ASSESSMENT OF THE RELATIONSHIP BETWEEN MATERNAL WELLBEING AND FETAL OUTCOME AMONG POSTNATAL MOTHERS AT SELECTED HOSPITALS IN CHENNAI.

Dissertation submitted to

THE TAMILNADU DR.M.G.R.MEDICAL UNIVERSITY

CHENNAI-600 032

In partial fulfillment of the requirement for the degree of

MASTER OF SCIENCE IN NURSING

OCTOBER-2017

ASSESSMENT OF THE RELATIONSHIP BETWEEN MATERNAL WELLBEING AND FETAL OUTCOME AMONG POSTNATAL MOTHERS AT SELECTED HOSPITALS IN CHENNAI.

SIGNATURE OF THE EXTERNAL EXAMINER

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STUDY TO ASSESS THE RELATIONSHIP BETWEEN MATERNAL WELLBEING AND FETAL OUTCOME AMONG POSTNATAL MOTHERS.

ABSTRACT

INTRODUCTION

Woman is the glory of creation. Pregnancy and childbirth are special events in women's lives and indeed the lives of their families. Good maternal health is crucial for a healthy birth outcome for both mother and the fetus. Staying healthy while pregnant is not only for mother's physical and mental wellbeing, but also for the growing baby. The investigator from her clinical experience noticed that the pregnant mother with the poor weight gaining pattern, low haemoglobin level, PIH, GDM had a child birth with poor fetal outcome like preterm birth, IUGR and low birth weight baby. At the same time, few pregnant mother had the same risk factors, but delivered a healthy baby. So, the investigator interested to identify the relationship between the maternal wellbeing and fetal outcome among postnatal mother.

STATEMENT OF THE PROBLEM

A study to assess the relationship between maternal wellbeing and fetal outcome among postnatal mothers at selected hospitals in Chennai.

OBJECTIVES OF THE STUDY

- To assess the maternal wellbeing and fetal outcome.

- To correlate the maternal wellbeing and fetal outcome.

- To associate the maternal wellbeing and fetal outcome with the demographic variables like the age, education, occupation and socio economic status.

- To associate the maternal wellbeing and fetal outcome with the obstetrical variables like gravida, para, number of live children, abortion, type of delivery, initiation of antenatal care, vaccination and iron and folic acid intake.

HYPOTHESIS

H_{01-} There is no relationship between maternal wellbeing and fetal outcome.

H_{02-} There is no association between maternal wellbeing and demographic variables like maternal age, education and socioeconomic status.

H_{03-} There is no association between maternal wellbeing with obstetrical variables like gravida, para, number of live children, abortion, type of delivery, iron and folic acid intake and maternal weight gain.

H_{04-} There is no association between fetal outcomes with demographic variable like maternal age, education and socioeconomic status.

H_{05-} There is no association between fetal outcomes with obstetrical variables like gravida, para, number of live children, abortion, type of delivery, iron and folic acid intake and maternal weight gain.

METHODOLOGY

The descriptive design was used as research design. The setting of the study was CSI Kalyani Multispecialty Hospital, Mylapore, Chennai and Pankajam Memorial Hospital, Nanganallor, Chennai. Total 120 samples were selected using non probability convenient sampling technique.

MEASUREMENT AND TOOL

Data were obtained from the postnatal mothers by self- report regarding the demographic and obstetrical data; review of antenatal records and mothers response regarding maternal wellbeing and fetal outcome using antenatal and newborn data. The data was analyzed using descriptive and inferential statistics.

RESULTS

The study findings revealed that the postnatal mothers with fair and poor health status during pregnancy had risk in fetal outcome. There was a statistically significant correlation between the maternal wellbeing and fetal outcome at $p<0.01$ level of significance. There was a statistically significant association between maternal wellbeing with demographic variables like maternal age, occupation and nature of work; and fetal outcome with demographic variables like maternal age, occupation and family income per month. Similarly there was a statistically significant association between maternal wellbeing with obstetrical variables like gravida, abortion, type of delivery, iron and folic acid intake, maternal weight gain and BMI; and fetal outcome like type of delivery and iron and folic acid intake.

CONCLUSION

From the results of the study, it was concluded that fair and poor maternal health status had increased the risk of fetal outcome. The study findings showed that maternal wellbeing and fetal outcome is related with each other. Maternal age, occupation and nature of work had influence on maternal wellbeing and maternal age, occupation and family income per month had influence on fetal outcome. Gravida, abortion, type of delivery, iron and folic acid intake, maternal weight gain and BMI had influence on maternal wellbeing and type of delivery and iron and folic acid intake had influence the fetal outcome. As maternal health status improve the fetal outcome also improve.

CHAPTER I

INTRODUCTION

Pregnancy and child birth is a normal physiological phenomenon. Pregnancy is a privilege of experiencing God's miracles on earth.

"Maternal health is a Nation's wealth. There is a chance for the welfare of the world only when the condition of women improves. It is not possible for a bird to fly with only one wing" given by Swami Vivekananda.

Woman is the glory of creation. In philosophy, she symbolizes the mother aspect of nature or feminine characteristic of the universe. Pregnancy and childbirth are special events in women's lives and indeed the lives of their families. It can be a time of great hope and joyful anticipation. It can also be a time of fear, anxiety, suffering and even death.

The World Health Organization defines, "health is a state of complete physical, mental and social wellbeing and not merely absence of disease or infirmity". "Maternal health as the health of a woman during pregnancy, childbirth and postpartum period". Good maternal health is crucial for a healthy birth outcome for both mother and the fetus. Staying healthy while pregnant is not only for mother's physical and mental wellbeing, but also for the growing baby. The goal of WHO is to ensure that healthy mothers give birth to healthy infants.

Maternal health is a sound investment strategy and it is believed that it is important to speak collectively, act quickly and bring about long-lasting change in neonatal health.

Many women are unaware of their health before and during conception and this may influence their risk of having an adverse outcome of the pregnancy. Pregnancy requires constant attention to the physical wellbeing of the mother. Healthy pregnancy can be achieved through various interventional strategies like standard care, adequate health care providers, availability of medical resources including equipment and medication, supportive health and family planning education programmes, nutrition initiatives and diseases prevention. There is a growing evidence that reducing risk in the preconception period improves the health of pregnant women and also contribute to the prevention of adverse outcome of neonatal mortality.

To a considerable extent, the well-being of a newborn depends on the health of the mother. Research showed that a significant number of stillbirths and neonatal deaths could be prevented if all women were adequately nourished and received good quality care during pregnancy, delivery, and the postpartum period.

The mother and child should be treated as one entity. The health of the mother and the newborn are interlinked. So, the newborn health and survival depends on appropriate maintenance of maternal health and wellbeing of the mother during pregnancy. The provision of care to the women before and during pregnancy would allow women to enter pregnancy in the best possible health and to have greater chances of giving birth to a healthy baby.

BACKGROUND OF THE STUDY

Better women's health is essential to the good health of her baby. Pregnancy can provide an opportunity to identify existing health risk in women to prevent the future health problems for women and their child.

A pregnancy is considered high risk when maternal or fetal complications are present that could affect the health or safety of the mother or baby. It has greater effect on woman's condition, physiologic, social or physical state that threatens maternal or fetal health and produces an increased chance of morbidity or mortality. Identifying a pregnancy as high risk helps to ensure that it receives extra attention and proper care thereby significantly decreasing maternal and neonatal morbidity and mortality rate.

Motherhood is often with both positive and negative experience, for many women it is associated with suffering, ill-health and even death during pregnancy. Pregnancy is one of the common state which brings many physiological changes and pregnancy induced discomfort in the body which may complicate the pregnancy. Even women who were healthy before getting pregnant can experience complication during pregnancy and it causes risk for mother as well as the fetus. The risk factors of mother during pregnancy like increased maternal age, PIH, hyperemesis gravidaraum, Gestational Diabetes Mellitus (GDM), anemia, vaginal bleeding and discharges, medical conditions like Diabetes Mellitus(DM), Urinary Tract Infection (UTI), thyroid dysfunction, fever, etc. can lead to neonatal infection, birth asphyxia, preterm birth, low birth weight baby and congenital anomalies for fetus (WHO, 2012).

The prevalence of anemic mother having preterm baby (26.15%), low birth weight baby (48.46%), baby with lower head circumference and length is more. Comparison of birth and 3½ month data indicates, weight gain and increase in length is significantly better in infant of non-anemic mothers (Ektadalah, 2009).

In mothers with gestational diabetes, the prevalence of preterm deliveries (9.5%) is higher than the other maternal risk factors. The poor control of preexisting or gestational diabetes in pregnancy increases the neonatal risk of hypoglycemia, hypocalcaemia, hyperbilirubinemia, organogenesis, low APGAR score (<7 at 1minute),

congenital malformation and macrosomia (>4500gms at birth) even if blood glucose is kept nearly normal (Mauro, J. 2014).

The maternal obesity and GDM have perinatal and neonatal effect. The in-utro exposure to hyperglycemia increases the perinatal complications including preterm birth, macrosomia, neonatal respiratory distress, hypoglycemia and polycythemia. Significantly GDM places the offspring at risk of insulin resistance and type 2 DM, obesity and cardiovascular diseases in later age (Malhotra, A&Varaka. 2014).

The International Association of Diabetes and Pregnancy Study Groups (IADSPG) and in UK the NICE guideline reported that the women with high incidence of GDM results in increased adverse pregnancy outcome.

Gestational Hypertension develops after 20 weeks of pregnancy and remains till 6 weeks in postpartum period. It occurs in 5-10% of pregnancies. Chronic and poor control of blood pressure before and during pregnancy predisposes the pregnant women and her baby at risk for complication. Uncontrolled preexisting hypertension also increases the risk of newborn which includes fetal growth restriction, hypoxia, preterm and even infant death (WHI-Women's Health Initiative 2013 Report). Thyroid disorder may develop during pregnancy. It results in fetal growth restriction, hypothyroidism, and intellectual deficit in baby.

Most common maternal infections like UTI, skin and respiratory tract infection, genital tract infection can cause damage to fetus like congenital cytomegalovirus, herpes simplex virus, rubella, hepatitis or syphilis. Infections may also have chance of fetal transmission of HIV infection and listeriosis which will increase the risk of premature labor and in rare cases stillbirth can occur. Research evidence showed that when compared to non-infected mother there is a greater prevalence of neonatal infection with affected mother (Chan, J. 2013 & Lenda, A. 2011).

THE HINDU (2012) reported that, approximately 4 million fetal deaths occur every year, 98% of them in developing countries of the world. In India, as many as 1.72 million children die annually before reaching 1 year and 72% die during first month of life, the neonatal period. Maternal health is a common risk factors for fetal deaths include advanced maternal age, chronic maternal condition such as anemia and sickle cell disease, maternal infections such as syphilis, HIV, and malaria, stress, inadequate maternal nutrition and maternal complication (both antepartum and Intrapartum).

According to National Centre for Health Statistics (2014), in India total number of live births are 3,988,076, in that 8% of the infants were low birth weight and 9.6% of them were preterm. The Ministry of Health and Family Welfare, India reported that the maternal health and fetal outcome has various demographic indicators which include pregnant women receiving antenatal checkups, women taking TT 2 doses with booster dose, women having low hemoglobin, stillbirth baby, low birth weight baby and minor disorders of newborn (WHO 2013).

NEED FOR THE STUDY

"The health of children is one of the most important measures of the wellbeing of a society, and that starts during pregnancy and at the very beginning of life." (Coffey Diane, 2015)

UNICEF (2014) found that healthy children need healthy mother. The health of the mother vastly impact on the health and success of our future generation. Yearly 8 million babies die before or during delivery or in first week of life. The report says that majority of the disease in early neonatal period is related to poor maternal health and nutrition as well as quality of care at pregnancy.

Globally, nearly 800 women die due to complication during pregnancy and 0.75 million neonates die due to poor fetal outcome. In that, 99% of these occur in developing countries. Most common causes for the neonatal mortality which influence the poor fetal outcome includes prematurity & low birth weight (44%); neonatal infection (15%); birth asphyxia & birth trauma (19%); congenital anomalies (8%); other conditions (7%); pneumonia (4%); tetanus (2%); diarrheal diseases (1%) and injuries (1%) (WHO, World Bank & UNICEF, 2015).

Thangarathinam,S. et. al. (2012) in their study report showed that firstly, among Indian Women early age of marriage (18%), repeated childbearing (47%), malnourishment (36%) and anemia (55%) are the stunning negative factors which had an influence on maternal and fetal outcome. Mothers with severe anemia are at increased risk of maternal death, stillbirth, and early neonatal death; and their infants are at increased risk of low birth weight, prematurity, and/or cognitive impairments.

Secondly, maternal health and nutrition has implications for child health. Infants whose mothers do not weigh enough before pregnancy and who do not gain enough weight during pregnancy, are more likely to develop risk for low birth weight and newborn may die in the first month of life.

Thirdly, Neonatal tetanus causes more than 300,000 newborn deaths occur every year. In the year 2014, approximately 4 million infants died in the first 28 days of life. Immunizing women with two doses of tetanus toxoid vaccine given during pregnancy protect the women during childbirth and it passes immunity to the fetus.

The investigator from her clinical experience noticed that the pregnant mother with the poor weight gain pattern, low hemoglobin level, PIH, GDM had a child birth with poor fetal outcome like preterm birth, IUGR and low birth weight baby. At the same time few pregnant mothers had the same risk factors, but delivered a healthy baby.

Hence, the investigator felt that there is a need to identify whether the mother's physical health status before pregnancy and the existing conditions during pregnancy influence the fetal outcome or not. So, the investigator was interested to identify the relationship between the maternal wellbeing and fetal outcome among postnatal mothers.

STATEMENT OF THE PROBLEM

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OBJECTIVES OF THE STUDY

- To assess the maternal wellbeing and fetal outcome.

- To correlate the maternal wellbeing and fetal outcome.

- To associate the maternal wellbeing and fetal outcome with the demographic variables like the age, education, occupation and socio economic status.

