

# Perinatal Outcomes and its Associated Risk Factors Among Hypertensive Pregnant Women in Hyderabad: A Retrospective Study



by

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Dissertation Submitted to the

**Kaloji Narayana Rao University of Health Sciences, Warangal, Telangana**  
In partial fulfilment of the requirement for the degree of

**MASTER OF SCIENCE IN NURSING**  
**IN**  
**OBSTETRICS AND GYNAECOLOGICAL NURSING**

Under the Guidance of  
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**2019**

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From  
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Date: 22-01-2019

To  
 The Medical Superintendent  
 Gandhi Hospital  
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 Hyderabad.

Subject: Request for permission to conduct research study at your esteemed hospital.

“Through Proper Channel”

Respected Sir/Madam,

I, Ms. Jennifer D'lima, 2<sup>nd</sup> year M.Sc. Nursing student of Apollo College of Nursing, Jubilee Hills, Hyderabad is intending to conduct a retrospective study on perinatal outcomes and its associated risk factors of hypertensive pregnant women in Hyderabad. Hence I request you to kindly permit me to conduct this study at your esteemed hospital in Hyderabad. I assure you that the confidentiality will be maintained and I will not collect any details pertaining to hospital.

Thanking you,

*V. Venkatesh*  
 Signature of the Principal:  
 Date: 23/1/19  
 Place: Hyderabad

*Prof. (DNM) G. Venkatesh*  
*Permit to do*  
*8/1/19*  
*24/1/19*

Yours Sincerely  
 Jennifer D'lima  
*D'lima*

**CERTIFICATE**

Certified that this is the Bonafide Work

of

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at

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**MASTER OF SCIENCE IN NURSING  
2<sup>ND</sup> YEAR  
DISSERTATION**

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2019

## CERTIFICATE

I hereby certify that the present study entitled, “Perinatal outcomes and its associated risk factors among hypertensive pregnant women in Hyderabad: A retrospective study” incorporates the results of the independent research of **Ms. D’Lima Bernadine Jennifer**, student of M.Sc. Nursing, department of Obstetrics and Gynaecological Nursing, from Apollo College of Nursing, Hyderabad, designed and carried out under our guidance and supervision.

We also certify that it has not previously formed the basis for the award of degree, diploma or associate fellowship of the **Kaloji Narayana Rao University of Health Sciences** or any other university before.

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Master of Science in Nursing  
(Obstetrics and Gynaecological Nursing)  
at  
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## DECLARATION

I, **D'LIMA JENNIFER BERNADINE**, hereby declare that this dissertation entitled “**Perinatal outcomes and its associated risk factors among hypertensive pregnant women in Hyderabad: A retrospective study**” has been prepared by me. It is the outcome of the original research work undertaken and carried out by me under the guidance and direct supervision of Dr. T. Vasundhara Tulasi, Principal cum Professor, Apollo College of Nursing, Hyderabad.

I also declare that the material of this thesis is not found anywhere for the award of any degree, diploma or associate fellowships, previously of this university or any other university.

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*Ms. Jennifer D'Lima*

**ABSTRACT**

Hypertensive disorders of pregnancy may impact the mother and fetus. It is understood that care guided by findings generated from rigorous scientific method for pregnant women and fetus consists of gold standard in health care. A Cross sectional Descriptive Retrospective study was undertaken to determine the perinatal outcomes and its associated risk factors among 135 hypertensive pregnant women admitted in Modern Government Maternity Hospital and Gandhi Hospital, Hyderabad, Telangana, India through purposive sampling. The data was collected and documented from the hypertensive pregnant women retrospectively through a semi-structured interview schedule and record review over a period of one month. Of the total participants, 52.6% were primigravida and 70% had more than four antenatal visits. The mean age was 24.57 years. The mean age at marriage and menarche was 20.71 years and 11.73 years respectively. Ninety five percentages underwent caesarean section. The adverse perinatal outcome was seen in 44% and normal perinatal outcome in 56%. Women with hypertensive disorder in pregnancy were 47%, 37%, 13%, 1.5%, 1.5% with preeclampsia, pregnancy induced hypertension, eclampsia, chronic hypertension and preeclampsia superimposed on chronic hypertension. The adverse perinatal outcomes were prematurity (39%), low birth weight( 33%), admitted to NICU (32%), APGAR score less than 7 at 1 min( 24%), and at 5 min (4%), neonatal respiratory distress and meconium aspiration syndrome(5% each), resuscitation.(1.5%) IUGR (9%), intrauterine death (4%) and immediate/early neonatal death (2%). About 12% women had a history of hypertension in the previous pregnancy. Around 44% of the women had a family history of hypertension. The lifestyle factors in majority were excessive intake of salt on table (39%), processed foods (68%) and exposed to stress during pregnancy (59%). None of the samples had habits of alcoholism, smoking, exercise and tobacco chewing. The midwife's role is fundamental to improve the quality of care and to optimize both maternal and perinatal outcomes associated these conditions.

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<b>%</b>	<b>Percentage</b>
<b><i>f</i></b>	<b>Frequency</b>
<b><i>n</i></b>	<b>Sample size</b>
<b>WHO</b>	<b>World Health Organization</b>
<b>NICU</b>	<b>Neonatal Intensive care unit</b>
<b>IUGR</b>	<b>Intrauterine Growth Retardation</b>
<b>NMR</b>	<b>Neonatal Mortality Rate</b>
<b>IMR</b>	<b>Infant Mortality Rate</b>

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## CHAPTER ONE INTRODUCTION

*“Everyone is different. Everyone’s body is different. Everyone’s birth experience is different.”*

-Liv Tyler

Pregnancy is a beautiful phase because it gives a person the joy and fulfilment which comes from bringing a new life into the world. Pregnancy is not just a physical metamorphosis of the female body; it is also an emotional change that leaves a lasting impact on one’s life and alters their perspective entirely.<sup>1</sup>

About 2, 87,000 women died in 2010 of complications during pregnancy or childbirth. Millennium Development Goal 5 (MDG 5) states to improve maternal health, set the targets of reducing maternal mortality by 75% and achieving universal access to reproductive health by 2015.<sup>1</sup>

The major direct causes of maternal morbidity and mortality include haemorrhage, infection, high blood pressure, unsafe abortion, and obstructed labour. These complications may arise unexpectedly. Investing in health systems - especially in training midwives and in making emergency obstetric care available round-the-clock is key to reducing maternal mortality.<sup>1</sup>

In 2015 there were 2.6 million stillbirths globally, with more than 7178 deaths a day. The majority of these deaths occurred in developing countries. Ninety-eight percent occurred in low- and middle-income countries. About half of all stillbirths occur in the intrapartum period, representing the greatest time of risk. Estimated proportion of stillbirths that are intrapartum varies from 10% in developed regions to 59% in south Asia.<sup>1</sup>

Complications of pregnancy are health problems that occur during pregnancy. They can involve the mother's health, the baby's health, or both. Some women have health problems before they become pregnant that could lead to complications. Other problems arise during the pregnancy. Whether a complication is common or rare, there are ways to manage problems that come up during pregnancy.<sup>2</sup>

In 2016, complications of pregnancy, childbirth, and the puerperium resulted globally in 230,600 deaths, down from 377,000 deaths in 1990. The most common causes of maternal mortality are maternal bleeding, maternal sepsis and other infections, hypertensive diseases of pregnancy, obstructed labour, and pregnancy with abortive outcome, which includes miscarriage, ectopic pregnancy, and elective abortion.<sup>3</sup> women with hypertensive disorders of pregnancy are all at increased risk of complications antenatally and in puerperium.

