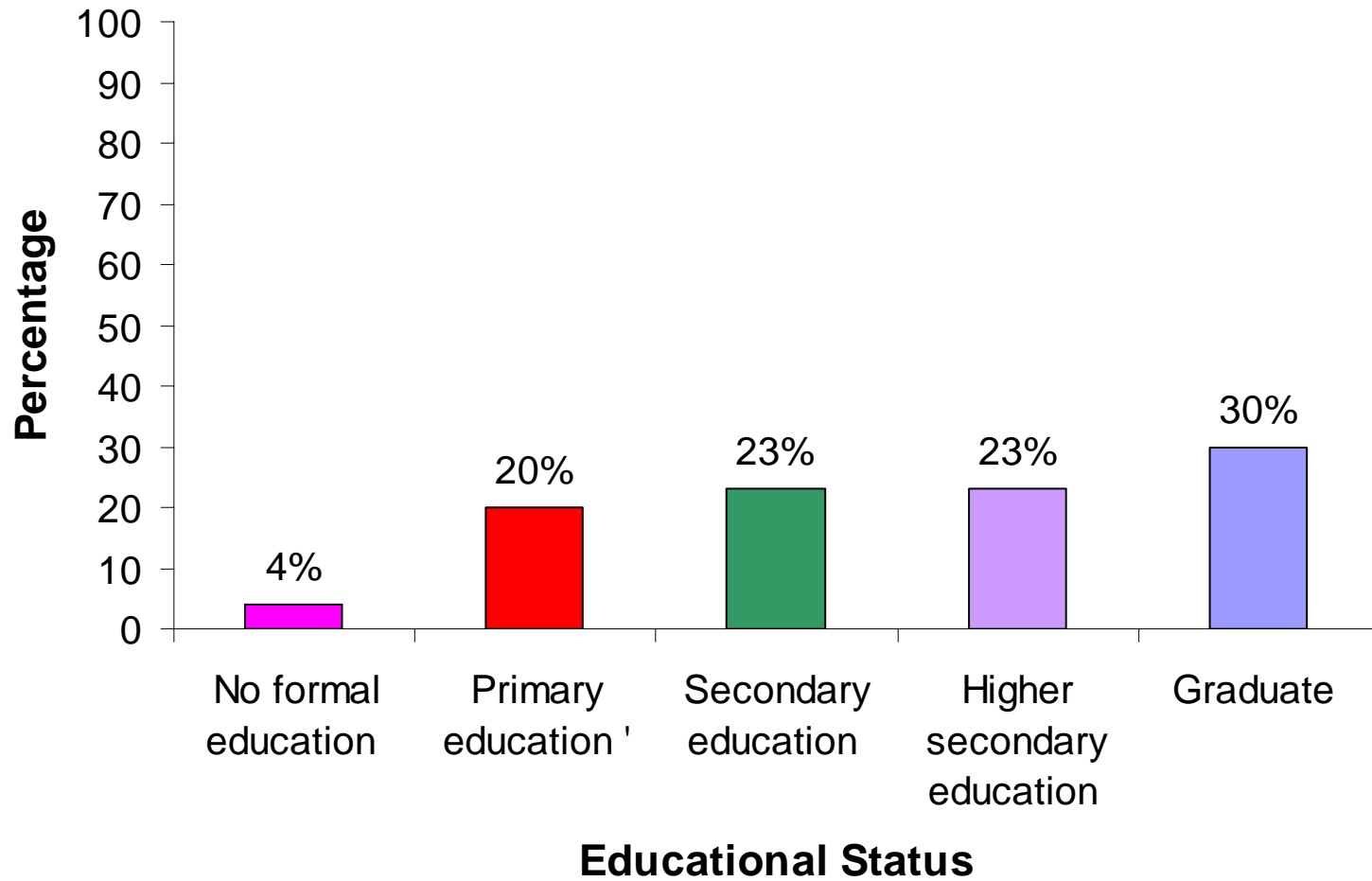
The majority of the mothers who participated in the study were non-vegetarian (87%). (Fig.7)

With regard to the type of family 50% of mothers were in joint family and 50% of mothers were in nuclear family. (Fig.8)

The majority of the mothers who participated in the study were residing in urban area (63%). (Fig.9)



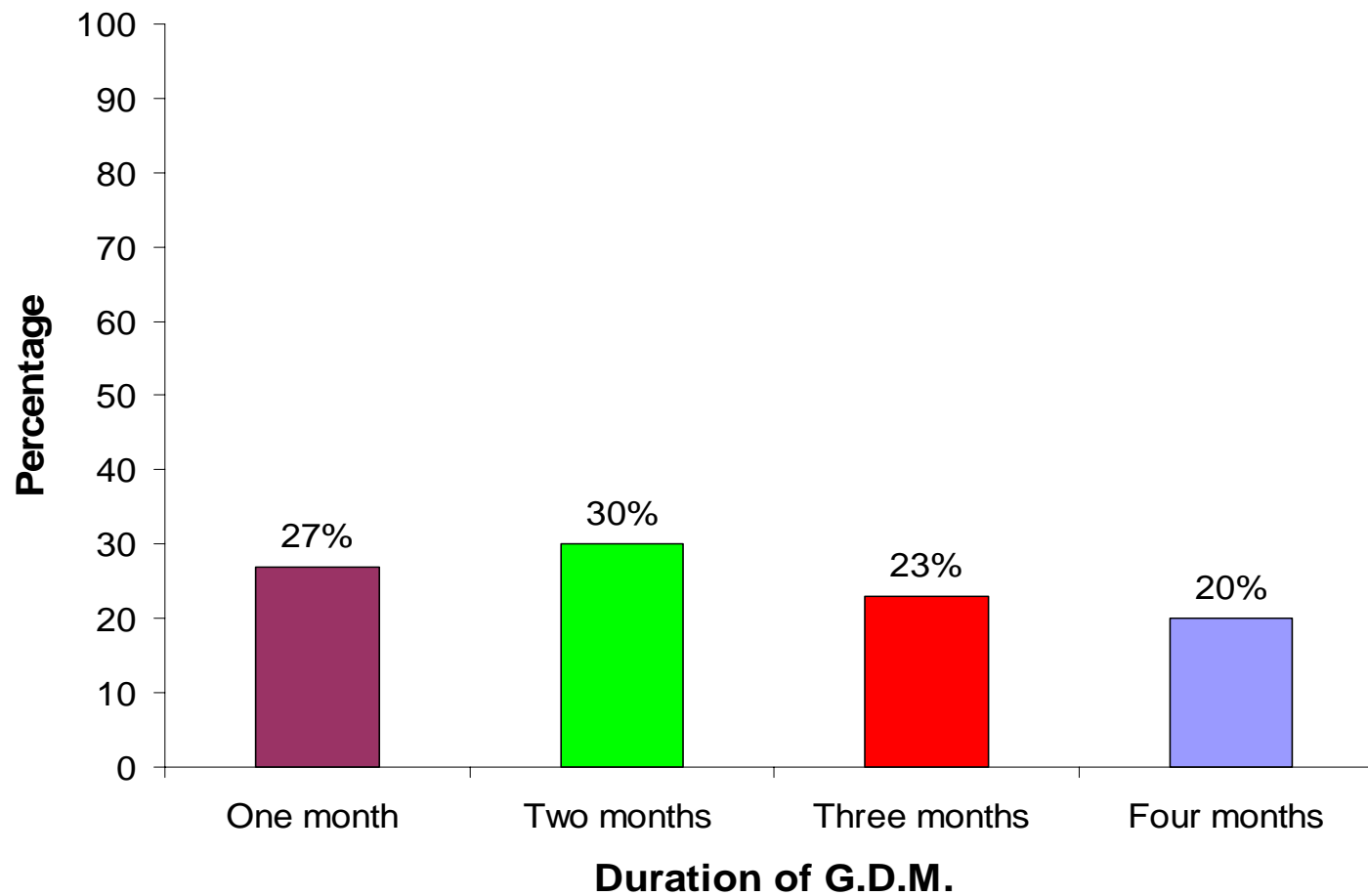
**Fig.2- Percentage distribution of antenatal mothers with gestational diabetes mellitus according to their age in years.**



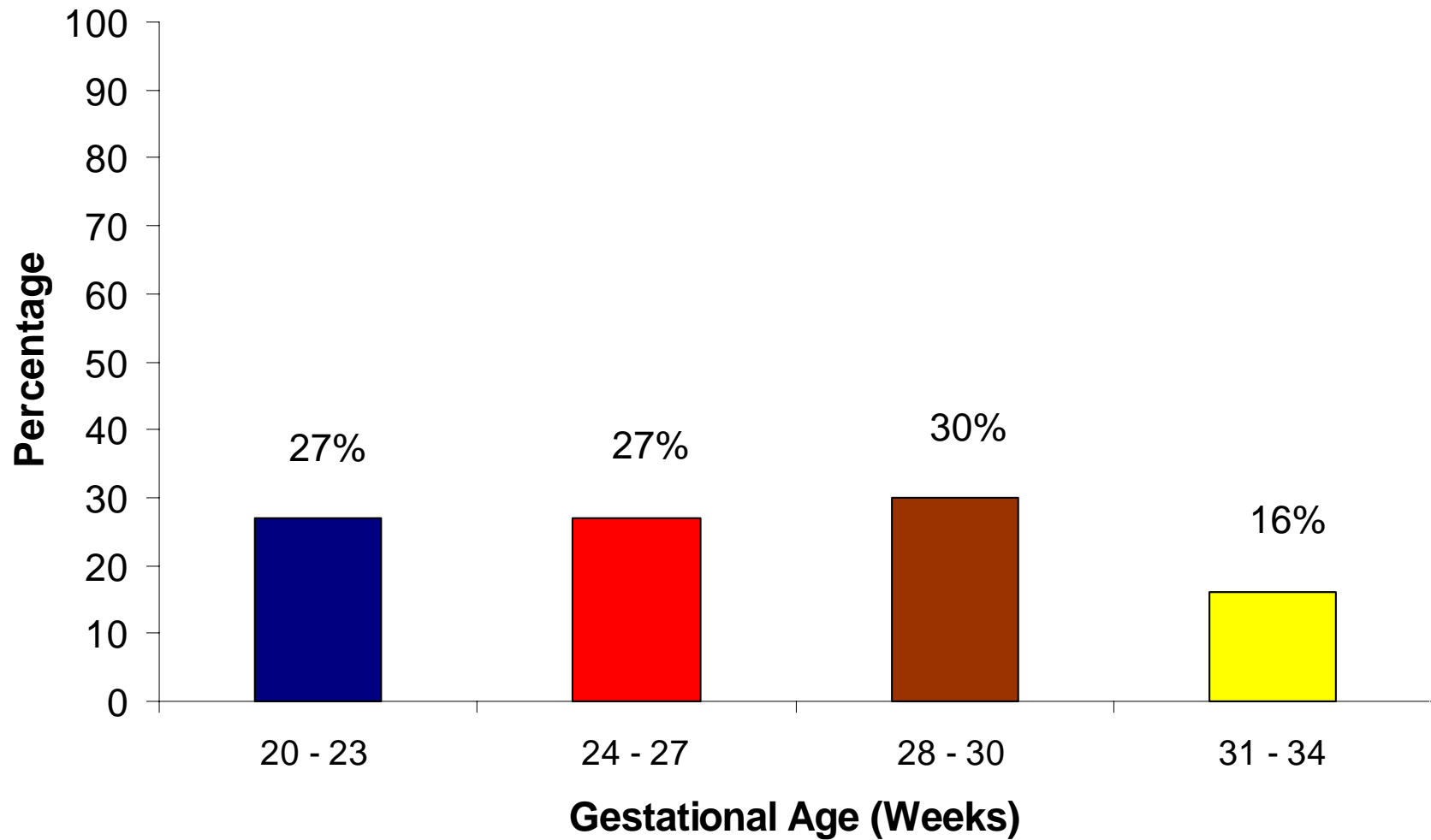
**Fig.3 - Percentage distribution of antenatal mothers with gestational diabetes mellitus according to their educational status.**



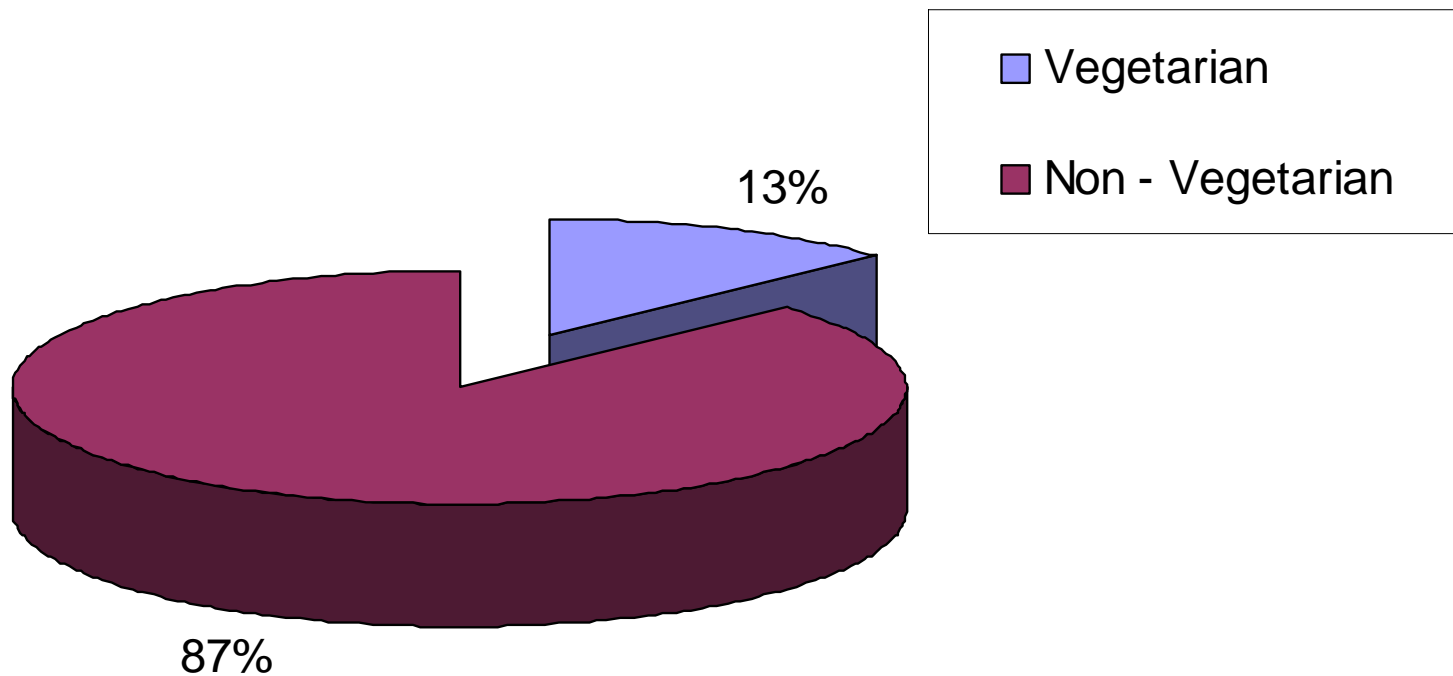
**Fig.4 - Percentage distribution of antenatal mothers with gestational diabetes mellitus according to their occupation.**