- To associate the maternal wellbeing and fetal outcome with the obstetrical variables like gravida, para, number of live children, abortion, type of delivery, initiation of antenatal care, vaccination and iron and folic acid intake.

OPERATIONAL DEFINITIONS

ASSESS

The term assess refers to the process of gathering information regarding maternal wellbeing and fetal outcome among postnatal mothers using questionnaire and checklist and analyzing the data using statistical methods.

MATERNAL WELLBEING

Maternal wellbeing refers to the physical health of the mother during 1st, 2nd and 3rd trimesters of pregnancy as reviewed from the records of postnatal mother which is assessed by using checklist.

FETAL OUTCOME

Fetal outcome refers to the health of the baby born to postnatal mothers admitted in selected settings in terms of gestational age, APGAR, birth weight, length, head circumference, chest circumference, congenital anomalies and reflexes which will be assessed by using checklist.

POSTNATAL MOTHERS

Postnatal mothers refer to women who are admitted in the postnatal wards after the delivery till 7 days in the selected settings.

HYPOTHESIS

H_{01}- There is no relationship between maternal wellbeing and fetal outcome.

H_{02}- There is no association between maternal wellbeing and demographic variables like maternal age, education and socioeconomic status.

H_{03}- There is no association between maternal wellbeing with obstetrical variables like gravida, para, number of live children, abortion, type of delivery, iron and folic acid intake and maternal weight gain.

H_{04}- There is no association between fetal outcomes with demographic variables like maternal age, education and socioeconomic status.

H_{05}- There is no association between fetal outcomes with obstetrical variables like gravida, para, number of live children, abortion, type of delivery, iron and folic acid intake and maternal weight gain.

ASSUMPTION

- Earlier the antenatal registration betters the fetal outcome.

- Decreased medical disorders during pregnancy better the fetal outcome.

- Decreased minor disorders during pregnancy better the fetal outcome.

DELIMITATION

The study is delimited to a period of 4 weeks of data collection at selected hospitals.

PROJECTED OUTCOMES

- The study will help to find the association on the influence of demographic variables on maternal wellbeing and fetal outcome.

- The study will help us to identify the relationship between maternal wellbeing on fetal outcome.

- The findings of the study will help the investigator to recommend on promotion of the maternal wellbeing.

CONCEPTUAL FRAMEWORK

Conceptual frame work is simple structure of research ideas or concepts in systematically organized manner which makes an investigator to communicate with variables. Miles and Huberman (1994) defined a framework as a visual or written product, one that explains, either schematically or narrative form, the key factors, concepts or variables and presumed relationship among them.

Conceptual framework adopted for the study was based on health care model "structure-process-outcome" framework described by Avedis Donabedian, a physician

and health service researcher at the University of Michigan. The framework outlines are interconnected inputs, required at different level of health system lead to delivery of quality care and results in positive health outcome.

Donabedian first describes the three aspects of model in his 1966 article "evaluating the quality of medical care". The maternal wellbeing and fetal outcome exhibits through 3 categories were connected by unidirectional arrows.

The boxes of information represents as,

➢ Structure

➢ Process

➢ Outcome

Structure

In this theory, Structure includes all factors that affect the context in which care is delivered. Structure is often easy to observe and measure and it may be the upstream cause of problems identified in process.

In this study, structure refers to the demographic variables such as age, education, occupation, monthly income, residence, type of family and unhealthy habits; and obstetrical variables such as gravida, para, abortion, type of delivery, antenatal visit, vaccination, iron and folic acid intake and maternal weight gain.

Process

In this theory, Process is the sum of all actions that make up healthcare. According to Donabedian, the measurement of process is nearly equivalent to the measurement of quality of care because process contains all acts of healthcare

delivery. Information about process can be obtained from medical records, interviews with patients and practitioners, or direct observations of healthcare visits.

In this study, process refers to the act of gathering information regarding maternal wellbeing and fetal outcome. Information regarding maternal wellbeing was obtained from review of health record and response from the postnatal mothers which includes minor disorders during pregnancy, high risk conditions during pregnancy and existing conditions complicating pregnancy. Information regarding fetal outcome was obtained by review of health record and assessment of newborn includes gestational age, APGAR, birth weight, length, head circumference, chest circumference, congenital anomalies and reflexes.

Outcome

Outcome contains all the effects of healthcare on patients or populations, including changes to health status, behavior, or knowledge as well as patient satisfaction and health-related quality of life. Outcomes are sometimes seen as the most important indicators of quality because improving patient health status is the primary goal of healthcare.

In this study, outcome refers to the quality of life of the postnatal mothers which is interpreted as poor health, fair health and good health. The fetal outcome is interpreted as newborn with risk and newborn without risk.

FIGURE 1: CONCEPTUAL FRAME WORK BASED ON MODIFIED DONABEDIAN HEALTH CARE OUTCOME MODEL (1966)

STRUCTURE

PROCESS

OUTCOME

DEMOGRAPHIC VARIABLES

- Age
- Education
- Occupation
- Monthly Income
- Residence
- Type of family
- Personal habits

OBSTETRICAL VARIABLES

- Obstetrical score
- Type of delivery
- Antenatal visit
- Vaccination
- Iron and folic acid intake
- Maternal weight gain

MEDICAL RECORD REVIEW & SELF REPORT

MATERNAL WELLBEING:

- Minor disorders during pregnancy
- High risk conditions during pregnancy
- Existing conditions complicating pregnancy

FETAL OUTCOME:

Assessment of

- Gestational age
- Growth pattern
- APGAR
- Birth weight
- Length
- Head circumference
- Chest circumference
- Congenital anomalies

POOR HEALTH

FAIR HEALTH

GOOD HEALTH

NEWBORN WITH RISK

NEWBORN WITHOUT RISK

CHAPTER II

REVIEW OF LITERATURE

Review of literature is a key step in research process. It refers to an extensive, exhaustive and systematic examination of publication relevant to the research project. For the present study, an extensive review of relevant literature was undertaken which is organized and presented under the following headings.

1. Studies related to maternal demographic variables and fetal outcome.

2. Studies related to minor disorders and medical conditions during pregnancy and fetal outcome

3. Studies related to maternal health and fetal outcome.

STUDIES RELATED TO MATERNAL DEMOGRAPHIC VARIABLES AND FETAL OUTCOME

Kozuki, et. al., (2013) conducted a study to identify the association between parity, maternal age and adverse neonatal outcomes using data from 14 cohort studies conducted in low and middle-income countries (LMIC).The study revealed that women with maternal age of less than 18 years and more than 35 years had neonatal outcome of small for gestational age (SGA), preterm, neonatal and infant mortality.

Lisonkova, et. al., (2012) conducted a retrospective cohort study of singleton births in British Colombia. In the cohort by convenient sampling technique 69,023 women aged 20 to 29 years; 25,058 women aged 35 to 39years, and 4,816women aged 40 years and above were selected as samples. Data was obtained from database registry. The results concluded that when compared with young aged primiparous mothers, the women aged 35 to 39 years had increased risk of still birth, neonatal death, preterm, SGA and

neonatal intensive care unit admission. It revealed that majority (95%) of the neonatal outcome differed by parity and maternal age.

Blomberg & Tyrberg. (2014) conducted a prospective study to assess the impact of maternal age on obstetric and neonatal outcome with emphasis on primiparous adolescents and older women. 798,732 women were taken as samples and data was collected from Swedish Medical Birth Register. The study result showed that prematurity had association with low maternal age and stillbirth, SGA and low APGAR score associated with advanced maternal age.

Drehmer & Duncan. (2013) conducted a study to investigate the association between weight gain during second and third trimester of pregnancy and fetal outcome. Totally 2,244 antenatal women were analyzed by using structured questionnaire, anthropometric measurement and BMI assessment. The results showed that among 2,244 women, 28.1% had insufficient weight gain, 43.4% had excessive weight gain in 2nd trimester and 38.9% had insufficient weight gain and 39.1% had excessive weight gain during 3rd trimester. In relation to total weight gain during pregnancy 33.4% had insufficient and 32.9% had excessive weight gain. The study results showed that insufficient total weight gain was associated with higher risk of preterm birth and SGA and excessive total weight gain was associated with higher risk of Large for Gestation Age (LGA) and with low risk of SGA.

Lumbanraja, S. Lutan, D & Usman, I. (2013) conducted a study to describe the maternal weight gain during all trimesters of pregnancy and its correlation with birth weight. 104 pregnant women were selected as samples from antenatal ward. Researcher collected data by record review and antenatal physical assessment at each trimester and were compared with the birth weight of their babies. The results concluded that there is a

correlation between total maternal weight gain in second and third trimester with birth weight of baby at p<0.05 level.

Gosavi, V & Koparkar, R. (2012) conducted a study to correlate the low birth weight and neonatal mortality rate associated with maternal factor in Manipal. The case reports of all mothers under 20 years of age were analyzed retrospectively. The Purposive sampling technique was used to select samples. During the study period, a total of 6,505 women delivered, in which 455 cases were teenage pregnancy. The study findings showed that majority (82.2%) were primigravida, 40.3% had nil or inadequate antenatal care, 16.9% had anemia, 20% had PIH, 31% had caesarean section and 61.5% had low birth weight. So investigator concluded that low birth weight is associated with mother of primigravida & teenage pregnancies.

Khadilkar, V. et. al., (2016) conducted a retrospective study to assess the growth status of small for gestational age among Indian children from two socio economic strata in Pune and Maharashtra. Data were collected by record review with a sample size of 618 children. Majority (65.7%) of babies were SGA. In that 34.5% were from USS (Upper Socioeconomic Strata) and 65.5% were from LSS (Lower Socioeconomic Strata). The study results revealed that maternal factors such as inadequate diet, intrauterine infection and inflammation had high percentage of relationship with SGA neonates under LSS when compared to USS.

STUDIES RELATED TO MINOR DISORDERS AND MEDICAL CONDITIONS DURING PREGNANCY AND FETAL OUTCOME

Peled, et. al., (2013) conducted a retrospective study to determine the pregnancy outcome in hyperemesis gravidarum (HEG) and the role of fetal gender. 545 pregnant women with hyperemesis gravidarum admitted in hospital were selected as samples by

Purposive sampling technique. Data were collected by record review and questionnaire method. Investigator compared the mother with HEG having male and female fetus. The study concluded that severe HEG is related to female fetus.

Dala. & Shah. (2014) conducted a comparative study on outcome of neonates born to anemic mother versus non anemic mother. By using purposive sampling technique, 130 postnatal mothers and their neonates were selected as samples at tertiary care institute during 2009-2011. Researcher assessed and compared both group for maturity, birth weight, hematological profile and physical growth at birth and 3 ½ month of age. The study concluded that 13% of them were anemic mothers with preterm deliveries, in that 26.7% of the cases had neonatal mortality.

Nisty, M. & Patil, A. (2014) conducted a prospective study to assess the maternal and fetal outcome in pregnancy with severe anemia. Pregnant women >28 weeks of gestational age with any parity and <7gram% of hemoglobin mothers were selected as samples using purposive sampling technique. Totally 50 samples were monitored for hemoglobin. Out of these sample neonates 40% were preterm, 14% with fetal growth restriction, 8% were still birth, 34% required NICU admission and 50% babies born with severe anemia and low birth weight.

Khosravi & Dabiran. (2014) conducted a descriptive study to assess the prevalence of Hypertension and complications of Hypertension in pregnancy and neonatal outcome. Mother admitted in labor ward with previous medical complication was selected as samples by using purposive sampling technique. Data were collected using questionnaire. Among the 1694 delivery cases examined, 173 cases had hypertension (9.8%). Among this, 45% had gestational hypertension; 14.8% had preeclampsia-eclampsia; 18% had preeclampsia superimposed on chronic hypertension; 13.5% cases had chronic hypertension; and 8% had pregnancy-aggravated chronic

hypertension. The researcher concluded that hypertensive mothers who are younger had low birth weight babies.

Sreelakshmi, P.R. Nair, S. & Soman, B. (2015) conducted a retrospective cohort study to assess the maternal and neonatal outcome of gestational diabetes. Totally 180 samples of which 60 women with gestational diabetes and 120 women without gestational diabetes were selected. The mother's antenatal history and fetal outcome data were collected by telephonic interview using semi structured questionnaire. The findings revealed that, nearly 48.3% of type II gestational diabetes mother's baby had more than 3kg birth weight. In that 12.1% of neonates were admitted in In-Born Nursery (IBN). The study concluded that major feto-maternal outcome of gestational diabetes are increased birth weight and In-Born Nursery admission during postnatal period.

Kalra, P. Kachhwaha, P. & Singh, V. (2013) conducted a study to evaluate the prevalence of gestational diabetes mellitus and its feto-maternal outcome in western Rajasthan. The samples were 500 antenatal mothers in the gestational age of 24 to 28 weeks attending antenatal outpatient department (OPD). The data was collected by questionnaire and plasma glucose level was measured. Out of 500 samples, 33 had GDM which influenced the neonatal outcome which includes 18.1% of macrosomia, 9.09% of stillbirth, 16.3% of hypoglycemia and 6.1% of hyperbilirubinemia.

Endale, T.Fentahun, N. & Gemada, D. (2013) conducted a retrospective cross sectional study to detect the maternal and fetal outcome associated with PROM among term pregnant women. Data was obtained using checklist from 4,525 women, 185 mothers with the complete history of PROM was taken as a samples. Among 185 neonates, 47% had first minute APGAR score below normal, 3.8% were stillbirth and 11.9% died. So the investigator concluded that PROM associated with unfavorable fetal outcome.

Nazarpour, S. & Tehrani, F. (2015) conducted a prospective study to review the impact of thyroid dysfunction on pregnancy and neonatal outcome. The researcher reviewed various studies and articles that include randomized clinical trials, cohort (retrospective and prospective) case control and case reports. From 4480 citations author got 512 related articles; in that 130 studies had overt hypothyroidism, 203 had subclinical hypothyroidism, 69 had overt hyperthyroidism, 43 had subclinical hyperthyroidism and 67 had thyroid immunity. The result of the study stated that overt hyperthyroidism has effect on fetal outcome that includes preterm and intrauterine growth retardation; and for overt hypothyroidism associated with premature birth, low birth weight, intrauterine fetal death and neonatal distress. The result summarized that overt hyperthyroidism and hypothyroidism has effect on pregnancy and fetal outcome.