Hypertensive disorders of pregnancy occur in about 10% of all pregnant women around the world. Preeclampsia affects 3–5% of pregnancies. Along with preeclampsia, other diseases which are included in the group of hypertensive disorders of pregnancy are eclampsia, gestational hypertension and chronic hypertension.<sup>4,5</sup>

In Asia and Africa, nearly one tenth of all maternal deaths are associated with hypertensive disorders of pregnancy.<sup>6</sup>

In India 2016, the incidence of preeclampsia is reported to be 8-10% among the pregnant women.<sup>7</sup> Perinatal indicates pertaining to the period immediately before and after birth. The perinatal period commences at 28 completed weeks of gestation and ends seven completed days after birth. Perinatal mortality refers to the number of stillbirths and deaths in the first week of life (early neonatal mortality). In 1990, India’s neonatal mortality rate—infant deaths within 28 days of birth per 1,000 births—was 52, while the global average was 32. India’s rate reduced nearly 50% to 28 in 2013, but is still higher than the global average (17 in 2016). The report projects that the global neonatal mortality rate will fall to 11 in 2030 or by another 50% to 9 if efforts improve. In 2017, neonatal mortality rate for India was 24 deaths per thousand live births. NMR (2013) for Andhra Pradesh including Telangana was 25 per 1000 births. In Telangana, IMR is 31 per 1000 live births in 2016.<sup>8</sup>

Hypertension is the most common medical problem encountered in pregnancy and remains an important cause of fetal and maternal morbidity and mortality. Approximately up to a quarter of all antenatal admissions will be related to hypertension. In developed countries, 16.1% of maternal deaths are attributed to hypertensive diseases and they continue to be a major contributor to global maternal mortality. Hypertension complicating pregnancy is a major cause of preterm birth and perinatal death of the fetus.<sup>9</sup>

Women aged more than 40 years had twice the risk of developing preeclampsia, whether they were primiparous or multiparous.<sup>10</sup> Nulliparity tripled the risk of preeclampsia women who had preeclampsia in the first pregnancy had seven times more risk of developing preeclampsia.<sup>11</sup> A family history of pre-eclampsia nearly triples the risk of pre-eclampsia.<sup>12</sup> A triplet pregnancy nearly triples the risk of pre-eclampsia compared with a twin pregnancy.<sup>13</sup> The likelihood of pre-eclampsia nearly quadruples if diabetes is present before pregnancy.<sup>14</sup> Women with more than 59 months between pregnancies had significantly

increased risks of pre-eclampsia compared with women with intervals of 18-23 months.<sup>15</sup> Women with a body mass index > 35 before pregnancy had over four times the risk of pre-eclampsia compared with women with a pre-pregnancy body mass index of 19-27.<sup>16</sup>

Women who are normotensive entering pregnancy typically experience a decrease in blood pressure toward the end of the first trimester. This decrease is thought to be secondary to the marked vasodilation that occurs despite the increase in plasma volume that comes with pregnancy. Blood pressure usually falls by 5 to 10 mm Hg and remains at this lower level throughout pregnancy until the third trimester, when it rises to return to pre-pregnancy values.<sup>17</sup>

High blood pressure, also called hypertension, occurs when arteries carrying blood from the heart to the body organs are narrowed. This causes pressure to increase in the arteries. In pregnancy, this can make it hard for blood to reach the placenta, which provides nutrients and oxygen to the fetus. Reduced blood flow can slow the growth of the fetus and place the mother at greater risk of preterm labour and preeclampsia.<sup>18, 19</sup>

Multiple maternal, fetal and placental factors are involved in placental hypoperfusion, which leads to maternal hypertension and other consequences. Abnormal placental (or trophoblast) implantation or development in the uterus leads to hypoperfusion of placenta and fetus. Arterial hypertension with systemic vasoconstriction causes placental hypoperfusion that leads to release of vasoactive substances causing increased maternal blood pressure to ensure sufficient blood supply of the fetus. Systemic endothelial dysfunction causes placental hypoperfusion leading to increase placental release of factors causing endothelial lesions that lead to microthrombosis. The consequences of vasoconstriction and microthrombosis are organ ischemia and damage. In preeclampsia there is multiorgan involvement (primarily renal). In eclampsia there is predominantly cerebral involvement. In Haemolysis Elevated Liver Enzymes and Low Platelet count occurring in pregnancy [HELLP] syndrome there is severe systematic inflammation with multiorgan haemorrhage and necrosis and so the chronic hypoperfusion of the placenta leads to insufficiency of the uteroplacental unit and fetal growth restriction.<sup>20</sup>

Immune factors, such as auto-antibodies, oxidative stress and natural killer (NK)-cell abnormalities, cause placental dysfunction and impaired placental perfusion. The latter acts as a stimulus of placental release of anti-angiogenic and inflammatory mediators that eventually cause endothelial dysfunction and organ damage.<sup>21</sup> Increased numbers of activated monocytes and macrophages have been described in the endometrium of women with preeclampsia.<sup>22</sup> A misbalance between antioxidant and pre-oxidant factors and increased production of reactive oxygen species results in vascular endothelium dysfunction in women with preeclampsia.<sup>23</sup> One study showed that women with early-onset severe preeclampsia have increased natural killer cell function related to cytokine production.<sup>24</sup>

Chronic hypertension is high blood pressure that precedes pregnancy, is diagnosed within the first 20 weeks of pregnancy, or does not resolve by the 12-week postpartum checkups. Two categories of severity are recognized: mild (up to 179 mm Hg systolic and 109 mm Hg diastolic) and severe ( $\geq 180$  mm Hg systolic or 110 mm Hg diastolic). Chronic hypertension can cause superimposed preeclampsia, fetal growth restriction, placental abruption, preterm birth, postpartum haemorrhage and caesarean section.<sup>25</sup> Other adverse maternal outcomes include end organ damage, increased risk of abruption placenta, and increased risk of development of diabetes mellitus. Women are more likely to be hospitalized for hypertension.

