ASSESSMENT ON MATERNAL AND FETAL OUTCOME OF

MOTHERS WITH GESTATIONAL DIABETES

MELLITUS DURING LABOUR

DISSERTATION SUBMITTED TO

THE TAMIL NADU Dr. M. G. R. MEDICAL UNIVERSITY, CHENNAI

IN PARTIAL FULFILLMENTOF THE REQUIREMENT FOR THE

DEGREE OF MASTER OF SCIENCE IN NURSING

OBSTETRICS AND GYNAECOLOGICAL NURSING

APRIL 2016

CERTIFICATE

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ACKNOWLEDGEMENT

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

LIST OF ANNEXURES

ABSTRACT

A study to assess the maternal and fetal outcome of mothers with Gestational Diabetes Mellitus during labour in selected hospitals at Kanyakumari district.

Descriptive research design and retrospective observational cohort design were adopted for this study. Purposive and convenient sampling technique was used to assess the maternal and fetal outcome. The experiences of mothers with gestational diabetes mellitus were recorded.150 samples in quantitative and 30 samples in qualitative study were selected. A record of past 5 years was observed. Questionnaire method is used to extrapolate the experience of mothers with gestational diabetes mellitus. Demographic variables like age, type of food and clinical variables like gestational weeks during labour, weight gain during pregnancy, mode of delivery and fetal birth weight was used to assess maternal and fetal outcome. The researcher conducted the study for 4 weeks.

The findings revealed that, in maternal outcome, none of the mothers with Gestational diabetes mellitus had good outcome, 124(82.7%) had average outcome, 26(17.3%) had poor outcome. In Fetal outcome none of them had good outcome, 137(91.3%) had average outcome, 13(8.7%) had poor outcome. The demographic variables such as age, type of food and clinical variables such as gestational weeks during labour, weight gain during pregnancy, mode of delivery and fetal birth weight were recorded. In maternal outcome there is no a significant association between demographic variables and maternal outcome. The calculated value of fetal birth weight (maternal outcome) is 38.60 which is significant at $p<0.05$. Hence hypothesis (H_1) is accepted. In fetal outcome there is no a significant association between demographic variables and fetal outcome and there is no a significant association between clinical variables and fetal outcome. Hence hypothesis H_2 is rejected. As per the study the researcher concludes that there was an average outcome of maternal and fetal outcome in mothers with gestational diabetes mellitus during labour.

CHAPTER I

INTRODUCTION

The miracle of life is the single most experience that every woman will remember in her lifetime. Almost every detail of the whole process can be definitely recalled by the mother, no matter how long it had happened. Every woman may have their own unique story of the parturition in every child may have. This amazing event is life changing, both an ending and a beginning. It marks the impending end of gestation and the start of a new family

Conception is when the sperm fertilizes the egg. The fertilized egg then travels down the fallopian tube and attaches to the inside of the uterus, where it begins to form the fetus and placenta

Pregnancy, also known as gestation, is the time during which one or more offspring develops inside a woman. A multiple pregnancy involves more than one offspring, such as twins, triplets, quadriplets etc. Pregnancy can occur by sexual intercourse or assisted reproductive technology. It usually lasts around 40 weeks from the last menstrual period (LMP) and ends in childbirth. This is just over nine lunar months, where each month is about 29½ days, when measured from conception it is about 38 weeks. An embryo is the developing offspring during the first eight weeks following conception, after which, the term fetus is used until birth. Symptoms of early pregnancy may include missed periods, tender breasts, nausea and vomiting, hunger, and frequent urination. Pregnancy may be confirmed with a pregnancy test.

Pregnancy is typically divided into three trimesters. The first trimester is from week one through 12 and includes conception. The first trimester carries the highest risk of miscarriage (natural death of embryo or fetus). The second trimester is from week 13 through 28. Around the middle of the second trimester, movement of the fetus may be felt. At 28 weeks, more babies can survive outside of the uterus if provided high-quality medical care. The third trimester is from 29 weeks through 40 weeks.

The labour process is a time of different bursting emotions. There is the excitement of seeing the baby for the first time fear of what might occur during the

culmination of pregnancy and the unforgettable, excruciating, agonizing pain of contractions.

The transition of events is very hard, long and rewarding all at the same time. The process of normal human childbirth is categorized in three stages of labour: the shortening and dilation of the cervix, descent and birth of the newborn and birth of the placenta. In many cases, with increasing frequency, childbirth is achieved through caesarean section, the removal of the neonate through a surgical incision in the abdomen, rather than through vaginal birth. One very important fact about women to keep in mind is that, labour is a normal and natural physiological event in the female body, a female's body is designed to handle labour and birth physically, mentally and emotionally. Labour has been a part of the female experience for centuries.

Medical and surgical illness complicating pregnancy are haematological diseases in pregnancy, heart diseases in pregnancy, gestational diabetes mellitus, thyroid dysfunction ,hypertensive disorder, preterm labour, preterm rupture of the membranes, post maturity, intrauterine fetal death, contracted pelvis, abnormal uterine action, malposition, malpresentation and cord prolapsed, prolonged labour, obstructed labour, dystocia caused by fetal anomalies and abnormalities of placenta.

Gestational diabetes mellitus (GDM) is defined as glucose intolerance diagnosed for the first time during pregnancy and usually disappears during the puerperium. The prevalence of Gestational diabetes mellitus in some ethnic groups ranges from 1 to 14 depending on different screening 9methods, diagnostic criteria and the population screened. Most women who have Gestational diabetes mellitus give birth to healthy neonates, especially when their blood glucose levels are well controlled with a diabetic diet, exercise and an appropriate body weight. In some cases, Gestational diabetes mellitus can negatively affect the pregnancy and result in adverse perinatal outcome like macrosomia, birth trauma, shoulder dystocia and higher rates of cesarean section (CS).

The management of Gestational diabetes mellitus has altered markedly in recent years. It is based on universal screening of blood sugar and to establish a tight control of serum glucose levels round the clock in these patients

through serial measurements of blood glucose by home monitoring and glycosylated haemoglobin. Adequate control of blood sugar has been associated with improved perinatal outcome. More than three-quarters of the patients with Gestational diabetes mellitus respond to diet therapy alone and the remaining patients require the addition of insulin with diet.

Pregnancy related morbidity and mortality in gestational diabetes is less than that of overt diabetes mellitus however if not treated it is significantly higher than for non diabetic women. There remains a small increase in unexplained stillbirth in mothers with gestational diabetes. Unlike established diabetes there is no increase in congenital malformation rates since significant maternal hyperglycaemia occurs when organogenesis is complete. There is increased Caesarean section rate because of macrosomic babies and obstructed labour especially in developing countries. There is also associated birth trauma especially when these babies are delivered vaginally. Most studies have found that women with gestational diabetes who develop pregnancy-related hypertension tend to be older and heavier.

Fetal outcome refers to macrosomia probably results from maternal hyperglycaemia hypertrophy and hyperplasia of the fetal islets of langerhans increased secretion of fetal insulin stimulates carbohydrate utilisation and accumulation of fat. Insulin like growth factors are also involved in fetal growth and adiposity with good diabetic control incidence of macrosomia is markedly reduced elevation of maternal free fatty acid in diabetes leads to its increased transfer to the fetus acceleration of triglyceride synthesis adiposity congenital malformation is related to the severity of diabetes affecting orgsnogenesis in the first trimester the factors associated with teratogenesis are multifactorial genetic susceptibility inhabitation, hyperglycaemia, archidonic acid deficiency, ketone body excess, somatomedin inhabitation, free oxygen radical excess .risks of fetal chromosomal abnormalities are not increased.

Priyanka k. et al., (2012) conducted a study to evaluate the prevalence of mothers with gestational diabetes mellitus during pregnancy a study group in India. Criteria and further assess its feto-maternal outcome a control group in western Rajasthan. This study was done in mothers who attending antenatal clinics. The prevalence of gestational diabetes mellitus in this study was 6.6%. Findings

suggest that Maternal and fetal complication in this gestational diabetes mellitus group were much higher than in the non- gestational diabetes mellitus group.

BACKGROUND OF THE STUDY

Gestational diabetes mellitus is a condition that develops during pregnancy when the body is not able to make enough insulin. The lack of insulin causes the blood glucose (also called blood sugar) level to become higher than normal. Gestational diabetes affects between 2 and 10 percent of women during pregnancy.

It is important to recognize and treat gestational diabetes as soon as possible to minimize the risk of complications to mother and baby. In addition, it is important for women with a history of gestational diabetes to be tested for diabetes after pregnancy because of an increased risk of developing type 2 diabetes in the years following delivery. Screening for gestational diabetes is usually done between 24 and 28 weeks of pregnancy. However, screening may be done earlier in the pregnancy if you have risk factors for gestational diabetes,

Diabetes is increasing worldwide, killing, disabling and impoverishing men and women alike. 366 million people already have diabetes, with roughly equal numbers of women and men Today as many as 60 million women of reproductive age have type 2 diabetes1, and Gestational diabetes mellitus, a type of diabetes that starts or is first recognised during pregnancy, affects up to 15% of pregnant women worldwide.

Gestational diabetes mellitus also has long-term public health significance, contributing to the escalating type 2 diabetes epidemic. Although Gestational diabetes mellitus is a temporary phenomenon for the pregnant woman, more than 50% of women with Gestational diabetes mellitus develop type 2 diabetes within 5-10 years of delivery. Moreover, infants of women with Gestational diabetes mellitus have a higher prevalence of overweight or obesity as young children and adolescents, and a higher risk of developing type 2 diabetes later in life all countries need to ensure that maternal and infant deaths from diabetes are recorded in maternal death audits Health systems must keep long-term records to facilitate periodic assessments for women with previous Gestational diabetes mellitus and their infants where appropriate.

According to **World health organization (WHO) 2014,** 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 15% of all pregnancies, depending on the population studied and the diagnostic tests employed globally. Gestational diabetes mellitus affects up to 15% of pregnant women worldwide, and in India alone an estimated 4 million women have Gestational diabetes mellitus.

According to the **American Diabetes Association (ADA) 2013**, recommends that all women with a history of gestational diabetes have testing for type 2 diabetes at least every three years after their pregnancy. Women who have Gestational diabetes after age 45 should have testing once per year.

According to the **National Nutritional Monitoring Bureau (NNMB) 2012**, in India alone, an estimated 4 million women have Gestational diabetes mellitus. These numbers are likely to increase as levels of maternal obesity continue to rise Type I diabetes, and the incidence of maternal mortality among pregnant women with type I diabetes in some countries is 5-20 times higher than that of women without diabetes. Type II Gestational diabetes mellitus accounts for 90% of all cases of diabetes in pregnancy, Gestational diabetes mellitus also have a 4-fold increased risk of perinatal mortality. Almost 3 million babies are stillborn every year, and Gestational diabetes mellitus is a major contributor to this unacceptable loss of life.

SIGNIFICANCE AND NEED FOR THE STUDY

Mother who have diagnosed with Gestational diabetes mellitus maternal and fetal outcomes are length of labour, perineal injuries, maternal distress, postpartum haemorrhage, postnatal hyperglycaemia, size of the baby, fetal distress, neonatal hypoglycaemia, apgar score, fetal heart rate. Were put on an 1800-kcal diabetic diet for 5 days followed by a blood sugar profile (BSP) to measure the fasting blood sugar and 2-hrs postprandial-breakfast, lunch and dinner serum glucose levels. If the fasting blood sugar was ≤100 mg/dL and the postprandial blood sugar levels <125 mg/dL; the patients were managed by diet alone.

Aruna. et al., (2011) conducted a study to determine the maternal and fetal outcomes of 50 diabetic vs. 50 normoglycemic pregnancies. Gestational diabetes

mellitus is an important public health problem because diabetes not only affects the maternal and fetal outcome, but these women and their fetuses are also at an increased risk of developing diabetes and related complications later in their life. The study concluded that the women with diabetic will most affected by Gestational diabetes mellitus in future.

Middleton P. et al., (2010) conducted a study to determine the maternal and foetal outcomes in mothers with gestational diabetes mellitus attending antenatal clinics. The modes of delivery were similar in both groups but genital injuries were more common among mothers with Gestational diabetes mellitus. The indications of Caesarian section in mothers with Gestational diabetes mellitus were two times more likely to be due to big babies and obstructed labour. The babies for mothers with Gestational diabetes mellitus were more likely to be macrocosmic, still born, and have shoulder dystocia than those of normal mothers.