**Fig.5 - Percentage distribution of antenatal mothers with gestational diabetes mellitus according to their duration of GDM.**



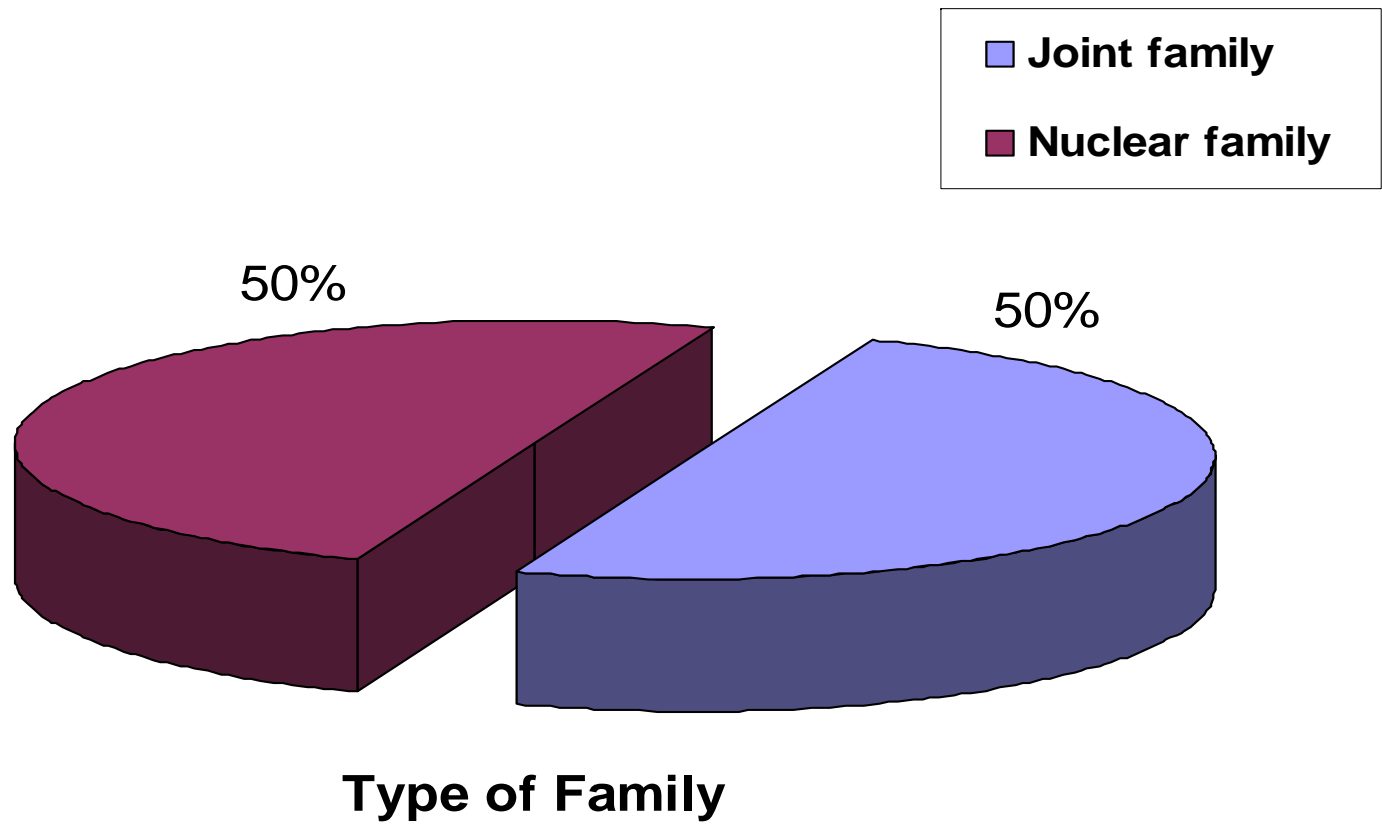
**Fig.6 - Percentage distribution of antenatal mothers with gestational diabetes mellitus according to their gestational age in weeks.**



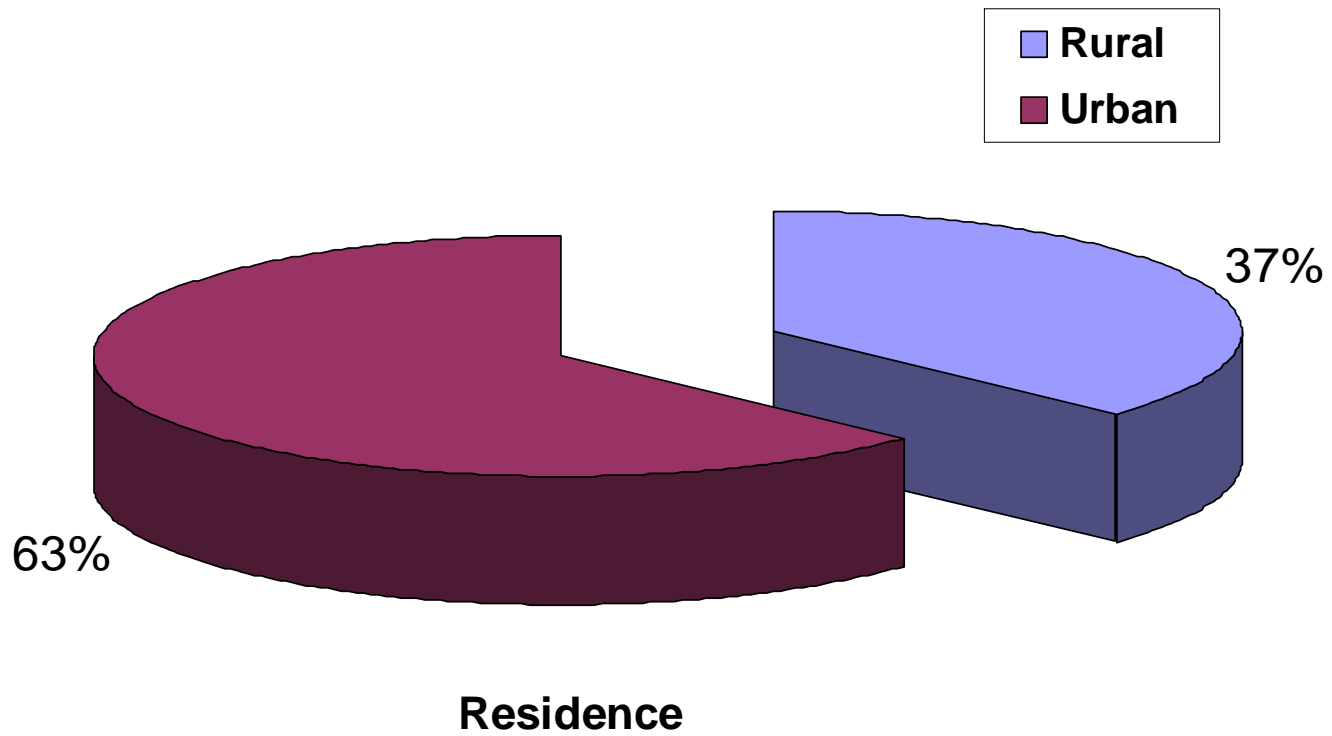
### Dietary Pattern

**Fig.7- Percentage distribution of antenatal mothers with gestational diabetes mellitus according to their dietary pattern.**





**Fig.8 - Percentage distribution of antenatal mothers with gestational diabetes mellitus according to their type of family.**



**Fig.9 - Percentage distribution of antenatal mothers with gestational diabetes mellitus according to their residence.**

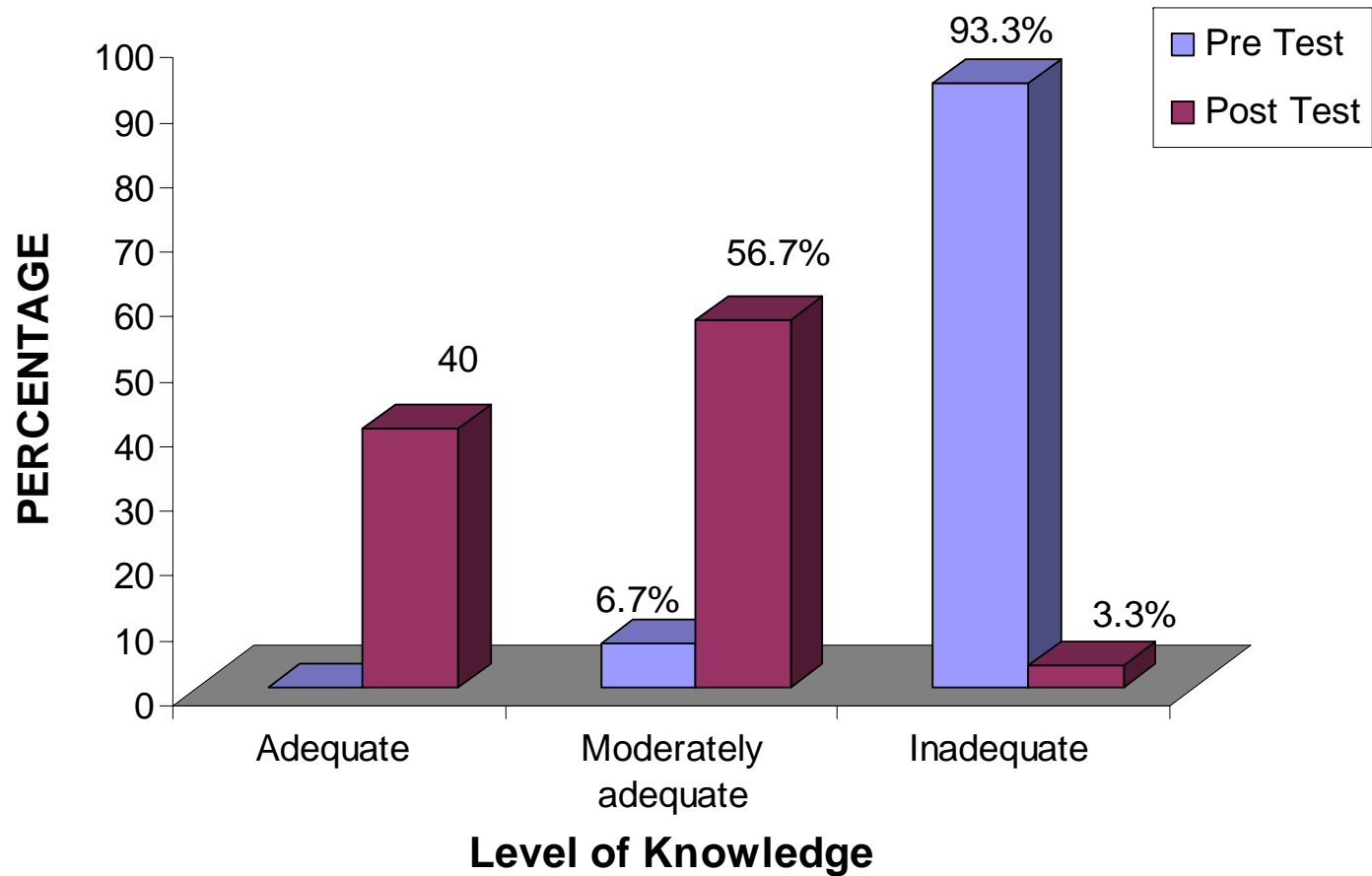
**Section B :- Comparison between pretest and posttest knowledge and practice scores regarding gestational diabetes mellitus among antenatal mothers with gestational diabetes mellitus.**

**Table 2 : Comparison of pretest and posttest knowledge scores regarding gestational diabetes among antenatal mothers with gestational diabetes mellitus.**

**n=30**

Level of knowledge	Pretest		Posttest	
	F	%	F	%
Adequate	-	-	12	40
Moderately adequate	2	6.7	17	56.7
Inadequate	28	93.3	1	3.3
<b>Total</b>	<b>30</b>	<b>100</b>	<b>30</b>	<b>100</b>

Table 2 showed that among 30 gestational diabetic mothers, in pretest majority 28 (93.3%) had inadequate knowledge, 2(6.75) had moderately adequate knowledge. Where as in post test 12 (40%) had adequate knowledge, 17 (56.7%) had moderately adequate knowledge and 1(3.3%) had inadequate knowledge.