Gestational hypertension or pregnancy-induced hypertension occurs with onset after 20 weeks gestation. It can be defined as a systolic blood pressure  $\geq 140$  mm Hg or diastolic blood pressure  $\geq 90$  mm Hg on 2 separate measurements at least 4 hours apart. There is no excess protein in the urine or other signs of organ damage.<sup>26</sup> Normalization of the blood pressure occurs in the post partum period within 10 days. Gestational hypertension has little effect on maternal and perinatal adverse outcomes if it develops at or beyond 37 weeks of gestation.

Preeclampsia is a condition that typically starts after the 20th week of pregnancy and is related to increased blood pressure and protein in the mother's urine (as a result of kidney problems).<sup>27</sup> The symptoms include cerebral/visual symptoms, severe persistent right upper quadrant or epigastric pain and pulmonary edema. Preeclampsia can be divided into non severe preeclampsia and severe preeclampsia.

Non severe preeclampsia is diagnosed when the blood pressure values state the systolic blood pressure above 140 mm Hg but lesser than 160 mm Hg and the diastolic blood pressure above 90 mm Hg but lesser than 110 mm Hg.<sup>7</sup> Other symptoms include slight swelling over the ankle which persists on rising from the bed in the morning or tightness of the ring on the finger due to preeclampsia. Gradually the swelling may extend to the face, abdominal wall, vulva and even the whole body.<sup>28</sup>

Severe preeclampsia is diagnosed when the blood pressure values state the Systolic blood pressure is greater than 160 mm Hg or diastolic blood pressure is greater /equal to 110 mm Hg on two occasions atleast 4 hours apart.<sup>7</sup> Other symptoms include headache either located over the occipital or frontal region, disturbed sleep, diminished urinary output (output is less than 400 ml in 24 hours, epigastric pain, eye symptoms that include blurring of vision, scotomato, dimness in vision or at times complete

blindness. The eye symptoms are due to spasm of retinal vessels, occipital lobe damage or retinal detachment. Vision is usually regained within 4-6 weeks following delivery.<sup>28</sup>

Superimposed preeclampsia is defined as an exacerbation of hypertension that was previously well controlled requiring escalation of blood pressure and/ or new onset of proteinuria or sudden increase in pre existing proteinuria that has to be substantial and/or sustained. Women can develop with end organ damage and adverse neonatal outcomes.

Preeclampsia affects the placenta, and it can affect the mother's kidney, liver, and brain. When preeclampsia causes seizures, the condition is known as eclampsia.<sup>27</sup> There is increased association of preeclampsia with elderly and young primigravida, family history of preeclampsia, eclampsia or hypertension, poor and under privileged sector ( more due to antenatal neglect), pregnancy complications such as hydatidiform mole, multiple pregnancy, polyhydromnios, Rh Incompatibility, medical disorders such as hypertension, nephritis, diabetes, hereditary (single gene recessive gene disorder).

Eclampsia is a severe form of preeclampsia with convulsive seizures and/or coma.<sup>29</sup> Eclampsia can occur before, during pregnancy or in the post partum period. Other causes of seizure during pregnancy can include a bleeding arteriovenous malformation, idiopathic seizure disorder or ruptured aneurysm.

It must be noted that the WHO recommends the use of care protocols, as well as the prevention and treatment of these conditions with magnesium sulphate. The use of the sulphate associated with the quality of care reduces by 50% the risk of mortality from pre-eclampsia or eclampsia. Superimposed preeclampsia occurs when preeclampsia occurs in a patient with chronic hypertension. The causes for perinatal mortality due to eclampsia are prematurity, intrauterine asphyxia, effects of the drugs used to control convulsions and trauma due to operative delivery.<sup>30</sup>

The maternal complications that can arise due to eclampsia are pulmonary edema, heart failure, anuria, hyperpyrexia and psychosis.

High blood pressure during pregnancy can place extra stress on your heart and kidneys and can increase your risk of heart disease, kidney disease, and stroke. Other possible complications include fetal growth restriction—High blood pressure can decrease the flow of nutrients to the baby through the placenta. The baby may have growth problems as a result. Preeclampsia—this condition is more likely to occur in women with chronic high blood pressure than in women with normal blood pressure. Preterm delivery is indicated if the placenta is not providing enough nutrients and oxygen to the baby, and so it may be decided that early delivery is better for the baby than allowing the pregnancy to continue. Placental abruption is a condition in which the placenta prematurely detaches from the wall of the uterus and is a medical emergency that requires immediate treatment. Women with hypertension are more likely to have a caesarean delivery than women with normal blood pressure. A caesarean delivery carries risks of infection, injury to internal organs, and bleeding.<sup>31</sup>

Women who experience hypertension in a first pregnancy are at increased risk in a subsequent pregnancy.<sup>32,33</sup> The earlier the onset of hypertension in the first pregnancy, the greater the risk of recurrence and the type of hypertensive disorder influences recurrence.<sup>33</sup>

In this study the hypertensive disorders in pregnancy were classified as preeclampsia, pregnancy induced hypertension, eclampsia, chronic hypertension and preeclampsia superimposed on chronic hypertension. Fetal and neonatal outcomes were measured in terms of prevalence of stillbirth, preterm birth, intrauterine death, neonatal respiratory distress, APGAR score less than 7 at 1 and 5 minutes, intrauterine growth restriction, low birth weight, required resuscitation, admission to NICU, immediate or early neonatal death, abortion, meconium aspiration syndrome.

Given the high mortality rate caused by these conditions, as well as the high rate of unfavourable outcomes, it is essential to provide quality of nursing care based on the best scientific evidence. It is understood that care guided by findings generated from rigorous scientific method consists of gold standard in health care. This approach can improve outcomes for patients, provide higher quality of care, minimize costs due to the reduction of morbidity and mortality and promote safety and reliability standards to health organizations.

Moving forward, there is an urgent need to improve the quality of care provided to women with hypertensive disorders in pregnancy in the country to optimize both maternal and perinatal outcomes associated these conditions.