Khalesi, N. & Khosravi, N. (2014) conducted a cross sectional study to assess the relationship between maternal urinary tract infection (UTI) during pregnancy and neonatal UTI. Totally 80 neonates were divided into study (with UTI 40) and the control (without UTI 40) group. Data collected by interview method and urine analysis for neonates. The study findings revealed that 49.9% of neonates with UTI had mother with history of UTI during pregnancy.

Pandey, K. & Verma.K (2016) conducted a retrospective study to assess the maternal and fetal outcome of cardiac disease in pregnancy. Totally 117 samples were selected by purposive sampling technique. Structured questionnaire was used for data collection. The study findings showed that, 82.1% had rheumatic heart disease, 53.1% had mitral stenosis and 19.6% had congestive heart failure. The neonatal outcome showed 12.8% were small for gestational age, 28.2% were admitted in NICU and 7.7% died. The study concluded that preexisting maternal cardiac disease had relationship with feto-maternal outcome.

STUDIES RELATED TO MATERNAL HEALTH AND FETAL OUTCOME

Jammeh, A. Sundby, J. & Vangen, S. (2011) conducted a cross sectional retrospective study to determine the maternal and obstetric risk factor for low birth weight and preterm birth among hospital births in rural Gambia. Out of 1579 pregnant women delivered in that hospital, 10.5% were LBW and 10.9% were Preterm babies (PTB). They were correlated with parity, antepartum hemorrhage and hypertension disorder during pregnancy. The study concluded that pregnancy complicated by antepartum hemorrhage and hypertensive disorder pregnancy was highly associated with risk of PTB & LBW babies.

Gosavi, V. & Koparkar, R. (2014) conducted a retrospective study to assess the maternal factors for low birth weight from maternal health care in rural hospital, Wardha. Data were collected from delivery records about maternal age, parity, childbirth weight and sex of child from 2005-2010. Among 455 neonates, 24.4% were low birth weight which is commonly higher in female babies and teenage pregnancies. Researcher concluded that maternal age and sex of newborn had significant association with low birth weight.

Mashuda, F. & Zuechner, A. (2014) conducted a cross sectional study to assess the pattern and factors associated with congenital anomalies among young infants (<2 months) admitted in hospital. Totally 445 infants with and without congenital anomalies were taken by using face to face interview with parent or care taker data collection was obtained. Among them 29% neonate were found with congenital anomalies. The study concluded that there was a significant association between congenital anomalies and lack of peri-conceptional use of folic acid.

Khan, A. Zuhaid, M. & Fayaz, M. (2015) conducted a cross sectional study to assess the frequency of congenital anomalies in newborn and its relation to maternal health in tertiary care hospital in Peshawar, Pakistan. Out of 1062 deliveries, 2.9% had various congenital anomalies hydrocephalus 22.6%, anencephaly 12.9% and spina bifida 9.7%. Researcher concluded that low intake of folic acid and high consanguinity rate were associated with congenital anomalies.

CHAPTER III

METHODOLOGY

A correlational study was undertaken to assess the maternal wellbeing and fetal outcome among postnatal mothers at selected hospitals, Chennai.

This chapter on methodology deals with the description of research approach and design, study setting, population, sample, criteria for sample selection, sampling size, sample technique, data collection tool, validity of tool, reliability, pilot study, data collection procedure and plan for data analysis.

SCHEMATIC REPRESENTATION OF METHODOLOGY

RESEARCH APPROACH
Evaluative in nature

↓

RESEARCH DESIGN
Descriptive Design

↓

SETTING OF THE STUDY
CSI Kalyani Multispeciality Hospital &
Pankajam Memorial Hospital, Chennai,

↓

TARGET POPULATION
Postnatal Mothers and their Babies

↓

SAMPLES
Postnatal mothers and their Babies who fulfilled the inclusion criteria

↓

SAMPLING TECHNIQUE
Non probability convenient sampling technique

↓

SAMPLE SIZE
120 Postnatal mothers and their Babies

↓

DATA COLLECTION METHOD & TOOL
Interview, Record Review and Checklist

↓

DATA ANALYSIS
Descriptive statistics such as Frequency and percentage distribution. Inferential
Statistics such as Correlation coefficient and chi-square test.

Figure 2. Schematic representation of the study

RESEARCH APPROACH

The research approach was evaluative in nature.

RESEARCH DESIGN

A descriptive design was chosen for the study.

MAJOR VARIABLES OF THE STUDY

The major variables of the study were maternal wellbeing and fetal outcome.

RESEARCH SETTING

The study was conducted in hospitals like

CSI Kalyani Multispecialty Hospital: It is 250 bedded hospitals at Mylapore, Chennai. This hospital provides various services, such as antenatal screening for normal and high risk mothers, treating medical conditions complicating pregnancy, postnatal care, neonatal care, immunization, etc.

Pankajam Memorial Hospital: It is a 50 bedded hospital at Nanganallor, Chennai. This hospital offers various services such as pregnancy monitoring, complication in pregnancy, postnatal services, neonatal care, immunization, etc.

POPULATIONOF THE STUDY

Population for the study included all postnatal mothers and their babies in the selected Hospitals, Chennai.

SAMPLE

The postnatal mothers and their babies who fulfilled the inclusion criteria were selected as samples.

CRITERIA FOR THE SELECTION OF SAMPLES

INCLUSION CRITERIA

1) Mothers who are willing to participate in the study.

2) Mothers with baby who are in early postnatal period of 7 days from delivery.

3) Mothers who had delivered normal vaginal delivery, forceps and vacuum delivery and cesarean section.

4) Mothers who can understand English or Tamil.

5) All primi and multipara mothers with the viable baby.

EXCLUSION CRITERIA

1) Mothers who are not registered.

2) Mothers with the incomplete records of pregnancy.

3) Mothers with labour and obstetrical complications.

4) Mothers with critically ill baby.

5) Mothers with infertility treatment.

6) Samples of pilot study.

SAMPLE SIZE

From the population, samples of 120 postnatal mothers and their babies were selected.

SAMPLING TECHNIQUE

Non Probability convenient sampling technique was used to select the postnatal mothers and their babies from the population.

TOOL FOR DATA COLLECTION

Structured questionnaire and Checklist was used to collect data. It consists of three parts.

PART I

SECTION A

It consisted of structured questionnaire to elicit the demographic data of postnatal mother like age, religion, education, occupation, residence, monthly income, type of family and personal habits.

SECTION B

It consisted of structured questionnaire to elicit the obstetrical data of postnatal mother like gravida, para, number of live children, abortion, type of delivery, initiation of antenatal care, vaccination, iron and folic acid intake, maternal weight gain and BMI at term.

PART II

MATERNAL WELLBEING

Maternal wellbeing was assessed using checklist, mothers response was obtained on minor disorders and antenatal record review was done to assess the high risk conditions during pregnancy and pre-existing conditions complicating pregnancy.

SCORING AND INTERPRETATION

Checklist (Yes or No) was used to assess the maternal wellbeing. It consists of 15 statements, each item was scored as

Option	Score
Yes	1
No	0

The maximum score is 42. As the score increases the risk increases and total score were arbitrarily classified as

Scores	Interpretation
>75%	Poor health
50-75%	Fair health
<50%	Good health

PART III

FETAL OUTCOME

Checklist was used to assess the fetal outcome. Length, head, chest circumference and reflexes were assessed and neonatal record review was done to obtain data regarding gestational age, intrauterine growth pattern, APGAR, birth weight and congenital anomalies.

SCORING AND INTERPRETATION

Checklist (Yes or No) was used to assess the fetal outcome. It consists of 10 statements, each scored as

Option	Score
Yes	1
No	0

The maximum score is 25and total score were arbitrarily classified as

Scores	Interpretation
<50%	No risk
>50%	Risk

VALIDITY OF THE TOOL

  The tool was validated by five experts, one Obstetrician, one Neonatologist and three Obstetrics and Gynecology Nursing experts.

RELIABILITY OF THE TOOL

  The reliability of the tool was calculated by inter rater method. The reliability correlation coefficient values are 0.81 for maternal wellbeing and 0.86 for fetal outcome.

HUMAN RIGHTSAND ETHICAL CONSIDERATION

  The study was approved by the ethical committee constituted by the college. Permission was obtained from the concerned authority of selected hospitals in Chennai. The informed consent was obtained from the samples for their willingness to participate in the study.

PILOT STUDY

  The study was conducted from 11.07.2016 to 16.07.2016 at Kalyani Multispeciality Hospital, Chennai and Pankajam Memorial Hospital, Nanganallur. After obtaining approval from the research committee in the college, permission was obtained from the concerned authority to conduct the study. Informed consent was obtained from the samples. Samples fulfilling the inclusion criteria were selected using non probability convenient sampling technique. Demographic data and obstetrical data were obtained from the postnatal mothers by interview method. Maternal wellbeing was assessed using checklist, mothers response was obtained on minor disorders and antenatal record review was done to assess the high risk conditions during pregnancy and pre-existing conditions complicating pregnancy. Fetal outcome was assessed using checklist. Length, head, chest

circumference and reflexes were assessed and neonatal record review was done to obtain data regarding gestational age, intrauterine growth pattern, APGAR, birth weight and congenital anomalies. It took approximately 30 minutes to collect data from each sample.

PILOT STUDY RECOMMENDATIONS

There were no practical difficulties experienced in the sample selection. The tool was feasible and the main study was carried out without any modification of pilot study.

DATA COLLECTION METHODS

The data for the main study was collected from 01.11.2016 to 28.11.2016 at CSI Kalyani Multispeciality Hospital, Chennai and Pankajam Memorial Hospital, Nanganallor. After obtaining approval from the research committee in the college, permission was obtained from the concerned authority to conduct the study. Informed consent was obtained from the samples. Samples fulfilling the inclusion criteria were selected using non probability convenient sampling technique. After self-introduction and establishing rapport with the samples, brief introduction about the study was given. Demographic data and obstetrical data was obtained from the postnatal mothers by interview method. Maternal wellbeing was assessed using checklist, mothers' response was obtained on minor disorders and antenatal record review was done to assess the high risk conditions during pregnancy and pre-existing conditions complicating pregnancy. Fetal outcome was assessed using checklist. Length, head, chest circumference and reflexes were assessed and neonatal record review was done to obtain data regarding gestational age, intrauterine growth pattern, APGAR, birth weight and congenital anomalies. It took approximately 30 minutes to collect data from each sample.

PLAN FOR DATA ANALYSIS

Data analysis was done using descriptive and inferential statistics

Descriptive Statistics

- Frequency and percentage distribution was used to describe the demographic variables and obstetrical variables.

- Frequency and percentage distribution was used to describe the maternal wellbeing and fetal outcome.

Inferential Statistics

- Coefficient correlation was used to correlate the maternal wellbeing and fetal outcome among postnatal mothers.

- Chi square test was used to associate the maternal wellbeing with the demographic variables and the obstetrical variables.

- Chi square test was used to associate the fetal outcome with the demographic variables and the obstetrical variables.

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

Data analysis and interpretation is the core step in the research process. The importance of analysis and interpretation of the collected data is to systematically organize, classify and summarize it so that the results can be interpreted to give all the results that trigged the research. In this chapter a detailed analysis of the collected data has been done as per the objectives stated earlier.

The data obtained were classified and was presented under the following sections

SECTION I: Frequency and percentage distribution of the postnatal mothers based on the demographic variables.

SECTION II: Frequency and percentage distribution of the postnatal mothers based on the obstetrical variables.

SECTION III: Assessment of the maternal wellbeing and fetal outcome of the postnatal mothers and her babies.

SECTION IV: Correlation of maternal wellbeing and fetal outcome among the postnatal mothers.

SECTION V: Association of maternal wellbeing and fetal outcome with demographic variables of the postnatal mothers.

SECTION VI: Association of maternal wellbeing and fetal outcome with obstetrical variables of the postnatal mothers.

SECTION I

FREQUENCY AND PERCENTAGE DISTRIBUTION OF THE POSTNATAL MOTHERS BASED ON DEMOGRAPHIC VARIABLES.

Table 1.1: Frequency and percentage distribution of the postnatal mothers based on demographic variables such as age in years, educational status, occupation and type of work.

N=120

S.No.	DEMOGRAPHIC VARIABLES	FREQUENCY (F)	PERCENTAGE (%)
1.	**Age in years**		
	a) <21 years	23	19.2
	b) 21-30 years	74	61.6
	c) 31-40 years	23	19.2
2.	**Education status**		
	a) No formal education	14	11.7
	b) Literate	106	88.3
	If literate,		
	i) Primary school	17	16.1
	ii) High school	31	29.2
	iii) Secondary education	32	30.2
	iv) Degree	26	24.5
3.	**Occupation**		
	a) Unemployed	60	50.0
	b) Employed	60	50.0
	If employed,		
	i) Government	16	26.7
	ii) Private	26	43.3
	iii) Business	10	16.7
	iv) Daily wages	8	13.3
4.	**Type of work**		
	a) Sedentary worker	30	25.0
	b) Moderate worker	74	61.7
	c) Heavy worker	16	13.3

Table 1.1 shows that, majority (61.6%) of the mothers were in the age group of 21-30 years and 88.3% of mothers were literate in that 16.1% had primary school, 29.2% had high school, 30.2% had secondary education and 24.5% were degree holders. Equal numbers of the mothers were unemployed and employed in that, 26.7% were employed in government, 43.3% were employed in private job, 16.7% were doing business and 13.3% were daily wages. Majority (61.7%) of the mothers were moderate type of workers

Table 1.2: Frequency and percentage distribution of the postnatal mothers based on demographic variables such as family income per month, religion, residence, type of family and personal habits.