Carlos A. et al., (2011) conducted a experimental study to determine the effectiveness of maternal diabetes in pregnancy early an long term outcomes on the offspring and the concept of metabolic memory in Switzerland. Maternal diabetes or obesity during pregnancy appears to be important risk factors for fetal obesity or macrosomia. Gestational diabetes mellitus and maternal obesity including nutritional strategies may have real improvement on maternal health and offspring in the future life.

The researcher during her clinical experience had observed various mothers with Gestational diabetes mellitus. During her interactions with those mothers, she identified that many mothers did not have normal outcome, so she selected this study to identify the maternal and fetal outcome of gestational diabetes mellitus mothers during pregnancy.

The study aims to assess the maternal and fetal outcome of mothers with gestational diabetes mellitus during labour and ask the experiences of mothers.

STATEMENT OF THE PROBLEM

A study to assess the maternal and fetal outcome of mothers with Gestational Diabetes Mellitus during labour in selected hospitals at Kanyakumari district.

OBJECTIVES OF THE STUDY

1. To assess the maternal outcome of mothers with gestational diabetes mellitus during labour.
2. To assess the fetal outcome of mothers with gestational diabetes mellitus during labour.
3. To extrapolate the experience of mothers with gestational diabetes mellitus during labour.

RESEARCH HYPOTHESIS

H_1 - There is a significant association between the maternal outcome of mothers with gestational diabetes mellitus during labour with the selected demographic variables and clinical variables.

H_2 - There is a significant association between the fetal outcome of mothers with gestational diabetes mellitus during labour with the selected demographic variables and clinical variables.

OPERATIONAL DEFINITION

Assess

Refers to observation of the maternal and fetal outcome of primi mothers with gestational diabetes mellitus during labour from the records.

Maternal outcome

Refers to those effects associated with labour like prolonged labour, perineal injuries, maternal distress, postpartum haemorrhage and postnatal hyperglycaemia as observed in the five year records of hospital measured with maternal outcome assessment scale.

Fetal outcome

Refers to those effects associated with fetus like macrosomic baby, fetal distress, neonatal hypoglycaemia, apgar score at 1 and 5 minutes and fetal heart rate as observed in the five year records of hospital measured with fetal outcome assessment scale.

Mother with Gestational Diabetes Mellitus during labour

Refers to the inpatient Records of primi mothers who had increasing blood sugar level diagnosed during second and third trimester of pregnancy and admitted in labour ward with contraction until the delivery of placenta.

ASSUMPTION

- Gestational diabetes mellitus may lead to poor maternal and fetal outcome.
- Early screening of any pregnant mothers may reduce the risk of fetal and maternal complication.

PROJECTED OUTCOME

- Early screening will avoid complications in next pregnancy.
- To guide and counsel the couple to prevent further complications.

CONCEPTUAL FRAMEWORK

Mercer's model of maternal role attainment (1979)

The conceptual framework or model is a phenomenon made up of concepts that are the mental image of a phenomenon. These concepts are linked together to express their relationship between them. A model is used to denote symbolic representation of concepts.

Mercer's model of maternal role attainment is placed within Brofenbrenners (1979) nested circle of the microsystem, exosystem and macrosystem.

Microsystem

In maternal role attainment the immediate environment includes the mother –fetal relationship, family and factors such as family functioning, mother-father relationship, social support and stress. In this study it shows about maternal outcomes like perineal injuries, prolonged labour, maternal distress, postpartum haemorrhage, postnatal hyperglycaemia in relationship with the fetal outcome such as apgar score, hypoglycaemia, fetal distress, macrosomia, fetal heart rate. The social supports to the maternal role in microsystem are antenatal visit, parenthood preparation and feedback. The family functioning which are related to the maternal and fetal outcome are financial support, psychological support and diet.

Exosystem

The exosystem encompasses influences and delimits the microsystem. The mother infant unit is not contained within the exosystem but the exosystem determine in part what happens to the developing maternal role and the child. In this study the exosystem focuses on maternal and fetal outcome of primi mothers with Gestational diabetes mellitus here the researcher described that good outcome, poor outcome and average outcome.

Macrosystem

The macrosystem in this study refers to the general prototype excising in a particular culture or transmitted cultural which includes belief, attitude, stress, cultural value and consistencies of societies. These cultural prototypes are interlinked

with the maternal and fetal outcomes.

Macrosystem=>belief, attitude and cultural value of society.

CHAPTER II
REVIEW OF LITERATURE

This chapter is designed to include the review of literature. The review of literature entails the systematic identification, reflection, criteria analysis, and reporting of existing information in relation to the problem. The review of literature presented in this chapter is organized systematically. The review of literature has two sections.

Section A: Studies related to gestational diabetes mellitus

Section B: Studies related to maternal and fetal outcome of mothers with gestational diabetes mellitus.

Section A: Studies related to gestational diabetes mellitus

Epidemiol.J. et al., (2013) conducted a prospective study of gestational diabetes mellitus risk in relation to maternal recreational physical activity before and during pregnancy compared with inactive women in Andhra Pradesh. Women who engaged in physical activity during both time periods experienced a 69% reduced risk. Findings suggest that efforts to increase maternal physical activity may contribute to substantial reductions in gestational diabetes mellitus risk.

Erica P. et al., (2012) conducted a study to assess gestational diabetes mellitus that is found for the first time when a woman in pregnant out of every 100 pregnant women in the United States three to eight get gestational diabetes mellitus. Findings suggest that blood sugar is too high and body uses glucose for too much glucose in the body can be harmful while pregnant too much glucose is not good for baby.

Susan.Y. et al., (2012) conducted a numerous studies in U.S. and elsewhere have reported an increased risk of gestational diabetes mellitus (GDM) among women

who are overweight or obese compared with lean or normal-weight women. Despite the number and overall consistency of studies reporting a higher risk of gestational diabetes mellitus with increasing weight or BMI, the magnitude of the association remains uncertain. This meta-analysis was conducted to better estimate this risk and to explore differences across studies. Findings indicate that high maternal weight is associated with a substantially higher risk of Gestational diabetes mellitus.

Ramos l. et al., (2012) conducted a prospective study to identify risk factors for gestational diabetes mellitus in a large population of women living in Spain. The aim of the study is to establish a risk appraisal model for gestational diabetes mellitus in a large population of 2194 women living in Spain women were screened for gestational diabetes mellitus based on the American diabetes association these studies are concluded to establish possible risk reduction and economic benefit.

Gunderson. D. et al., (2011) performed a study to assess breastfeeding may offer unique benefits to women protect against type 2 diabetes after delivery in the united states approximately 2,50,000 women annually. Women with gestational diabetes mellitus are upto seven times more likely to develop type 2 diabetes within several years after pregnancy. It is concluded that women who exclusively or mostly breastfed for atleast two months after giving birth and those who continued to breastfeed for several months were able to cut their risk for type 2 diabetes by half.

Leanne D. et al., (2011) conducted a study to assess visceral fat in early pregnancy can increase risk of gestational diabetes mellitus in diabetic care centre Bangalore. Women who have high levels of abdominal fat during their first trimester of pregnancy have a high risk of developing diabetes later in their pregnancy. The study looked at nearly 500 women between 18 and 42 years old. This study concluded that both visceral and total abdominal fat were predictors of developing gestational diabetes mellitus.

Wang et. al, (2011) conducted a study in china about weight loss surgery before pregnancy lowers risk for women with gestational diabetes mellitus. Who undergo weight loss surgery before becoming pregnant has a lower chance of developing gestational diabetes mellitus and giving birth to large babies. Findings suggest that this study has both positive and negative effects women who underwent

this surgery were more than twice as likely to give birth to small babies. The doctors closely follow the baby's weight during pregnancy and the mothers meet with nutritionists during and after pregnancy.

Metzger et. al.,(2011) conducted a study to gestational diabetes mellitus rates rising more than 250,000 women who gave birth in 2012 had gestational diabetes mellitus according to a new report from the agency for health care research and quality. The American diabetes association usually estimates that upto 4 percent of total deliveries are made by women with gestational diabetes mellitus. The finding shows to premature birth and newborns frequently experience hypoglycaemia, jaundice and overly large body size which can complicate the birth.

Section B: Studies related to maternal and fetal outcome of mothers with gestational diabetes mellitus.

Khalid M. et al., (2013) performed a retrospective cohort study of neonatal short term outcomes of mothers with gestational diabetes mellitus in Saudi Arabian mothers. In this the medical records of King Khalid University Hospital were viewed. The finding reveals that the primary outcome was the rate of hospital stay infants born with gestational diabetes mellitus. Mothers had significantly higher risk of NICU admissions.

Niranjan T. et al.,(2013) conducted a prospective observational cohort study to determine the perineal outcomes of infants born to mothers with Gestational Diabetes Mellitus treated with insulin or oral hypoglycemic agents in tertiary care perinatal center in Madhya Pradesh. 10,394 mothers who delivered during the study period 574 were diagnosed to have Gestational diabetes mellitus. 137 were treated with insulin and 141 with oral hypoglycemic agents. Findings suggest that there is no difference in the perinatal outcome whether the mother received insulin or an oral hypoglycemic agent for treatment of Gestational diabetes mellitus other that the increased incidence of hyper bilirubinemia in the insulin group.

Emmanuel T. et al., (2012) conducted a study to determine the maternal and fetal outcomes in mothers with gestational diabetes mellitus attending antenatal clinics in Kerala. The modes of delivery were similar in both groups but genital

injuries were more common among mothers with gestational diabetes mellitus. The indications of Caesarean section in mothers with gestational diabetes mellitus were two times more likely to be due to big babies and obstructed labour. Findings suggest that babies for mothers with gestational diabetes mellitus were more likely to be macrocosmic, still born, and have shoulder dystocia than those of normal mothers.

Saima Y. et al.,(2012) performed a descriptive observational study to measure the maternal and fetal outcome of Gestational diabetes mellitus in Alhada Military hospital, Taif, KSA. In this study fetal wellbeing was assessed by kick count, cardiotocography and ultrasound. It was concluded that early detection, constant supervision, strict glycaemic control, delivery with intensive monitoring and facilities of expert neonatologist can result in good maternal and fetal outcome, without much morbidity.

Shakya K. et al.,(2012) conducted a study to determine Gestational diabetes mellitus and fetal macrosomia in affiliated hospital, China. Fetal macrosomia defined as a birth weight >4000g may affect 12% of newborns of normal women and 15% to 45% of newborns of women with Gestational diabetes mellitus the increased risk of macrosomia in Gestational diabetes mellitus is mainly due to the increased insulin resistance of the mother. This study concluded that the Infants of women with Gestational diabetes mellitus are at an increased risk of becoming overweight or obese at a young age.

Carlos A. et al.,(2011) conducted a experimental study to determine the effectiveness of maternal diabetes in pregnancy early an long term outcomes on the offspring and the concept of metabolic memory in Switzerland. Maternal diabetes or obesity during pregnancy appears to be important risk factors for fetal obesity or macrosomia. Findings suggest that Gestational diabetes mellitus and maternal obesity including nutritional strategies may have real improvement on maternal health and offspring in the future life.

Roberts et. al.,(2011) performed a study to evaluate whether there is increased maternal or neonatal morbidity in connection with impaired glucose tolerance during pregnancy when the condition is not treated in selected geographical area Karnataka. There is increased independent association between caesarean section rate,

prematurity and macrosomic infants born to mothers with untreated impaired glucose tolerance most of the children were healthy. Findings suggest that there is still increased morbidity therefore to evaluate the effects of treatment.

CHAPTER III

RESEARCH METHODOLOGY

RESEARCH APPROACH

The researcher utilized Mixed Quantitative & Qualitative research method.

Quantitative Approach – maternal and fetal outcome of mothers with gestational diabetes mellitus during labour by observing details from the records.

Qualitative Approach – study the experience of mothers with gestational diabetes mellitus during labour.

RESEARCH DESIGN

Descriptive research design on maternal outcome and fetal outcome.

Retrospective observational Cohort design on experience of mothers with gestational diabetes mellitus.