#### ➤ *Need for the study*

Hypertensive disorders of pregnancy may impact the mother and fetus. A woman may develop severe hypertension with risks of a stroke if this is unrecognized and untreated. The confidential enquiries into maternal death has repeatedly emphasised the need for prompt referral and treatment if a woman's systolic blood pressure is more than 150 mm Hg, although the absolute risk of stroke is still low. A very small proportion of women may have an eclamptic fit without obvious hypertension or

proteinuria preceding it. Women with pre-eclampsia are also at risk of placental abruption and so any reports of abdominal pain, vaginal bleeding or reduced fetal movements should lead to immediate referral to a hospital unit.<sup>34</sup>

Maternal mortality is unacceptably high. About 830 women die from pregnancy or childbirth related complications around the world every day. It was estimated that in 2015, roughly 30,300 women died during and following pregnancy and childbirth. Almost all of these deaths occurred in low-resource settings, and most could have been prevented.<sup>35</sup>

Countries have now united behind a new target to reduce maternal mortality even further. One target under Sustainable Development Goal 3 is to reduce the global maternal mortality ratio to less than 70 per 1,00,000 births, with no country having a maternal mortality rate of more than twice the global average. The maternal mortality ratio in developing countries in 2015 is 239 per 1,00,000 live births versus 12 per 100,000 live births in developed countries.<sup>36</sup>

Children face the highest risk of dying in their first month of life at an average global rate of 18 deaths per 1,000 live births in 2017. Globally, 2.5 million children died in the first month of life in 2017 alone – approximately 7,000 neonatal deaths every day – most of which occurred in the first week, with about 1 million dying on the first day and close to 1 million dying within the next six days.<sup>8</sup>

Globally, the neonatal mortality rate fell from 36 (35, 38) deaths per 1,000 live births in 1990 to 19 (18, 21) in 2015, and the number of neonatal deaths declined from 5.1 (4.9, 5.3) million to 2.7 (2.5, 2.9) million. However, the decline in neonatal mortality from 1990 to 2015 has been slower than that of post-neonatal under-five mortality: 47 percent compared with 58 percent globally.<sup>8</sup>

Women die as a result of complications during and following pregnancy and childbirth. Most of these complications develop during pregnancy and most are preventable or treatable. Other complications may exist before pregnancy but are worsened during pregnancy, especially if not managed as part of the woman's care. The major complications that account for nearly 75% of all maternal deaths are: severe bleeding (mostly bleeding after childbirth), infections (usually after childbirth), high blood pressure during pregnancy (pre-eclampsia and eclampsia), complications from delivery and unsafe abortion.<sup>37</sup>

Improving maternal health is one of WHO's key priorities. WHO works to contribute to the reduction of maternal mortality by increasing research evidence, providing evidence-based clinical and programmatic guidance, setting global standards, and providing technical support to Member States.

In addition, WHO advocates for more affordable and effective treatments, designs training materials and guidelines for health workers, and supports countries to implement policies and programmes and monitor progress.<sup>38</sup> A single antenatal visit does not give information about the completeness of the care and so as suggested by WHO the mother should undergo at least minimum 4 visits during her pregnancy period.

Antenatal care is a careful, systematic assessment and follows up of pregnant women that include education, counselling, screening and treatment to assure the best possible health of the mother and her fetus. An antenatal visit should include the screening for conditions that are likely to increase adverse outcomes, to provide therapeutic interventions and educating pregnant women about planning a safe birth, emergencies during pregnancy and how they can deal with it. It is also known that educated women have better pregnancy outcomes compared with uneducated women and that education during antenatal period can reduce pregnancy and delivery complications.

The antenatal check in pregnancy is considered important to ensure that the visits are arranged and a good quality of information is delivered to the mother to improve her outcomes. It is the nursing personnel's duty to provide information to the mothers regarding healthy lifestyle and signs and symptoms that can help the mother to recognize the complications that can arise during pregnancy. She should also provide information on postpartum care, newborn care, and breastfeeding, signs of problems and appropriate action to take.<sup>37</sup>

All women need access to antenatal care in pregnancy, skilled care during childbirth, and care and support in the weeks after childbirth.<sup>38</sup> The midwife's role in the assessment and diagnosing hypertension is fundamental to the early detection and subsequent referral that will allow treatment to be implemented rapidly, potentially minimising the severity of the condition. The midwife is in a prime position to identify those women who are more likely to develop gestational hypertension, and respond to detection of problems.<sup>38</sup>

Nurses are the first professionals to have contact with pregnant women in obstetric emergency, so it is essential that nursing care is guided by current scientific evidence. The collection of detailed data, careful physical examination and attention to blood pressure values and other preeclampsia signals; early detection of cases; the collection and monitoring of relevant laboratory tests, especially 24 hours proteinuria and foetal assessment; promoting and encouraging the monitoring of prenatal consultations; the



correct and rapid interventions, and call for help, requesting evaluation of anaesthetist, administering oxygen, establishing calibre venous access and starting magnesium sulphate therapy; health education throughout the pregnancy and childbirth and hospital discharge are actions that if carried out, ensure excellence of care and the reduction of maternal and fetal morbidity and mortality in these patients.

There is an increase need to target women about the importance of follow-ups for the prevention of late complications of hypertensive disorders, such as long-term monitoring of clinical data and adoption of healthy living habits. Creating and following care protocols guided by scientific evidence in daily clinical nursing practice can be helpful to guide the decision-making process and ensure the provision of quality and safe care.

The midwife's role in the assessment and diagnosing hypertension is fundamental to the early detection and subsequent referral that will allow treatment to be implemented rapidly, potentially minimising the severity of the condition. The midwife is in a prime position to identify those women who are more likely to develop gestational hypertension, and respond to detection of problems.<sup>39</sup>

Women with hypertension and its complication (such as pre-eclampsia) may experience psychological stress and disruption of family life due to the need for extra hospital visits and potentially long stays as an inpatient. Community midwives can provide valuable support during pregnancy and after the birth for women at this time.<sup>38</sup>

It is noteworthy, therefore, the importance of trained staff, able to recognize the signs and symptoms presented by the woman, to exclude differential diagnoses and then establish and implement the correct and necessary treatment in the setting of hypertensive disorders. The competence of the staff goes beyond the knowledge base; it is a set of skills and care that make effective work.

The community midwife has a pivotal role to play in this period of transition to motherhood. It's a time of emotional change and can be particularly difficult for women whose babies spend long periods in a neonatal unit with subsequent separation. Furthermore, new mothers with pregnancy induced hypertension may still require medication. Regular monitoring of blood pressure should continue and liaison with the general practitioner is useful to ensure that the mother is on the right dose of antihypertensive medication.<sup>38</sup>

The main objective of the study is to determine the perinatal outcomes of hypertensive disorders in pregnancy among pregnant mother obtaining services at selected maternity hospitals in Hyderabad. The possible risk factors confirmed in this study may be useful for the development of early diagnosis and appropriate treatment of hypertensive pregnant women. The findings of the study represent an evidence for health care providers and policy makers in devising more appropriate interventions to improve the maternal and perinatal health among pregnant women with hypertensive disorders.

Hence, the nurse midwife felt a need in finding the perinatal outcomes of the mother with a hypertensive disorder, so that the risk factors associated with the adverse outcomes could be found out and adequate health training could be given to the mother.