N=120

S.No.	DEMOGRAPHIC VARIABLES	FREQUENCY (F)	PERCENTAGE (%)
5.	**Family Income per month**		
	a) < Rs.10,000	44	36.6
	b) Rs.10,000 – Rs.15,000	48	40.0
	c) Rs. 15,000 – Rs. 20,000	20	16.7
	d) >Rs. 20,000	8	6.7
6.	**Religion**		
	a) Hindu	75	62.5
	b) Christian	33	27.5
	c) Muslim	12	10.0
7.	**Residence**		
	a) Urban	120	100.0
	b) Rural	0	0.0
8.	**Type of family**		
	a) Nuclear family	87	72.5
	b) Joint family	21	17.5
	c) Extended family	12	10.0
9.	**Personal habits**		
	a) Betel chewing	0	0.0
	b) Smoking	0	0.0
	c) Alcohol consumption	0	0.0
	d) None	120	100.0

Table 1.2 shows that, Majority (40%) of the mothers family income was Rs.10, 000-Rs.15,000. Majority (62.5%) of the mothers were Hindus, all (100%) mothers were residing in urban area. Majority (72.5%) of the mothers were from nuclear family and none of the mothers had the habit of betel chewing, smoking and alcohol consumption.

SECTION II

FREQUENCY AND PERCENTAGE DISTRIBUTION OF OBSTETRICAL VARIABLES AMONG THE POSTNATAL MOTHERS

Table 2.1: Frequency and percentage distribution of the postnatal mothers based on obstetrical variables such as gravida, para, number of live children and abortion.

N=120

S.No.	OBSTETRICAL VARIABLES	FREQUENCY (F)	PERCENTAGE (%)
1.	**Gravida**		
	a) Primigravida	41	34.2
	b) Multigravida	70	58.3
	c) Grand multigravida	9	7.5
2.	**Para**		
	a) Primipara	71	59.2
	b) Multipara	47	39.2
	c) Grand multipara	2	1.6
3.	**No. of live children**		
	a) 1 child	81	67.5
	b) 2 child	35	29.2
	c) >3 child	4	3.3
4.	**History of Abortion**		
	a) 0	78	65.0
	b) 1	26	21.7
	c) > 2	16	13.3

Table 2.1 shows that, majority (58.3%) were multigravida mothers, 59.2% of them were primipara mothers, 67.5% had one child and 65% had no abortion, 21.7% had one abortion and 13.3% had >2 abortion.

Table 2.2:Frequency and percentage distribution of the postnatal mothers based on obstetrical variables such as type of delivery, initiation of antenatal care, vaccination, iron and folic acid intake, maternal weight gain and BMI at term.

N=120

S.No,	OBSTETRICAL VARIABLES	FREQUENCY (F)	PERCENTAGE (%)
5.	**Type of delivery**		
	a) Normal vaginal delivery	62	51.7
	b) Forceps delivery	6	5.0
	c) Vacuum delivery	15	12.5
	d) Cesarean section	37	30.8
6.	**Initiation of antenatal care**		
	a) < 12 weeks	120	100.0
	b) > 12 weeks	0	0.0
7.	**Vaccination (Tetanus toxoid)**		
	a) Vaccinated	120	100.0
	b) Not vaccinated	0.0	0.0
8.	**Iron and folic acid intake**		
	a) Regular	77	64.2
	b) Irregular	43	35.8
9.	**Maternal weight gain**		
	a) < 10kg	84	70.0
	b) 10 – 12kg	26	21.7
	c) >12kg	10	8.3
10.	**BMI at term**		
	a) Normal 18.5-24.9	49	40.8
	b) Overweight 25-29.9	52	43.4
	c) Obesity greater than 30	19	15.8

Table 2.2 shows that, majority (51.7%) of mothers had undergone normal vaginal delivery and 30.8% had cesarean section. All (100%) mothers initiated antenatal care in <12 weeks and were vaccinated. Majority (64.2%) of mothers had taken iron and folic acid regularly. Majority (70%) of mother had <10kg of weight gain and 43.3% of the mothers had over weight.

SECTION III

ASSESSMENT OF THE MATERNAL WELLBEING AND FETAL OUTCOME AMONG THE POSTNATAL MOTHERS

Table 3.1: Frequency and percentage distribution of maternal wellbeing status among the postnatal mothers.

N=120

S. No	VARIABLE	GOOD HEALTH		FAIR HEALTH		POOR HEALTH	
		F	*%*	*F*	*%*	*F*	*%*
1	Maternal wellbeing	64	53.3	38	31.7	18	15.0

Table 3.1 shows that, majority (53.3%) of mothers had good health, 31.7% of them had fair health and 15% of the mother had poor health.

Table 3.2: Frequency and percentage distribution of the fetal outcome among neonates.

<div align="right">

N=120

</div>

S.No.	VARIABLE	NO RISK		RISK	
		F	**%**	**F**	**%**
1	Fetal outcome	33	27.5	87	72.5

Table 3.2 shows that, majority (72.5%) of newborn babies had risk and 27.5% had no risk.

SECTION IV

TABLE 4: CORRELATION OF MATERNAL WELLBEING AND FETAL OUTCOME AMONG THE POSTNATAL MOTHERS.

N=120

S.NO.	VARIABLES	CORELATION COEFFICIENT VALUE
1.	Maternal wellbeing	r = 0.257
2.	Fetal outcome	p = 0.01**S

* p<0.05, **p<0.01, ***p<0.001 S - Significant NS - Not Significant

Table 4: shows that, there was a low positive correlation between maternal wellbeing and fetal outcome at p<0.01 level of significance.
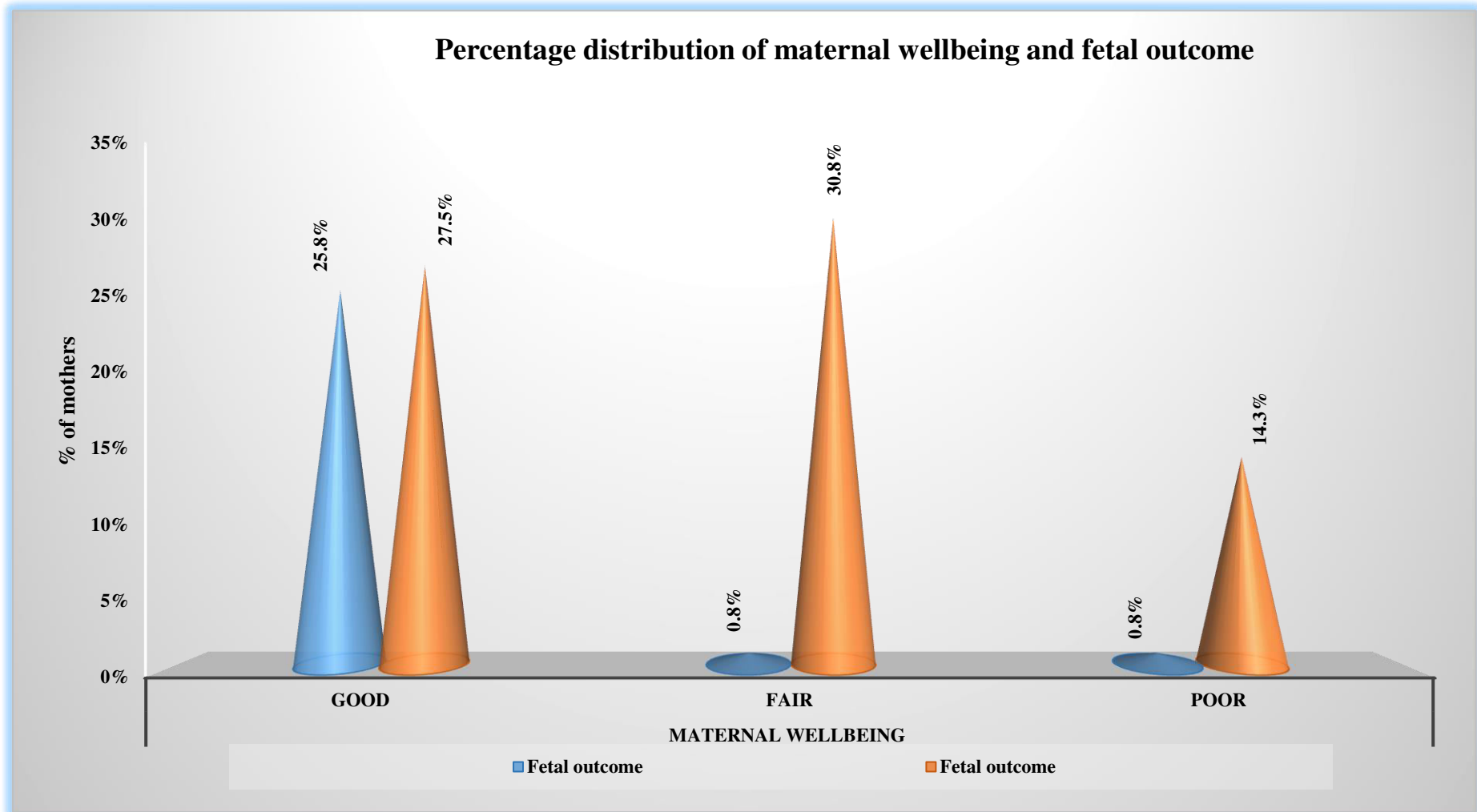
Figure 3: Correlation of percentage distribution on maternal wellbeing and fetal outcome.

SECTION V
ASSOCIATION OF MATERNAL WELLBEING AND FETAL OUTCOME WITH DEMOGRAPHIC VARIABLES OF THE POSTNATAL MOTHERS.

Table 5.1: Association of maternal wellbeing with demographic variables such as age, education, occupation and nature of work among the postnatal mothers.

N=120

S. No.	DEMOGRAPHIC VARIABLES	Maternal wellbeing						Chi square test
		Good health		Fair health		Poor health		
		(F)	(%)	(F)	(%)	(F)	(%)	
1.	**Age in years**							χ^2=23.787
	a) <21 years	5	4.2	11	9.2	7	5.8	d.f=4
	b) 21-30 years	52	43.4	15	12.5	7	5.8	p=0.001
	c) 31-40 years	7	5.8	12	10.0	4	3.3	S***
2.	**Education status**							
	a) No formal education	6	5.0	5	4.2	3	2.5	
	b) Literate	58	48.3	33	27.5	15	12.5	
	If literate,							χ^2=5.345
	i) Primary school	6	5.7	7	6.6	4	3.8	d.f = 8
	ii) High school	16	15.1	11	10.3	4	3.8	p=0.720
	iii) Secondary education	19	17.9	9	8.5	4	3.8	N.S
	iv) Degree	17	16.0	6	5.7	3	2.8	
3.	**Occupation**							
	a) Unemployed	30	25.0	25	20.8	5	4.2	
	b) Employed	34	28.4	13	10.8	13	10.8	χ^2=18.126
	If employed,							d.f=8
	i) Government	12	20.0	1	1.6	3	5.0	p=0.020
	ii) Private	16	26.7	6	10.0	4	6.7	S*
	iii) Business	4	6.7	4	6.7	2	3.3	
	iv) Daily wages	2	3.3	2	3.3	4	6.7	
4.	**Nature of work**							χ^2=14.640
	a) Sedentary worker	17	14.2	10	8.3	3	2.5	d.f=4
	b) Moderate worker	44	36.7	22	18.3	8	6.7	p=0.006
	c) Heavy worker	3	2.5	6	5.0	7	5.8	S**

* p<0.05, **p<0.01, ***p<0.001   S - Significant NS - Not Significant

Table 5.1 shows that, there was a statistically significant association between the maternal wellbeing with age at p<0.001 level, occupation at p<0.05 level and nature of work at p<0.01 level and there was no statistically significant association between maternal wellbeing with educational status.
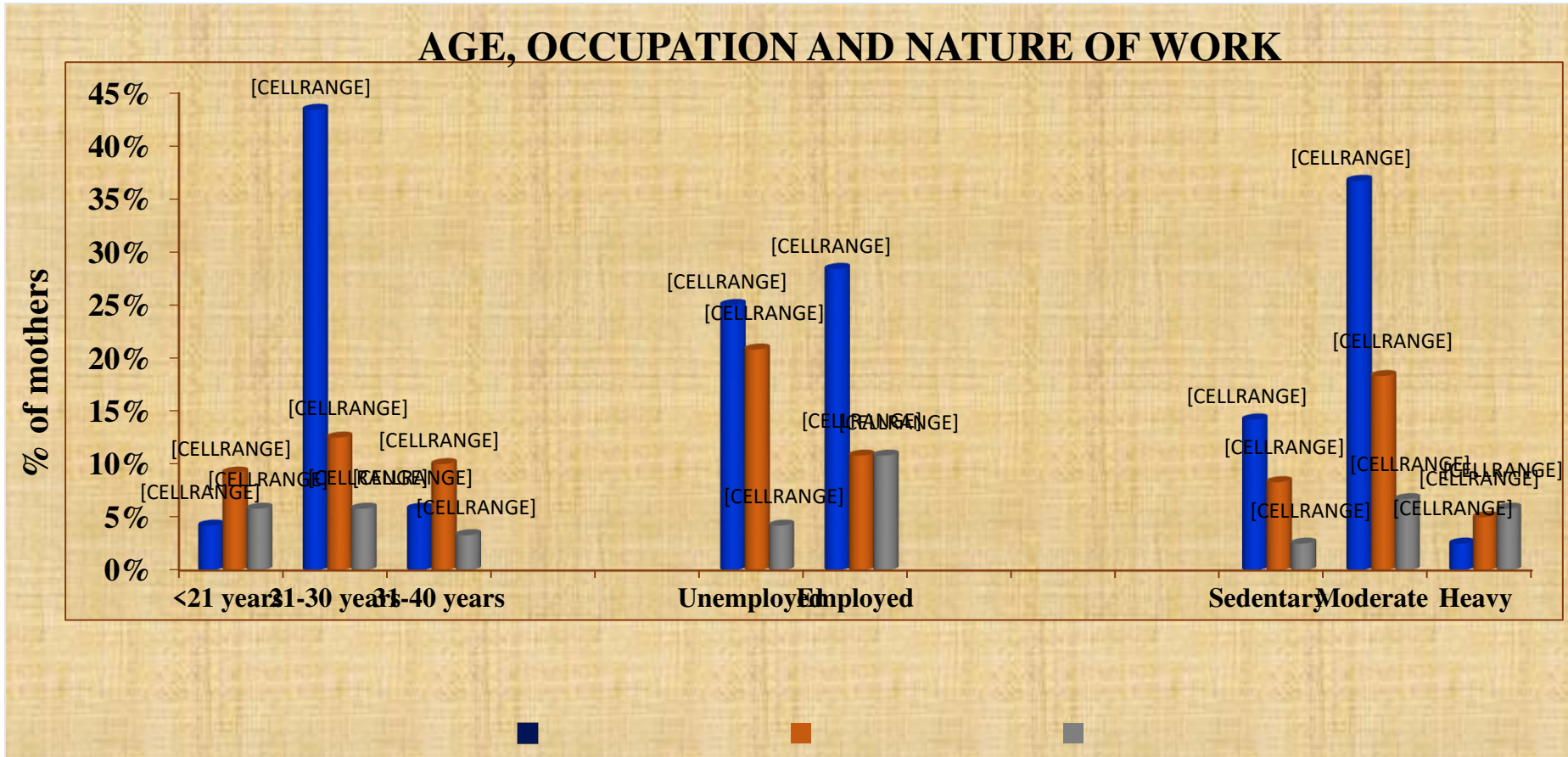
Figure 4: Percentage distribution of demographic variables such as age, occupation and nature of work based on maternal wellbeing.