SETTINGS

The setting adopted for this study is P.P.K.Hospital, Ratna Hospital, and Holy cross Hospital. PPK hospital is a 300 bedded multispecialty hospital located in Marthandam, Kanyakumari District. It is located 35 kilometres away from St.Xavier's Catholic College of Nursing, Chunkankadai. P.P.K Hospital records 100 to 150 deliveries per month. Ratna Hospital is a 150 bedded multispecialty hospital located in Swamiyarmadam, which is located 30 kilometres away from St.Xavier's catholic college of nursing, Chunkankadai. Ratna hospital records 80 to 100 deliveries per month. Holy cross hospital is 250 bedded multispecialty hospital located in Nagercoil, which is located 10 kilometres away from St.Xavier's catholic college of nursing, Chunkankadai. Holy cross hospital records 60 to 80 deliveries per month. These three hospitals has all facilities such as casualty, labour ward, operation theatre,

antenatal ward, postnatal ward, post-operative ward and other specialities and is well known for its maternal health care.

POPULATION

Target population – the population under study constituted all mothers with gestational diabetes mellitus during labour

Accessible population – Primi mothers with gestational diabetes mellitus delivered in P.P.K, Ratna and Holycross hospitals.

SAMPLE

The sample selected for this study is primi mothers with gestational diabetes mellitus during labour from P.P.K, Ratna and Holycross hospitals who fulfilled the inclusion and exclusion criteria.

SAMPLE SIZE

150 samples for quantitative research selected. and 30 samples for qualitative research selected from P.P.K, Ratna and Holycross hospitals.

SAMPLING TECHNIQUE

Purposive and convenient sampling techniques were used to select the samples.

CRITERIA FOR SAMPLE SELECTION

The sample selection was based on the following inclusion and exclusion criteria

Inclusion criteria

> ➢ Primi Mothers with Gestational diabetes mellitus.
> ➢ Records of inpatient primi mothers with adequate data's of maternal and fetal outcome.

Exclusion criteria

> ➢ Primi mothers with Gestational diabetes mellitus during labour who had other obstetrical complications such as pregnancy induced hypertension, antepartum haemorrhage, hydramnios and pre eclampsia.

DESCRIPTION OF TOOLS

Part I

Demographic variables (Annexure VII) including age, type of food, and clinical variables including number of pregnancies, gestational weeks during labour, weight gain during pregnancy, mode of delivery and fetal birth weight.

Part II

The assessment of Gestational Diabetes mellitus on maternal and fetal outcome was assessed by using two scales (Annexure VII) such as,

- Maternal outcome assessment scale.
- Fetal outcome assessment scale.

The scoring consists of three observed assessment such as good, average and poor outcome. Each assessment was observed and evaluated based on the score.

Scoring Procedure for Outcome:
- 1-5 : Good outcome
- 6-10 : Average outcome
- 11-15: Poor outcome

Part III

- Open Ended Questionnaire for assessing experience of mothers with Gestational Diabetes Mellitus (Annexure VII).

CONTENT VALIDITY

The content validity of the tool was ascertained by the expert opinion from two medical practitioners and three nursing experts. The experts gave their opinions and suggestions for further modification of items to improve the clarity and content of the tool. The formal tool was prepared as per the suggestions.

RELIABILITY

Inter rater reliability was done to assess the maternal and fetal outcome assessment tool. The 'r' values of maternal outcome assessment scale and fetal outcome assessment scale respectively were 0.8 and 0.7, which concluded that the tool were reliable.

PILOT STUDY

Pilot study was conducted in Caroline John Hospital, Nesamani Nagar, Kanyakumari District, after receiving a formal approval from Director of Caroline John hospital, the pilot study was conducted with 15 primi mothers in quantitative and 3 mothers in qualitative to assess the maternal and fetal outcome. Analyses of the data were done by using descriptive statistics and inferential statistics. No changes were made and the researcher proceeded to the main study.

PROCEDURE FOR DATA COLLECTION

After obtaining formal approval from the Principal of St. Xavier's catholic college of nursing (Annexure I) and administrators of P.P.K Hospital, Ratna Hospital and Holy cross Hospitals (Annexure II).

150 records were selected from 1480 records from all three hospitals. The maternal and fetal outcomes were observed from the records (150 samples) and from that 30 samples were confirmed through telephone conversation. The researcher obtained oral consent and selected samples for qualitative research. The researcher met 30 mothers and asked about their experiences with Gestational Diabetes Mellitus during labour. For this the researcher used open ended questionnaire, and the mother's feelings were recorded. Analysis of data was done by descriptive and inferential statistics.

PLAN FOR DATA ANALYSIS

Data was collected, analysed and tabulated by using descriptive and inferential statistics.

Descriptive statistics – frequency and percentage distribution was need to find out the maternal and fetal outcome and experience of mothers with Gestational diabetes mellitus during labour.

Inferential statistics– chi-square test was need to find out the association.

ETHICAL CONSIDERATION

The proposed study was conducted after the approval of the dissertation committee of St.Xavier's Catholic College of Nursing. Permission was obtained from administrator of P.P.K Hospital, Ratna Hospital, and Holy cross Hospital in Kanyakumari District. An oral consent was obtained from each subject before starting the data collection. Assurance was given to the study subjects regarding the confidentiality of the data collected.

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

This chapter deals with the analysis and interpretation of the data collected among mothers with gestational diabetes mellitus during labour. This chapter also represents the findings of the study. The data collected from the samples were tabulated, analysed and preserved in the tables and interpreted under the following sections based on the objectives and hypothesis of the study. This chapter is divided into four sections.

Section A:

1. **Distribution of demographic variables and clinical variables of mothers with gestational diabetes mellitus during labour.**

   1.1 Distribution of demographic variables of mothers with gestational diabetes mellitus during labour. .

   1.2 Distribution of clinical variables of mothers with gestational diabetes mellitus during labour. .

Section B:

2. **Assessment of frequency and percentage distribution of maternal and fetal outcome of mothers with gestational diabetes mellitus during labour.**

   2.1. Frequency and percentage distribution on maternal outcome of mothers with gestational diabetes mellitus during labour.

   2.2. Frequency and percentage distribution on fetal outcome of mothers with gestational diabetes mellitus during labour.

Section C:

3. Association between the maternal and fetal outcome of mothers with gestational diabetes mellitus during labour with the selected demographic and clinical variables.

3.1. Association between the maternal outcome of mothers with gestational diabetes mellitus during labour with the selected demographic variables.

3.2 Association between the maternal outcome of mothers with gestational diabetes mellitus during labour with the selected clinical variables.

3.3 Association between the fetal outcome of mothers with gestational diabetes mellitus during labour with the selected demographic variables.

3.4 Association between the fetal outcome of mothers with gestational diabetes mellitus during labour with the selected clinical variables.

Section D:

4.Frequency and percentage distribution on experience of mothers with gestational diabetes mellitus during labour with open ended questionnaire.

SECTION A
DISTRIBUTION OF DEMOGRAPHIC VARIABLES AND CLINICAL VARIABLES OF MOTHERS WITH GESTATIONAL DIABETES MELLITUS DURING LABOUR.

Table 1.1: Distribution of demographic variables of mothers with gestational diabetes mellitus during labour.

N = 150

S.No	Demographic variables	f	%
1.	Age		
	21– 26 years	65	43.3
	27– 32 years	78	52
	33 – 38 years	97	6
	Above 38 years	0	0
2.	Type of food		
	Vegetarian	20	13.3
	Non vegetarian	130	86.7

Table No.1.1: represents distribution of postnatal mothers with gestational diabetes mellitus in age of mothers during labour, 65(43.3%) of them belong to the age between 21-26 years, 78(52%) of them belong to the age between 27-32 years.

7(4.7%) of them belong to the age between 33-38 years; more of them were above 38 years.

With regard to mothers with gestational diabetes during labour according to their type of food is 20(13.3%) were vegetarian, 130(86.7%) were non vegetarian.
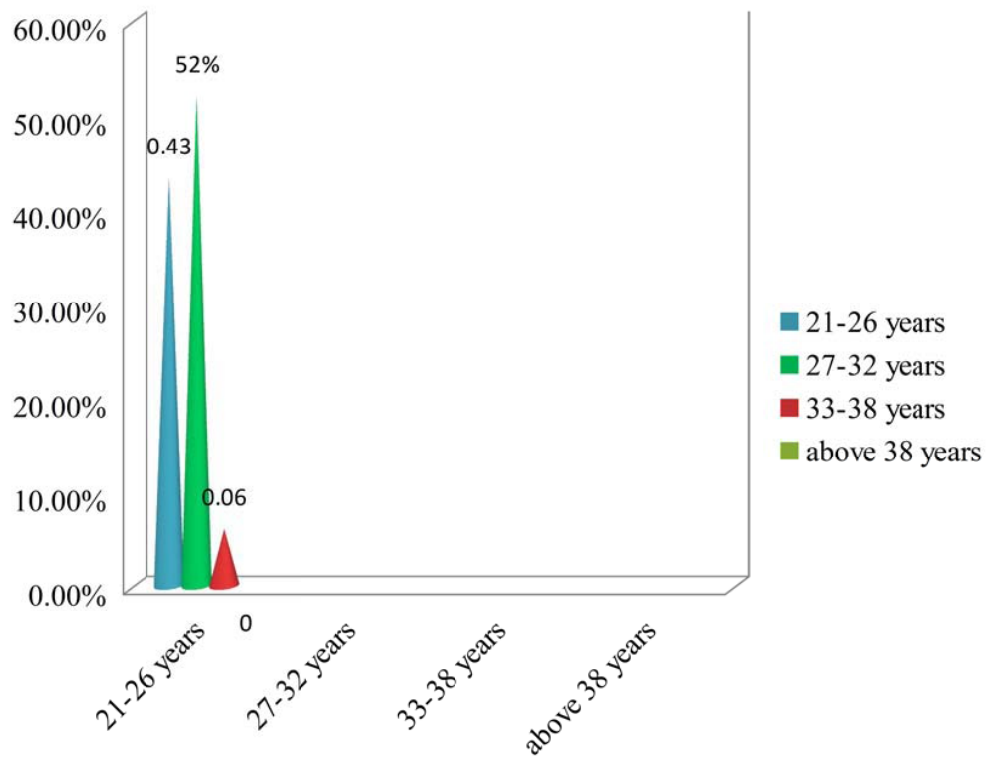
Fig -2: percentage distribution of age among mothers with gestational diabetes mellitus during labour.
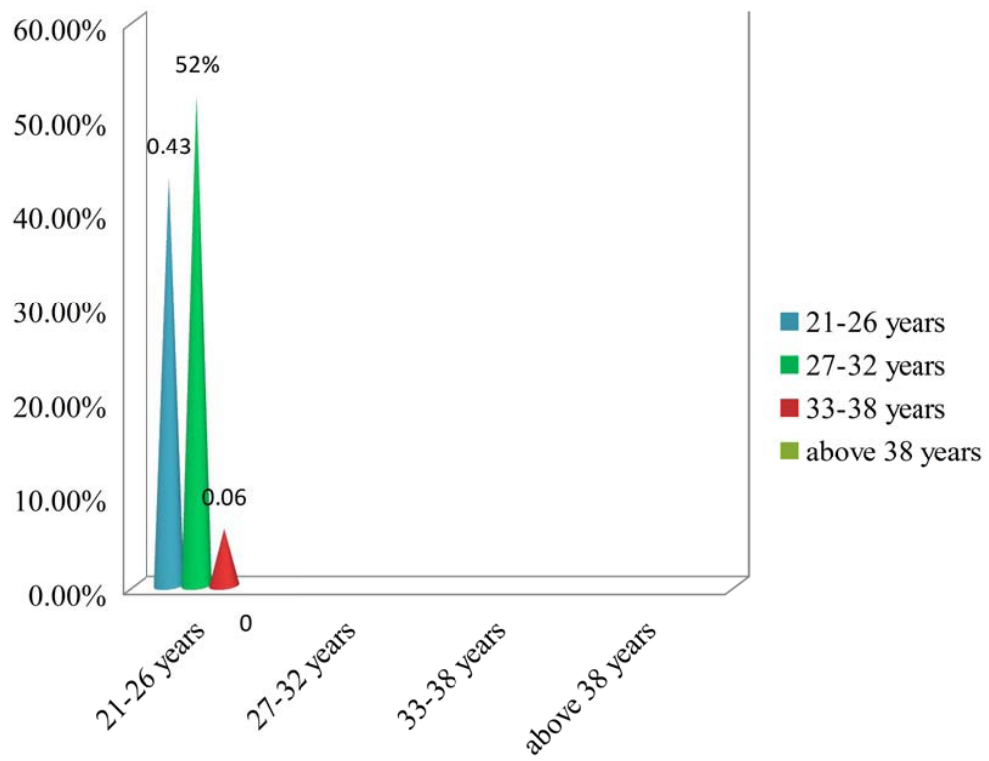
Fig -2: percentage distribution of age among mothers with gestational diabetes mellitus during labour.
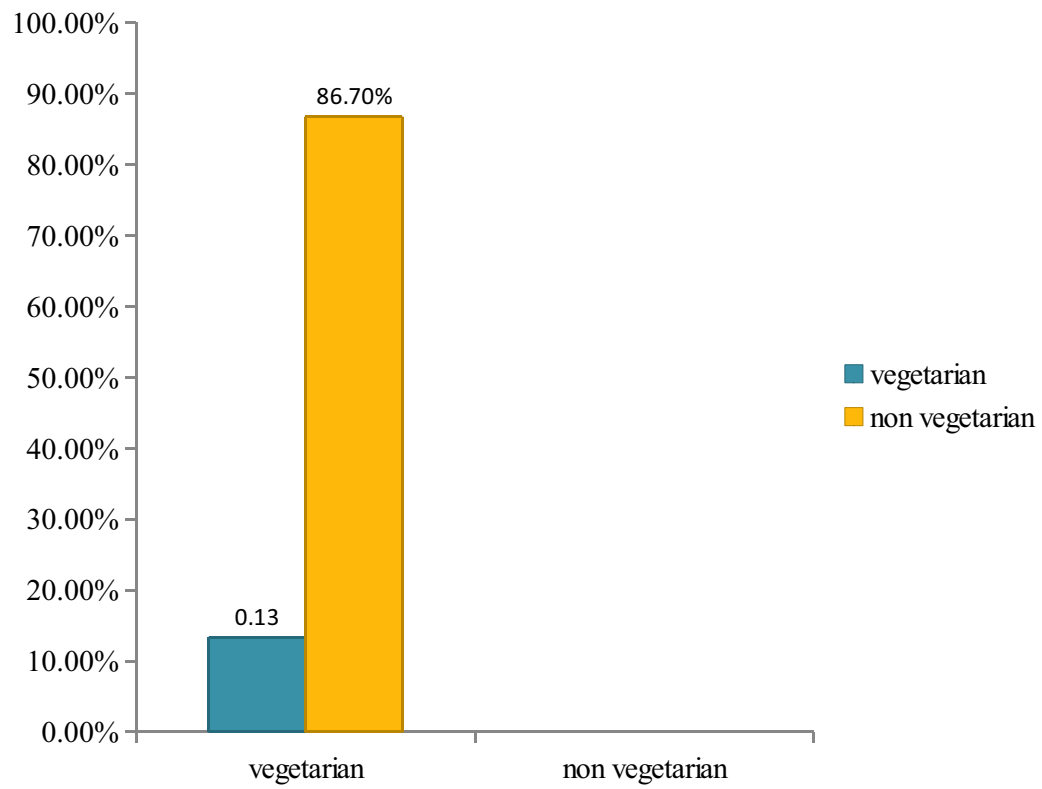
Fig -3: percentage distribution of type of food among mothers with gestational diabetes mellitus during labour.