➤ *Statement of the problem*

“Perinatal outcomes and its associated risk factors among hypertensive pregnant women in Hyderabad: A retrospective study”

➤ *Objectives of the study*

- To determine the perinatal outcomes among hypertensive pregnant women.
- To assess associated risk factors for perinatal outcomes among hypertensive pregnant women.
- To develop instructional booklet on understanding and managing hypertension during pregnancy.

➤ *Operational Definition*

• *Perinatal outcomes:*

In this study it refers to women having hypertensive disorder with a normal or an adverse perinatal outcome (i.e. stillbirth, preterm birth, immediate /early neonatal death, intrauterine death, low birth weight, neonatal respiratory distress/asphyxia, low APGAR score, required resuscitation, admission to NICU, meconium aspiration syndrome, intrauterine growth retardation) after 28 weeks of gestation to within 7 days of delivery.

• *Associated risk factors:*

In this study it refers to the associated risk factors related to the adverse perinatal outcomes that include previous obstetrical history, previous history of hypertension, antenatal checkups, family history and lifestyle related risk factors that include

excessive intake of salt and processed foods, alcohol intake, smoking habits, chewing tobacco, exposure to stress and adaptation of mind relaxation techniques at home.

- *Hypertensive pregnant women:*  
In this study it refers to women who delivered the baby with the history of hypertensive disorder that includes
- *Preeclampsia:*  
Development of hypertension and proteinuria after 20 weeks of gestation.
- ✓ *Non severe preeclampsia:*  
Systolic blood pressure is above 140 mm Hg but lesser than 160 mm Hg. Diastolic blood pressure is above 90 mm Hg but lesser than 110 mm Hg.
- ✓ *Severe preeclampsia:*  
Systolic blood pressure is greater than 160 mm Hg or diastolic blood pressure is greater /equal to 110 mm Hg on two occasion's at least 4 hours apart.
- *Eclampsia:*  
It is the development of convulsions in a pre-existing pre-eclampsia or it may appear unexpectedly in a patient with minimally elevated blood pressure and no proteinuria.
- *Gestational hypertension:*  
The new onset of hypertension after 20 weeks of gestation with elevated blood pressure (systolic  $\geq$  140 or diastolic  $\geq$  90 mm Hg).
- *Chronic Hypertension:*  
Blood pressure exceeding 140/90 mm Hg before pregnancy or before 20 weeks' gestation.
- *Pre eclampsia superimposed on chronic hypertension:*  
Chronic hypertensive women with new onset of proteinuria but no proteinuria before 20 weeks of gestation.

➤ *Assumptions*

For the present study, it is assumed that:

- The hypertensive pregnant women would experience an adverse perinatal outcome.
- The hypertensive pregnant women would experience an adverse maternal outcome.
- The researcher would be able to collect accurate data about associated risk factors from hypertensive pregnant women retrospectively.

➤ *Delimitations*

The present study is delimited to:

- Women who are with or without the control of hypertensive drugs.
- Women who are currently admitted for delivery at selected hospitals.
- Women admitted in postnatal ward after delivery up to 7 days.
- The data on perinatal outcomes is delimited to antenatal period after 28 weeks of gestation, intranatal period, and within 7 days after delivery.

➤ *Conceptual framework*

A conceptual framework is defined as a network or a "plane" of linked concepts. Conceptual framework analysis offers a procedure of theorization for building conceptual frameworks based on grounded theory method.<sup>39</sup>

Conceptual framework is like the fundamental support of a house. It provides a rationale for prediction about relationship among variable in research study. The conceptual framework deals with the interrelated concepts that are assessable fighter in some rational scheme by virtue of their relevance to a common them.<sup>39</sup>

Conceptual framework for a particular study is the logical structure that enables the researchers' to link the findings to nursing body of knowledge. It is developed from the existing theory of interest and proposing relationship among them the model gives direction for planning research design data collection and interpretation of findings.<sup>39</sup>

The theory incorporated in this study is Roy Adaptation Model

Major Concepts of Roy's Adaptation Model:

The conceptual framework related to the study based on Sister Calista Roy's Adaptation model. The main concepts of this theoretical framework are human beings, stimuli, adaptation models and nursing. In the present study modified Roy's adaptation model. According to Roy's theory of adaptation human being is an adaptive system, which is in constant interaction with the changing environment. So, a human being is continuously attempting himself. The adaptive system has input (stimuli), process, and output in terms of health.

➤ *Input: (Stimuli)*

The stimuli is been the exposure to internal and external factors as focal stimuli, the contextual stimuli is the present in the situation. The residual stimuli effect is unclear but effect the current situation.

In the present study:

FOCAL stimuli constitutes in the way below mentioned:

- *Internal Environment:*  
Age, Height, Gravida of the hypertensive pregnant women.
- *External Environment:*  
Age at menarche, Age at marriage, Religion, Educational status, Employment status of the hypertensive pregnant women

➤ *Processes:*

The modal stresses on two sub-systems that is the Cognator and the Regulator.

- *Regulator:*

The regulator mechanism works primarily through autonomic nervous system and includes endocrine, neural, and perception pathways and promotes adaptive process.

In the present study it includes previous history of hypertension, previous obstetrical history, antenatal visits, Family history, and Lifestyle factors.

- *Cognator:*

It is a major coping process involving four cognitive emotional channels i.e. perceptual and informational processing. The Cognator mechanism includes emotions, perceptual/ information processing, learning, and judgement.

The present study has focused on perceptual and informational processing in the form of previous knowledge about hypertension from various sources.

➤ *Effectors:*

Initiate the adaptation process to maintain equilibrium. The hypertensive pregnant women's health is being affected mainly due to the physiological component.

- *Physiological mode:*

Behaviour is a manifestation due to physiological activity of the cells, tissues, organs of the body.

In this study it includes the current diagnosis of hypertension in the pregnant women.

The diagnosis includes pre eclampsia, eclampsia, pregnancy induced hypertension, chronic hypertension, and preeclampsia superimposed on chronic hypertension

- *The Self-Concept Mode:*

This consist of control over one's life [not included in the study]

- *The interdependence mode:*

This consists of nurturing love and affection, support system like family, friends and relatives which compromises social interaction, role position. [not included in the study]

- *The Role Function Mode:*

Which consists of role function performance to take care of the child [not included in the study]

➤ *Output:*

Output of the system means behaviour response of the individual and that serve as feedback. It can be both internal and external adaptation. Behaviour response may be adaptive response or ineffective response.

• *In the Present Study:*

• *Adaptive:*

Normal Perinatal outcomes and Normal Maternal outcomes.

• *Maladaptive:*

Adverse Perinatal outcomes, Preterm birth, IUD. Neonatal distress, APGAR score less than 7 at 1 and 5 minute, Low birth weight, Required resuscitation, Admission to NICU, Immediate/ early neonatal death, Meconium aspiration syndrome, Intrauterine growth retardation

✓ Adverse maternal outcomes: In the present study it is observed to note the adverse maternal outcomes which were postpartum haemorrhage and vulval edema.