Table 5.2: Association of maternal wellbeing with demographic variables such as family income per month, religion, residence, type of family and personal habits among the postnatal mothers.

N=120

S. No.	DEMOGRAPHIC VARIABLES	Maternal wellbeing						Chi square test
		Good health		Fair health		Poor health		
		(F)	(%)	(F)	(%)	(F)	(%)	
5.	**Income per month**							χ^2=7.700
	a) < Rs.10,000	18	15.0	16	13.3	10	8.3	d.f=6
	b) Rs.10,000-Rs.15,000	27	22.5	15	12.5	6	5.0	p=0.261
	c) Rs.15,000–Rs.20,000	15	12.5	4	3.4	1	0.8	N.S
	d) >Rs. 20,000	4	3.4	3	2.5	1	0.8	
6.	**Religion**							χ^2=1.614
	a) Hindu	43	35.8	21	17.5	11	9.2	d.f=4
	b) Christian	15	12.5	13	10.8	5	4.2	p=0.806
	c) Muslim	6	5.0	4	3.3	2	1.7	N.S
7.	**Residence**							χ^2=3.673
	a) Urban	64	53.3	38	31.7	18	15.0	d.f=2
	b) Rural	0	0.0	0	0.0	0	0.0	p=0.159
								N.S
8.	**Type of family**							χ^2=6.015
	a) Nuclear family	48	40.0	25	20.8	14	11.8	d.f=4
	b) Joint family	13	10.8	7	5.8	1	0.8	p=0.198
	c) Extended family	3	2.5	6	5.0	3	2.5	N.S
9.	**Personal habits**							
	a) Betel chewing	0	0.0	0	0.0	0	0.0	χ^2=3.673
	b) Smoking	0	0.0	0	0.0	0	0.0	d.f=2
	c) Alcohol consumption	0	0.0	0	0.0	0	0.0	p=0.159
	d) None	64	53.3	38	31.7	18	15.0	N.S

* p<0.05, **p<0.01, ***p<0.001 S - Significant NS - Not Significant

Table 5.2 shows that, there was no statistically significant association between the maternal wellbeing with demographic variables such as family income per month, religion, residence, type of family and personal habit.

Table 5.3: Association of fetal outcome with demographic variables such as age, education, occupation and family income per month among the postnatal mothers.

N=120

S.No.	DEMOGRAPHIC VARIABLES	Fetal outcome				Chi square test
		Risk		No risk		
		(F)	(%)	(F)	(%)	
1.	**Age in years**					χ^2=17.447
	a) <21 years	0	0.0	23	19.1	d.f = 2
	b) 21-30 years	30	25.0	44	36.7	p=0.001
	c) 31-40 years	3	2.5	20	16.7	S***
	d) >40 years	0	0.0	0	0.0	
2.	**Education status**					χ^2=7.573
	a) No formal education	2	1.7	12	10.0	d.f=4
	b) Literate	31	25.8	75	62.5	p=0.109
	If literate,					N.S
	i) Primary school	1	0.9	16	15.1	
	ii) High school	9	8.5	22	20.9	
	iii) Secondary education	11	10.3	21	19.8	
	iv) Degree	10	9.4	16	15.1	
3.	**Occupation**					
	a) Unemployed	14	11.7	46	38.3	χ^2=10.197
	b) Employed	19	15.8	41	34.2	d.f=4
	If employed,					p=0.037
	i) Government	7	11.7	9	15.0	S*
	ii) Private	11	18.3	15	25.0	
	iii) Business	0	0.0	10	16.7	
	iv) Daily wages	1	1.6	7	11.7	
4.	**Nature of work**					χ^2=4.917
	a) Sedentary worker	11	9.2	19	15.8	d.f=2
	b) Moderate worker	21	17.5	53	44.2	p=0.086
	c) Heavy worker	1	0.8	15	12.5	N.S
5.	**Income per month**					
	a) < Rs.10,000	6	5.0	38	31.6	χ^2=8.054
	b) Rs.10,000 – Rs.15,000	15	12.5	33	27.5	d.f=3
	c) Rs. 15,000 – Rs. 20,000	9	7.5	11	9.2	p=0.045
	d) >Rs. 20,000	3	2.5	5	4.2	S*

* p<0.05, **p<0.01, ***p<0.001   S - Significant NS - Not Significant

Table 5.3 shows that, there was a statistically significant association between fetal outcome with maternal age at p<0.001 level, occupation and family income per month at p<0.05 level and there was no statistically significant association between fetal outcome of postnatal mothers with demographic variables such as educational status and nature of work.
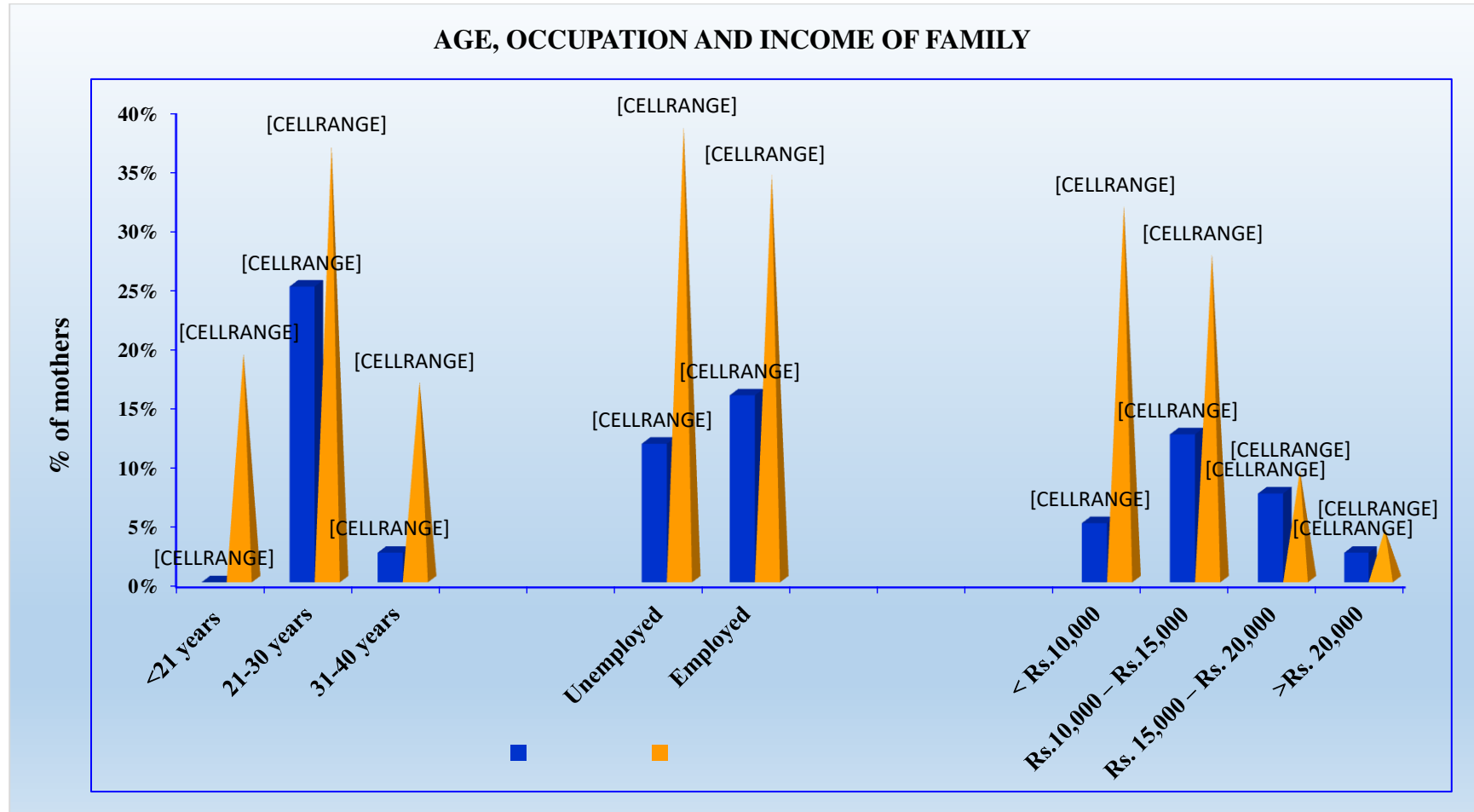
Figure 5: Percentage distribution of demographic variables such as age, occupation and income of the family based on fetal outcome.

Table 5.4: Association of fetal outcome with demographic variables such as religion, residence, type of family and personal habits among the postnatal mothers.

N=120

S.No.	DEMOGRAPHIC VARIABLES	Fetal outcome				Chi square test
		Risk		No risk		
		(F)	(%)	(F)	(%)	
6.	**Religion**					χ^2=0.194
	a) Hindu	20	16.7	55	45.8	d.f = 2
	b) Christian	10	8.3	23	19.2	p=0.908
	c) Muslim	3	2.5	9	7.5	N.S
7.	**Residence**					χ^2=3.673
	a) Urban	33	27.5	87	72.5	d.f = 2
	b) Rural	0	0.0	0	0.0	p=0.159
						N.S
8.	**Type of family**					χ^2=2.900
	a) Nuclear family	27	22.5	60	50.0	d.f = 2
	b) Joint family	5	4.2	16	13.3	p=0.235
	c) Extended family	1	0.8	11	9.2	N.S
9.	**Personal habits**					χ^2=3.673
	a) Betel chewing	0	0.0	0	0.0	d.f = 2
	b) Smoking	0	0.0	0	0.0	p=0.159
	c) Alcohol consumption	0	0.0	0	0.0	N.S
	d) None	33	27.5	87	72.5	

* p<0.05, **p<0.01, ***p<0.001   S - Significant NS - Not Significant

Table 5.4 shows that, there was no statistically significant association between fetal outcome with demographic variables such as religion, residence, type of family and personal habits.

SECTION VI

ASSOCIATION OF MATERNAL WELLBEING AND FETAL OUTCOME WITH DEMOGRAPHIC VARIABLES OF THE POSTNATAL MOTHERS.

Table 6.1: Association of maternal wellbeing with obstetrical variables such as gravida, para, number of live children and abortion among the postnatal mothers.

N=120

S. No.	OBSTETRICAL DATA	Maternal wellbeing						Chi square test
		Good health		Fair health		Poor health		
		(F)	(%)	(F)	(%)	(F)	(%)	
1	**Gravida** a) Primigravida b) Multigravida c) Grand multigravida	27 36 1	22.5 30.0 0.8	13 20 5	10.8 16.7 4.2	1 14 3	0.8 11.7 2.5	χ^2=13.591 d.f=4 p=0.009 S**
2	**Para** a) Primipara b) Multipara c) Grand multipara	39 25 0	32.5 20.8 0.0	23 14 1	19.2 11.7 0.8	9 8 1	7.5 6.7 0.8	χ^2=3.394 d.f=4 p=0.494 N.S
3	**No. of live children** a) 1 child b) 2 child c) >3 child	39 23 2	32.5 19.2 1.7	26 11 1	21.7 9.2 0.8	16 1 1	13.3 0.8 0.8	χ^2=6.411 d.f=4 p=0.170 N.S
4	**Abortion** a) 0 b) 1 c) > 2	52 8 4	43.3 6.7 3.3	22 10 6	18.3 8.3 5.0	4 8 6	3.3 6.7 5.0	χ^2=23.114 d.f=4 p=0.001 S***

* p<0.05, **p<0.01, ***p<0.001   S - Significant NS - Not Significant

Table 6.1shows that, there was a statistically significant association between maternal wellbeing with gravida at p<0.01 level, abortion at p<0.001 level and there was no statistically significant association between maternal wellbeing of postnatal mothers with obstetrical variables such as para and number of live children.

Table 6.2: Association of maternal wellbeing with obstetrical variables such as type of delivery, initiation on of antenatal care, vaccination, iron and folic acid intake, maternal weight gain and BMI among the postnatal mothers.