Table 1.2: Distribution of clinical variables of mothers with gestational diabetes mellitus during labour.

N=150

S.No	Clinical Variables	f	%
1.	Gestational Weeks during Labour		
	Below 35 weeks	48	32
	35 - 37 weeks	98	65.3
	38 - 40 weeks	4	2.7
2.	Weight Gain during Pregnancy		
	5 to 7 kg	9	6
	8 to 10kg	98	65.3
	11 to 13 kg	42	28
	14 to 16 kg	1	0.7
3.	Mode of delivery		
	Normal delivery	9	6
	Instrumental delivery	24	16
	Caesarean delivery	117	78
4.	Fetal Birth Weight		
	2 to 3 kg	8	5.3
	3 to 4 kg	107	71.4
	4 to 5 kg	35	23.3
	5 to 6 kg	0	0

Table 1.2 represents the clinical variables on maternal and fetal outcome. Allocation of mothers on gestational weeks during labour according to their last menstrual period shows that, 48(32%) were in 35 weeks, 98(65.3%) were in 35-37 weeks, 4(2.7%) were in 38-40 weeks.

Analysing of mothers with gestational diabetes mellitus during labour, according to their weight gain during pregnancy, 9(6%) had 5-7 kg, 98(65.3%) had 8-10 kg, 42(28%) had 11-13 kg, 1(0.7%) had 14-16 kg.

With regard of mothers with gestational diabetes mellitus during labour, according to mode of delivery is, 9(6%) of them had normal vaginal delivery, 24(16%) of them underwent assisted instrumental vaginal delivery, 117(78%) of them underwent caesarean section.

Regarding mothers with gestational diabetes mellitus during labour, according to fetal birth weight is, 8(5.3%) had 2-3 kg, 107(71.4%) had 3-4 kg, 35(23.3%) had 4-5 kg, 0(0%) had 5-6 kg.
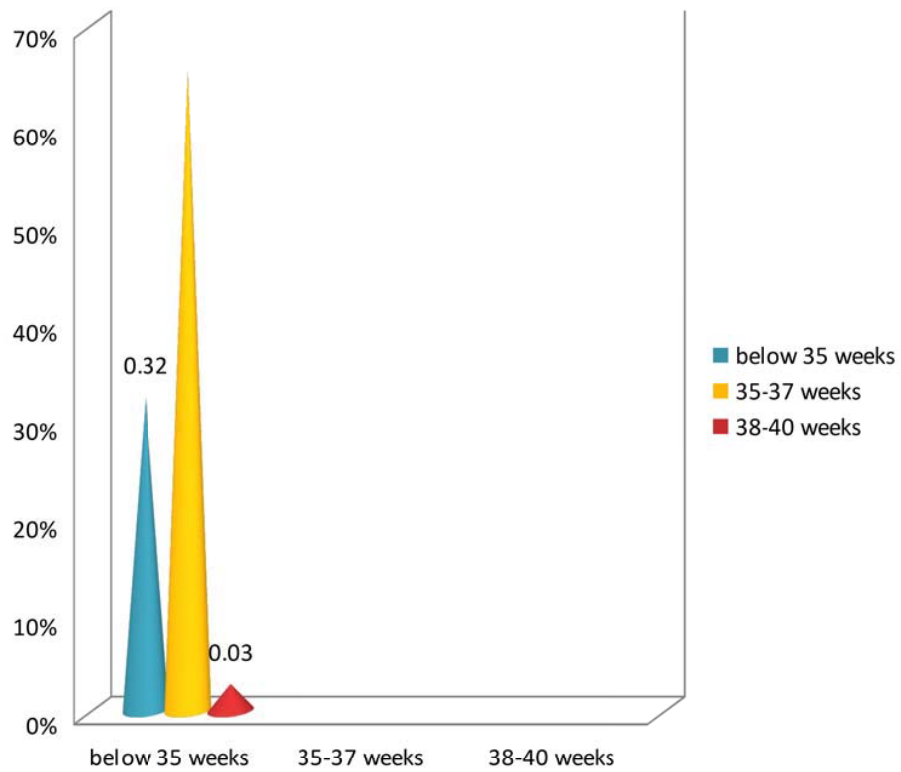
Fig -4: percentage distribution of gestational weeks among mothers with gestational diabetes mellitus during labour.
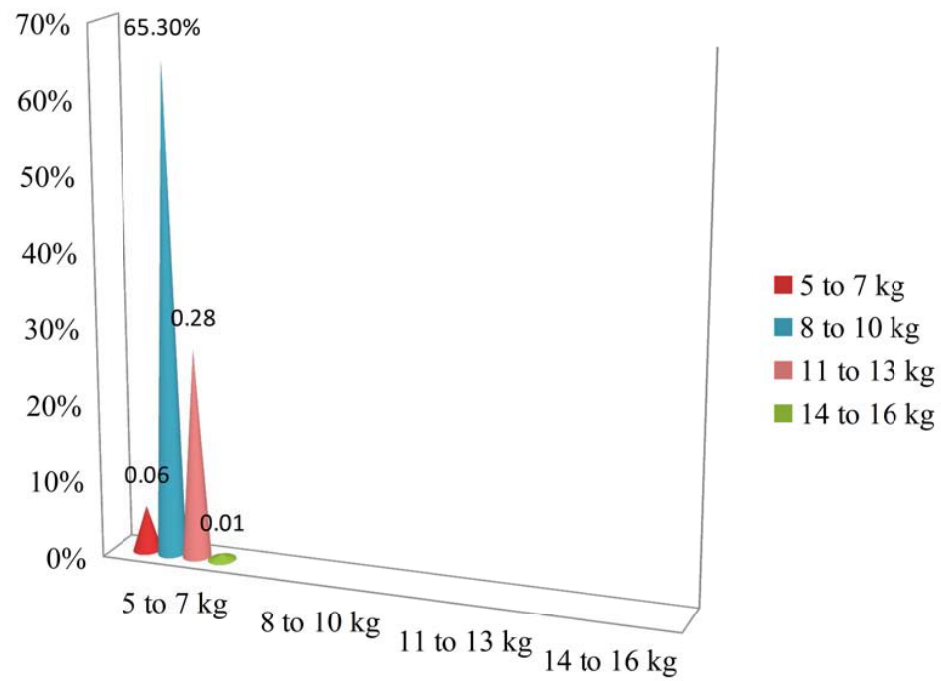
Fig -5: percentage distribution of weight gain during pregnancy among mothers with gestational diabetes mellitus during labour.
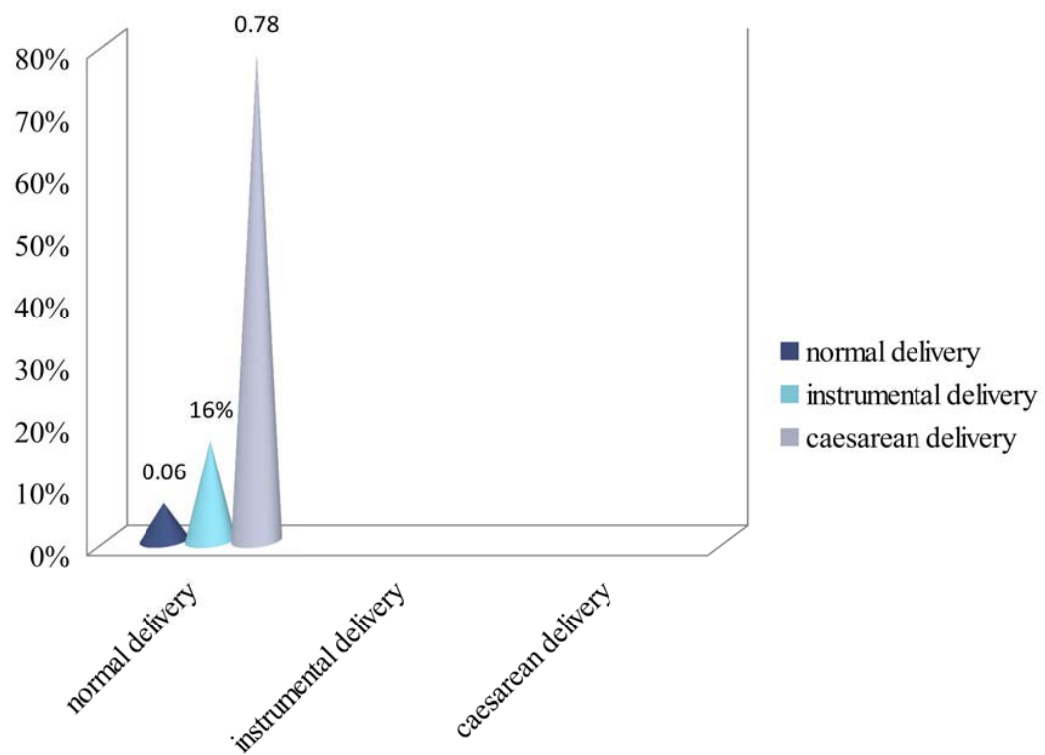
Fig -6: percentage distribution of mode of delivery among mothers with gestational diabetes mellitus during labour.
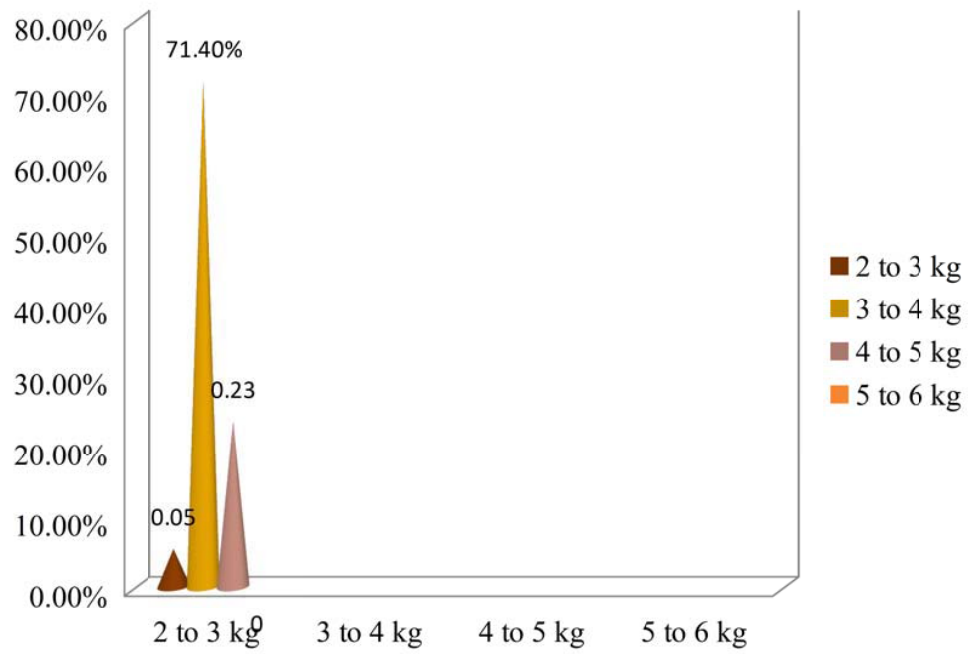
Fig -7: percentage distribution of fetal birth weight among mothers with gestational diabetes mellitus during labour.