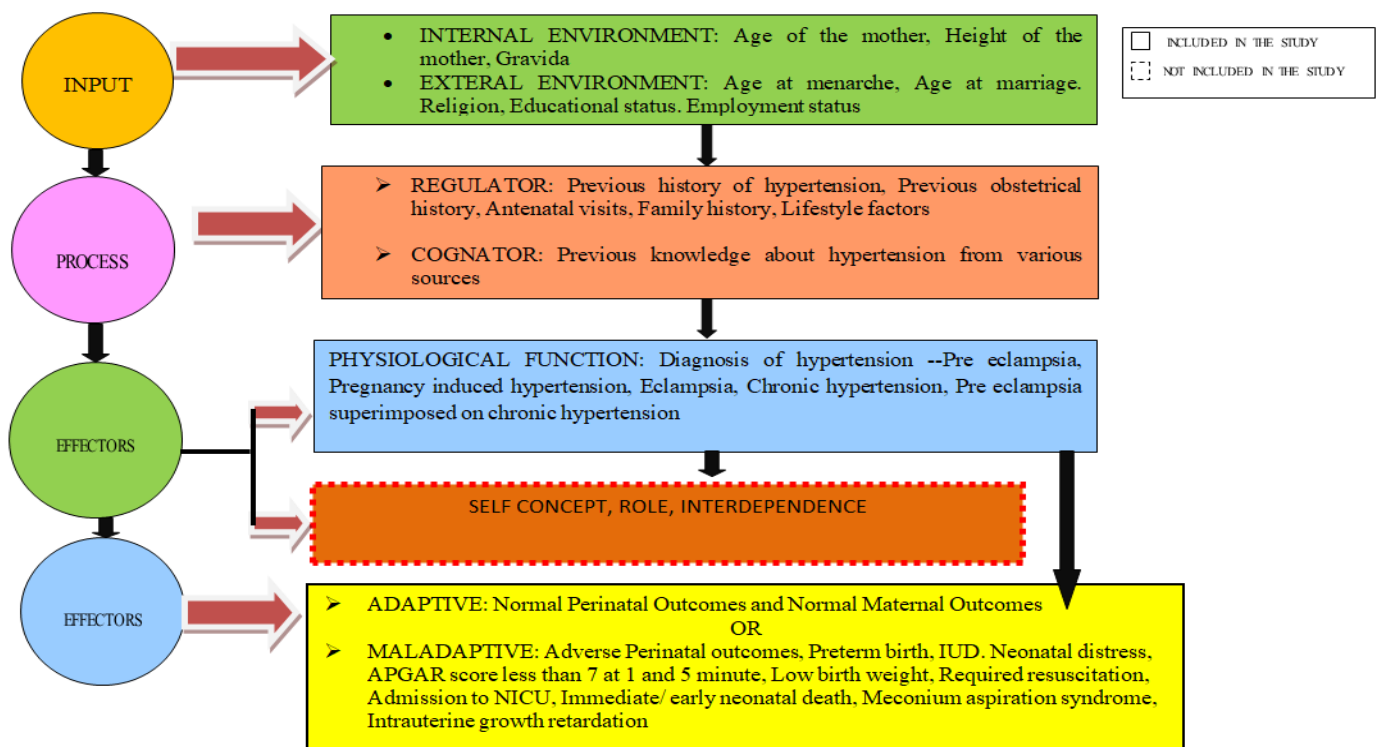


Fig 1 Conceptual Framework based on Roy's Adaptation Model

## CHAPTER TWO

### REVIEW OF LITERATURE

Review of literature is an important step in development of any research project. It helps the investigator to analyse what is known about the topic and to describe methods of inquiry used in earlier work including their success and shortcoming. It gives a broad understanding of the problem.<sup>39</sup>

In the present study, the reviewed articles/literature is categorized under sections:

- A. *Section-I*: Deals with studies related to perinatal outcomes among hypertensive pregnant women.
- B. *Section –II*: Deals with studies related to risk factors associated with hypertensive disorders in pregnant women

➤ *Section I Studies Related To Perinatal Outcomes Among Hypertensive Pregnant Women.*

- *Netsanet Abera Asseffa and Birhanu Wondimeneh (2019)* conducted a retrospective cross-sectional study from 1<sup>st</sup> January 2014-31<sup>st</sup> December 2016 in Wolaita Sodo Teaching and Referral Hospital among 168 hypertensive mothers to know the perinatal outcomes and factors associated with unfavourable perinatal outcomes among women with hypertensive disorders in pregnancy. Of the total participants, 49.7% were primigravida and 87.6% had at least one antenatal contact. The proportion of preterm delivery was 28.1% whereas low birth weight was 9.8%. The majority of mothers had Spontaneous Vaginal Delivery. Regarding maternal complications, it was recorded in 45.1% of women with hypertensive disorder in pregnancy; 19.6%, 9.2%, 8.5%, 5.9%, 1.3%, and 0.7% were eclampsia, Hemolysis elevated liver enzymes syndrome, Acute Kidney Injury, Postpartum Haemorrhage, Disseminated Intravascular Coagulation, and pulmonary edema respectively. Of the total perinatal death, 64.7% were preterm and 35.3% had birth weight of less than 2.5kg. Concerning the type of hypertensive disorder in pregnancy and complications developed, 84.5% of those with Acute Kidney Injury complications were diagnosed with severe preeclampsia. On the other hand, the mean length of postpartum hospital stay was 2.89 days. Referral, diastolic blood pressure, antenatal care use, fetal weight at birth, maternal complication and maternal outcome were found to be associated with unfavourable perinatal outcomes.<sup>4</sup>
- *Kwame Adu-Bonsaffoh, Michael Y, Samuel A, Joseph D (2017)* conducted a cross sectional study at the Maternity unit of KBTH in Accra between 1st January and 28th February 2013 to analyze the perinatal outcomes of 368 hypertensive mothers. The mean gestational age at delivery was 37.4 weeks. Meconium staining of the liquor occurred in 64 women (17.4%) with the highest (27 women, 19.3%) and lowest (3 women, 13.0%) frequencies occurring in the preeclamptic and uncomplicated chronic hypertensive groups respectively. Caesarean birth occurred in 168 (45.7%) hypertensive mothers. Neonates who had respiratory distress or asphyxia were of 15.2%. The need for ventilator support occurred in 14 (3.8%) neonates with the highest requirement occurring in the babies of pre-eclamptic mothers. The frequency of low birth weight (LBW) was 24.7% which was highest in the pre-eclamptic group. On the other hand, macrosomia occurred in 7.9% of the babies which was most frequent in chronic hypertension. Preterm delivery also occurred in 21.7% of the babies. The occurrence of low birth weight, admission to NICU and low APGAR score after 1 minute of delivery remained significantly higher in preeclampsia compared the other hypertensive disorder in pregnancy after adjusting for maternal age, parity, number of antenatal visits, gestational age at delivery and the mode of delivery. There was a perinatal mortality rate of 106 per 1000 births among women with hypertensive disorders in pregnancy. The researcher recommends a regular goal-oriented clinical audit into perinatal morbidity and mortality associated with hypertensive disorder in pregnancy and a multidisciplinary approach to the management of these disorders in the hospital to improve the clinical outcomes of women with maternal hypertension.<sup>40</sup>
- *Charu Sharma, Smriti Gupta, Mamta Tyagi, Poonam Mani, Jasneet Dhingra, Renu Rana (2017)* conducted a 3 years retrospective study in a tertiary care centre of Northern India from July 2011 to June 2014 to determine the maternal and perinatal outcomes of 207 hospitalized pregnant cases with hypertension. The researcher reported that out of 2,989 deliveries the women who presented with hypertensive disorders in pregnancy were 6.92% (n=207). Of these 50.2% were pre eclampsia, 35.7% eclampsia, 12.5% were gestational hypertension and rest were chronic hypertension. The mean age of women was 25.42 ±4.64 years. About 53.1% were multigravida mothers and 54.10% of the mothers had a normal delivery. About 13.76% were stillbirths. Prematurity was seen in 62.8% babies. NICU admission was observed in 41.2% babies and of these 15 required ventilator support. There were seven early neonatal deaths. On comparison it was found that poor neonatal outcome in terms of low APGAR, intrauterine growth retardation, low birth weight, higher NICU admissions and need for ventilator for baby was much higher in the women with eclampsia and severe pre-eclampsia. Co-morbid conditions like Gestational Diabetes Mellitus were seen in 1.4%, twin pregnancy in 5.79% and obesity in 7.24% cases. There were 2 maternal deaths and 7 neonatal deaths. Maternal complications like acute renal failure, congestive heart failure, acute respiratory distress syndrome & disseminated intravascular coagulation were seen more commonly in severe pre-eclampsia group. Hence it was concluded that a substantial burden of maternal and perinatal morbidity and mortality is associated with hypertensive disorders of pregnancy.<sup>41</sup>