N=120

S. No.	OBSTETRICAL VARIABLES	Maternal wellbeing						Chi square test
		Good health		Fair health		Poor health		
		(F)	(%)	(F)	(%)	(F)	(%)	
5.	**Type of delivery** a) Normal vaginal delivery b) Forceps delivery c) Vacuum delivery d) Cesarean section	 51 2 3 8	 42.5 1.6 2.5 6.7	 8 1 8 21	 6.7 0.8 6.7 17.5	 3 3 4 8	 2.5 2.5 3.3 6.7	χ^2=48.786 d.f=6 p=0.001 S***
6.	**Initiation of antenatal care** a) < 12 weeks b) > 12 weeks	 64 0	 53.3 0.0	 38 0	 31.7 0.0	 18 0	 15.0 0.0	χ^2=3.673 d.f=2 p=0.159 N.S
7.	**Vaccination (Tetanus toxoid)** a) Vaccinated b) Not vaccinated	 64 0	 53.3 0.0	 38 0	 31.7 0.0	 18 0	 15.0 0.0	χ^2=3.673 d.f=2 p=0.159 N.S
8.	**Iron and folic acid intake** a) Regular b) Irregular	 58 6	 48.3 5.0	 10 28	 8.3 23.4	 9 9	 7.5 7.5	χ^2=44.734 d.f=2 p=0.001 S***
9.	**Maternal weight gain** a) < 10kg b) 10 – 12kg c) >12kg	 41 22 1	 34.3 18.3 0.8	 30 3 5	 25.0 2.5 4.2	 13 1 4	 10.8 0.8 3.3	χ^2=19.772 d.f=4 p=0.001 S***
10.	**BMI at term** a) Normal 18.5-24.9 b) Overweight 25-29.9 c) Obesity greater than 30	 34 27 3	 28.3 22.5 2.5	 11 20 7	 9.2 16.7 5.8	 4 5 9	 3.3 4.2 7.5	χ^2=25.446 d.f=4 p=0.001 S***

* p<0.05, **p<0.01, ***p<0.001   S - Significant NS - Not Significant

Table 6.2 shows that, there was a statistically significant association between maternal wellbeing with type of delivery, iron and folic acid intake, maternal weight gain and BMI at p<0.001 level and there was no statistically significant association between maternal wellbeing with other demographic variables such as early initiation of antenatal care and vaccination.
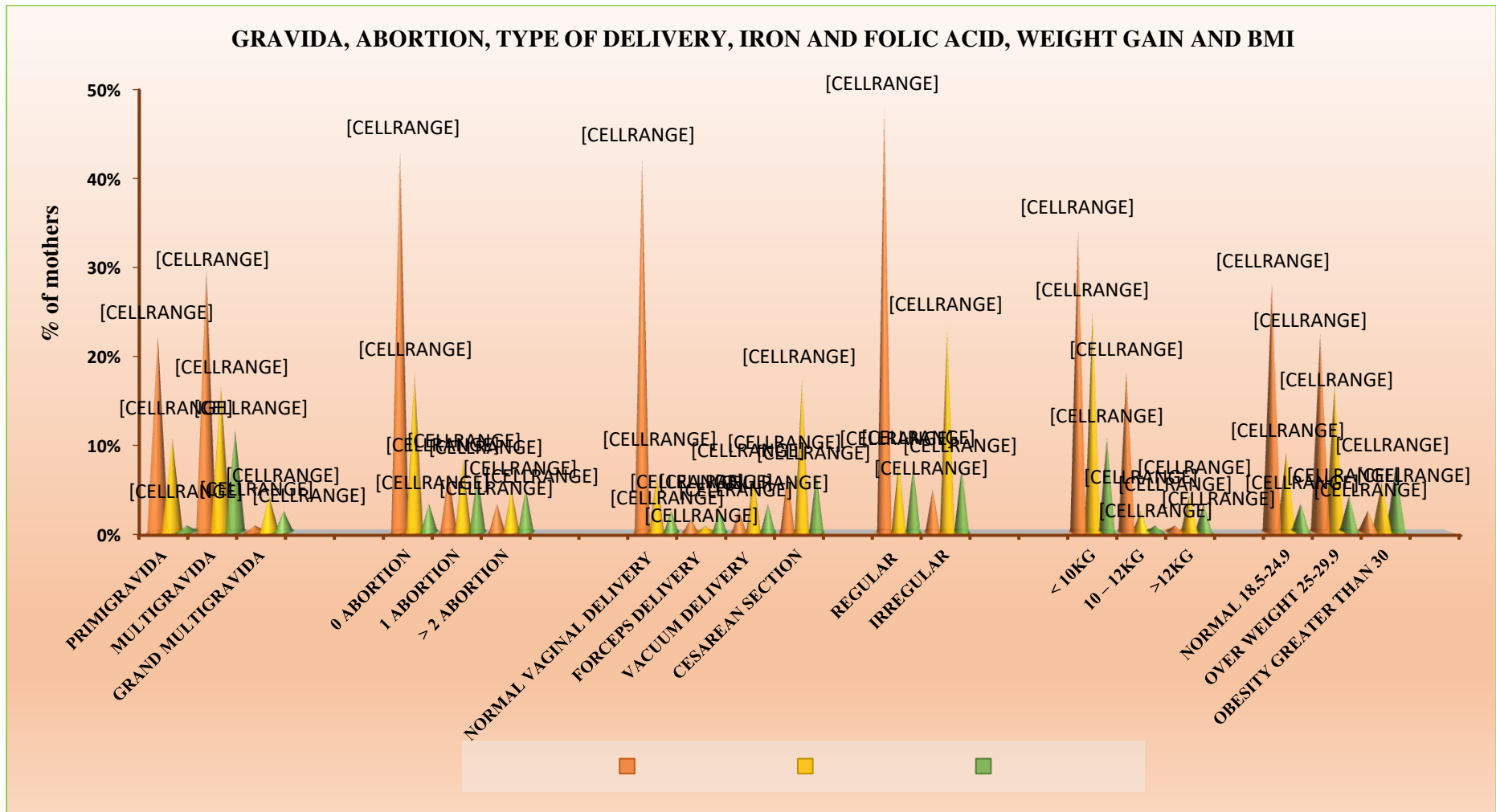
Figure 6: Percentage distribution of obstetric variables such asgravida, abortion, type of delivery, iron and folic acid intake, maternal weight gain and BMI based on maternal wellbeing.

Table 6.3: Association of fetal outcome with obstetrical variables such as gravida, para, number of live children and abortion among the postnatal mothers.

N=120

S.No.	OBSTETRICAL DATA	Fetal outcome				Chi square test
		Risk		No risk		
		(F)	(%)	(F)	(%)	
1.	**Gravida** a) Primigravida b) Multigravida c) Grand multigravida	15 16 2	12.5 13.3 1.7	26 54 7	21.7 45.0 5.8	χ^2=2.580 d.f = 2 p=0.275 N.S
2.	Para a) Primipara b) Multipara c) Grand multipara	23 10 0	19.2 8.3 0.0	48 37 2	40.0 30.8 1.7	χ^2=2.525 d.f = 2 p=0.283 N.S
3.	No of live children a) 1 child b) 2 child c) >3 child	23 9 1	19.2 7.5 0.8	58 26 3	48.3 21.7 2.5	χ^2=0.101 d.f = 2 p=0.951 N.S
4.	Abortion a) 0 b) 1 c) > 2	25 5 3	20.8 4.2 2.5	53 21 13	44.2 17.5 10.8	χ^2=2.317 d.f = 2 p=0.314 N.S

* p<0.05, **p<0.01, ***p<0.001   S - Significant NS - Not Significant

Table 6.3 shows that, there was no statistically significant association between fetal outcome with obstetrical variables such as gravida, para, number of live children and abortion.

Table 6.4: Association of fetal outcome with obstetrical variables such as type of delivery, initiation of antenatal care, vaccination, iron and folic acid intake, maternal weight gain and BMI among the postnatal mothers.

N=120

S.No.	OBSTETRICAL VARIABLES	Fetal outcome				Chi square test
		Risk		No risk		
		(F)	(%)	(F)	(%)	
5.	**Type of delivery**					χ^2=18.970 d.f=3 p=0.001 S***
	a) Normal vaginal delivery	27	22.5	35	29.2	
	b) Forceps delivery	2	1.7	4	3.3	
	c) Vacuum delivery	0	0.0	15	12.5	
	d) Cesarean section	4	3.3	33	27.5	
6.	**Initiation of antenatal care**					χ^2=3.673 d.f=2 p=0.159 N.S
	a) < 12 weeks	33	27.5	87	72.5	
	b) > 12 weeks	0	0.0	0	0.0	
7.	**Vaccination (Tetanus toxoid)**					χ^2=3.673 d.f=2 p=0.159 N.S
	a) Vaccinate	33	27.5	87	72.5	
	b) Not vaccinated	0	0.0	0	0.0	
8.	**Iron and folic acid intake**					χ^2=17.548 d.f=1 p=0.001 S***
	a) Regular	31	25.8	46	38.3	
	b) Irregular	2	1.7	41	34.2	
9.	**Maternal weight gain**					χ^2=3.715 d.f=2 p=0.156 N.S
	a) < 10kg	20	16.6	64	53.3	
	b) 10 – 12kg	11	9.2	15	12.5	
	c) >12kg	2	1.7	8	6.7	
10	**BMI at term**					χ^2=4.026 d.f=2 p=0.134 N.S
	a) Normal 18.5-24.9	17	14.1	32	26.7	
	b) Over weight 25-29.9	14	11.7	38	31.7	
	c) Obesity greater than 30	2	1.7	17	14.1	

* p<0.05**, p<0.01, ***p<0.001   S - Significant NS - Not Significant

Table 6.4 shows that, there was a statistically significant association between fetal outcome with type of delivery and iron and folic acid intake at p<0.001 level and there was no statistically significant association between fetal outcome with other demographic variables such as early initiation of antenatal care, vaccination, maternal weight gain and BMI.
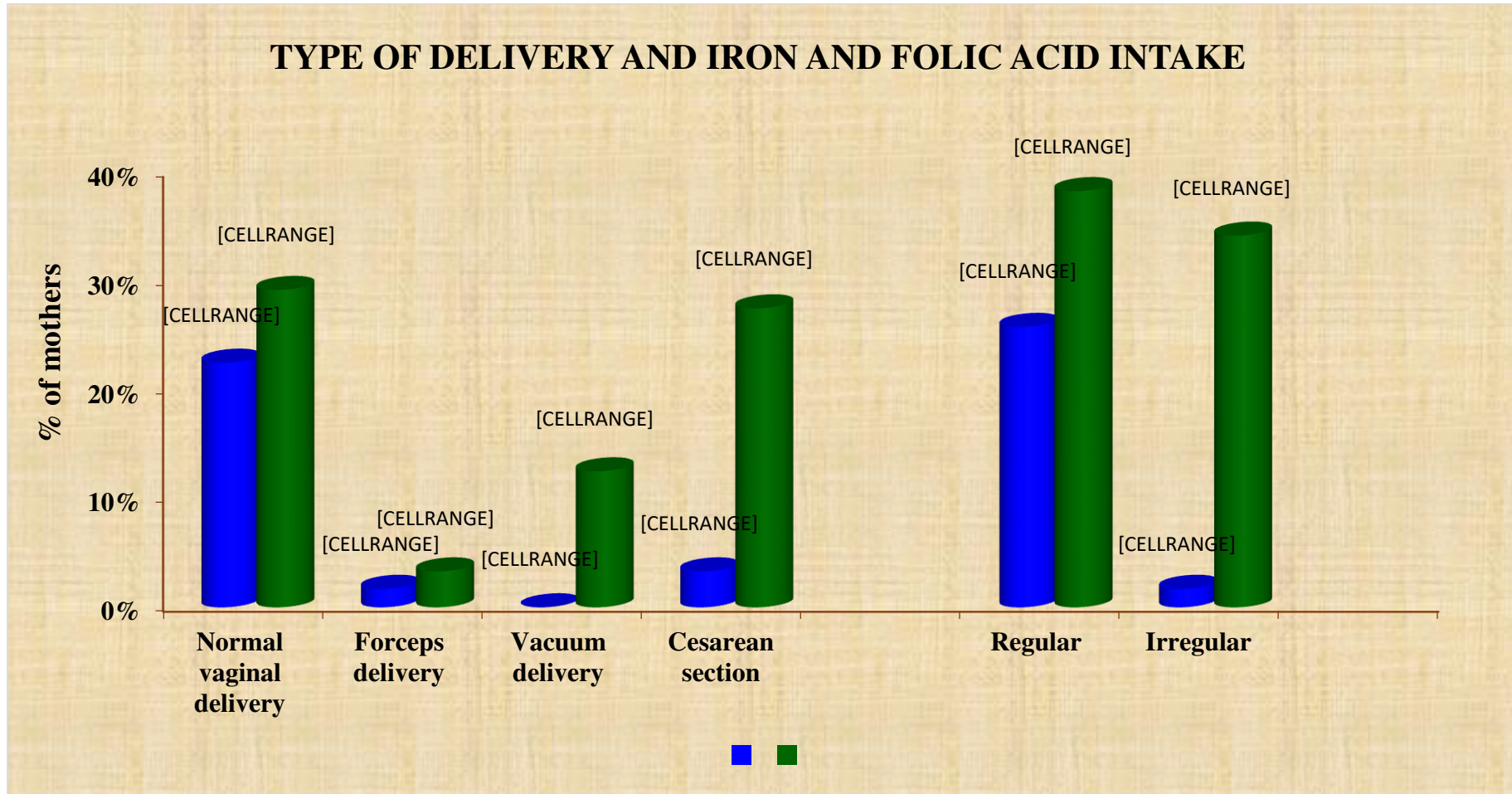
Figure 7: Percentage distribution of obstetric variables such as type of delivery and iron and folic acid intake based on fetal outcome.

CHAPTER V

DISCUSSION

The aim of the study was to assess the relationship between maternal wellbeing and fetal outcome among the postnatal mothers at selected hospitals in Chennai.

Totally 120 postnatal mothers were selected as samples using non-probability convenient sampling technique. In that 60 postnatal mothers were selected from Kalyani Multispeciality Hospital, Chennai and 60 postnatal mothers were selected from Panakjam Memorial Hospital, Nanganallur. Demographic data and obstetrical data was obtained from the postnatal mothers by interview method. Maternal wellbeing was assessed by checklist using mothers response (minor disorders) and antenatal record review (high risk conditions during pregnancy and pre-existing conditions complicating pregnancy). Fetal outcome was assessed by checklist using biophysical measures (length, head & chest circumference) and neonatal record review (gestational age, growth pattern, APGAR, birth weight, congenital anomalies and reflexes). The collected data were tabulated and analyzed using descriptive and inferential statistics and results were interpreted. The discussion is based on the objectives specified in the study.