SECTION B

DISTRIBUTION ON MATERNAL AND FETAL OUTCOME OF MOTHERS WITH GESTATIONAL DIABETES MELLITUS DURING LABOUR.

2.1 Frequency and percentage distribution on maternal outcome of primi mothers with gestational diabetes during labour.

N = 150

S.NO	MATERNAL OUTCOME	OUTCOME OF LABOUR					
		GOOD		AVERAGE		POOR	
		f	%	f	%	f	%
1	LENGTH OF LABOUR	0	0	90	60	60	40
2	PERINEAL INJURIES	0	0	83	55.3	67	44.6
3	MATERNAL DISTRESS	0	0	87	58	63	42
4	POSTPARTUM HAEMORRHAGE	0	0	118	78.6	32	21.3
5	POSTNATAL HYPERGLYCAEMIA	0	0	129	86	21	14
	MATERNAL OUTCOME (OVERALL)	0	0	124	82.7	26	17.3

Table 2.1 represents components of maternal outcome during labour. In the length of labour in maternal outcome none of the mothers had good outcome, 90(60%) had average outcome, 60(40%) had poor outcome. In Perineal injuries none of the mother had good outcome, 83(55.3%) had average outcome, 67(44.6%) had

poor outcome. In Maternal distress none of the mother had good outcome, 87(58%) average outcome, 63(42%) had poor outcome. In Postpartum haemorrhage none of the mother had good outcome, 118(78.6%) had average outcome, 32(21.3%) had poor outcome. In Postnatal hyperglycaemia none of the mother had good outcome, 129(86%) had average outcome, 21(14%) had poor outcome. In the Overall maternal outcome, none had good outcome, 124(82.7%) had average outcome, 26(17.3%) had poor outcome.

Fig -8: percentage distribution of maternal outcome according to mothers with gestational diabetes mellitus during labour.

2.2. Frequency and percentage distribution on fetal outcome of primi mothers with gestational diabetes during labour.

N = 150

S.NO	FETAL OUTCOME	OUTCOME OF LABOUR					
		GOOD		AVERAGE		POOR	
		f	%	f	%	f	%
1	SIZE OF THE BABY	0	0	109	72.6	41	27.3
2	FETAL DISTRESS	0	0	140	93.3	10	6.6
3	NEONATAL HYPOGLYCAEMIA	0	0	115	76.6	35	23.3
4	APGAR SCORE	0	0	97	64.6	53	35.3
5	FETAL HEART RATE	0	0	101	67.3	49	32.6
	FETAL OUTCOME (OVERALL)	0	0	137	91.3	13	8.7

Table 2.2. represents components of fetal outcome during labour. In the fetal outcome the size of the baby none of them had good outcome, 109(72.6%) had average outcome, 41(27.3%) had poor outcome. In Fetal distress none of them had good outcome, 140(93.3%) had average outcome, 10(6.6%) of them had poor outcome. In Neonatal hypoglycaemia none of them had good outcome, 115(76.6%) had average outcome, 35(23.3%) had poor outcome. In APGAR score none of them had good outcome, 97(64.6%) had average outcome, 53(35.3%) had poor outcome. In Fetal heart rate none of them had good outcome, 101(67.3%) had average outcome, 49(32.6%) had poor outcome. In the Overall fetal outcome, none of them had good outcome, 137(91.3%) had average outcome, 13(8.7%) had poor outcome.
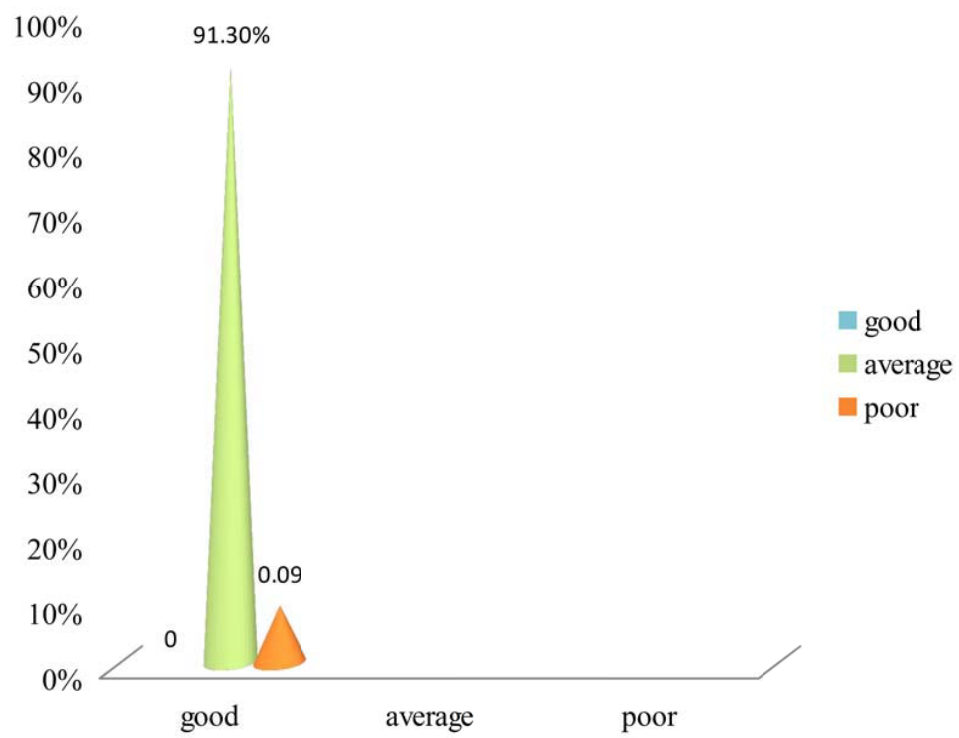
Fig -9: percentage distribution of fetal outcome according to mothers with gestational diabetes mellitus during labour.

SECTION-C

ASSOCIATION BETWEEN THE MATERNAL OUTCOME OF MOTHERS WITH GESTATIONAL DIABETES MELLITUS DURING LABOUR WITH SELECTED DEMOGRAPHIC VARIABLES AND CLINICAL VARIABLES.

Table: 3.1 Association between the maternal outcome of mothers with gestational diabetes mellitus during labour with the selected demographic variables.

N=150

			MATERNAL OUTCOME						
S.No	**Demographic Variables**		**Good**		**Average**		**Poor**		**Chi – square test**
			f	**%**	**f**	**%**	**f**	**%**	
1	Age	21 – 26yrs	31	20.6	17	11.3	18	12	χ^2 = 2.40
		27-32 yrs	18	12	3	2	13	8.6	
		33-38 yrs	10	6.6	3	2	27	1.8	df = 2
		Above 38yrs	1	0.6	0	0	4	2.6	Table value = 5.99
2	Type of food	vegetarian	2	1.3	5	3.3	5	3.3	χ^2 = 6.53
		Non vegetarian	18	12	75	50	45	30	df = 3 Table value = 7.82

Table 3.1.represents that in maternal outcome the calculated value of demographic variable such as age and type of food is lesser than the table value which

indicates there is no significant association between demographic variables and maternal outcome. Hence hypothesis H1 is not accepted.

Table: 3.2 Association between the maternal outcomes of mothers with gestational diabetes mellitus during labour with selected clinical variables.

N=150

S.No	Clinical variables		MATERNAL OUTCOME						Chi-square test
			Good		Average		Poor		
			f	%	f	%	f	%	
1.	Gestational weeks during labour	Below 35 wks	10	6.6	15	10	1	0.6	$\chi^2 =$ 5.600
		35-37 wks	48	3.2	24	16	3	2	df = 2
		38-40 wks	32	21.3	17	11.3	0	0	Table value = 5.99
2.	Weight gain during pregnancy	5-7 kg	2	1.3	24	1.3	10	6.6	$\chi^2 =$ 3.200
		8-10 kg	8	5.3	50	33.3	22	14.6	
		11-13 kg	0	0	18	12	10	6.6	df = 2
		14-16 kg	0	0	6	4	0	0	Table value = 5.99
3.	Mode of delivery	Normal	0	0	4	2.6	3	2	$\chi^2 = 2.60$
		Instrumental	0	0	6	4	0	0	df = 2
		Caesarean	9	6	107	71.3	21	14	Table value = 5.99
4.	Fetal birth weight	2-3 kg	10	6.6	10	6.6	2	1.3	$\chi^2 =$ 38.60*
		3-4 kg	19	12.6	95	63.3	4	2.6	df = 2
		4-5 kg	6	4	2	1.3	2	1.3	

		5-6 kg	0	0	0	0	0	0	Table value = 5.99

Table 3.2.represents that in maternal outcome the calculated value of fetal birth weight (38.600) is greater than the table value (5.99), which is a significant at $p<0.05$, and there is no significant association between gestational weeks during labour, weight gain during pregnancy, mode of delivery and maternal outcome. Hence the hypothesis (H_1) is accepted.

ASSOCIATION BETWEEN THE FETAL OUTCOME OF MOTHERS WITH GESTATIONAL DIABETES MELLITUS DURING LABOUR WITH SELECTED DEMOGRAPHIC VARIABLES AND CLINICAL VARIABLES.

Table: 3.3. Association between the fetal outcomes of mothers with gestational diabetes mellitus during labour with selected demographic variables.

N =150

		FETAL OUTCOME							
S.No	**Demographic Variables**		**Good**		**Average**		**Poor**		**Chi-square test**
			f	**%**	**f**	**%**	**f**	**%**	
1	**Age**	**21 – 26yrs**	20	13.3	9	6	12	8	χ^2 = 0.800
		27-32 yrs	15	15	5	3.3	30	20	df = 2
		33-38 yrs	10	10	6	4	17	11.3	Table value = 5.99
		Above 38yrs	15	15	3	2	3	2	
2	**Type of food**	**vegetarian**	8	5.3	3	2	3	2	χ^2 = 6.533
		Non vegetarian	82	54.6	37	24.6	17	11.3	df = 3 Table value = 7.82

Table3.3. represents that in fetal outcome the calculated value of demographic variable such as age and type of food is lesser than the table value which indicates there is no significant association between demographic variables and fetal outcome. Hence hypothesis H_2 is not accepted.

Table: 3.4. Association between the fetal outcome of mothers with gestational diabetes mellitus during labour with selected clinical variables.