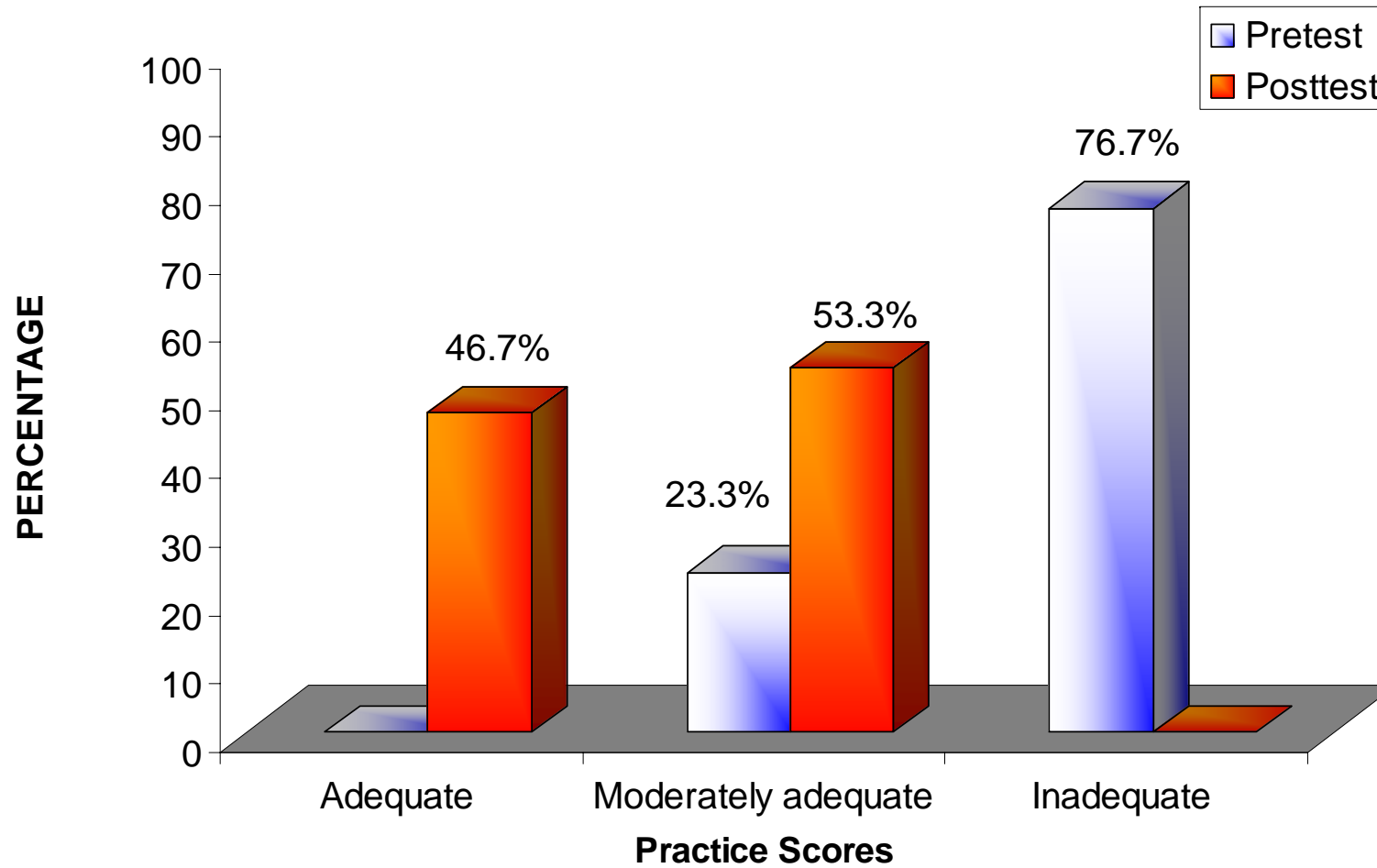
**Fig 10: Comparison of pretest and post test knowledge scores regarding gestational diabetes among antenatal mothers with gestational diabetes mellitus.**

**Table 3: Comparison of the pretest and posttest practice scores regarding gestational diabetes mellitus among antenatal mothers with gestational diabetes mellitus.**

**n=30**

<b>Practice</b>	<b>Pretest</b>		<b>Posttest</b>	
	<b>F</b>	<b>%</b>	<b>F</b>	<b>%</b>
Adequate	-	-	14	46.7
Moderately adequate	7	23.3	16	53.3
Inadequate	23	76.7	-	-
Total	30	100	30	100

Table 3 showed that, among 30 gestational diabetic mothers, in pretest majority 23 (76.7%) had inadequate practice, 7 (23.3%) had moderately adequate practice. Where as in post test, 14(46.7%) had adequate practice and 16 (53.3%) had moderately adequate practice, regarding gestational diabetes.



**Fig 11: Comparison of pretest and posttest practice scores regarding gestational diabetes among antenatal mothers with gestational diabetes mellitus.**

**Table 4:- Comparison of mean, standard deviation and paired't' test value of pretest and posttest knowledge scores regarding gestational diabetes mellitus among antenatal mothers with gestational diabetes mellitus.**

**n = 30**

<b>S. No</b>	<b>Variables</b>	<b>Mean</b>	<b>S.D.</b>	<b>"t" Value</b>	<b>Table Value</b>
1.	Pretest	7.46	2.04	18.52	1.699
2.	Post test	18.8	4.58		

**df=29**

**p<0.05**

Table 4 showed that mean pretest and posttest knowledge scores of the gestational diabetic mothers regarding gestational diabetes mellitus were 7.46 [ SD  $\pm$  2.04 ] and 18.8 [ SD  $\pm$  4.58 ] respectively. The post test mean scores were higher than pre test mean scores. The "t" value is 18.52 which was significant at 0.05 level.

**Table 5:- Comparison of mean, standard deviation, and paired “t” test value of pretest and posttest practice scores regarding gestational diabetes mellitus among antenatal mothers with gestational diabetes mellitus.**

**n=30**

<b>S. No</b>	<b>Variables</b>	<b>Mean</b>	<b>S.D.</b>	<b>“t” Value</b>	<b>Table Value</b>
1.	Pretest	2.96	0.87	21.17	1.699
2.	Post test	6.63	1.35		

**df=29**

**p<0.05**

Table 5 showed that mean pretest and post test practice scores of the antenatal mothers with gestational diabetes mellitus regarding gestational diabetes mellitus were 2.96 (SD ± 0.87) and 6.63 (SD ± 1.35) respectively. The post test mean scores were higher than the pretest mean scores. The “t” value is 21.17 which was significant at 0.05 level.



**Section -C: - Correlation of post test knowledge score and practice scores regarding gestational diabetes mellitus among antenatal mothers with gestational diabetes mellitus.**

**Table 6:- Correlation of mean post test knowledge and practice scores among antenatal mothers with gestational diabetes mellitus.**

**n=30**

<b>S. No</b>	<b>Variable</b>	<b>Mean score</b>	<b>Co-efficient of correlation (r)</b>	<b>Table value</b>
1.	Post test knowledge	18.8	0.94	0.349
2.	Post test practice	6.63		

**df=28**

**p<0.05**

Table 6 showed that there was positive correlation (r=0.94) between mean post test knowledge and practice scores at 0.05 level of significance among antenatal mothers with gestational diabetes mellitus regarding gestational diabetes mellitus.

**Section-D: Association of post test knowledge scores regarding gestational diabetes mellitus with their selected demographic variables.**

**Table-7: Association of post test knowledge scores of antenatal mothers with gestational diabetes mellitus with their selected demographic variables. n=30**

S. No	Demographic Variables	Level of knowledge						X <sup>2</sup>	Table Value	Inference
		Adequate		Moderate		Inadequate				
		No	%	No	%	No	%			
<b>1.</b>	<b>Mother's Age ( in years)</b>									
	a) 18 – 21	-	-	-	-	-	-	0.615	3.841	NS
	b) 22 -25	3	10	7	23.3	-	-			
	c) 26 – 30	6	20	6	20	1	3.3			
	d) >30	3	10	4	13.3	-	-			
<b>2.</b>	<b>Educational Status</b>									
	a) No formal education	-	-	-	-	1	3.3	7.22	3.841	S
	b) Primary education	1	3.3	5	16.7	-	-			
	c) Secondary education	1	3.3	6	20	-	-			
	d) Higher secondary education	3	10	4	13.3	-	-			
	e) Graduate	7	23.3	2	6.7	-	-			

<b>3.</b>	<b>Occupation</b>									
	a) House wife	2	6.7	1	3.3	1	3.3			
	b) Self employee	4	13.3	7	23.3	-	-	1.04	3.841	NS
	c) Daily wages	4	13.3	6	20	-	-			
	d) Private employee	2	6.7	3	10	-	-			
<b>4.</b>	<b>Duration of GDM</b>									
	a) One Month	1	3.3	6	20	1	3.3			
	b) Two Months	3	10	6	20	-	-			
	c) Three Months	3	10	4	13.3	-	-	4.44	3.841	S
	d) Four Months	5	16.7	1	3.3	-	-			
<b>5.</b>	<b>Gestational age (in weeks)</b>									
	a) 20-23	1	3.3	6	20	1	3.3			
	b) 24-27	2	6.7	6	16.7	-	-	6.43	3.841	S
	c) 28-30	5	16.7	4	13.3	-	-			
	d) 31-34	4	13.3	1	3.3	-	-			
<b>6.</b>	<b>Dietary Pattern</b>									
	a) Vegetarian	2	6.7	3	10	-	-			
	b) Non-Vegetarian	10	33.3	14	46.7	1	3.3	0.196	3.841	NS
<b>7.</b>	<b>Type of family</b>									
	a) Nuclear family	8	26.7	7	23.3	-	-	2.2	3.841	NS
	b) Joint family	4	13.3	10	33.3	1	3.3			

<b>8.</b>	<b>Residence</b>								
	a) Rural	5	16.7	5	16.7	1	3.3	3.841	NS
	b) Urban	7	23.3	12	40	-	-		
<b>df=1</b>	<b>NS = Not Significant</b>				<b>S = Significant</b>			<b>p&lt;0.05</b>	

Chi-square values were calculated to find the association (table 7) between posttest knowledge scores of antenatal mothers with gestational diabetes mellitus with their age, educational status, occupation, duration of gestational diabetes, gestational age, dietary pattern, type of family, and residence. Only three demographic variables – educational status, duration of gestational diabetes and gestational age were associated with posttest knowledge scores. Other demographic variables (mother’s age, occupation, dietary pattern, type of family, and residence) had no association with posttest knowledge regarding gestational diabetes mellitus. Therefore, there is no significant association between knowledge and demographic variables except for educational status, duration of gestational diabetes, and gestational age.

## CHAPTER – V

### DISCUSSION

This chapter attempts to discuss the description of sample characteristics, findings of the study as per objectives and hypotheses.

#### **DISCRIPTION OF SAMPLE CHARACTERISTICS:-**

The majority of the mothers who participated in the study were between the age group of 26-30 years (43%). With regard to educational status, 30% were graduates, 23% were having higher secondary education, 23% were having secondary education, and rest of them was below primary education. The majority of the mothers who participated in the study were self employee. With regard to the duration of GDM 27 % were under one month, 30% were below two months, 23% were below three months and 20 % were below four months. With regard to gestational age, the majority (30%) of the mothers were between 28-30 weeks of gestation. The majority of the mothers who participated in the study were non-vegetarian (87%). With regard to the type of family 50% of mothers were in joint family and 50% of mothers were in nuclear family. The majority of the mothers who participated in the study were residing in urban area (63%).

The study findings are discussed under the following headings:

1. Assess the pretest knowledge and practice scores regarding gestational diabetes mellitus among antenatal mothers with gestational diabetes mellitus.
2. Assess the posttest knowledge and practice scores regarding gestational diabetes mellitus among antenatal mothers with gestational diabetes mellitus.
3. Compare the pretest and posttest knowledge and practice scores regarding gestational diabetes mellitus among antenatal mothers with gestational diabetes mellitus.
4. Correlate the posttest knowledge scores with practice scores of gestational diabetic mothers regarding gestational diabetes mellitus.
5. Find the association between posttest knowledge scores of gestational diabetic mothers with their selected demographic variables.

**FIRST OBJECTIVE: - Assess the pre-test knowledge and practice scores regarding gestational diabetes mellitus among antenatal mothers with gestational diabetes mellitus.**

To assess the knowledge regarding gestational diabetes among 30 gestational diabetic mothers revealed that 93.3% had inadequate knowledge (table - 2) and practice regarding gestational diabetes mellitus among gestational diabetic mothers 76.7% had inadequate practice (table - 3) in pre test. From the table 2 and 3, it revealed that there was need for structured teaching programme regarding gestational diabetes mellitus among gestational diabetic mothers.

These findings are consistent with the findings of Mrs. Anitha, S., (2003) reported that 54.29% had inadequate knowledge; 40% had moderately adequate knowledge; and 5.71% had adequate knowledge in pretest.

**SECOND OBJECTIVE:- Assess the post test knowledge and practice scores regarding gestational diabetes mellitus among antenatal mothers with gestational diabetes mellitus.**

The assessment of post test knowledge regarding gestational diabetes among 30 gestational diabetic mothers revealed that, 40% of mothers had adequate knowledge, 56.7% had moderately adequate knowledge (table 2 and 3). Assessing practice regarding gestational diabetes among gestational diabetic mothers showed that 46.7% had adequate practice and 53.3% had moderately adequate practice. After being exposed to structured teaching programme the findings showed that knowledge and practice scores had been markedly increased.

These findings are consistent with the findings of Mrs.Anitha,S., (2003) reported that 54.29% had adequate knowledge; 31.43% had moderately adequate knowledge; and 14.29% had inadequate knowledge in post test.



**THIRD OBJECTIVE: - Compare the pre test and post test knowledge score with practice score regarding gestational diabetes among antenatal mothers with gestational diabetes mellitus.**

The assessment of knowledge and practice score of antenatal mothers with gestational diabetes mellitus after being exposed to structured teaching programme showed that knowledge and practice scores had been markedly increased as evidenced by the post test analysis. Table 4 revealed that the mean posttest knowledge scores of mothers was 18.8 (SD-4.58) which was increased compared to the mean pretest knowledge scores 7.46 (SD-2.04). The 't' value was of 1.699 which is highly significant at (P<0.05) level. Hence H1, the mean post test knowledge scores is significantly higher than the mean pre test knowledge scores was accepted.

Table 5 showed that the mean posttest practice scores of antenatal mothers with gestational diabetes mellitus was 6.63 (SD 1.35) which was increased compared to the mean pretest practice scores 2.96 (SD-0.87). The 't' value was 1.699 which is highly significant at (P<0.05) level. Hence H2 the mean post test practice scores is significantly higher than the mean pretest scores was accepted.

These findings are consistent with the findings of Mrs. Anitha, S., (2003) reported that there was a significant improvement between the pretest and post test scores. The over all mean score for knowledge of self care management of GDM were 50.10 in pretest and 65.14 in post test at the level of  $P < 0.001$ .

**FOURTH OBJECTIVE:- Correlate the post test knowledge and practice scores of gestational diabetic mothers.**

There is positive correlation ( $r = 0.94$ ) between mean post test knowledge and practice scores on gestational diabetes mellitus among antenatal mothers with gestational diabetes mellitus (Table – 6). Further it could be inferred that knowledge and practice depends on each other. The reason might be when the knowledge is improving, practice also will improve. Hence, there is a significant correlation between post test knowledge and practice scores on gestational diabetes among gestational diabetic mothers. Hence H3, there is a significant correlation between post test knowledge score and practice scores was accepted.

**FIFTH OBJECTIVE:- Find out the association between post test knowledge scores of gestational diabetic mothers with their selected demographic variables.**

Chi-square value were calculated to find out the association (table 7) between the knowledge on gestational diabetes among antenatal mothers with gestational diabetes mellitus with their age (in years), educational status, occupation, duration of gestational diabetes mellitus, gestational age (in weeks), dietary pattern, type of family, and residence. Among these, three demographic variables were associated with posttest knowledge scores of antenatal mothers with gestational diabetes mellitus. They were educational status ( $\chi^2 = 7.22$ ), duration of gestational diabetes mellitus ( $\chi^2=4.44$ ) and gestational age ( $\chi^2=6.43$ ) respectively (table 7). So educational status plays an important role in gaining knowledge. There was a significant association found between posttest knowledge scores with duration of GDM and gestational age as they are already exposed to treatment and instruction. Other demographic variables such as, mother's age, occupation, dietary pattern, type of family, & residence had no association with knowledge regarding gestational diabetes mellitus.

These findings are consistent with the findings of Endres, L.K., et al., (2004) investigated the association between functional health literacy and markers of pregnancy preparedness in women with pregestational diabetes. Women completed the Test of Functional Health Literacy in Adults (TOFHLA) short form and a questionnaire. A TOFHLA score of  $<$  or  $=30$  was defined as low functional health literacy. Of 74 women participated in the study, 16 (22%) were classified as having low functional health literacy. Compared with women with adequate health literacy, those with low health literacy were significantly more likely to have an unplanned pregnancy ( $P = 0.02$ ).