The significant findings of the study were as follows

In relation to demographic variables

- Majority (61.6%) of the postnatal mothers were in the age group of 21-30 years, and equal number (19.2%) of them were in age group of <21 years and 31-40 years.

- Among postnatal mothers, 11.7% had no formal education and 88.3% were literate. In that majority (30.2%) of the postnatal mothers had completed secondary education, 29.2% were completed high school education, 24.5% were completed degree, and 16.1% were completed primary school education.

- Equal number (50%) of the postnatal mothers were unemployed and employed, in that majority (43.3%) were employed in private, 26.7% were employed in government job, 16.7% had own business, and 13.3% had daily wages.

- Majority (61.7%) of the postnatal mothers were moderate type of worker, 25% were sedentary worker and 13.3% were heavy worker.

- Majority (40%) of the postnatal mothers had family income of Rs.10,000 to Rs.15,000, 36.6% had family income of <Rs.10, 000, 16.7% had family income of Rs.15,000 – Rs.20,000, and 6.7% had family income of >Rs20,000.

- Majority (62.5%) of the postnatal mothers were Hindus, 27.5% of the postnatal mothers were Christians, and 10% of the postnatal mothers were Muslims.

- All the mothers were residing in the urban area.

- Majority (72.5%) of the postnatal mothers were from nuclear family, 17.5% were from joint family and 10% were from extended family.

- None of the postnatal mothers had the habit of betel chewing, smoking and alcohol consumption.

- Majority (58.3%) of the postnatal mothers were multigravida, 34.2% were primigravida mothers and 7.5% were grand multigravida mothers.

- Majority (59.2%) of the postnatal mothers were primipara, 39.2% were multipara mothers and 1.6% were grand multipara mothers.

- Majority (67.5%) had one child, 29.2% had 2 children and 3.3% had >3 children.

- Majority (65%) of the postnatal mothers had no history of abortion, 21.7% had one abortion and 13.3% had >2 abortions.

- Majority (51.7%) of the postnatal mothers had normal vaginal delivery, 30.8% had cesarean section, 12.5% had vacuum delivery and 5% of them had forceps delivery.

- All (100%) postnatal mothers had initiated antenatal care <12 weeks and were vaccinated.

- Majority, (64.2%) of the postnatal mothers had taken iron and folic acid regularly and 35.8% had irregular intake of iron and folic acid.

- Majority, (70%) of the postnatal mothers had <10kg of weight gain, 21.7% had 10-12kg of weight gain and 8.3% had >12kg of weight gain.

- Majority (43.4%) of the postnatal mothers had over weight, 40.8% had normal weight and 15.8% had obesity.

The findings of the study based on objectives were discussed

1. The first objective was to assess the maternal wellbeing and fetal outcome.

Maternal wellbeing

Majority (53.3%) of the postnatal mothers had good health, 31.7% of the postnatal mothers had fair health and 15% of the postnatal mothers had poor health (table 3.1). So, we can infer from the findings of maternal wellbeing that majority of the postnatal mothers were in good health even though few had poor and fair health.

The above finding is supported by the study shows that three-fourth of the mother had good health; one-fourth had fair and poor health in maternal wellbeing (Kapil, M 2013).

Fetal outcome

Majority (72.5%) of newborn babies had risk and (27.5%) of newborn babies had no risk (table 3.2). From the findings we can infer that majority of babies had under risk status.

The above finding is supported by the study shows that there was a significant association between neonatal congenital anomalies and lack of peri-conceptional use of folic acid (Jehan, I. Harris, H. & Fayaz, M. (2015).

2. The second objective was to correlate the maternal wellbeing and fetal outcome

The correlation between maternal wellbeing and fetal outcome revealed that there was a low positive correlation existing between maternal wellbeing and fetal outcome r=0.257 at p<0.01 level of significance (table 4).

From the above finding, we can infer that the fetal outcome was influenced by the maternal wellbeing. Good maternal wellbeing will lead to no risk status of fetal outcome. Fair and poor maternal wellbeing will lead to risk of fetal outcome. This shows that, when there was poor maternal health the fetal risk was increased.

Hence, the postnatal mother who had good maternal health status will have better fetal outcome as compared to postnatal mother with fair and poor maternal health status.

The above findings were supported a study to describe the maternal weight gain during all trimesters of pregnancy and its correlation with birth weight. The results concluded that there is a correlation p<0.05 among total maternal weight gain in second and third trimester with birth weight of baby (Lumbanraja S, Lutan D & Usman I, 2013).

Hence the assumption stated that earlier the antenatal registration decreased minor and medical disorders during pregnancy better the fetal outcome was supported by study findings.

The null hypothesis stated that there is no relationship between maternal wellbeing and fetal outcome was rejected.

3. The third objective was to associate the maternal wellbeing and fetal outcome with the demographic variables.

The study findings shows that there was a statistically significant association between maternal wellbeing with maternal age at p<0.001 level, occupation at p<0.05 level and nature of work at p<0.01 level (table 5.1). It revealed that age, occupation and nature of work had influenced the maternal wellbeing.

There was a statistically significant association between fetal outcome with maternal age at p<0.001 level, occupation and family income per month at p<0.05 level (table 5.3). It is evident that age, occupation and family income per month had influenced the fetal outcome.

The above findings were supported to assess the maternal risk factors and outcome of low birth weight babies admitted in tertiary care teaching hospital in Orissa. The study concluded that among 1080 babies, 56.7% were low birth weight babies 64% were preterm and 36% were IUGR. There was a correlation between maternal risk factors and outcome of LBW babies (Maheswari, K & Behera, N 2014).

Hence, the assumption stated earlier that, maternal wellbeing and fetal outcome will be influenced by the demographic variable was supported by study findings.

Hence, the null hypothesis stated earlier that there is no association between maternal wellbeing with demographic variables like maternal age, education and socioeconomic status and there is no association between fetal outcomes with demographic variables like maternal age, education and socioeconomic status was rejected.

4. The fourth objective was to associate the maternal wellbeing and fetal outcome with the obstetrical variables.

There was a statistically significant association between maternal wellbeing with gravida at p<0.01 level and abortion at p<0.001 level (table 5.5) and type of delivery, iron and folic acid intake, maternal weight gain and BMI at p<0.001 level (table 5.6). The findings revealed that the gravida, abortion, type of delivery, iron and folic acid intake, maternal weight gain and BMI had influenced maternal wellbeing.

The above findings were supported by study conducted by Manisha Nair, Manoj K Choudhury, et al. (2016) that assessed the relationship between maternal anemia and adverse maternal and infant outcome. The results concluded that maternal iron deficiency anemia was associated with (25%) low birth weight and (44%) small for gestational age.

There was a statistically significant association between fetal outcome with type of delivery and iron and folic acid intake at p<0.001 level (table 5.8). It is evident that type of delivery and iron and folic acid intake influenced the fetal outcome.

The result shows that the postnatal mothers who had good maternal health status had positive fetal outcome. Mother with normal maternal weight gain and regular intake of iron and folic acid supplements during pregnancy had babies with normal birth weight and fetal development.

The above findings were supported by prospective cross sectional study conducted to assess the prevalence and to identify risk factor affecting low birth weight neonates in district hospital. Researcher concluded that 11.61% of postnatal mothers with low maternal weight gain during pregnancy delivered low birth weight babies (Dandekar, H. R & Shafee, M 2013).

Hence, the assumption stated earlier that, maternal wellbeing and fetal outcome will be influenced by the obstetrical variables was supported by study findings.

Hence, the null hypothesis stated earlier that there is no association between maternal wellbeing with obstetrical variables like gravida, para, number of live children, abortion, type of delivery, iron and folic acid intake and maternal weight gain and there is no association between fetal outcomes with obstetrical variables like gravida, para, number of live children, abortion, type of delivery, iron and folic acid intake and maternal weight gain was rejected.

CHAPTER VI

SUMMARY, CONCLUSION, IMPLICATION AND RECOMMENDATIONS

SUMMARY

Pregnancy and child birth is a normal physiological phenomenon. Pregnancy is a privilege of experiencing God's miracles on earth. The health of the mother and the newborn are interlinked, so the newborn health and survival depends on appropriate maintenance of maternal health and wellbeing of the mother during pregnancy. The provisions of care of mothers before and during pregnancy were to allow the mothers to get best possible health and to have greatest chance of giving birth to healthy baby. So the investigator felt the need to identify the relationship between the maternal wellbeing and fetal outcome among postnatal mother.

The objectives of the study were,

- to assess the maternal wellbeing and fetal outcome.

- to correlate the maternal wellbeing and fetal outcome

- to associate the maternal wellbeing and fetal outcome with the demographic variables like the age, education, occupation and socio economic status.

- to associate the maternal wellbeing and fetal outcome with the obstetrical variables like gravida, para, number of live children, abortion, type of delivery, initiation of antenatal care, vaccination and iron and folic acid intake.

The hypothesis of the study was,

H_{01}- There is no relationship between maternal wellbeing and fetal outcome.

H_{02}- There is no association between maternal wellbeing with demographic variables like maternal age, education and socioeconomic status.

H$_{03}$- There is no association between maternal wellbeing with obstetrical variables like gravida, para, number of live children, abortion, type of delivery, iron and folic acid intake and maternal weight gain.

H$_{04}$- There is no association between fetal outcomes with demographic variables like maternal age, education and socioeconomic status.

H$_{05}$- There is no association between fetal outcomes with obstetrical variables like gravida, para, number of live children, abortion, type of delivery, iron and folic acid intake and maternal weight gain.

The assumption of the study were,

- Earlier the antenatal registration better the fetal outcome.

- Decreased medical disorders during pregnancy better the fetal outcome.

- Decreased minor disorders during pregnancy better fetal outcome.

Review of literature provided a base to construct the tool and methodology. Descriptive design was chosen for the study. The tool was developed and validated by five experts, one obstetrician, one neonatologist and three obstetrics and gynecology nursing experts. The reliability was determined by inter rater method. Feasibility was analyzed by conducting the pilot study. The main study was conducted from 01.11.2016 to 28.11.2016 at CSI Kalyani Multispeciality Hospital, Chennai and Pankajam Memorial Hospital, Nanganallor. Sample fulfilling the inclusion criteria were selected using non probability convenient sampling technique. Demographic data and obstetrical data was obtained from the postnatal mothers by interview method. Maternal wellbeing was assessed using checklist, mothers response was obtained on minor disorders and antenatal record review was done to assess the high risk conditions during pregnancy and pre-existing conditions complicating pregnancy. Fetal outcome was assessed using checklist. Length, head, chest circumference and reflexes were assessed and neonatal record review

was done to obtain data regarding gestational age, intrauterine growth pattern, APGAR, birth weight and congenital anomalies. The data was analyzed using descriptive and inferential statistics and results were interpreted.

The study findings revealed that the postnatal mothers with fair and poor health status during pregnancy had risk in fetal outcome. There was a statistically significant correlation between the maternal wellbeing and fetal outcome at p<0.01 level of significance. There was a statistically significant association between maternal wellbeing with demographic variables like maternal age, occupation and nature of work; and fetal outcome with demographic variables like maternal age, occupation and family income per month. Similarly there was a statistically significant association between maternal wellbeing with obstetrical variables like gravida, abortion, type of delivery, iron and folic acid intake, maternal weight gain and BMI; and fetal outcome like type of delivery and iron and folic acid intake.

CONCLUSION

From the results of the study, it was concluded that fair and poor maternal health status had increased the risk of fetal outcome. The study findings showed that maternal wellbeing and fetal outcome is related with each other. Maternal age, occupation and nature of work had influenced on maternal wellbeing and maternal age, occupation and family income per month had influenced on fetal outcome. Gravida, abortion, type of delivery, iron and folic acid intake, maternal weight gain and BMI had influenced on maternal wellbeing and type of delivery and iron and folic acid intake had influenced the fetal outcome. In maternal wellbeing, majority (53.3%) of the postnatal mothers had good health, 31.7% of them belonged to fair health and 15% of postnatal mothers had poor health. In fetal outcome, majority (72.5%) of newborn babies had risk and 27.5% had no risk status. Good maternal health status during pregnancy leads to better fetal outcomes.

NURSING IMPLICATIONS

The study findings are relevant to nursing field. The implication can be discussed mainly in the area of nursing services, nursing education, nursing administration and nursing research.

Nursing Service

- Prenatal and Antenatal counseling should be done for the pregnant mother as well as family members which help the midwives to identify and follow the mothers with severe minor disorders prevent complications and plan for nursing intervention.

- Health care system must do early tracking of adolescent girls for anemia and must provide individualized surveillance programme to reduce anemia related maternal and infant mortality rates.

- Nurses must create awareness in wide range about the preexisting conditions complicating pregnancy among antenatal mothers visiting outpatient department to know its effect on fetus and its preventive measures.

- Midwives must encourage the pregnant mother to come for early registration, periodic antenatal visit and regular intake of iron and folic acid to improve pregnancy and fetal outcome.

- Emergency helpline services can be made available for the easy reach of health facilities, benefits and accessible maternal health care from health care providers to identify quality improvement in maternal care.

- Midwives can improve the obstetrical care by providing outreach programme and addressing gap in utilization of maternal health care and services.

- Nurses can implement the complementary and alternative therapy in pregnant mothers while providing care.

- Prenatal counselling sessions can be arranged for the couple to get healthy pregnancy.

Nursing Education

- Curriculum should include about advanced technology to provide care for high risk antenatal mother in each trimesters and its effect on pregnancy and fetal outcome.

- Seminar, conferences, panel discussion should be held to students to create awareness regarding the care for high risk antenatal mother and preventive measures of high risk conditions.

- Students should be encouraged to study the high risk prenatal and antenatal counseling and give health teaching make awareness among mothers.

- Nurse educator can conduct staff development programme regarding preconceptional and high risk antenatal care.