N =150

S.No	Clinical variables		Good		Average		Poor		Chi - square test
			f	%	f	%	f	%	
1.	Gestational weeks during labour	Below 35 wks	20	13.3	20	13.3	1	0.6	χ^2 = 1.400
		35-37 wks	50	33.3	25	16.6	3	2	df = 2
		38-40 wks	20	13.3	11	7.3	0	0	Table value = 5.99
2.	Weight gain during pregnancy	5-7 kg	22	14.6	2	1.6	15	10	χ^2 = 7.400
		8-10 kg	44	29.3	5	3.3	12	8	df = 2
		11-13 kg	15	10	2	1.2	20	13.3	Table value = 5.99
		14-16 kg	7	4.6	1	0.6	5	3.3	
3.	Mode of delivery	Normal	2	1.3	3	2	2	1.3	χ^2 = 0
		Instrumental	5	3.3	4	2.6	0	0	df = 0
		Caesarean	100	66.6	27	18	7	4.6	Table value = 0
4.	Fetal birth weight	2-3 kg	13	8.6	5	3.3	10	6.6	χ^2 = 0.60
		3-4 kg	68	45.3	13	8.6	16	10.6	df = 2
		4-5 kg	15	10	5	3.3	3	2	Table value = 5.99
		5-6 kg	1	0.6	0	0	1	0.6	

Table3.2. represents that in fetal outcome the calculated value of clinical variables such as gestational weeks during labour, weight gain during pregnancy, mode of delivery and fetal birth weight is lesser than the table value which indicates there is no significant association between clinical variables and fetal outcome. Hence hypothesis H_2 is not accepted.

SECTION D

FREQUENCY AND PERCENTAGE DISTRIBUTION ON EXPERIENCE OF MOTHERS WITH GESTATIONAL DIABETES MELLITUS DURING LABOUR WITH OPEN ENDED QUESTIONNAIRE.

Table: 4. Frequency and percentage distribution on experience of mothers with gestational diabetes mellitus during labour with open ended questionnaire.

N=150

S.NO	QUESTIONS	EXPERIENCES	f	%
1.	Identification of GDM	Blood test	20	13.3
		Urine test	5	3.3
		Symptoms	5	3.3
2.	Symptoms during pregnan-cy	Giddiness	15	10
		Vomiting	2	6.6
		Tiredness	3	2
		Back pain	5	3.3
		Leg pain	3	2
		Polydipsia	1	0.6
3.	Food habits during pregna-ncy	Green leafy vegetables	18	12
		Starch food	2	1.3
		Diabetic diet	8	26.6
		Balanced diet	2	1.3
4.	Exercises	Activities of daily living	2	6.6
		Walking	25	16.6
		Complete rest	3	2
5.	Medicines	Hospital medicines	20	13.3
		Home remedies	5	3.3
		Both	5	3.3
6.	Weight changes during pregnancy	Suddenly increased	3	10
		Gradually increased	27	90
7.	Had DM before pregnancy	Yes	2	6.6
		No	28	93.3
8.	Family history of GDM	Yes	4	13.3
		No	26	86.6

9.	Experience of GDM during antenatal, labour and postnatal.	Fear of outcome	25	16.6
		Anxiety about taking new role	3	10
		Learning new things	2	1.3
10.	Opinion about GDM	Nothing	6	20
		GDM leads complications	23	15.3
		Adaptation needed throughout pregnancy	1	0.6

Table: 4 represent the experience of mothers with Gestational Diabetes Mellitus during labour. 30(100%) of mothers identified Gestational diabetes mellitus through blood test, 5(3.3%) identified mothers by urine test, 5(3.3%) were identified through symptoms.

By symptoms during Gestational Diabetes Mellitus 15(10%) of them had giddiness, 2(6.6%) had vomiting, 3(2%) had tiredness, 5(3.3%) had back pain, 3(2%) had leg pain, 1(0.6%) had polydipsia.

According to the food habits during pregnancy, 18(12%) of them had took green leafy vegetables, 2(1.3%) of them took starch food, 8(26.6%) of them took diabetic diet, 2(1.3%) of them took balanced diet.

Regarding the activities 2(6.6%) of them had the habit of activities of daily living, 25(16.6%) had the habits of walking, 3(2%) of them had took complete rest. 20(13.3%) took only hospital remedies, 5(33%) of them took home remedies, 5(3.3%) of them took both.

Based on the weight changes during pregnancy 3(10%) of them had sudden increase in weight, 27(90%) had increase in weight gradually.

Based on Diabetes mellitus before pregnancy 2(6.6%) of them had diabetic before pregnancy, 28(93.3%) had diabetic during pregnancy.

In family history 4(13.3%) of them had family history of Gestational diabetes mellitus, 26[86.6%] did not have any family history of Gestational diabetes mellitus.

Based on the experience of mothers with gestational diabetes mellitus during antenatal, labour and postnatal, 25(16.6%) had fear of outcome, 3(10%) had anxiety about taking new role, 2(1.3%) of them had experience of learning new things.

Based on the opinion about Gestational diabetes mellitus 6(20%) of them had no ideas about gestational diabetes mellitus, 24(80%) had some ideas that Gestational diabetes mellitus leads to complication, 1(0.6%) of them had opinion that adaptations needed throughout pregnancy.

CHAPTER V

DISCUSSION

This mixed method research was done to assess the maternal and fetal outcome among mothers with gestational diabetes mellitus in P.P.K Hospital. Marthandam, Ratna hospital. Swamiyarmadam, Holycross Hospital. Nagercoil at Kanyakumari district.

Distribution of demographic variables of mothers with gestational diabetes mellitus during labour.

In the demographic variable, 65(43.3%) of them belong to the age between 21-26 years, 78(52%) of them belong to the age between 27-32 years. 7(4.7%) of them belong to the age between 33-38 years, 0(0%) of them belong to the age group of above 38 years.

According to mothers with Gestational diabetes mellitus during labour according to their type of food is 20(13.3%) are vegetarian, 130(86.7%) were non vegetarian.

Distribution of clinical variables of mothers with gestational diabetes mellitus during labour.

Regarding Gestational weeks during labour, 48(32%) of the mother belong to below 35 weeks, 98(65.3%) belong to 35-37 weeks, 4(2.7%) were belong to 38-40 weeks.

With regard to weight gain during pregnancy 9(6%) of them belong to 5-7 kg, 98(65.3%) were belong to 8-10 kg, 42(28%) were belong to 11-13 kg and 1(0.7%) belong to 14-16 kg.

According to mode of delivery 9(6%) of them underwent normal vaginal delivery, 24(16%) of them underwent assisted instrumental vaginal delivery, 117(78%) of them underwent caesarean section.

Analyzing the fetal birth weight 8(5.3%) of them belong to 2-3 kg, 107(71.4%) of them belong to 3-4 kg, 35(23.3%) of them belong to 4-5 kg and none of them belong to 5-6 kg.

The first objective was to assess the maternal outcome of mothers with gestational diabetes mellitus during labour.

The maternal outcome during labour regarding the length of labour in maternal outcome none of the mothers had good outcome, 90(60%) had average outcome, 60(40%) had poor outcome. In Perineal injuries none of the mother had good outcome, 83(55.3%) had average outcome, 67(44.6%) had poor outcome. In Maternal distress none of the mother had good outcome, 87(58%) average outcome, 63(42%) had poor outcome. In Postpartum haemorrhage none of the mother had good outcome, 118(78.6%) had average outcome, 32(21.3%) had poor outcome. In Postnatal hyperglycaemia none of the mother had good outcome, 129(86%) had average outcome, 21(14%) had poor outcome. In the Overall maternal outcome, none had good outcome, 124(82.7%) had average outcome, 26(17.3%) had poor outcome.

The first objective was supported by a study which was conducted by **Gasim t., (2012)** to assess the maternal complications of pregnancy in mothers with gestational diabetes mellitus who delivered in hospital during study period. Variables regarding patient satisfaction and events related to obstetrical care, maternal outcome were evaluated. The result revealed that the outcome of maternal is average and it will used to reduce the maternal complications.

In maternal outcome the calculated value of fetal birth weight is 38.60 is greater than table value, which is significant at $p<0.05$. This indicates that there is a significant association between maternal outcome and fetal birth weight. Hence the research hypothesis (H_1) is accepted.

Based on the maternal role attainment Model the researcher findout the maternal outcome among mothers with gestational diabetes mellitus.

The second objective was to assess the fetal outcome of mothers with gestational diabetes mellitus during labour.

In the fetal outcome during labour the size of the baby none of them had good outcome, 109(72.6%) had average outcome, 41(27.3%) had poor outcome. In Fetal distress none of them had good outcome, 140(93.3%) had average outcome, 10(6.6%) of them had poor outcome. In Neonatal hypoglycaemia none of them had good outcome, 115(76.6%) had average outcome, 35(23.3%) had poor outcome. In APGAR score none of them had good outcome, 97(64.6%) had average outcome, 53(35.3%) had poor outcome. In Fetal heart rate none of them had good outcome, 101(67.3%) had average outcome, 49(32.6%) had poor outcome. In the Overall fetal outcome, none of them had good outcome, 137(91.3%) had average outcome, 13(8.7%) had poor outcome.

Emmanuel T. et al., (2012) conducted a study to determine the maternal and fetal outcomes in mothers with gestational diabetes mellitus attending antenatal clinics in Kerala. The modes of delivery were similar in both groups but genital injuries were more common among mothers with gestational diabetes mellitus. The indications of Caesarean section in mothers with gestational diabetes mellitus were two times more likely to be due to big babies and obstructed labour. Findings suggest that babies for mothers with gestational diabetes mellitus were more likely to be macrocosmic, still born, and have shoulder dystocia than those of normal mothers.

In fetal outcome the Calculated value of age , gestational weeks during labour, weight gain during pregnancy, type of food, mode of delivery is lesser than the table value which indicates there is no a significant association between demographic variables, clinical variables and fetal outcome. Hence hypothesis H_2 is rejected.

The third objective was to extrapolate the experience of mothers with gestational diabetes mellitus.

In this study the calculated value is according to the experiences of mothers with gestational diabetes mellitus during labour with open ended questionnaire.

30(100%) of mothers identified Gestational diabetes mellitus through blood test, 5(3.3%) identified mothers by urine test, 5(3.3%) were identified through symptoms.

By symptoms during Gestational Diabetes Mellitus 15(10%) of them had giddiness, 2(6.6%) had vomiting, 3(2%) had tiredness, 5(3.3%) had back pain, 3(2%) had leg pain, 1(0.6%) had polydipsia.

According to the food habits during pregnancy, 18(12%) of them had took green leafy vegetables, 2(1.3%) of them took starch food, 8(26.6%) of them took diabetic diet, 2(1.3%) of them took balanced diet.

Regarding the activities 2(6.6%) of them had the habit of activities of daily living, 25(16.6%) had the habits of walking, 3(2%) of them had took complete rest. 20(13.3%) took only hospital remedies, 5(33%) of them took home remedies, 5(3.3%) of them took both.

Based on the weight changes during pregnancy 3(10%) of them had sudden increase in weight, 27(90%) had increase in weight gradually.

Based on Diabetes mellitus before pregnancy 2(6.6%) of them had diabetic before pregnancy, 28(93.3%) had diabetic during pregnancy.

In family history 4(13.3%) of them had family history of Gestational diabetes mellitus, 26[86.6%] did not have any family history of Gestational diabetes mellitus.

Based on the experience of mothers with gestational diabetes mellitus during antenatal, labour and postnatal, 25(16.6%) had fear of outcome, 3(10%) had anxiety about taking new role, 2(1.3%) of them had experience of learning new things.

Based on the opinion about Gestational diabetes mellitus 6(20%) of them had no ideas about gestational diabetes mellitus, 24(80%) had some ideas that Gestational diabetes mellitus leads to complication, 1(0.6%) of them had opinion that adaptations needed throughout pregnancy.

CHAPTER-VI

SUMMARY, CONCLUSION, LIMITATIONS, NURSING IMPLICATIONS, RECOMMENDATIONS

This chapter deals with the summary of the study and conclusion. It clarifies nursing implications for nursing practice, limitations and recommendations for further research in the field.

SUMMARY

The aim of the study is to assess the maternal and fetal outcome of mothers with Gestational diabetes mellitus during pregnancy. A review of related literature enabled the researcher to develop the conceptual framework and methodology for the study. The conceptual framework based on this study was Mercer's maternal role attainment theory. Mixed method approach was adopted. This study was conducted in PPK Hospital, Marthandam, Ratna Hospital, Swamiyarmadam and Holy cross Hospital, Nagercoil at KanyaKumari District. Samples were selected by using purposive and convenient sampling technique. The level of significance was assessed by chi square statistics.

FINDINGS

The major findings of the study was summarised as follows

In the demographic variable, 65(43.3%) of them belong to the age between 21-26 years, 78(52%) of them belong to the age between 27-32 years. 7(4.7%) of them belong to the age between 33-38 years, 0(0%) of them belong to the age group of above 38 years.