## CHAPTER – VI

### **SUMMARY, CONCLUSION, IMPLICATIONS, RECOMMENDATIONS AND LIMITATION**

This chapter deals with summary of the study, conclusion, implication for nursing, recommendations and limitations.

#### **SUMMARY:-**

The study was done to assess the effectiveness of structured teaching programme on gestational diabetes mellitus in terms of knowledge and practice among antenatal mothers with gestational diabetes mellitus.

The research design used for the study was pre experimental design one group pre test post test design.

The research approach used for the study was evaluative approach which was conducted in GKNM Hospital at Coimbatore. The conceptual frame work based on Daniel Stuffle Beam's Evaluation Model (1983).

A sample of 30 antenatal mothers who met the inclusion criteria were selected by using purposive sampling technique.

The investigator gave brief introduction and pretest was conducted. On the same day, structured teaching programme on gestational diabetes mellitus was given for 45 minutes by using laptop and compact disc, post test was done on 14<sup>th</sup> day after structured teaching programme using the same instrument tools.

#### **MAJOR FINDINGS OF THE STUDY:-**

- Most of the mothers 33 % were above 26 years.
- Most of the mothers 30 % were graduates.
- Most of the mothers 37 % were self employed.
- Most of the mothers 30 % were at two months duration of GDM
- Most of the mothers 30 % were belong to 28-30 weeks of gestation.
- Highest percentage of mothers 87 % were belongs to non-vegetarian.
- Equal percentage of mothers 50% were with joint and nuclear family.
- Most of the mothers 63 % were residing in urban area.
- During pretest among 30 gestational diabetic mothers 93% of the mothers had in adequate knowledge, 7% of the mothers had moderately adequate knowledge; where as in post test 40% of the mothers had adequate knowledge and 57% of the mothers had

moderately adequate knowledge and 3% of the mothers had inadequate knowledge regarding gestational diabetic mothers

- During pretest among 30 mothers ,78% of the mothers had inadequate knowledge on practice, 24 % of the mothers had moderately adequate knowledge on practice; where as in post test 47% of the mothers had adequate knowledge on practice and 53% of the mothers had moderately adequate knowledge on practice regarding gestational diabetes mellitus .
- Highly significant difference was found between pretest and post test knowledge and practice scores.
- Significant correlation was found between post test knowledge score and practice scores.
- Significant association was found between posttest knowledge score of mothers with their educational status, duration of GDM and gestational age.
- The study revealed that the knowledge and practice score regarding gestational diabetes mellitus was highly significant after administration of structured teaching programme . Findings showed that the structured teaching programme was effective in knowledge and practice among antenatal mothers regarding gestational diabetes

mellitus. Thus structured teaching programme played an important role in improving knowledge and practice of mothers.



## **CONCLUSION:-**

Based on the findings of the study the following conclusions were drawn.

The existing knowledge of mothers regarding gestational diabetes mellitus was inadequate and moderately adequate. The existing practice of mothers regarding gestational diabetes mellitus was inadequate and moderately adequate. The structured teaching programme significantly increased the knowledge ('t' value 18.52) and practice ('t' value 21.17) among mothers regarding gestational diabetes mellitus.

## **IMPLICATIONS FOR NURSING:**

### **NURSING SERVICE:**

1. The structured teaching programme used to improve the knowledge regarding gestational diabetes mellitus among gestational diabetic mothers.
2. Health promotion is a vital function of the nurse and Nurse can use this structured teaching programme among all the gestational diabetic mothers in community.

3. The structured teaching programme can be used to improve the knowledge regarding gestational diabetes mellitus and utilization to the expectant mothers.

#### **NURSING EDUCATION:**

1. Students can utilize the structured teaching programme to give health education to mothers with gestational diabetes mellitus.
2. Teacher can utilize the structured teaching programme to teach community health nursing students in their community.
3. Hand out can be used for all the beneficiaries in a community set up.
4. The structured teaching programme can be utilized by the nurses to educate the mothers in sub centers, primary health centers.

#### **NURSING ADMINISTRATION:**

1. Nursing administrators can utilize the structured teaching programme while conducting in service education programme for directing and motivating the staff towards implementation of awareness programme.
2. Nursing administrators have more responsibility as supervisor on creating awareness regarding GDM among primimothers by facilitating free distribution of booklets, handouts, and charts

regularly to patients in outpatient department of hospitals, health clinics in urban and rural.

3. Nursing administrators can formulate policies that will includes all nursing staff to be actively involved in health education programme in their respective hospitals.

#### **NURSING RESEARCH:**

1. This study can be effectively utilized by the emerging researchers for their reference purpose.
2. This study can be base line for further studies is build upon.

#### **RECOMMENDATIONS:**

1. A longitudinal study can be done using posttest after 2 weeks, 3 weeks and 4 weeks to see retention of knowledge.
2. This similar study can be replicated on large sample in various hospitals, there by findings can be generalized in large population.
3. This similar study can be replicated with control and experimental group.

#### **LIMITATION:**

1. It was time consuming for the investigator, as it took one hour 30 minutes to interview and educate the mother.

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## **STRUCTURE TEACHING PROGRAMME**

### **GESTATIONAL DIABETES MELLITUS**

Topic	:	Gestational Diabetes Mellitus
Duration	:	45 minutes
Group	:	Antenatal mothers with gestational diabetes mellitus
Place	:	GKNM Hospital, Coimbatore.
Method of Teaching	:	Lecture cum discussion.
Medium of Instruction	:	Tamil.
Teaching Aids	:	Compact Disc with laptop.

## **GENERAL OBJECTIVES:-**




At the end of the teaching, mothers will be able to acquire in depth knowledge regarding gestational diabetes mellitus and its management and develop skills in their day to day life.



## **SPECIFIC OBJECTIVES:-**




The mothers will be able to;

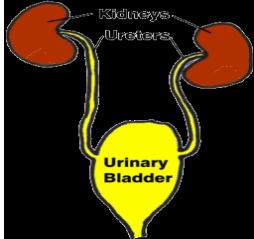


- define gestational diabetes mellitus
- list down the risk factors
- explain the pregnancy increased metabolic changes
- enlist the diagnosis of gestational diabetes
- differentiate the sign and symptoms
- narrate the effects of pregnancy on diabetes
- discuss the effect of diabetes on pregnancy
- describe the management for gestational mellitus.




Specific Objectives	Content	A V Aids	Teacher and learner activity
List down the risk factors	<p><b>RISK FACTORS</b></p> <ul style="list-style-type: none"> <li>• Obesity</li> <li>• Family history of diabetes.</li> <li>• Previous large newborn.</li> <li>• Previous newborn with a congenital anomaly.</li> <li>• Unexplained pregnancy wastage (Spontaneous abortion / still birth).</li> <li>• Multiparty.</li> <li>• Presence of hydramnios.</li> <li>• Age over 35 years.</li> <li>• Maternal hypertension.</li> </ul>	  	Lecture cum Discussion.



Specific Objectives	Content	A V Aids	Teacher and learner activity
<p data-bbox="129 456 421 687">Explain the pregnancy increased metabolic changes</p> <p data-bbox="129 1169 436 1337">Enlist the diagnosis of gestational diabetes.</p>	<p data-bbox="459 456 1077 491"><b>Pregnancy induced metabolic changes:</b></p> <p data-bbox="459 517 1489 1074">During the later half of the pregnancy , increased levels of hormones (human chorionic somatotropin, prolactin, cortisol, and glucagons) Causes alteration in the carbohydrate metabolism. Because of this, it affects the liver to decrease the glycogen storage and increase glycogen production which results in increase in blood sugar level . This high level of sugar in blood will not be utilized properly which causes increase the blood sugar of fetus and it grows bigger. Increased blood sugar in fetus causes increased urination which results in polyhydramnios.</p> <p data-bbox="459 1102 674 1137"><b>DIAGNOSIS</b></p> <ul data-bbox="510 1169 972 1337" style="list-style-type: none"> <li>• History</li> <li>• Clinical risk factors</li> <li>• Oral glucose tolerance test.</li> </ul>	 	<p data-bbox="1850 456 2101 555">Lecture cum Discussion.</p>


<b>Specific Objectives</b>	<b>Content</b>	<b>A V Aids</b>	<b>Teacher and learner activity</b>																				
Differentiate the sign and symptoms	<p>This oral glucose tolerance test has been the accepted standard for diagnosis of GDM. This test will be performed between 24-28 weeks of gestation (second half of the pregnancy ). The mother will be asked to take 50 gram of glucose orally and after one hour 2-3 ml of blood will be drawn to test the sugar level. A threshold value of 140 mg/dl is considered a positive screen result.</p> <p><b>SIGNS AND SYMPTOMS</b></p> <table border="1" data-bbox="624 876 1359 1355"> <thead> <tr> <th data-bbox="624 876 990 922">Hypoglycemia</th> <th data-bbox="990 876 1359 922">Hyperglycemia</th> </tr> </thead> <tbody> <tr> <td data-bbox="624 922 990 968">Hunger</td> <td data-bbox="990 922 1359 968">Increased appetite</td> </tr> <tr> <td data-bbox="624 968 990 1015">Nausea</td> <td data-bbox="990 968 1359 1015">Nausea</td> </tr> <tr> <td data-bbox="624 1015 990 1061">Headache</td> <td data-bbox="990 1015 1359 1061">Headache</td> </tr> <tr> <td data-bbox="624 1061 990 1107">Sweating</td> <td data-bbox="990 1061 1359 1107">Polyuria</td> </tr> <tr> <td data-bbox="624 1107 990 1153">Nervousness</td> <td data-bbox="990 1107 1359 1153">Polydispsia</td> </tr> <tr> <td data-bbox="624 1153 990 1200">Fatigue</td> <td data-bbox="990 1153 1359 1200">Dry mouth</td> </tr> <tr> <td data-bbox="624 1200 990 1246">Shallow respiration</td> <td data-bbox="990 1200 1359 1246">Fatigue</td> </tr> <tr> <td data-bbox="624 1246 990 1292">Pallor, cold, clammy skin</td> <td data-bbox="990 1246 1359 1292">Tachypnea</td> </tr> <tr> <td data-bbox="624 1292 990 1355">Blurred vision</td> <td data-bbox="990 1292 1359 1355">Flushed hot skin</td> </tr> </tbody> </table>	Hypoglycemia	Hyperglycemia	Hunger	Increased appetite	Nausea	Nausea	Headache	Headache	Sweating	Polyuria	Nervousness	Polydispsia	Fatigue	Dry mouth	Shallow respiration	Fatigue	Pallor, cold, clammy skin	Tachypnea	Blurred vision	Flushed hot skin	  	Lecture cum Discussion
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Shallow respiration	Fatigue																						
Pallor, cold, clammy skin	Tachypnea																						
Blurred vision	Flushed hot skin																						


Specific Objectives	Content	A V aids	Teacher and learner activity
Narrate the effects of pregnancy on diabetes	<p><b>EFFECTS OF PREGNANCY ON DIABETES :</b></p> <p>Once gestational diabetes mellitus occurs, the pregnancy may result some of the adverse effect that may worsen the condition. They are;</p> <ol style="list-style-type: none"> <li>1. Renal infection is most common during pregnancy. This cause hyperglycemia and raise the demand for insulin. So the mother should be careful in maintaining proper personal hygiene and should get treatment if she got any urinary tract infection.</li> <li>2. During third trimester because of increased levels of placental hormones, the blood sugar level will be increased. So there is increased need of insulin.</li> </ol>	  	Lecture cum discussion










Specific Objectives	Content	A V aids	Teacher and learner activity
<p>Discuss the effects of diabetes on pregnancy</p>	<p>3. Soon after delivery, the mother should withdraw the insulin only after confirming whether glucose tolerance is restored. It takes around six weeks to get to the normal level.</p> <p><b>EFFECTS OF DIABETES ON PREGNANCY :</b></p> <p>Gestational diabetes mellitus also affects the pregnancy. Some mothers will exhibit symptoms like excessive thirst, hunger, urination and weakness. It affects both the mother as well as the fetus.</p> <p><b>MATERNAL EFFECTS:</b></p> <ol style="list-style-type: none"> <li>1. Abortion(rarely)</li> <li>2. Pregnancy induced hypertension</li> <li>3. Renal infection</li> <li>4. Hydramnios</li> <li>5. Abnormal presentation</li> <li>6. Prolonged labour</li> <li>7. Puerperal infection</li> </ol>		<p>Lecture cum discussion</p>




Specific Objectives	Content	A V aids	Teacher and learner activity
<p>Describe the management for gestational diabetes mellitus</p>	<p><b>FETAL EFFECTS :</b></p> <ol style="list-style-type: none"> <li>1. Big baby</li> <li>2. Neural tube defect</li> <li>3. Respiratory distress syndrome</li> <li>4. Cardiac anomalies</li> </ol> <p><b>MANAGEMENT :</b></p> <p>Management of gestational diabetes mellitus includes ;</p> <ul style="list-style-type: none"> <li>• Diet</li> <li>• Exercise</li> <li>• Insulin</li> </ul> <p>Adequate control over the blood sugar will help to prevent or lessen the incidence of perinatal mortality or morbidity.</p> <p><b>NUTRITION :</b></p> <p>Dietary therapy for a gestational diabetic mother includes nutrient meals and meal planning and control of maternal weight gain.</p> <ul style="list-style-type: none"> <li>• The caloric requirement for the normal weight client is 35 k.cl per kilogram of deal weight per day or approximately 2,000 to 2,500 calories.</li> </ul>	  	<p>Lecture cum discussion</p>




Specific Objectives	Content	A V aids	Teacher and learner activity
	<ul style="list-style-type: none"> <li>• Of the dietary calories the mother should take, 20% to 30 from protein; 40% to 60% from carbohydrate; and 25% to 40% from fat.</li> <li>• Mother can divide the total calories into three meals and three snacks, is a usual regimen for a women with diabetes during pregnancy.</li> <li>• If the mother is not able to eat due to heart burn in later pregnancy, she must notify it to health care provider. She may need temporary intravenous fluid supplementation.</li> <li>• It may be extremely vulnerable for hypoglycemia at night due to the continous fetal use of glucose during the time she sleep. If so, she can take her final snack of the day one of protein and complex carbohydrate (like dhal or sundal) to allow slow digestion during the night.</li> <li>• The appropriate weight gain for the gestational diabetic mother in 10 – 20 kg during second and third trimester or 350 – 400 gm per week.</li> </ul>	 <p>The 'A V aids' column contains several visual elements: a diagram showing a 24-hour clock divided into six segments labeled 'Breakfast', 'Morning snack', 'Lunch', 'Afternoon snack', 'Dinner', and 'Evening snack'; a photograph of a pregnant woman holding her chest, indicating heartburn; a photograph of a bowl of dhal (lentils); and a photograph of a person's feet on a scale with the word 'HELP!' on the display, representing hypoglycemia.</p>	