- *Vasavi Kolluru, Ramya Y. Harikaa and Rajesh Kaul (2016)* conducted a one year study in Kamineni Institute of Medical Sciences among 234 mothers diagnosed with pregnancy induced hypertension to analyze the maternal and perinatal outcomes. Total hypertensive cases accounted for 234 (7.9%) out of which gestational hypertensions were 63 cases (2.1%) preeclampsia 146 (4.9%) and eclampsia 25 cases (0.9%). The mean age of the study population was 23.52±4.33. The researcher found that the majority of them i.e. 76% belonged to low socioeconomic status. Primigravida constituted 48.3% while 51.7% were multigravida. The numbers of vaginal deliveries were equal to caesarean sections. The maternal outcomes that were noticed were acute renal failure (1.28%), Post-partum haemorrhage in 3 cases and an abruption placenta in one case. 2 cases developed pulmonary edema and cerebral haemorrhage, Abnormal liver function tests were seen in 26.49% of the cases and 4.3% of them showed low platelet counts.. There was no maternal mortality in the study. Out of the 234 deliveries, 74 (31.6%) were pre term births. There were 54 (23.1%) cases of perinatal mortality with 35 intra uterine deaths and 19 early neonatal deaths. Majority of the cases (82.4%) had Apgar score between 5-7 at one minute and Apgar score of 8-10 at five minutes in 80.2% of cases. The mean birth weight was 2.35 kg. Most common fetal complication was Low birth weight (54.2%) followed by Intra uterine growth restriction seen in 33.4% of cases and 99 babies (42.3%) needed NICU admission. The researcher concluded that though the incidence of pre-eclampsia and eclampsia still remains the major contributor to poor maternal and fetal outcome. Regular antenatal check-ups, early diagnosis, prompt multidisciplinary treatment, optimum timing of delivery reduces the incidence of complications and the maternal mortality.<sup>42</sup>
- *Alane C , Arienne S, Alexandra R, Amanda M, and Myrian C (2016)*: Carried out a prospective cohort study in 2014 among 89 pregnant women with preeclampsia and 89 pregnant women without preeclampsia in the city of Maceió to evaluate the maternal factors and adverse perinatal outcomes of pregnant women with preeclampsia. The results show that a personal history of PE is associated with a new occurrence of PE in a later pregnancy. Cesarean delivery increases the risk of maternal complications, especially in pregnant women with severe PE. Most pregnant women with pre eclampsia had newborn with Apgar scores at 1 and 5 minutes above the cutoff value, but the presence of the disease did not increase the frequency of these indexes. Black skin color was reported by 16.7% of the pregnant women with preeclampsia and 10.0% of pregnant women without preeclampsia, whereas 28.9% and 8.9%, respectively, had a family history of pre eclampsia, and 38.9% and 1.11%, respectively, had a personal history of pre eclampsia. Obesity rates were 40.1% and 13.0%, respectively, and rates of excessive gestational weight gain were 34.5% and 16.7%, respectively. The limitations of this study included the large loss of information related to the Apgar score due to incomplete filing of medical records and / or certificates of live birth, emphasizing the importance of correct filing by the professionals.<sup>43</sup>
- *Hassan M, Begum M, Ferdousi C, Rahman H and Sayeba Akhter (January 2015)* conducted a prospective study over a period of one year among 60 mothers from Ad-Din women's medical college hospital to examine the immediate neonatal outcomes of women with maternal hypertensive disorder of pregnancy. The mother's demographic details were recorded using a structured questionnaire. The researcher reported that 75% were multipara mothers and 25% were primipara mothers. Among them 90% had undergone lower segment caesarean-section and only 10% had normal vaginal delivery. Among the neonates 50% born were low birth weight babies and 26.66 were very low birth weight babies and 30% had intrauterine growth retardation. Respiratory distress was the most common cause of admission to neonatal ICU. After conducting various diagnostic tests the found that all the neonates had hyperbilirubiemia and needed phototherapy. 10% neonates died while 90% survived. Hence they concluded that the maternal hypertensive disorder of pregnancy is associated with neonatal mortality and morbidity.<sup>44</sup>
- *Browne JL, Vissers K, Antwi E, Srofenyoh E, Van der Linden E, Agyepong I et al. (2015)* conducted a prospective cohort study to evaluate perinatal outcomes of pregnancies complicated by hypertensive a disorder in pregnancy was conducted at two hospitals in Accra, Ghana: Ridge Regional Hospital's Outpatient Clinic and Maamobi General Hospital over a period of 2 years. 789 pregnant women were selected using purposive sampling out of which 700 were normotensive, 59 had pregnancy induced hypertension, 14 had pre-eclampsia and 16 had chronic hypertension. Participant's demographic information was obtained by trained interviewers through structured questionnaires and perinatal outcome information was extracted from the record books at the labour ward and post-natal clinic 4–8 weeks post-partum. The results indicated that women with chronic hypertension and pre-eclampsia had a higher risk of perinatal outcomes. No adverse effects were observed in women with pregnancy-induced hypertension. Women with chronic hypertension were more likely to have a lower gestational age at delivery and higher risk of pre-term delivery and a child with a lower APGAR score after 1 min. Women with pre-eclampsia had emergency Caesarean section significantly more often with a higher risk for low birth weight infants and a higher risk of neonatal death. Comparable to high-income countries, in an urban resource-limited setting, hypertensive disorders during pregnancy were associated with a higher risk of adverse perinatal outcomes. It was observed that a high-quality care in an economically poor setting that may in part be attributed to a successful quality improvement program, indicating the value of a continued focus on optimising quality of care.<sup>45</sup>
- *Gezehagn Endeshaw and Yifru Berhan (2015)* conducted a retrospective cohort study design and included 1015 hypertensive pregnant women who gave birth to 1110 babies between 2008 and 2013 in three university teaching hospitals. The median