According to mothers with Gestational diabetes mellitus during labour according to their type of food is 20(13.3%) are vegetarian, 130(86.7%) were non vegetarian.

Regarding Gestational weeks during labour, 48(32%) of the mother belong to below 35 weeks, 98(65.3%) belong to 35-37 weeks, 4(2.7%) were belong to 38-40 weeks.

With regard to weight gain during pregnancy 9(6%) of them belong to 5-7 kg, 98(65.3%) were belong to 8-10 kg, 42(28%) were belong to 11-13 kg and 1(0.7%) belong to 14-16 kg.

According to mode of delivery 9(6%) of them underwent normal vaginal delivery, 24(16%) of them underwent assisted instrumental vaginal delivery, 117(78%) of them underwent caesarean section.

Analyzing the fetal birth weight 8(5.3%) of them belong to 2-3 kg, 107(71.4%) of them belong to 3-4 kg, 35(23.3%) of them belong to 4-5 kg and none of them belong to 5-6 kg.

In maternal outcome during labour regarding the length of labour in maternal outcome none of the mothers had good outcome, 90(60%) had average outcome, 60(40%) had poor outcome. In Perineal injuries none of the mother had good outcome, 83(55.3%) had average outcome, 67(44.6%) had poor outcome. In Maternal distress none of the mother had good outcome, 87(58%) average outcome, 63(42%) had poor outcome. In Postpartum haemorrhage none of the mother had good outcome, 118(78.6%) had average outcome, 32(21.3%) had poor outcome. In Postnatal hyperglycaemia none of the mother had good outcome, 129(86%) had average outcome, 21(14%) had poor outcome. In the Overall maternal outcome, none had good outcome, 124(82.7%) had average outcome, 26(17.3%) had poor outcome.

In maternal outcome the Calculated value of age and type of food is lesser than the table value which indicates there is no a significant association between demographic variables and maternal outcome. Hence hypothesis H_1 is rejected.

In maternal outcome the calculated value of fetal birth weight is 38.60 is greater than table value, which is significant at $p<0.05$. This indicates that there is a significant association between maternal outcome and fetal birth weight. Hence the research hypotheses (H_1) is accepted.

In the fetal outcome during labour the size of the baby none of them had good outcome, 109(72.6%) had average outcome, 41(27.3%) had poor outcome. In Fetal distress none of them had good outcome, 140(93.3%) had average outcome,

10(6.6%) of them had poor outcome. In Neonatal hypoglycaemia none of them had good outcome, 115(76.6%) had average outcome, 35(23.3%) had poor outcome. In APGAR score none of them had good outcome, 97(64.6%) had average outcome, 53(35.3%) had poor outcome. In Fetal heart rate none of them had good outcome, 101(67.3%) had average outcome, 49(32.6%) had poor outcome. In the Overall fetal outcome, none of them had good outcome, 137(91.3%) had average outcome, 13(8.7%) had poor outcome.

In fetal outcome the calculated value of demographic variable such as age and type of food is lesser than the table value which indicates there is no a significant association between demographic variables and fetal outcome. Hence hypothesis H_2 is not accepted.

In fetal outcome the calculated value of clinical variables such as gestational weeks during labour, weight gain during pregnancy, mode of delivery is lesser than the table value which indicates there is no a significant association between clinical variables and fetal outcome. Hence hypothesis H_2 is not accepted.

The experience of mothers with Gestational Diabetes Mellitus during pregnancy were identified through open ended questionnaire. 30(100%) of mothers identified Gestational diabetes mellitus through blood test, 5(3.3%) were identified mothers by urine test, 5(3.3%) were identified through symptoms.

By symptoms during Gestational Diabetes Mellitus 15(10%) of them had giddiness, 2(6.6%) had vomiting, 3(2%) had tiredness, 5(3.3%) had back pain, 3(2%) had leg pain, 1(0.6%) had polydipsia.

According to the food habits during pregnancy, 18(12%) of them had took green leafy vegetables, 2(1.3%) of them took starch food, 8(26.6%) of them took diabetic diet, 2(1.3%) of them took balanced diet.

Regarding the activities 2(6.6%) of them had the habit of activities of daily living, 25(16.6%) had the habits of walking, 3(2%) of them had took complete rest. 20(13.3%) took only hospital remedies, 5(33%) of them took home remedies, 5(3.3%) of them took both.

Based on the weight changes during pregnancy 3(10%) of them had sudden increase in weight, 27(90%) had increase in weight gradually.

Based on Diabetes mellitus before pregnancy 2(6.6%) of them had diabetic before pregnancy, 28(93.3%) had diabetic during pregnancy.

In family history 4(13.3%) of them had family history of Gestational diabetes mellitus, 26[86.6%] did not have any family history of Gestational diabetes mellitus.

Based on the experience of mothers with gestational diabetes mellitus during antenatal, labour and postnatal, 25(16.6%) had fear of outcome, 3(10%) had anxiety about taking new role, 2(1.3%) of them had experience of learning new things.

Based on the opinion about Gestational diabetes mellitus 6(20%) of them had no ideas about gestational diabetes mellitus, 24(80%) had some ideas that Gestational diabetes mellitus leads to complication, 1(0.6%) of them had opinion that adaptations needed throughout pregnancy.

NURSING IMPLICATIONS

The finding of the study enables us to conclude that there was an average maternal outcome and fetal outcome, which is of vital concern to the field of nursing profession including nursing practice, nursing administration, nursing education and nursing research.

NURSING SERVICE

- Nursing personnel should develop in depth knowledge about complications of Gestational diabetes mellitus
- The midwives should assess maternal and fetal outcome during labour among gestational diabetes mellitus mothers according to the hospital policy.

NURSING EDUCATION

- Nurse educator should conduct workshops or conferences for students regarding maternal and fetal outcome of mothers with Gestational diabetes mellitus during labour.
- Strengthen the curriculum of nurses to extend their knowledge and skills in various modalities of outcome of mothers with Gestational diabetes mellitus during labour.

NURSING ADMINISTRATION

- Nurse administrator should assist in implementing public health awareness in hospitals regarding gestational diabetes mellitus and its complications.
- Nurse administrator should initiate or develop framework to improve reproductive health and set standards for care.
- Nurse administrator should be able to make judgments on which interventions helps to improve the fetal and maternal outcome.
- Request should be designed by nurses to the institutions to implement assessment of maternal and fetal outcome in mothers with gestational diabetes mellitus during labour.

NURSING RESEARCH

- Nursing research is to be done to find out the various methods for good maternal and fetal outcome in of mothers with Gestational diabetes mellitus during labour.
- The findings of the study would help to expand the scientific body of professional knowledge upon which their research can be conducted.

LIMITATIONS

- The study period was limited to a period of 4 weeks.
- The investigator had a lot of difficulty in visiting the mothers with gestational diabetes mellitus at their homes and obtaining their experiences on Gestational diabetes mellitus**.**

RECOMMENDATIONS

- A study can be conducted on large samples which may help to draw conclusions that are more definite and generalized to a larger population.

CONCLUSION

The study was conducted to assess the maternal and fetal outcome among mothers with gestational diabetes mellitus at selected hospital, Kanyakumari District. To assess maternal and fetal outcome among mothers with gestational diabetes mellitus by using maternal and fetal assessment tool and to extrapolate mothers experience during pregnancy, using open ended questionnaire. The demographic and clinical variables such as age, type of food, gestational weeks during labour, weight gain during pregnancy, mode of delivery and fetal birth weight were recorded. The calculated value of fetal birth weight (maternal outcome) is 38.60 which is significant at $p < 0.05$. Hence hypothesis (H_1) is accepted. As per the study the researcher concluded that there was an average maternal and fetal outcome in mothers with gestational diabetes mellitus during labour.

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ANNEXURE I
LETTER SEEKING PERMISSION TO CONDUCT THE STUDY

St. XAVIER'S CATHOLIC COLLEGE OF NURSING

Chunkankadai, Nagercoil,
Kanyakumari District,
Tamil Nadu - 629 003.

Tel : College : 04651 - 231749
Cell : 9840307884
Fax : 04651 - 230914
E-mail : xaviers_nursing@yahoo.com
reenaevancy@yahoo.com
Website : www.xaviersnsg.edu.in

Dr. A. REENA EVENCY, M.Sc (N)., Ph.D.,
Principal

29/6/2015

TO

The Administrator

Holycross Hospital

Nagercoil

Respected madam,

Mrs. Asha. M.S is a student of M.Sc. Nursing program in our college from obstetrics and gynaecological nursing department. She is conducting study on **A retrospective study to assess the maternal and fetal outcome of primi mothers with gestational diabetes mellitus during labour in selected hospitals at Kanyakumari district.**

This is for the research project to be submitted to the Dr. M.G.R. Medical University in partial fulfilment of university requirement for the award of M.Sc Nursing degree and will be beneficial in understanding and improving the health of the patients with gestational diabetes mellitus during labour.

As part of her study she needs to assess the maternal and fetal outcome of primi mothers with gestational diabetes mellitus by observing records. So permission may kindly be granted for her to conduct the study in your esteemed hospital. She will be abide by the rules and regulations of your hospital.

Thanking you.

Yours faithfully,

St. XAVIER'S CATHOLIC COLLEGE OF NURSING

Chunkankadai, Nagercoil.
Kanyakumari District,
Tamil Nadu - 629 003.

Tel : College : 04651 - 231740
Cell : 9840307884
Fax : 04651 - 230914
E-mail : xaviers_nursing@yahoo.com
reenaevancy@yahoo.com
Website : www.xaviersnsg.edu.in

Dr. A. REENA EVENCY, M.Sc (N)., Ph.D..
Principal

29/6/2015

TO

The Administrator

Ratna Hospital

Swamiyarmadam

Respected madam,

Mrs. Asha. M.S is a student of M.Sc. Nursing program in our college from obstetrics and gynaecological nursing department. She is conducting study on **A retrospective study to assess the maternal and fetal outcome of primi mothers with gestational diabetes mellitus during labour in selected hospitals at Kanyakumari district.**

This is for the research project to be submitted to the Dr. M.G.R. Medical University in partial fulfilment of university requirement for the award of M.Sc Nursing degree and will be beneficial in understanding and improving the health of the patients with gestational diabetes mellitus during labour.

As part of her study she needs to assess the maternal and fetal outcome of primi mothers with gestational diabetes mellitus by observing records. So permission may kindly be granted for her to conduct the study in your esteemed hospital. She will be abide by the rules and regulations of your hospital.

Thanking you.

Yours faithfully,

St. XAVIER'S CATHOLIC COLLEGE OF NURSING

Chunkankadai, Nagercoil,
Kanyakumari District,
Tamil Nadu - 629 003.

Tel : College : 04651 - 231740
Cell : 9840307884
Fax : 04651 - 230914
E-mail : xaviers_nursing@yahoo.com
reenaevancy@yahoo.com
Website : www.xaviersnsg.edu.in

Dr. A. REENA EVENCY, M.Sc. (N)., Ph.D.,
Principal

29/6/2015

TO

The Administrator

PPK Hospital

Marthandam

Respected madam,

Mrs. Asha. M.S is a student of M.Sc. Nursing program in our college from obstetrics and gynaecological nursing department. She is conducting study on **A retrospective study to assess the maternal and fetal outcome of primi mothers with gestational diabetes mellitus during labour in selected hospitals at Kanyakumari district.**

This is for the research project to be submitted to the Dr. M.G.R. Medical University in partial fulfilment of university requirement for the award of M.Sc Nursing degree and will be beneficial in understanding and improving the health of the patients with gestational diabetes mellitus during labour.

As part of her study she need to assess the maternal and fetal outcome of primi mothers with gestational diabetes mellitus by observing records. So permission may kindly be granted for her to conduct the study in your esteemed hospital. She will be abide by the rules and regulations of your hospital.

Thanking you.

Yours faithfully,

ANNEXURE II

LETTER GRANTING PERMISSION TO CONDUCT THE STUDY

Dr. M. Santhi M.D.,D.G.O.,D.R.M.,(Germany)
Director, Infertility Specialist
Obstetrician & Gynecologist.

Rathna Fertility Centre

30.07.2015

TO

The Principal,
St. Xavier's catholic college of nursing,
Chunkankadai,
Nagercoil – 629003.

Subject: Permission for M.Sc Nursing project regarding.