Specific Objectives	Content	A V aids	Teacher and learner activity
	<p><b>FOODS TO BE INCLUDED :</b></p> <ol style="list-style-type: none"> <li>1. All types of pulses and sprouts.</li> <li>2. Fresh vegetables which grow above the ground level like ladies finger, Broad beans, Beans, Brinjal, Drumstick, Bitter ground, Cauliflower, Bottle gourd, Radish, Plantain stem, Chow chow, Cabbage, Capsicum, Tomatoes, Onions, and Garlic.</li> <li>3. All types of green leafy vegetables.</li> <li>4. Vegetable Soups, Butter milk, lime juice (without sugar)</li> </ol> <p><b>FOODS TO BE INCLUDED MODERATELY :</b></p> <ol style="list-style-type: none"> <li>1. Cereals like rice, wheat, Ragi, corn, maize can be included.</li> <li>2. Skimmed milk should be taken atleast 500ml per day (may be in the form of curd, Butter milk, Milk etc)</li> <li>3. Fish 2 – 3 pieces (or) chicken 4 – 5 small piece (without deep fat frying)</li> <li>4. Any one of the following fruit can be taken per day. <ul style="list-style-type: none"> <li>• Goose Berry 4 – 5 numbers</li> <li>• Apple – 1 medium size</li> <li>• Green grapes – 10 numbers</li> <li>• Guava – 1 medium size</li> </ul> </li> </ol>		<p>Lecture cum discussion</p>


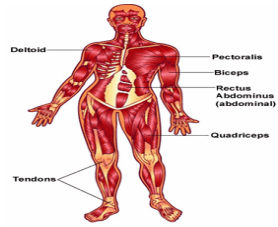

Specific Objectives	Content	A V aids	Teacher and learner activity
	<ul style="list-style-type: none"> <li>• Watermelon – 1 slice</li> <li>• Pears – 1 medium, size</li> <li>• Pomegranate – 1 medium size</li> <li>• Sweet lime – 1 medium size</li> <li>• Jambu – 10 small</li> <li>• Plums – 2 numbers</li> </ul> <p>5. Plant oil like, sunflower, groundnut, gingili, mustard, olive, soyabean, corn oil can be used alternatively (3 – 4 tsp per day)</p> <p><b>FOODS TO BE AVOIDED :</b></p> <ol style="list-style-type: none"> <li>1. Sugar, Honey, Jaggery, sweets, jam, jelly and chocolates.</li> <li>2. Baked products like puffs, cakes, pastries, cream biscuits etc.</li> <li>3. Nuts like groundnuts, cashew nuts, coconut, and almond.</li> <li>4. Soft drinks like (coco cola, miranda) Sherbet.</li> <li>5. Health drinks like (Horlicks, Boost)</li> <li>6. Fast foods like pizza, Burger, Chips.</li> <li>7. Deep fried foods like (Poori, Vadai, Bonda)</li> <li>8. Fats like butter, coconut oil, vanaspathi and Ghee, mutton, Egg yolk, cottoage cheee,</li> </ol>	   	




Specific Objectives	Content	A V aids	Teacher and learner activity
	<p>Organ meat like liver, brain.</p> <p>9. Fruit juices, porridge, rice/ wheat / Ragi Kanji.</p> <p>10. Pickles</p> <p>11. Mango, jack fruit, Banana, Sapota and Custard apple, Pineapple, Dates.</p> <p>12. Refined flours such as Maida, white rava</p> <p>13. Avoid root vegetables like Potato, Beetroot, Sweet potato, and Yam.</p> <p><b>TIPS REGARDING DIET :</b></p> <ol style="list-style-type: none"> <li>1. Eat small and frequent meals</li> <li>2. Never skip a meal</li> <li>3. Avoid fasting or feasting</li> <li>4. Eat food that is rich in complex carbohydrates and fiber such as greens because they help to reduce blood cholesterol.</li> <li>5. Walking for about 45 minutes is good for health which helps to reduce weight.</li> <li>6. Use cooking oil in rotation</li> <li>7. Avoid alcohol and smoking</li> </ol>	  	




Specific Objectives	Content	A V Aids	Teacher and learner activity
	<p>8. Don't exercise on an empty stomach as it may cause low blood sugar</p> <p>9. To have an immediate recovery from hypoglycemic state always have sugar or candy in your pocket .</p> <p>10. Drink water before taking a meal because it reduces your food intake.</p> <p><b>CARPOHYDRATES :</b> Foods rich in carbohydrates are;</p> <ul style="list-style-type: none"> <li>• Whole grains</li> <li>• Greens</li> <li>• Vegetables</li> <li>• Rice</li> <li>• Cereals</li> <li>• Milk</li> <li>• Fresh fruits</li> </ul> <p><b>PROTEINS:</b> Foods rich in protein are;</p> <ul style="list-style-type: none"> <li>• Cereals</li> <li>• Pulses</li> </ul>	  	<p>Lecture cum Discussion</p>




Specific Objectives	Content	A V Aids	Teacher and learner activity
	<ul style="list-style-type: none"> <li>• Sprouts</li> <li>• Egg</li> <li>• Milk</li> <li>• Green leafy vegetables</li> <li>• Paneer (cottage cheese)</li> </ul> <p><b>FAT:</b> Foods rich in fat are;</p> <ul style="list-style-type: none"> <li>• Ghee</li> <li>• Butter</li> <li>• Mutton</li> <li>• Egg yolk</li> <li>• Cheese</li> <li>• Coconut oil</li> </ul> <p><b>EXERCISE:</b> Daily exercise is an integral part of the treatment plan because it helps in many ways to the gestational diabetic mother.</p> <p><b>Purpose of exercise:</b></p> <ul style="list-style-type: none"> <li>• Exercise helps the muscles to increase their uptake of glucose</li> </ul>	  	Lecture cum Discussion



Specific Objectives	Content	A V Aids	Teacher and learner activity
	<ul style="list-style-type: none"> <li>• thus helps to lower the blood glucose level.</li> <li>• It decrease the need of insulin</li> <li>• It helps to reduce weight in case of obese mother.</li> <li>• Although pregnancy is not optimum time to begin vigorous exercise, the mother can do low to moderate intensity of exercise which is believed to be safe and beneficial.</li> <li>• Walking is often recommended and should do at the same time each day.</li> <li>• If the arm in which insulin in injected, when the mother actively exercise, the insulin is released quickly and hypoglycemia can be marked. To avoid this phenomenon, the mother should eat a snack consisting of protein or complex carbohydrate before exercise and should maintain a consistent exercise program.</li> </ul>	  	Lecture cum Discussion

Specific Objectives	Content	A V Aids	Teacher and learner activity
	<ul style="list-style-type: none"> <li>• Exercise following a meal may be helpful in preventing meal related blood glucose elevation.</li> <li>• She should follow a consistent and structured program of activity rather than an irregular and unpredictable schedule. If any discomforts arise like head ache, giddiness, sweating she should discontinue the activity and immediately take sugar to get relief of hypoglycemia.</li> </ul> <p><b>INSULIN:</b></p> <ul style="list-style-type: none"> <li>• If diet alone is not helpful in regulating blood sugar, insulin therapy should be started.</li> <li>• If the mothers fasting plasma blood glucose level exceeds 105mg/ dl or post prandial blood glucose level</li> </ul>	  	Lecture cum Discussion

Specific Objectives	Content	A V Aids	Teacher and learner activity
	<p>more than 120mg /dl, it indicated she may need insulin therapy</p> <ul style="list-style-type: none"> <li>• Oral hypoglycemic agents are not recommended during pregnancy because the possibility of teratogenic effects on the fetus.</li> <li>• Take insulin half an hour before meals.</li> <li>• The main areas for injection are the arm (posterior surface) thighs (anterior surface) and hips.</li> <li>• Rotate the insulin injection sites regularly. E.g; if you take injection on the arm in the morning, you can change it to thighs in the evening</li> <li>• Store your insulin in cool dark place.</li> </ul>	  	

Specific Objectives	Content	A V Aids	Teacher and learner activity
	<ul style="list-style-type: none"> <li>• It is safe for you to have intrauterine contraceptives (Copper -T) but you should be careful to note any infections arise.</li> <li>• The safest method is the barrier method E.g. Condom, Diaphragm.</li> </ul> <p><b>CONCLUSION:-</b></p> <p>We have discussed regarding gestational diabetes mellitus, its causes, its pathological changes, its effects, symptoms, and management. Hope this will help to have self care management on gestational diabetes mellitus.</p>	  	Lecture cum Discussion

### MENU PLAN FOR GESTATIONAL DIABETIC MOTHERS

Time	Item	Amount
Break fast (8-9 am)	Idlis (3)	150 gm
	Radish sambar (1cup) <b>(or)</b>	100 ml
	Coriander chapattis (2)	57 gm
	Raitha	
	Cucumber	25 gm
	Tomato	25gm
	Onion	25gm
	Butter milk (skimmed)	25gm
	<b>(or)</b>	
	Dosas (3)	100 gm
	Tomato chutney	100gm
Mid morning (11am)	Any one fruit in a moderate ripe condition	
	Guava / apple / Pomegranate	150gm
	Milk without sugar (skimmed)	200ml
	<b>(or)</b>	
	Lime juice without sugar	200ml
Launch (1-2pm)	Salad	79gm
	Cucumber	
	Tomato	
	Radish	
	Rice	250 gm
	Amaranth curry	50gm
	Cabbage porial	100 gm
	Curd (skimmed milk)	50 gm

<b>Time</b>	<b>Item</b>	<b>Amount</b>
	(or) Radish Chapattis (3) (without oil)	150 gm
Evening (4pm)	Sprouts - green gram / Bengal gram) (or) Marie biscuits (2) Tea without sugar (or) Tomato Soup	100gm  50gm 200ml  100ml
Dinner (7.30 – 8.30pm)	Mint chapattis (without oil) (3) (or) Idlis (3) Raitha (or) Brinjal curry	100gm  150gm 100gm  45gm
Bed time (9.00 9.30pm)	Skimmed milk without sugar (or) Lime juice without sugar Apple / guava / sweat line / pomegranate (or) green gram sundal (or) Marie biscuits (2)	200 ml  200 ml 150 gm  100 gm  50gm

### MENU PLAN CALCULATION

Item	K.cal	CHO	Protein	Fat	Iron
<b>Break fast (8-9am)</b>					
Idlis (3) 150gm	144	3.45	5.1	0.225	0.9
Radish sambar 100 gm (or)	52	6.7	2.1	1.8	1.1
Coriander	40	5.3	3.3	0.6	10.0
Chappattis (2) – 57gm	193	30.8	5.0	1.6	3.0
<b><u>Raitha</u></b>					
Cucumber (25gm)	3.5	0.7	0.1	0.025	0.4
Tomato (25gm)	5.25	0.97	0.25	0.025	0.25
Onion (25gm)	24.75	5.725	0.3	0.025	0.175
Butter milk (25gm)	8.75	1.275	0.875	0.025	0.05
(skimmed)	216	28.2	4.1	0.7	1.5
Dosas (3) 100 gm	27	4.5	1.9	0.1	2.4
Tomato chutney (100gm)					
<b>Mid morning (11 am)</b>					
Guava 150 gm	99	21.75	2.25	0.3	1.5
Apple 150 gm	84	20.1	0.45	0.15	2.55
Pomegranate 150 gm	97.5	21.9	2.4	0.15	0.45
Milk (skimmed) 200ml	70	10.2	7	0.2	0.4
Lime juice 200ml	59	10.9	1.5	1.0	0.3
<b>Lunch</b>					
Salad					
Cucumber	5.5	0.7	0.1	0.025	0.4
(25gm)	5.25	0.97	0.25	0.025	0.25
Tomato (25gm)	5.25	1.3	0.175	0.025	0.1
Radish (25gm)					

<b>Item</b>	<b>K.cal</b>	<b>CHO</b>	<b>Protein</b>	<b>Fat</b>	<b>Iron</b>
Rice (250gm) 1 Plate	295	67	6	0.5	2.5
Amaranth curry (50gm)	84	7.3	4.3	4.1	11.8
Cabbage porial (100gm)	50	6.4	1.8	0.5	8.8
Curd (slammed milk) (50gm)	9	0.7	0.45	0.7	0.05
<b><u>Evening</u></b>					
Sprouts (100gm) (Green gram)	351	59.9	24.5	1.2	8.8
Marie biscuits (50gm) 2	240	35.5	2.6	10.1	0.9
Tea (200ml)	72	13.6	1.4	1.6	-
Tomato soup (100ml)	-	-	-	-	-
<b><u>Dinner</u></b>					
Mint	57	8.0	4.8	0.6	15.6
Chapattis 3 (100gm)	339	54.0	8.8	1.6	5.3
Brinjal curry (45gm)	122	4.9	1.4	10.7	0.9
<b><u>Bed term</u></b>					
Green gram sundal (50gm)	90	21.8	9.2	1.5	3.4
<b>Total</b>	<b>2000</b>	<b>257</b>	<b>89</b>	<b>25</b>	<b>74</b>

**Required:-**

Total calories for gestational diabetic mother is 2,000-2,500 k.cal

**Planned:-**

Total calories planned for gestational diabetic mother is **2000** k.cal.



## tiuaWf;fg;gl;l tpsf;fg;ghlk;

nghJ Nehf;fk;:-

, ej gapwrrpad; Kbt;py> fhggfhy ehpopT NehAss j hakhh;fs>  
fhggfhy ehpopT Neha; gwvwpAk> mj d; rpfpri r Ki wi a gwvwpAk; nj hpe;J  
nfhs;tJl d> mji d md,whl thot;py; fi l ggpbggj wFk; cj Tk;

Fwpggpl ; Nehf;fq;fs;:-

fhgfhy ehpopT NehAss j hakhh;fs; nj hpe;J nfhsS Ntz bai t.  
fhg fhy ehpopT Neha; gwvwp mwvj y;  
mj d; fhuz pfs; gwvwp mwvj y;  
fhg fhyj j py; VwgLk; tshrrpi j khwwq;fs; gwvwp tpt huj j y;  
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mwvFwvfi s tFj j y;  
fhgfhyj j pdhy; ehpopT Neha;f;F VwgLk; tpi sTfs; gwvwp tpt huj j y;  
ehpopT Nehahy; fhgj j pw;F VwgLk; tpi sTfs; gwvwp tpt huj j y;  
fhgfhy ehpopT Nehi af; fl ;LggLj ;J k; Ki wfs; gwvwp tpt huj j y;

### Kd;Di u :-

fhgk; vdgJ cl ypy; VwgLk; xU nghpa khwwk; gyNtW tji khd  
tjahj pfsHy; fhgfhyk; ghj pffgglyhk; , J j haf;Fk; mts; fUtW;Fk;  
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fhgfhyk; KOJ khf ghj pffggLfWJ. ehpoT Nehapdhy; VwgLk; ghj pgG  
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nra;J , ujj j j py; rh;ffi uapd; msi t rhpnra;J nfhs;tJ kpfTk;  
ed;W.