Nursing Administration

- Nurse administrator should encourage and support the midwives to do clinical trials, evidence based practices and involve them in research activities to improve the patient care.

- Nurse administrator can plan and organize in service education programme for the staff nurses to reinforce the importance of preconceptional and antenatal care for mothers.

- Nurse administrator must extend their support to conduct community reach programme for prevention of high risk pregnancy.

Nursing Research

- Disseminate the findings of research through conferences, seminars, scientific paper presentation and publishing in nursing journal.

- Research study can be conducted on home care management on minor disorders of pregnancy at rural area.

- Research study can be conducted on awareness on high risk pregnancy.

RECOMMENDATIONS

Keeping the findings of the present study in view, the following recommendations were made.

- A study can be conducted with multiple variables which will influence the maternal wellbeing and fetal outcome.

- A study can be conducted in urban and rural setting and to compare the prevalence rate of high risk mothers and their risk status.

- A comparative study can be conducted to assess the primigravida and multi gravida mothers and their fetal outcome.

- A study can be conducted using variables of maternal wellbeing.

- The study can include the maternal psychological effect in antepartum and intrapartum period influence on pregnancy and fetal outcome.

- An interventional study to assess the effect on alternative therapies on maternal wellbeing and fetal outcome.

- A comparative study to assess the type of delivery influence on neonatal outcome.

LIMITATIONS

- There was no limitation faced by the investigator during the study.

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CERTIFICATE OF CONTENT VALIDITY

This is to certify that the tool developed by Ms. Divya.V, M.Sc. Nursing student of M.A.Chidambaram College of Nursing for the study, **"To assess the relationship between maternal wellbeing and fetal outcome among postnatal mothers at selected hospitals in Chennai"**, is validated by the undersigned and she can proceed with this tool to conduct the main study.

DATE: 1/11/16

(VEENA M. JOSEPH)
SIGNATURE WITH SEAL

CERTIFICATE OF CONTENT VALIDITY

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DATE: 22.7.16

SIGNATURE WITH SEAL

CONSULTANT
PAEDIATRICIAN
C.S.I. KALYANI GENERAL HOSPITAL
15, Dr. Radhakrishnan Road,
Mylapore, Chennai - 600 004

CERTIFICATE OF CONTENT VALIDITY

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DATE:

SIGNATURE WITH SEAL

M.B.B.S, M.D.(OG),
Obstetrician & Gynaecologist
Reg. No. 34267

CERTIFICATE OF CONTENT VALIDITY

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DATE: 15.4.16

SIGNATURE WITH SEAL

CERTIFICATE OF CONTENT VALIDITY

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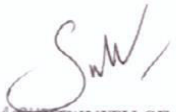
DATE: 27|11|16

SIGNATURE WITH SEAL (N), Ph.D
Mrs. IRIN PRIVE
VICE PRINCIPAL
VENKATESWARA NURSING COLLEGE
THALAMBUR
CHENNAI - 603 103

LETTER SEEKING PERMISSION FOR CONDUCTING THE STUDY

From

Ms. Divya. V,
I Year M.Sc. (Nursing),
M.A. Chidambaram College of Nursing,
Voluntary Health Services,
T.T.T.I Post, Adyar, Chennai - 600 113.

To

The Medical Director,
Pankajam Memorial Hospital,
C-3, 4th Cross Street,
Hindu Colony, Nanganallor,
Near Ranga Theatre,
Chennai-600061

Through

The Principal,
M.A. Chidambaram College of Nursing,
Voluntary Health Services,
TTTI Post, Adyar, Chennai - 600 113.

R. Sudha

Prof. Dr. (Mrs). R. SUDHA, M.Sc (N)., Ph.D.,
PRINCIPAL
M.A. Chidambaram College of Nursing
VHS Campus, Chennai - 600 113.

Respected Sir/Madam,

I am Ms.Divya.V, I Year M.Sc. (Nursing) student of M.A. Chidambaram College of Nursing, Voluntary Health Services, Adyar, Chennai- 600113.

As a part of the requirement in M.Sc. Nursing Programme as per The Tamilnadu Dr.M.G.R. Medical University specification, I have to complete a dissertation. The topic I have selected is **"A STUDY TO ASSESS THE RELATIONSHIP BETWEEN MATERNAL WELLBEING AND FETAL OUTCOME AMONG POSTNATAL MOTHERS AT SELECTED HOSPITALS IN CHENNAI".** I am interested in conducting the study in your esteemed institution.

The period of data collection for pilot study is from 13.07.2016 to 19.07.2016 and for the main study is from 01.11.2016 to 28.11.2016.

I assure you Sir /Madam that my study will not interfere with the routine functioning of the institution. Kindly grant me permission to conduct the study.

Thanking you Sir/Madam in anticipation of a favorable response.

Place: Chennai

Date:

Yours faithfully,

Divya
(Ms.Divya.V)

The candidates study will not interfere with the functioning of the hospital. The hospital has granted the study. The hospital to do

For Pankajam Memorial Hospital
Managing Director

LETTER SEEKING PERMISSION FOR CONDUCTING THE STUDY

From

Ms. Divya. V,
I Year M.Sc. (Nursing),
M.A. Chidambaram College of Nursing,
Voluntary Health Services,
T.T.T.I Post, Adyar, Chennai - 600 113.

To

The Medical Director,
CSI, Kalyani Multispeciality Hospital,
No.15, Dr.Radha Krishnan Salai,
Mylapore,
Chennai - 600004.

Through

The Principal,
M.A. Chidambaram College of Nursing,
Voluntary Health Services,
TTTI Post, Adyar, Chennai - 600 113.

R. Sudh

Prof. Dr. (Mrs). R. SUDHA, M.Sc (N)., Ph.D.,
PRINCIPAL
M.A. Chidambaram College of Nursing
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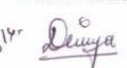
I assure you Sir /Madam that my study will not interfere with the routine functioning of the institution. Kindly grant me permission to conduct the study.

Thanking you Sir/Madam in anticipation of a favorable response.

Place: Chennai

Date: 13/07/2016

Yours faithfully,

Divya

(Ms.Divya.V)

Dr. J. JERENE JAYANTH, M.D., DCH.,
Medical Director
CSI Kalyani General Hospital
Mylapore, Chennai - 600 004.

INFORMED CONSENT FORM

I have been informed about the purposes of the study being conducted by Ms.Divya.V., M.Sc (Nursing) student of M.A.Chidambaram College of Nursing, Adyar, Chennai and I have no objection in participating in the study. I also give my full consent for the use of this data for the purpose of any presentation or publication.

Signature:

Name:

Date:

CERTIFICATE OF ENGLISH EDITING

This is to certify that Ms. Divya.V., II year M.Sc, (Nursing) student of M.A.Chidambaram College of Nursing, Adyar, Chennai, conducted a dissertation work on **"To assess the relationship between maternal wellbeing and fetal outcome among postnatal mothers at selected hospitals in Chennai",** has been edited by me for English language appropriateness.

DATE: **SIGNATURE WITH SEAL**

A STUDY TO ASSESS THE RELATIONSHIP BETWEEN MATERNAL WELLBEING AND FETAL OUTCOME AMONG POSTNATAL MOTHERS IN SELECTED HOSPITALS, CHENNAI.

PART – I
SECTION A

DEMOGRAPHIC DATA   **Sample No:**

1. Age in years

    a) <21 years

    b) 21 – 30 years

    c) 31 – 40 years

    d) >40years

2. Education status

    a) No formal education

    b) Literate

         If literate,

         i)   Primary school

         ii)   High school

         iii)   Secondary education

         iv)   Degree

3. Occupation

    a) Unemployed

    b) Employed

         If employed,

         i)   Government

         ii)   Private

         iii)   Business

         iv)   Daily wages

4. Nature of work

    a) Sedentary worker

    b) Moderate worker

    c) Heavy worker

5. Income per month
   a) < Rs.10,000
   b) Rs.10,000 – Rs.15,000
   c) Rs. 15,000 – Rs. 20,000
   d) >Rs. 20,000

6. Religion
   a) Hindu
   b) Christian
   c) Muslim

7. Residence
   a) Urban
   b) Rural

8. Type of family
   a) Nuclear family
   b) Joint family
   c) Extended family

9. Personal habits
   a) Betel chewing
   b) Smoking
   c) Alcohol consumption
   d) None

SECTION B

OBSTETRICAL HISTORY

1. Gravida
   a) Primigravida
   b) Multigravida
   c) Grand multigravida

2. Para
   a) Primipara
   b) Multipara
   c) Grand multipara

3. No of live children
   a) 1 child
   b) 2 child
   c) >3 child

4. Abortion
   a) 0
   b) 1
   c) > 2

5. Type of delivery
   a) Normal vaginal delivery
   b) Forceps delivery
   c) Vacuum delivery
   d) Cesarean section

6. Initiation of antenatal care
   a) < 12 weeks
   b) > 12 weeks

7. Vaccination (Tetanus toxoid)

   a) Vaccinated

   b) Not vaccinated

8. Iron and folic acid intake

   a) Regular

   b) Irregular

9. Maternal weight gain

   a) < 10kg

   b) 10 – 12kg

   c) >12kg

10. Height of the mother _____

11. BMI at term

   a) Normal 18.5-24.9

   b) Over weight 25-29.9

   c) Obesity greater than 30

PART- II

TOOL TO ASSESS THE MATERNAL WELLBEING OF MOTHER AMONG SELECTED SETTING

Note: If mark (YES) is score: 1 and mark (NO) is score: 0

S.NO.	ITEMS	SCORE	1 Trimester	2 Trimester	3 Trimester	MAXIMUM SCORE
	MINOR DISORDERS DURING PREGNANCY					
1.	Nausea	1				3
2.	Vomiting	1				3
3.	Leukorrhea	1				3
	HIGH RISK IN PREGNANCY					
4.	Bleeding	1				3
5.	Infection	1				3
6.	Anemia	0				0
	a) Mild (9-10gram % of hemoglobin)	1				3
	b) Moderate (7-9gram % of hemoglobin)	1				3
	c) Severe (<7gram % of hemoglobin)	1				3
7.	Pregnancy induced hypertension (PIH)	0				0
	a)Controlled (Blood pressure <140/90 mmhg without proteinuria)	1				2
	b)Uncontrolled (Blood pressure >140/90 mmhg with proteinuria)	1				2
8.	Eclampsia	0				0
	a)Controlled	1				2
	b)Uncontrolled	1				2
	Gestational diabetes mellitus (GDM)	0				0
	a)Controlled (Fasting plasma glucose <90mg and postprandial <120mg)	1				2

S.NO.	ITEMS	SCORE	1 Trimester	2 Trimester	3 Trimester	MAXIMUM SCORE
	b)Uncontrolled (Fasting plasma glucose >90mg and postprandial >120mg)	1				2
	EXISTING CONDITION COMPLICATING PREGNANCY					
10	Fever	1				3
11	Hypertension					
	a) Controlled	0				0
	b) Uncontrolled	1				3
12	Diabetes mellitus					
	a) Controlled	0				0
	b) Uncontrolled	1				3
13	Thyroid dysfunction					
	a) Controlled	0				0
	b) Uncontrolled	1				3
14	Cardiac diseases	1				3
15	Abdominal surgeries	1				3

SCORING AND INTERPRETATION

The maximum score is 54 and total score were arbitrarily classified as

Scores	Interpretation
>75%	Good health
50-75%	Fair health
<50%	Poor health

PART- III

TOOL TO ASSESS THE FETAL OUTCOME IN SELECTED SETTINGS

Note: If mark (YES) is score: 0 and mark (NO) is score: 1

Age: **Gender:**

S.NO.	ITEMS	SCORE	YES / NO	MAXIMUM SCORE
1.	Gestation age			**1**
	a) Preterm	**1**		
	b) Term	**0**		
	c) Post term	**1**		
2.	Growth pattern			**1**
	a) IUGR (Intrauterine growth restriction)	**1**		
	b) Appropriate to gestational age	**0**		
	c) Large for gestation	**1**		
3.	APGAR score at 1 minute			**1**
	a) 1-3	**1**		
	b) 4-6	**1**		
	c) 7-10	**0**		
4.	APGAR score at 5 minutes			**1**
	a) 1-3	**1**		
	b) 4-6	**1**		
	c) 7-10	**0**		
5.	Birth weight			**1**
	a) <2,500 grams	**1**		
	b) 2,500-4,000 grams	**0**		
	c) >4,000 grams	**1**		
6.	Length			**1**
	a) < 50cm	**1**		
	b) 50-52 cm	**0**		
	c) > 52 cm	**1**		
7.	Head circumference			**1**
	a) <32 cm	**1**		

S.NO.	ITEMS	SCORE	YES / NO	MAXIMUM SCORE
	b) 32-37 cm	0		
	c) >37 cm	1		
8.	Chest circumference			1
	a) <30 cm	1		
	b) 30-35 cm	0		
	c) >35 cm	1		
9.	Congenital anomalies			1
	a) Present	1		
	b) Absent	0		
10.	Reflexes	0		16

REFLEXES

Note: If mark (YES) is score: 0 and mark (NO) is score: 1

S.NO.	REFLEXES	ELICITED	NOT-ELICITED
1.	**REFLEXES OF EYE**		
	i) Blinking		
	ii) Doll's eye		
2.	**REFLEXES OF NOSE**		
	i) Sneeze		
	ii) Glabellar		
3.	**REFLEXES OF MOUTH**		
	i) Rooting		
	ii) Sucking		
	iii) Gag		
	iv) Extrusion		
	v) Cough		
4.	**REFLEXES OF EXTRIMITIES**		
	i) Grasp		
	ii) Babinski		
5.	**MASS REFLEXES**		
	i) Moro reflex		
	ii) Tonic neck reflex		
	iii) Galant reflex		
	iv) Dance or stepping reflex		
	v) Crawl		

SCORING AND INTERPRETATION

The maximum score is 25 and total score were arbitrarily classified as

Scores	Interpretation
<50%	No risk
>50%	Risk