We are glad to inform that we have permitted your college student Miss. Asha. M.S. to undergo project on "A study to assess the maternal and fetal outcome of mothers during labour with Gestational Diabetes Melllitus in selected hospitals. Kanyakumari District" in our hospital from 01.07.2015 to 31.07.2015. We trust that your student will abide by our hospital rules and regulations.

Thanking You

DR. M. SANTHI M.D. D.G.O.
Reg. No. : 56898

RATHNA
MEMORIAL HOSPITAL
RAY OF MEDICAL HOPE

11/208, Main Road, Swamiyarmadam, Kattathurai Post, Kanyakumari District, TamilNadu -629 158.
Ph: 04651 - 275120, mahilansanthi@gmail.com, www.rathnahospital.com

PPK HOSPITAL
Main Road. Marthandam - 629 165
Ph:04651-270135, 273245, 273255
E-mail : ppkvijayakumar@gmail.com

34 Years of Excellence

01/07/2015

Ref.No.PPK/L31/2015

To

The Principal,
St. Xaviers Cathalic College of Nursing,
Chunkankadai,
Nagercoil- 629 003
K.K.Dist.

Sir,

Sub: Permission for M. Sc., Nursing Project – Regarding.

We are glad to inform that we approved permission to your college Student Miss. **M.S Asha, M.Sc (N)**, to undergo project on ""**A Study to assess the maternal and fetal outcome of mothers during labour with gestational diabetes mellitus**" in our Hospital from 01-07-2015 to 31-07-2015. We trust that your student will abide our hospital rules and regulations.

Thanking You,

Administrative Officer

A. MATHIVANAN MBA
ADMINISTRATIVE OFFICER
PPK HOSPITAL
MARTHANDAM - 629 165

P.P.K. HOSPITAL
PIN : 629 165
MARTHANDAM

QUALITY HEALTH CARE WITHIN YOUR REACH

HOLY CROSS HOSPITAL

VETTOORNIMADAM,
NAGERCOIL - 629 003, K.K. DISTRICT, TAMIL NADU.
Ph : 04652 - 230897, 224711, 223331
e-mail : hch_ngl@yahoo.com

30-07-2015

To

The principal,

St. Xavier's catholic college of nursing,

Chunkankadai,

Nagercoil – 629003.

Subject: permission for M.Sc Nursing project regarding

We are glad to inform that we have permitted your college student Miss. Asha. M.S. to undergo project on ''A study to assess the maternal and fetal outcome of mothers during labour with Gestational Diabetes Mellitus in selected hospitals. Kanyakumari District'' in our hospital from 01.07.2015 to 31.07.2015. We trust that your student will abide by our hospital rules and regulations.

Thanking You

Dr. S. FRANK DAVIS
CONSULTANT URO
HOLY CROSS HC
VETTOORNI
Reg No : 46790

ANNEXURE III

LETTER SEEKING EXPERTS OPINION FOR THE VALIDITY OF THE TOOL

From,

     Mrs. Asha M. S,

     M.Sc. Nursing II year,

     St.Xavier's Catholic College of Nursing, Chunkankadai.

To,

     Dr. F. Caroline Felcia Mary. M.D. DGO

     Carolin Hospital, Nagercoil-629001.

Respected Sir/ Madam,

     Sub: Requisition to expert opinion and suggestion for the content validity.

     I, Mrs Asha M.S M.Sc. Nursing II year student of St. Xavier's Catholic College of Nursing, Chunkankadai, have selected the following topic, **"A descriptive study to assess the maternal and fetal outcome of mothers with gestational diabetes mellitus at selected hospital Kanyakumari Dist"** for my dissertation to be submitted to The Tamilnadu Dr. M.G.R. Medical University in the partial fulfilment of the requirement for award of Master of science in Nursing.

     I request you to go through the items and give your valuable suggestions and opinions to develop the content validity of the tool. Kindly suggest modifications, addition and deletions if any in the remarks column.

Thanking You,

Place: Chunkankadai.   Yours sincerely,

Date: Ms Asha M.S

ENLOSURE:

1. Problem statement, objectives, and hypothesis of the study.

2. Demographic profile

3. Partograph, modified scale for maternal and fetal well being

4. Evaluation Performa.

ANNEXURE IV

EVALUATION CRITERIA CHECKLIST FOR VALIDATION

Instructions:

The expert is requested to go through the following criteria for evaluation. Three columns are given for responses and a column for remarks. Kindly please tick mark (✓) in the appropriate columns and give remarks. Interpretation column:

Column I – meets the criteria.

Column II - Partially meets the criteria.

Column III – does not meet the criteria.

S.NO	CRITERIA	1	2	3	REMARKS
1	Scoring -adequacy. -clarity. -simplicity.				
2	Content -logical sequence. -adequacy. -relevance.				
3	Language -Appropriate. -clarity. -simplicity.				
4	Practicability -easy to score. -precise. -utility.				

Signature: Any other suggestion:

Name:

Designation:

Address:

CRITERIA CHECK   LIST FOR VALIDATION OF THE TOOL

Instruction:

Kindly give your suggestions regarding the accuracy, relevance   and appropriateness of the content. Kindly (✓) against specific columns.

PART-I

Validation of Demographic variables.

Item	Very relevant	Relevant	Need for modification	Not relevant	Remarks
1					
2					
3					
4					
5					
6					

PART-II

Validation for maternal outcome assessment scale during labour

Item	Very relevant	Relevant	Need for modification	Not relevant	Remarks
1					
2					
3					
4					
5					

PART –III

Validation for fetal outcome assessment scale during labour

Item	Very relevant	Relevant	Need for modification	Not relevant	Remarks
1					
2					
3					
4					
5					

tnrs| Item	Very relevant	Relevant	Need for modification	Not relevant	Remarks
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

ANNEXURE V

LIST OF EXPERTS VALIDATED THE TOOL

1.**Dr. F. Caroline Felicia Mary. M. D. DGO,**

   Obstetrician and Gynacologist,

   Caroline John Hospital,

   Asaripallam Road,

   Nesamony Nager,

   Nagercoil-629001

2.**Dr. Felsit Punitha M. B. B. S. DGO,**

   Consultant,

   P.P.K. Hospital,

   Marthandum.

3.**Mrs. R. Arzta Sophia**,

   Associate Professor,

   Christian College of Nursing,

   Neyyoor, Kanyakumari District.

4.**Mrs. S. Gladin Sudha**,

   Reader,

   P.S College of Nursing,

   Thalakulam, Kanyakumari District.

5.**Mrs. Jeba Nesa Mahiba . S. T,**

   Assistant Professor,

   Christian College of Nursing,

   Neyyoor, Kanyakumari District.

ANNEXURE VI

CERFIFICATE OF ENGLISH EDITING

Certified the dissertation paper titled "A Study to assess the maternal and fetal of mothers with Gestational diabetes Mellitus during labour in Selected Hospital at Kanyakumari district" by Asha M.S   has been Checked for accuracy and correctness of English language usage and that the language in the tool is lucid, unambiguous, Free of grammatical and spelling errors and apt for the purpose.

Principal
K,M.P. NATIONAL NURSERY AND
PRIMARY SCHOOL,
Thingal Nagar, Neyyoor P.O.

ANNEXURE VII

TOOL FOR DATA COLLECTION

PART I: Structured Questionnaire to Collected Demographic Variables and Clinical Variable

1. Age

    a) 21 – 26 years   ( )
    b) 27 – 32   years   ( )
    c) 33 – 38 years   ( )
    d) Above 38 years   ( )

2. Gestational Weeks during Labour

    a) Below 35 weeks   ( )
    b) 35 - 37 weeks   ( )
    c) 38 - 40   ( )

3. Weight Gain during Pregnancy

    a) 5 to 7 kg   ( )
    b) 8 to 10kg   ( )
    c) 11 to 13 kg   ( )
    d) 14 to 16 kg   ( )

4. Type of food

    a) Vegetarian   ( )
    b) Non vegetarian   ( )

 5. Mode of delivery   ( )

    a) Normal
    b) Instrumental delivery   ( )
    c) Caesarean delivery   ( )

6. Fetal Birth Weight

    a) 2 to 3 kg   ( )
    b) 3 to 4 kg   ( )
    c) 4 to 5 kg   ( )
    d) 5 to 6 kg   ( )

PART II: MATERNAL OUTCOME ASSESSMENT SCALE

Tool To Assess The Maternal Outcome On Mothers With Gestational Diabetes Mellitus.

		TOOLS FOR ASSESS MATERNAL OUTCOME		
S.NO.	**COMPONENTS**	**SCORES**		
		1	**2**	**3**
1	**Length of labour**	12 – 14 hrs	14 – 16 hrs	16 – 18 hrs
2	**Perineal injuries**	Apex of vagina	Base of vagina	Cervix
3	**Maternal distress**	Breathing difficulty	Breathing difficulty with dehydration	Breathing difficulty with dehydration, and loss of consciousness
4	**Postpartum haemorrhage**	<650ml	650 – 1000 ml	>1000ml
5	**Postnatal hyperglycaemia**	<45 days	45 – 6 months	>6 months

TOTAL SCORE =

GOOD OUTCOME   = 1 - 5

AVERAGE OUTCOME = 6 - 10

POOR OUTCOME   = 11 - 15

PART III: FETAL OUTCOME ASSESSMENT SCALE

Tool To Assess The Fetal Outcome On Mothers With Gestational Diabetes Mellitus.

TOOLS FOR ASSESS FETAL OUTCOME				
S.NO.	COMPONENTS	SCORES		
		1	2	3
1	**Size of the baby**	3 – 4 kg	4 – 5 kg	Above 5 kg
2	**Fetal distress**	Cynosis in extremities	Cynosis in trunk	Cynosis in whole body
3	**Neonatal hypoglycaemia**	35 mg/dl	30 – 35 mg/dl	Below 30mg/dl
4	**Apgar score**	7 -10	4 - 6	0 - 3
5	**Fetal heart rate**	140-160 beats/min	120-140 beats/min	Below 120 beats/min

TOTAL SCORE =

GOOD OUTCOME = 1 - 5

AVERAGE OUTCOME = 6 - 10

POOR OUTCOME = 11 – 15.

PART IV: 0PEN ENDED QUESTIONNAIRE

To assess the experience of primi mothers with gestational diabetes mellitus.

1. How you came to know that you have gestational diabetes mellitus ?
2. What are all the complaints you had during antenatal period?
3. What was your dietary pattern ?
4. Do you have the habit of doing exercises ? if yes what kind of exercises?
5. What are all the medications you have taken during pregnancy ?
6. What about your weight changes during pregnancy ?
7. Did you have diabetes before pregnancy ?
8. Do you have any family history of gestational diabetes mellitus ?
9. How did you feel emotionally during antenatal, labour and postnatal period ?
10. What do you know about gestational diabetes mellitus ?

ANNEXURE VIII

Table 5: Data collection period, number of sample and method of   sample   selection

S.No	Date	Number of samples		Method of sample selection
		Hospital visit	Home visit	
1	01-07-2015	20		
2	02-07-2015	22		
3	03-07-2015	25		
4	04-07-2015	25		
5	06-07-2015	23		
6	07-07-2015	20		
7	08-07-2015	15		
8	09-07-2015		02	Purposive sampling technique used
9	10-07-2015		02	
10	11-07-2015		02	
11	13-07-2015		01	
12	14-07-2015		02	
13	15-07-2015		02	
14	16-07-2015		01	
15	17-07-2015		02	
16	20-07-2015		01	
17	21-07-2015		02	
18	22-07-2015		02	
19	23-07-2015		01	
20	24-07-2015		01	
21	25-07-2015		03	
22	27-07-2015		02	
23	29-07-2015		02	
24	31-07-2015		02	

ANNEXURE IX

CERTIFICATE OF STATISTICAL ANALYSIS

TO WHOM SO EVER IT MAY CONCERN

Certified the dissertation paper titled "A study to assess the maternal and fetal outcome of mothers with gestational diabetes mellitus in selected hospitals at kanyakumari district" done by Mrs.Asha.M.S has been Checked for the accuracy in statistical analysis and interpretation and was appropriate for the purpose.

Signature

Dr. G. IMMANUEL, Ph.D.
Assistant Professor
Centre for Marine Sciences & Technology
Manonmaniam Sundaranar University
Rajakkamangalam-629 502
K.K. District, South India

ANNEXURE X

INFERENTIAL STATISTICS

Chi-Square test $$x^2 = \sum \frac{(o-e)^2}{e}$$

ANNEXURE XI

PHOTOGRAPHS