### FwpgGi u :-

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ruhrhapd; msTf;F khwhf , Uggi j Kj d;Ki wahf fhgfhyj j py;  
fz ;l waggL t j hFk;

### fhuz pfs;:-

gUkd;

FLkgggukgi u

Kj y; Foei j gpwgG NfshhWfNshL gpwej J

tpt hpf;f Kbahj fUfi ygG

Foei j , weNj gpwej J

35 taj W;F Nky; fhgkhj y;

fUgi gapy; mj pfeh; css thfs;

**fhgfhyyj j py;VwgLk; tshrpi j khwwqfs;-**

fhgfhyyj j pd; gpdgFj papy; Ruggpfs pd; khwwj j hy; cl ypy; css  
khTrj;J epi yapy; khwwk; VwgLk> , j dhy; <uy py; fpi sNfhrd;  
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mj pfkhdhy; mej rh,ffi u Ki wahf cgNahfggLj j ggl hky;  
, ujjjj pNyNa j qfptpLk; , j dhy; j haf;F mj pf rh,ffi u mstpd;  
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cz j hfpwJ. , j dhy; fU NgWfhyk; neUq;Fk; NghJ rhpahd epi yfF  
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**Neha; fz j wpAk; Ki w :-**

FLkg FwpgG

kUj ;J thj pahd fhuz pfs;

FS fNfh] ; rfpGj j di k Ma;T

FS fNfh] ; rfpGj j di k Ma;T vdgJ fhggfhy ehppT Nehi a  
cWj pgLj j f;\$ ba ghNrhj i dahFk; , J fhgfhyjj py; 24ypUe;J 28  
thuqfS fFs; nraaggLk; , j py; 50 fpuhk; FS fNfh] ; tha; topahf  
vLj ;J f; nfhz ; gpwF xU kz pNeuk; fopj ;J 2 kp.yp , uj j k; vLj ;J  
rh;ffi uapd; msi t Nrhj pff Ntz ;Lk; , uj j j j py; rh;ffi uapd; msT  
Fi wej gl rkhf 140kp.fp/nl .yp , Uej hy; mJ rh;ffi u Neha; cssi j  
cWj pgLj ;J k;

**mwpFwpfS; :-**

**rh;ffi u Fi wj ypd; mwpFwpfS; :-**

mj pf grp

Fkl ; y;

j i yty

tpahj j y;

eLf;fk;

j i y Rwwy;

gytBk;

%rR thq;Fj y;

cl y; ntsphgNghj y;

Nj hy; Fsphe;J Nghj y;

kq;fyhd ghhi t

rh,f;fi u mj pfkhj ypd; mwpFwps;-

mj pfkhd grp

mj pf j hfk;

mj pfkhf rpWeh; fogj j y;

Fkl j y;

j i ytyp

twz j tha;

gyt k;

Nrhh;T

%rR thq;Fj y;

fhgj j pdhy; ehpopT Neha;f;F VwgLk; tpi sTfs;-

ehpopT Neha; Vwgl j hy; fhgg fhyj j py; gy khwwqfs; VwgLk;  
fhgfhyj j py; rpWef nj hwW Vwgl thagGssJ> , j dhy; , uj j j j py;  
rh,f;fi uapd; msT mj pfhggJl d; , dRypd; Nj i ti a mj pfhpf;fwJ.  
, i j j Lf;f fhggfhyj j py; j hakhh;fs; cl i y Rj j khf i tj j f; nfhss  
Ntz ;Lk> mggb Vj htJ rpW nj hwW fhz ggl j hy; cl dbahf kUj ;J ti u  
mZ fp rpfpr; r ngw Ntz ;Lk;

fhgj j pd; fi l rp %dW khj q;fs;py; Ruggpfs; mj pfhggj hy;  
, uj j j j py; rh,f;fi uapd; msT mj pfkhtJl d; , dRypd; Nj i tAk;  
mj pfkhf;fwJ.

gpurtjjpw;Fgpd; , uj j j j py; rh;f;fi uapd; msT rhj huz epi yf;F  
j pUkgptpl ;l j h? vd;W cWj pggLj j pa gpwNf , dRypi d epWj j Ntz ;Lk;  
, j w;F Rkhh; MW thuq;fS; vLf;Fk;

**ehpopT Nehahy; fhggj j pw;F VwgLk; tpi sT :-**

rpy j hakhh;fS f;F , eNehahy; mj pf j hfk> mj pf grp> mj pf  
rpWeh; nts;NaWj y> gyt;lk; Nghdw mwp;Fwp;fS; VwgLk; , J j hi aAk>  
fUi tAk; ghj pf;Fk;

**j haf;F VwgLk; ghj pgG :-**

fhgj j pdhy; , uj j mOj j k; mj pfhj j y;  
rpWeh; nj hwW  
fUgi gapy; mj pf eh; cz ;l hj y;  
fUgi gapy; fU j twhd epi yapy; , Uj j y;  
eZ ;l Neu gpurt typ.

**fUt;pw;F VwgLk; ghj pgG :-**

nghp; Foei j  
j z ;L tI NfhshWfs;  
Rthr NfhshW  
, Uj a NfhshW

rpfpri r Ki w :-

fhgfh y ehpopT Nehi a fl ;LgLj j Ntz ba rpfpri r Ki waht d.

cz T fl ;Lgghl ;L Ki w

cl wgapw;rp

, dRypd;

, uj j j j py; rhf;fi uapd; msi t fl ;LgG Lj j pdhy; fhgg fhyj j py;

VwgLk; tpi sTfi sAk> rhtpd; vz z pfi fi aAk; Fi wff;f;yhk;

**cz T fl ;LgghL :-**

Ngh[hf;Fss cz T> cz TKi w> vi l fl ;LgghL , i tnayyhk;  
fhgfh y ehpopT NehAss j hakhh;fs; fi l ggpbff Ntz bai t.

rhahd vi l Ass j haf;F xU ehspw;F 35 fNyhhp/ fpNyh. fNyhhp  
msTfs;py; 20%- 30% Guj rj j pypUe;J > 40% - 60% khT rj j pypUe;J . 25%  
- 40% nfhOgG rj j pypUe;J vLj ;J f; nfhss Ntz ;Lk;

fhg fhy ehpopT Neha; j hakhh;fs; vLf;Fk; nkj j fNyhhpi a  
%d;W Ki w cz T> %d;W Ki w j pdgz ;k; vdggphj ;J  
cz z Ntz ;Lk;

fhg fhyj j py; fi l rp ehlf;fs;py; neQnrhprry; cz l hdhy;  
kUj ;J ti u mZ fp rpfpri r ngw Ntz ;Lk;

, utpy; mj pfkf rhf;fi uapd; msT Fi wAk; thagGss j hakhh;fs;>  
gLfi ff;F Kd; Guj rj ;J myyJ khTrrj ;J ss j pdgz ;k; vLj ;J f;  
nfhss Ntz ;Lk; (gUgG myyJ Rz ;l y) , J nkJ thf nrhggj wF  
cj Tf;pwJ.





nfhaahggok; - 1>j hG+rz p - 1 J z ;L> MuQR - 1>ggghs p - 2-3  
J z ;Lfs>Nghpf;fha; - 1>khJ sk;gok; - 1>rhj ;J fFb - 1>  
eht ygok; - 10>gpsk;] ; - 2.

ri kay;vz nz afspy; #hpa fhej p vz nz a>eynyz nz a>Myrt;  
vz nz a> Nrha hgd;] vz nz a> Nrhsk; vz nz a; , i t f i s  
ri kaYf;F khwwp khwwp cgNahfggLtJ eyyJ. (2-3  
Nki [ ffuz b xU ehi sf;F).

### **j t p f f N t z b a c z T t i f f s ; :-**

rh;f;fi u>ntyk>Nj d>FS fNfh] ;kwWk; , dpgG ti ffs;  
Ngf;fhp nghUI ;fshd fhk;gp] ;fl ;] >gg;] >Ng] ;l h] ;  
cyhej nfhl ;l kwWk; go ti ffs; (ghj hk> gp] j h> Nj qfha>  
epf;fl i y>Kej p p cyhej j puhl ;i r).  
Fshghd q;fs; (ngg;] p kpuhz ;l h) kwWk; , seh;  
rj ;J ghd q;fs; (G+) ;l >` hhy;pf;] ).  
nea>l hyl h>ntz nz a>Nj qfha;vz nz a;  
vz nz apy; nghhj j gz ;l qfshd (ti l> g[;] p kb; tWty>  
Nghz ;l h>G+hp) Nghdwi t.  
r] j hggok> khkgok> thi oggok> gyhggok> rgNghi ;l h>  
md;dhrpggok> Nghpr;rkgok;  
nfhOgG rj ;J kpf;f khkpr cz T ti ffs;hd Kl ;l lapd; kQrs; fU>  
cWgG khkprqfshd %i s><uy;kwWk; MI bi wrp> kh ;L , i wrp

vyyh ti fahd fQrp

i kj h khT> ntsi s ui t.

t l fk> t wwy> m ggs k> kwWk; C Wfha;

gorrhW.

[hk> n[ yyp> rhfNyl > rh] ; ti ffs;

epyj j pwF mbapy; tpi sAk; fpqfF ti ffi s j t phffTk;

**fb,fz ; F wpgGfi s gpd gww Ntz ;Lk; :-**

xNu rkaj j py; mj pf msT cz T cz gi j t pl rpw p rpwj hf 6

Ki wfs; rhggpl yhk;

fz bgghf tuj k; fi l gpbff;\$ l hJ.

mj pf msT ehrrrj J kpFej cz Tg; nghUI fshd fil u ti ffs>

Nryl> gaWti ffs> fhafwpfs; Mfpatwi w Nrhj J nfhstj d;

%yk; rhf;fi u t pahj pi aAk; nfhOgGr; rj i j Ak; fl ;Lgghl ;Lf;Fs;

i tj ;J f; nfhssyhk;

ei l g; gapwrp Nkwnfhss Ntz ;Lk> , J cly; vi li a Fi wj J

MNuhf;fpakhf , Uff cj Tk;

i gapy; vgnghOJ k; rhf;fi u (m) kpl l ha; (m) FS fNfh] ; i tj ;J f;

nfhss Ntz ;Lk; , i j j hoepi y , ujj rhf;fi u tej hy; vLj ;J f;

nfhss Ntz ;Lk;

vyyh j hdpaqfS k; Vwj j ho xNu msT rfj pi aj j hd; (fNyhhp)

nfhLf;fpdwd. NfhJ i k kwWk; uhfp kl ;Lk; rhggpL t j hy;

rh,ffi uapd; msi t fl;LggLj j KbahJ. vdNt rh,ffi u t pahj p  
cssth,fs; mhprpi aAk; msthf md,whl cz tpy; Nrhj ;Jf;  
nfhssyhk;

xNu ri kay;vz nz a;cgNahf,ff,hky; khw,wp cgNahf,ff,FTk;  
ntWk; tap,wwpy; gap,wrp Nkwnfhss,f;\$I hJ. Vnddpy; j hoepi y  
rh,ffi u Vwgl f;\$ Lk;  
cz tUe;Jk; Kd; j z z h; Fbggj d; %ykhfTk> gri r fha,fw,ffs,pd;  
fyi t vLggj d; %ykhfTk; cz T cl nfhs,S k; msT Fi wAk;

khTrrj ;J epi wej cz Tti ffs;:-

j hd,paq,fs;

mhprp

gUgG ti ffs;

ghy;

goq,fs;

fha,fw,ffs;

gri r fl ufs;

Guj rj ;J epi wej cz T ti ffs;:-

gUgGfs;

Ki sfl ba gaWfs;

KI j l

ghy;

, i wr,rp

gri r fha,fwpfs;

nfhOgG rj ;J epi wej cz Tfs;:-

ntz nz a;

nea;

, i wr,rp

KI j l apd;kQrs;fU

ghyhi l

Nj qfha;vz nz a;

kB;

cl wgapw,rp

fhg fhy ehpopT Neha; rpfprj r Ki wapy; kpf Kf;fpakhd xd,W

cl wgapw,rp nra;tj hFk;

cl wgapwrrp; Nehf;fk; :-

cl wgapwrrp nrat; jhy; cl ypy; css j i rfs; , uj j j j py; css  
rh;f;fi u mstpi d vLj;Jf; nfhs;f;pwJ. , j dhy; , uj j j j py;  
rh;f;fi uapd; msT Fi wf;f;pwJ.  
, dRypd; Nj i ti af; Fi wf;f;pwJ.  
, J gUkkhd j hakhh;f;S fF vi li af; Fi wf;f; cj Tf;pwJ.

fhg fhyk> mj pf rpkkhhd cl wgapwrrp nraa rhpahd Neuk;  
, yyhtpl; hYk; , yFthd cl wgapwrrp nraayhk; j pdKk; ei l gapwrrp  
Nkwnfhs;tjhy; cl y; epi y rhngWk> Rthr rkgej khd cl wgapwrrpi a  
ghh;f;fpYk; ei l gapwrrpNa rpwej J. xUehs; cl wgapwrrp nra;J kW ehs;  
xdWk; nraahky; , Uggi j tpl j pdKk; 30 epkpl q;f;s; ei l gapwrrp  
nrat;J eyyJ.

, dRypd; Nghl; i ffs;py; cl wgapwrrp nraj hy; rff;f;uj j py;  
, dRypd; ntspahFk> , J , uj j j j pd; rh;f;fi u msi t kpfTk;  
Fi wf;f;pwJ. , i j j; j Lff j hakhh;f;s; cl wgapwrrp;F Kd; Guj rj J  
myyJ khT rj;J epi wej cz i t cl nfhss Ntz ;Lk; cz tpw;Fg;  
gpd; cl wgapwrrp nraj td; %yk; cz T hj pahd rh;f;fi u mj pfh;gi g  
Fi wf;f;pwJ.

xOq;fww cl wgapwrrp ekJ cl i yghj pf;Fk> mj dhy; vgnghOJk;  
tFj j i kf;fggl; cl wgapwrrpfi s Nkwnfhss Ntz ;Lk;

cl wgapwrpapd; NghJ j i yty> j i yRwwy> t>ahi t Nghdw  
mwpFwpfs; Vwgl j hy; rwpJ rh;f;fi ui a vLj; J fnfhss Ntz ;Lk;

, dRypd;:-

cz T Ki w kl;Lk; ehpopT Nehi a rhgLjj Kbahky; Nghdhy>  
, dRypd; Ki wi aAk; Nkwnfhss Ntz ;Lk; fhgKww j hapd;  
rh;f;fi uapd; msT , uj j j j py; cz TfF Kd; 105 kpfp/nl .yp I tpi  
mj pfkhf , Uej hNyh> myyJ cz tpwF gpd; 120 kpfp/nl .yp I tpi  
mj pfk; , Uej hNyh , dRypd; Ki wi a i fahs Ntz ;Lk; thatop  
cl nfhssk; rh;f;fi ui a fl;LggLj;Jk; khjj pi ui a fhgfhyj j py;  
vLj;Jf; nfhssf; \$ I hJ. Vnddpy; , J rpRtpwF gpwgGf; NfhshWfs;  
Vwgl thaggsppf;fpwJ. cz TfF ½ kz pNeuj j pwF Kd; , dRypd; Crp  
Nghl Ntz ;Lk; , dRypd; Crpi a Nghl rpwej , I k; gpd;dqi f kwWk;  
Kdnj hi I. NkYk; xtnthU Ki w , dRypd; Crp NghLk; NghJk;  
, I j j j khww Ntz ;Lk; (fhi yapy; i fapYk> khi yapy; nj hi I apYk)  
, dRypd; d Fsp; rhj dg; ngl bapy; i tj j y; Ntz ;Lk;

**tl by;, Uf;Fk;NghJ ftdpf;f Ntz bai t :-**

j twhky;, dRypd;vLj ;J f;nfhss Ntz ;Lk;

fUtpd;Jbgi g ftdpf;f Ntz ;Lk;

cl wgapwrpi a j twhky;nraa Ntz ;Lk;

ehpopT Nehi af;fl ;LggLj ;J k;cz T Ki wi ag;gpdgww Ntz ;Lk;

j twhky;fhgfhy ghNrhj i df;F tuNtz ;Lk;

**kfgNgwW gpw;fhyk; :-**

kfgNgwW gpw;fhyj j py; 98 % fhgfhy ehpopT Nehahs;pf; rhpahd

rh;f;fi uapd;msi t mi l thh;

Foei j gpwej MW thuj j pw;Fggpd; th;atop FS fNfh] ; mUej p

ehpopT Neha;cssj h vd ghNrhj i d nraa Ntz ;Lk;

fUkp j hf;Fj ypy; , Ue;J j wfhj ;J f;nfhss fUkp ehropd pi a vLj ;J f;

nfhss Ntz ;Lk;

Foei j f;F j hagh;nfhLggJ mtrpak;

**fUj j i l nraj y; :-**

th;atop cl nfhs;S k; fUj j i l khj j pi ufi s rhggpl f; \$ l hJ. , J

, uj j j j py;css rh;f;fi ui a mj pfhpf;Fk;

fhggh; - b Ki wi a cgNahf;ggJ ghJ fhgghdJ. Mdhy; nj hwW

tuhky;ghJ fhgghf , Uf;f Ntz ;Lk;

kpfTk; ghJ fhgghd fUj j i l Ki w MZ i w (epNuhj )

cgNahf;ggj hFk;

**KbTi u :-**

, J ti u ehk; fhgfh y ehpopT Neha; gwmpAk> mj d; nrayghLfs;  
gwmpAk> meNeha;f;fhd rpfprj r Ki wfi sAk; fz NI hk; , J cqfS fF  
kpfTk; cgNahfkhf , Uf;Fk; vd epi df;f;Nwd; , dW ghj j vyyh  
tj pKi wfi sAk; gpdgwmpdhy; , eNehapd; tpi sTfi sj ; j Lf;f KbAk;  
NkYk;j ha;Nra;eyj i j Ak;Ngz KbAk;



fhgfh y ehppT Nehaf;fh d cz T gl bay;

Neuk;	cz T	msT
fhi y - 8 kz p Kj y; 9 kz p ti u	, l yp (3) Kssq;fp rhkggh; (1fg) (myyJ) nfhj j kyyp rgghj j p (2) (vz nz a; Nghl hky) uhaj j h - (1fg) - ntsshpf;fha; - j f;fhsp - ng. ntq;fhak; - fi l ej Nkhh; (myyJ) Nj hi r - (3)(vz nz a; Cwwhky) j f;fhsp/Gj pdh/nfhj j kyyp rl dp (½ fg)	150 fpuhk; 100 kpyp  57 fpuhk;  25 fpuhk; 25 fpuhk; 25 fpuhk; 25 kpyp  100 fpuhk;  100 fpuhk;
gpwgf y; 11- kz p	Vj htJ xU gok; (rppwNj fdpe;J , Uf;f Ntz ;Lk) nfhaah/Mggpy/khJ i s vYkpri r rhW rh;f;fi u , yyhky; (1 l ksh) (myyJ) ghyhi l e;f;fpa ghy; (rh;f;fi u , yyhky) (1 l ksh)	150 fpuhk; 200 kpyp  200 kpyp
kj pak; 1kz p Kj y; - 2kz p ti u	fha;fwp fyi t (1fg) ntsshp j f;fhsp Kssq;fp rhj k; (1 fg) fl u FokG (½ fg) Kl i l Nfh] ; nghhpay; (½ fg) j ap; (ghyhi l e;f;fpa ghy; , Ue;J) (½ fg) (myyJ) Kssq;fp rgghj j p (vz nz a; , yyhky) - (2)	25 fpuhk; 25 fpuhk; 25 fpuhk; 250 fpuhk; 50 fpuhk; 100 fpuhk;  50 fpuhk;  57 fpuhk;

Neuk;	cz T	mST
khi y 4kz p Kj y; 5kz p ti u	Ki sfl ba gah; (gri r gah/nfhz i l fl i y) (½ fg) (myyJ) Nkhp gp] ;fl ; (2) Nj eh; (rh;f;fi uapyyhky) (1l ksh) (myyJ) j f;fhsp # g; (1l ksh)	100 fpuhk; 50 fpuhk; 200 kpy 100 kpy
, uT 7.30kz p Kj y; 8.30kz p ti u	Gj pdh rgghj j p (3) uhaj j h (1fg) ntssh j f;fhsp ng. ntq;fhak; fi l j nj Lj j Nkhh; (myyJ) , l yp (3) fj j hp;f;ha; FokG (½ fg)	100 fpuhk; 100 fpuhk;      150 fpuhk; 45 fpuhk
gLfi ffF Kd; 9.00 kz p Kj y; - 9.30kz p ti u	ghyhi l e;f;fpa ghy; (rh;f;fi u , yyhky) (1l ksh) (myyJ) vYkpr; r rhW (rh;f;fi u , yyhky) (1l ksh) gok; - (1) Mggps/nfhaah/ khJi s/rhj JFb. (myyJ) gri rgaW Rz l y; (½ fg) (myyJ) Nkhp gp] ;fl ; - (2)	200 kpy   200 kpy 150 fpuhk;  100 fpuhk; 50 fpuhk;

nkhj j fNyhhp : 2000 f.p.f

**PART - I**  
**DEMOGRAPHIC VARIABLES**

- 1) Mother's Age
  - a) 18 -21 years
  - b) 22 - 25 years
  - c) 26 - 30 years
  - d) 30 and above.
  
- 2) Mothers Education Level
  - a) No formal education.
  - b) Primary Education
  - c) Secondary Education
  - d) Higher Secondary Education
  - e) Graduate and Post Graduate
  
- 3) Occupation
  - a) House Wife
  - b) Business
  - c) Daily Wager
  - d) Company Employee
  
- 4) Duration of gestational diabetes mellitus
  - a) One month
  - b) Two months
  - c) Three months
  - d) Four months

5) Gestational Age

- a) 20 – 23 weeks
- b) 24 -27 weeks
- c) 28 -30 weeks
- d) 31–34 weeks.

6) Dietary pattern

- a) Vegetarian
- b) Non Vegetarian

7) Type of family

- a) Nuclear.
- b) Joint.

8) Residence.

- a) Urban.
- b) Rural.

## PART - II

### STRUCTURED INTERVIEW SCHEDULE

#### KNOWLEDGE QUESTIONNAIRE

1. What are the risk factors for gestational diabetes?
  - a) Family history of diabetes and obesity
  - b) Eating high amount of sugar and fat
  - c) Women who had consanguineous marriage and high parity
  - d) Spouse with diabetes mellitus and having habit of smoking.
  
2. Gestational diabetes mellitus is usually diagnosed at
  - a) Second half of the pregnancy
  - b) During the first trimester
  - c) As soon as the pregnancy is confirmed
  - d) At the time of delivery
  
3. The confirmatory test to diagnose gestational diabetes mellitus is
  - a) Random blood sugar
  - b) Oral glucose tolerance test
  - c) Blood test before meals
  - d) Blood test after meals
  
4. What are the main symptoms of hypoglycemia?
  - a) Giddiness, sweating, Nervousness.
  - b) Polyuria, polydipsia, polyphagia.
  - c) Dry mouth, vomiting, oliguria
  - d) Depressed reflexes, dehydration, back pain

5. What are the main symptoms of hyperglycemia?
- a) Polyuria, polydipsia, polyphagia.
  - b) Sweating, nervousness, Giddiness.
  - c) Pallor, cold and clammy skin.
  - d) Weight loss, irritability, stupor.
6. The foods rich in complex carbohydrates which can be taken by the gestational diabetic mother are
- a) Whole grains, greens and vegetables.
  - b) Potato, sugars, honey.
  - c) Wheat, sugar cane, jaggery.
  - d) Milk, curd, butter.
7. The foods rich in protein which can be taken by the gestational diabetic mother are
- a) Rice, wheat, soup.
  - b) Pulses, sprouts, egg.
  - c) Ragi, greens, fruits.
  - d) Sugar, fruits, cucumber.
8. The foods rich in fat which should be avoided by the gestational diabetic mother are
- a) Butter milk, fruits, vegetables.
  - b) Rice, wheat, ragi.
  - c) Fish, chicken, vegetable oil.
  - d) Butter, ghee, meat.

9. If the mother is vulnerable to hypoglycemia at night, she should take

- a) Extra snacks at midnight
- b) Final snacks of the day with protein and carbohydrate.
- c) Fruit juices during the episode
- d) Large meals at night.

10. The constitution of carbohydrate in the total calories is

- a) 10 – 20 %
- b) 20 – 30 %
- c) 40 – 60 %
- d) 50 – 75 %.

11. The constitution of protein in the total calories is

- a) 20 – 30 %
- b) 40 – 50 %
- c) 50 – 60 %
- d) 60 – 70 %

12. The constitution of fat in the total calories is

- a) 10 – 20 %
- b) 25 – 40 %
- c) 45 – 60 %
- d) 55 – 75 %

13. What are the foods rich in fiber content?

- a) Egg, Milk.
- b) Meat, Fish.
- c) Greens, Vegetables.
- d) Cereals, Pulses.

14. Diet regimen for a woman with diabetes during pregnancy is
- a) Three meals and three snacks
  - b) Two meals and two snacks
  - c) Four meals and no snacks
  - d) Three meals and no snacks
15. The fruit that is not rich in sugar is
- a) Mango.
  - b) Banana.
  - c) Sapotta.
  - d) Guava.
16. A snack which can be taken by the gestational diabetic mother is
- a) Raw vegetable salad.
  - b) Bhaji.
  - c) Cakes.
  - d) Cream biscuits.
17. The vegetable to be avoided by the gestational diabetic mother is
- a) Beetroot.
  - b) Cauliflower.
  - c) Cabbage.
  - d) Radish.
18. What is the need for exercise in a gestational diabetic mother?
- a) Lowers the serum glucose level and lowers the need for insulin
  - b) Increases the serum glucose level and increases the need of insulin.
  - c) Decreases the serum glucose level and increases the need of insulin.
  - d) Increases the serum glucose level, and decreases the need of insulin.



19. The exercise which is recommended for gestational diabetic mother is
- a) Cycling
  - b) Walking.
  - c) Swimming.
  - d) Vigorous exercise.
20. Before activity the mother should have
- a) A cup of coffee without sugar (or) Horlicks.
  - b) Bhaji (or) Vadai.
  - c) Sundal (or) Biscuits.
  - d) Nothing orally .
21. Oral hypoglycemic tablets are not recommended during pregnancy because there is
- a) Possibility of hypoglycemia in the mother
  - b) Possibility of teratogenic effect on the fetus
  - c) No control over hyperglycemia
  - d) Slow absorption.
22. The areas for injection of insulin are
- a) Arms (posterior surface), thighs (anterior surface).
  - b) Abdomen, Arms (anterior surface)
  - c) Thighs (posterior surface), abdomen.
  - d) Hips and anterior surface of the arms.
23. What is the correct time to take insulin?
- a)  $\frac{1}{2}$  an hour before meals.
  - b) 2 hours before meals.
  - c)  $\frac{1}{2}$  an hour after meals.
  - d) 2 hours after meals.

24. Simple management of hypoglycemia is
- a) Take salt.
  - b) Take insulin.
  - c) Take sugar.
  - d) Take water.
25. Insulin should be stored in
- a) Room Temperature.
  - b) Covered Box.
  - c) Refrigerator.
  - d) Cupboard.
26. From the following one is not the maternal effects of diabetes.
- a) Excess fluid in the amniotic sac.
  - b) Increased chance for instrumental and caesarean delivery.
  - c) Back pain
  - d) Urinary tract infection.
27. From the following one is not the fetal effects of diabetes
- a) Delayed delivery after due date.
  - b) Big baby.
  - c) Defect in the vertebral column.
  - d) Respiratory distress syndrome.
28. After how many weeks of delivery, is the glucose tolerance test to be performed to ensure the diabetes has disappeared?
- a) Six weeks
  - b) Ten weeks
  - c) One weeks
  - d) Two weeks

29. The best contraception preferred after delivery is

- a) Pills
- b) Copper- T.
- c) Condom.
- d) Not to take anything.

30. During postpartum period, the mother should

- a) Fully avoid giving breast feeding
- b) Immediately give breast feeding.
- c) Delay breast feeding for some days.
- d) Give breast feeding along with artificial feeding.

**PART - III**  
**STRUCTURED DICHOTOMOUS QUESTIONNAIRE**

Sl. No.	Questions	Yes	No
1.	Do you follow the diabetic dietary pattern?		
2.	Do you walk regularly?		
3.	Do you take snacks before doing exercise?		
4.	Do you maintain kick count when you are at home?		
5.	* Do you take a large meal at bed time?		
6.	* Do you skip a meal?		
7.	Do you take insulin injection regularly?		
8.	* Do you take insulin injection after your meal?		
9.	* Do you have the habit of taking more sweets?		
10.	Do you come regularly for the antenatal visit		

\* - Negative questions

gFj p - m  
j hapd; Ra FwpgG

1. j hapd; taJ

m) 18 - 21 taJ

M) 22 - 25 taJ

, ) 26 - 30 taJ

<) 30 kwWk; mj w;F Nky;

2. j hapd; fy;tp; j Fj p

m) gbffhj th;

M) Mukg fy;tp

, ) cahepi y gsspf;fy;tp

<) Nkyepi yf;fy;tp

c) gl j j hhp

3. nj hopy;

m) , yyj j urp

M) Ra nj hopy;

, ) j pd f;\$ yp

<) j dpahh; Copah;

4. eUopTNeHarð; fhyk;  
 m) xU khj k;   
 M) , U khj q,fS;  
 , ) %dW khj q,fS;  
 <) ehd;F khj q,fS;
5. fhg fhyk;  
 m) 20 - 23 thuq,fS;   
 M) 24 - 27 thuq,fS;  
 , ) 28 - 30 thuq,fS;  
 <) 31 - 34 thuq,fS;
6. cz T Ki w   
 m) i rtk;  
 M) mi rtk;
7. FLkg ti f   
 m) j d;f;FLkgk;  
 M) \$ I ;Lf; FLkgk;
8. FbaUgG   
 m) fpuhkk;  
 M) efuk;

gFj p - M

ti uaWf;fggl j Neh;fhz y; ml j ti z

mwpTj j pvd; Nfs;t pfs;

1. fhggfhy elopTNeapd; fhuz pfs;vd;d?
- m) FLkg gukgi ui ag; nghWj ;J>gUkd;
- M) rh;f;fi u kwWk;nfhOgGr; rj ;J mj pfKss cz T  
cl nfhS;S j y;  
, ) , uj j rkkej ggl j cwTI d;ngz fspd; j pUkz k; nraj y;  
kwWk; mj pf Ki w fhggkhj y;
- <) Gi f gpb;Fk;gof;fk;kwWk; rh;f;fi u NehAss fz td;  
cssthfs;
2. fhggfhy elopTNea> fhgj j pd; vej f; fhyfl j j j py;  
fz j wpaggLfWJ?
- m) fhggj j pd; , uz j htJ ghj papy;
- M) fUTww Kj yhtJ %dW khj q;f;spy;  
, ) fUj j hgj j cl Nd
- <) gpur t j j pd; NghJ
3. fhggfhy elopTNehi a cWj pggLj ;J k; ghNrhj i d vJ?
- m) nj huhakhd , uj j g; ghNrhj i d
- M) FS fNfh] ; mUej pa gpwF , uj j j j py; rh;f;fi uapd; msi t  
ghNrhj pf;Fk; Ki w  
, ) cz Tf;F Kd; vLf;fggLk; , uj j g; ghNrhj i d
- <) cz Tf;F gpd; vLf;fggLk; , uj j g; ghNrhj i d

4. rh,fi u Fi wj ypd; mwpF wps; vd;d?

m) j i yRwwy> Nthj j y> eLf,fk;

M) mj pfkhd rWWh; foj j y> mj pfkhd j hfk> mj pfkhd grp

, ) twz j tha> thej p rWWh; fopf,phi k

<) mOj j j j pdhy; VwgLk; epi d tpgG> eh; , ogG> KJ F typ

5. rh,fi u mj pfhj j ypd; mwpF wps; vd;d?

m) mj pfkhd rWWh; foj j y> mj pfkhd j hfk> mj pfkhd grp

M) Nthj j y> eLf,fk> j i y Rwwy;

, ) ci y; ntshpf; fhz ggLj y> Nj hy; kpfTk; Fsphe;J Nghj y;

<) vi l Fi wj y> vhprryi l j y> epi d tpgG

6. fhggfhy ehpoT Neha; css j ha; Nrhj ; J f; nfhss Ntz ba

khTrrj ; J mj pfKss cz Tfs; ahi t?

m) gaph;fs> fl ufs> fha;fwps;

M) fpoq;F> rh,fi u> Nj d;

, ) NfhJ i k> fUkG> ntyyk;

<) ghy> j aph> ntz j z

7. fhggfhy ehpoT Neha; css j ha; Nrhj ; J f; nfhss Ntz ba

Guj rrj ; J mj pfKss cz Tfs; ahi t?

m) mhprp NfhJ i k> fha;fwps;

M) gUgG ti ffs> Kl i l> Ki sfl ba gaph;ti ffs;

, ) uhfp fl ufs> goq;fs;

<) rh,fi u> goq;fs> ntsshpf;fha;



8. fhggfhy ehpoT Neha;css j ha;j t h,f,f Ntz ba nfhOgGrrj ;J  
mj pfKss cz Tfs;ahi t?
- m) Nkh> goq;fs> fhafw;fs;  
M) mhprp NfhJ i k>uhfp  
, ) kb>Nfhopj htuvz nz a;  
<) ntz nz a>nea>fwp
9. , utpy;rh;f;fi u Fi wj ypdhy;mtj pggLk;j ha;nraa Ntz baJ  
vd;d?
- m) mj pf j pdgz ;l q;fi s eL , utpy;cz gJ  
M) khTrrj ;J k>Guj rrj ;J k;css j pz gz ;l q;fi s  
gLfi ffF Kd;cz gJ  
, ) mej rkaj j py;gorrhW mUe;J tJ.  
<) mj pf cz i t , utpy;cz gJ
10. nkhj j fNyhhpapy;khTrrj j pd; rj tj k;vd;d?
- m) 10 - 20%  
M) 20 - 30%  
, ) 40 - 60%  
<) 50 - 75%
11. nkhj j fNyhhpapy;Guj rrj j pd; rj tj k;vd;d?
- m) 20 - 30%  
M) 40 - 50%  
, ) 50 - 60%  
<) 60 - 70%

12. nkjh j fNyhhpapy; nfhOggpd; rj t] k; vd;d?
- m) 10 - 20%
- M) 25 - 40%
- , ) 45 - 60%
- <) 55 - 75%
13. ehrrrj ;J mj pfKss cz Tfs; ahi t?
- m) KI j l > ghy;
- M) MI bi wrp kld;
- , ) fl ufs > fha;fwf;fs;
- <) gUgGfs > j hdpaq;fs;
14. fhgj j pdNghJ rh;fi ui af; fl ;LggLj j j hakhh;fs; vLj ;J f; nfhss Ntz ba cz TKi w vJ?
- m) %dW Ki w cz T > %dW Ki w j pdgz ;l q;fs;
- M) , uz ;L Ki w cz T > , uz ;L Ki w j pdgz ;l q;fs;
- , ) ehd;F Ki w cz T > j pdgz ;l q;fs; , yi y
- <) %dW Ki w cz T > j pdgz ;l q;fs; , yi y
15. rh;fi uapd; msT Fi wej gok; vJ?
- m) khkgok;
- M) thi oggok;
- , ) rgNghl ;l h
- <) nfhaah
16. fhgfhy e;opTNeHa; css j ha; vLj ;J fnfhsS k; j pdgz ;l k; vJ ?
- m) gri r fha;fwp rhy;l ;
- M) g[ ;[ p
- , ) Nff;
- <) fhpk; gp] ;fl ;

17. fhgfhy ehpopT Neha; css j ha; j t ph; f f Ntz ba fha; fwp vJ?
- m) gll ;&l ;
- M) fhs; ggps th;
- , ) Kl i l fNfh] ;
- <) Kssq; fp
18. fhgfhy eliopT Neha; css j hakhh; fS fF cl wgapw; rp nrat; j d; mtrpak; vdd?
- m) , uj j j j py; rh; f; fi u msi tAk> , dRypd; Nj i ti aAk; Fi wf; fpwJ
- M) , uj j j j py; rh; f; fi u msi tAk> , dRypd; Nj i ti aAk; mj pfhp; f; fpwJ
- , ) , uj j j j py; rh; f; fi u msi t f; Fi wj ; J> , dRypd; Nj i ti a mj pfhp; f; fpwJ
- <) , uj j j j py; rh; f; fi u msi t mj pfhj ; J> , dRypd; Nj i ti af; Fi wf; fpwJ
19. fhgfhy eliopT Neha; css j hakhh; fS; nraa; Ntz ba cl wgapw; rp vJ?
- m) kqj ptz b XI ;Lj y;
- M) ei l gapw; rp
- , ) ehry; gapw; rp
- <) j Pt pu cl wgapw; rp
20. cl wgapw; rp; f; F Kd; j ha; vLj ; J f; nfhss Ntz baJ vJ?
- m) rh; f; fi u , yyhj fhg/ ^ hhy; pf; ] ;
- M) g[ ; [ p/ ti l
- , ) Rz ; l y/ gp] fl ;
- <) vi j Ak; vLj ; J fnfhss f; \$ l hJ

21. fhgf;fhy eUopT Nehi af; fl ;LggLj j khj j pi ufs;   
ghpe;J i uf;fg;gl hj j d; fhuz k;vd;d?

m) , uj j j j py; rh;f;fi uapd; msT Fi wAk; thagG

M) rpRt;pw;F gpwt; p Fi wghLfs; VwgLk; thagG

, ) , uj j j j py; rh;f;fi uapd; ms i t fl ;LggLj j Kbahj epi y

<) cl ;f;pu;f;ij j y; nkJ thf , Uggj hy;

22. , dRypd; C rp Nghl ggLk; , l qfs; ahi t?

m) gpd;gf;f i f > Kd;nj hi l

M) t apW > Kd;gf;f i f

, ) gpd;gf;f nj hi l > t apW

<) , LgG > Kd;gf;f i f

23. , dRypd; vLj ;J fnfhss Ntz ba rhpahd Neuk; vJ?

m) cz T cz gj w;F mi ukz p Neuj j pw;F Kd;

M) cz T cz gj w;F , uz ;Lkz p Neuj j pw;F Kd;

, ) cz T cz gj w;F mi ukz p Neuj j pw;F gpd;

<) cz T cz gj w;F , uz ;Lkz p Neuj j pw;F gpd;

24. , uj j j j py; rh;f;fi u msT Fi wAkNghJ mi j Nkw;nfhsS  
vL;f;ggLk; vs;pa j h;T vJ?

m) cgG vLj ;J fnfhss; j y;

M) , dRypd; vLj ;J fnfhss; j y;

, ) rh;f;fi u vLj ;J fnfhss; j y;

<) j z z h; vLj ;J fnfhss; j y;

25. vej , l j j py; , dRypi d ghJ fhj ;J i t f f N t z ;Lk?

m) mi wapd; ntggj j py;

M) %ba ngl bapy;

, ) F s p h r h j d g ; n g l b a p y ;

<) mykhhpapy;

26. fb,f,fz ; t w W s ; e l o p T N e h a h y ; j h a f ; F V w g l h j g h j p g G v J ?

m) f U g i g a p y ; e h p d ; m s T m j p f h j j y ;

M) m W i t r p f p r i r k w W k ; M A j g p u r t t h a g G m j p f h j j y ;

, ) K J F t y p

<) r p W e l f g h i j a p y ; n j h w W V w g L j y ;

27. fb,f,fz ; t w W y ; e l o p T N e h a h y ; r p R t p w ; F V w g l h j g h j p g G v J ?

m) g p u r t N j j p f ; F g p w F g p u r t o j j y ;

M) m j p f v i l A s s F o e i j

, ) j z ; L t l f ; F i w g h L

<) R t h r k z ; l y j j p y ; F i w g h L

28. g p u r t k ; K b e j v j j i d e h l f s p y ; r h f ; f i u m s i t f ;

f z ; l w p a > F S f N f h ] ; g h p N r h j i d N k w n f h s s y h k ?

m) 6 t h u q f s ;

M) 10 t h u q f s ;

, ) 1 t h u k ;

<) 2 t h u q f s ;

29. gpur t j j p w; F g; g p d; f U j j i l f; F r p w e j t o p v J ?

m) k h j j p i u f s;

M) f h g g h; - b

, ) M Z i w c g N a h f o j j y;

<) v J T k; N k w n f h s s h j p U j j y;

30. F o e i j g p w e j g p d; F o e i j f; F j h a; n r a a N t z b a J ?

m) j h a g g h i y K O t J k h f j t p h; f; f N t z ; L k;

M) c l d b a h f j h a g g h y; n f h L f; f N t z ; L k;

, ) r p w p j e h l f s; f o j j j h a g g h y; n f h L f; f N t z ; L k;

<) j h a g g h Y l d; N r h j j G l b g g h Y k; n f h L f; f N t z ; L k;

gFj p - III

ti uaWf;fggl ; Neh,fhz y;ml ; ti z

nray;top Nfs;t pfs;

t. vz ;	Nfs;t pfs;	Mk;	, yi y
1.	rh;fi uf;fhd cz Tf; fl ;LgghL Ki wi a gpd gw;Wf;wh;fsh?		
2.	j pd Kk;ei l ggawrpi a Nkwnfhs;f;wh;fsh?		
3.	cl wgapwrpf;F Kd;j pdgz ; qfs; rhggpL t J cz ; h?		
4.	tl by; , Uf;FkNghJ Foei j mi rtpd; vz z pfi fi af; fz ; wptJ z ; h?		
5.	* , uT cz T mj pfk; cz gh;fsh?		
6.	* cz i t j t phggJ cz ; h?		
7.	, dRypd; Crpi a Ki wahf vLj ; J fnfhs;f;wh;fsh?		
8.	* cz Tf;Fg;gpd; , dRypd; Crpi a vLj ; J fnfhs;f;wh;fsh?		
9.	* mj pf , dpgG ti ffs; cz ; Z k;goffKz ; h?		
10.	fhgfhy gh;Nrhj i d fF j twhky; nry;tJ z ; h?		

- -vj phki wf; Nfs;t pfs;

**ANSWER KEY**

**SCORES RELATED TO KNOWLEDGE REGARDING GESTATIONAL  
DIABETES MELLITUS**

<b>S.NO</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
1	1	0	0	0
2	1	0	0	0
3	0	1	0	0
4	1	0	0	0
5	1	0	0	0
6	1	0	0	0
7	0	1	0	0
8	0	0	0	1
9	0	1	0	0
10	0	0	1	0
11	1	0	0	0
12	0	1	0	0
13	0	0	1	0
14	1	0	0	0
15	0	0	0	1
16	1	0	0	0
17	1	0	0	0
18	1	0	0	0
19	0	1	0	0
20	0	0	1	0
21	0	1	0	0
22	1	0	0	0
23	1	0	0	0
24	0	0	1	0
25	0	0	1	0
26	0	0	1	0
27	1	0	0	0
28	1	0	0	0
29	0	0	1	0
30	0	1	0	0



**SCORES RELATED TO PRACTICE REGARDING GESTATIONAL  
DIABETES MELLITUS**

**s**

<b>S.NO</b>	<b>YES</b>	<b>NO</b>
1	1	0
2	1	0
3	1	0
4	1	0
5	0	1
6	0	1
7	1	0
8	0	1
9	0	1
10	1	0