gestational ages for perinatal deaths and survivors in women with preeclampsia were 32 and 38 weeks, respectively. The perinatal mortality has increased by about 1.6 and 2.8 fold among multiparous and grand multiparous women, respectively. The risk of perinatal mortality in very preterm babies was 7.7 fold higher than term babies. Lack of antenatal care and having eclampsia increased the risk of perinatal mortality by more than 2 and 4 fold. Antepartum and intrapartum onset of hypertensive disorder in pregnancy also independently predicted the chance of perinatal mortality by 6.6 and 4 fold as compared to postpartum onset of hypertensive disorder in pregnancy. Perinatal mortality was higher among women whose labour was either spontaneously initiated or induced. There was also a strong association of perinatal mortality with vaginal delivery. Birth weight < 2.5 kg was associated with four times increased risk of mortality during the perinatal period. The odds of perinatal mortality among mothers who lost their life were more than 7 fold higher than alive mothers. In the multivariate analysis, however, a strong association of perinatal mortality with highest SGOT raised by  $\geq 2$  fold, vaginal delivery, low birth weight, and maternal death was demonstrated. On the other hand, the independent predictors of early neonatal mortality were very preterm gestational age, having eclampsia, vaginal delivery, birth weight < 2.5 kg, and maternal death. The study concluded that the parity, gestational age, type and onset of hypertensive disorder in pregnancy, mode of delivery, birth weight, and maternal outcome were strong predictors of perinatal mortality.<sup>46</sup>

- *Rekha Sachan, Munna L, Sachan P, Amrita Gaurav, Meenakshi Singh, and Bhumika Bansal (2013)* conducted a prospective case control study over a year from 2011 to 2012 at King George's Medical University, Lucknow, Uttar Pradesh, India among 142 hypertensive mothers to analyse the maternal and perinatal outcomes of pregnancy. The researcher reported that 45.8% were cases of mild preeclampsia, 22.5% were severe preeclampsia and about 31.6% were eclampsia cases. Just over half of the patients (53.52%) were primigravida, while the remainder (46.48%) were multigravida. The overall maternal mortality rate was 2.8% and neonatal mortality rate was 4.23% of all study cases. Maternal complications reported were acute renal failure in 3.13% and placenta abruption in 55.94% cases. The most common manifestation was edema, seen in 90% of cases. Proteinuria was also relatively common. Central nervous system involvement was observed in 42.2% of cases, elevated bilirubin levels in 47.0%, visual symptoms in 6.4%, vaginal bleeding in 11.3% and HELLP syndrome (hemolysis, elevated liver enzymes, and low platelet count) was reported in 2.80%. During hospital admission, 16.90% of babies were stillborn. In the severe preeclampsia group 87.5% babies were born with a birth weight between 1500 and 2490 g, whereas, in the eclampsia group, 66.7% babies were born with a birth weight > 2500 g. In the hypertensive disorder in pregnancy groups, 16.90% of babies were born with an APGAR score < 7 compared with 6.45% of babies in the control group. Further, 28.8% of neonates born to women in the hypertensive disorders groups required resuscitation and 20.3% required hospital admission, whereas only 6.5% of neonates born to women in the control group required resuscitation and/or hospital admission.<sup>47</sup>
- *Poon L, Akolekar R, Lachmann R, Beta J and Nicolaidis K (2010)* conducted a study aimed to develop prediction algorithms for hypertensive disorders based on multivariate analysis of factors from the maternal history and compare the estimated performance of such algorithms in the prediction of early preeclampsia (PE), late-PE and gestational hypertension (GH) with that recommended by the National Institute for Clinical Excellence (NICE). This survey for high risk screening protocol was prospective, designed before any of the records analysed in our on-going data collection protocol sought prenatal care. The results showed there were 37 cases with early-PE, 128 with late-PE, 140 with GH and 8061 cases that were unaffected by PE or GH. Predictors of early-PE were Black race, chronic hypertension, prior PE and use of ovulation drugs. Predictors of late-PE and GH were increased maternal age and body mass index, and family history or history of PE. Additionally, late-PE was more common in Black, Indian and Pakistani women. For women with history of PE, compared with nulliparous women, there is a fourfold increase in risk for early-PE and twofold increase in risk for late-PE, whereas in parous women with no PE, the risk for both early and late disease is reduced by three to four times. Increased maternal age and BMI are associated with increased risk for late-PE and GH but not early PE.<sup>48</sup>
- *Zareen N, Naqvi S, Majid N, Fatima H (2009)* conducted a cohort study to determine the perinatal outcome of high risk pregnancies, in terms of perinatal mortality, Apgar score, birth weight and neonatal complications in first week after birth among 282 antenatal patients attending the Outpatient Department of Sir Syed Trust Hospital, Karachi, from January to December 2007. Mothers were grouped as high risk (group A cases) and low risk (group B control). All pregnant women, who had multiple pregnancies or congenital malformations, were excluded. The number of patients in group A were 162 and in group B, 120. Anaemia 98 (60.49%), pregnancy induced hypertension 24 (14.8%) and preterm labour 26 (16%) were identified as the major risk factors in group A. There were 12 (7.40%) stillbirths and 5 (3.08%) early neonatal deaths in group A, while there was 1 (0.84%) stillbirth and no neonatal death in group B. There were 58 (35.80%) neonates with low birth weight in group A, while the same were only 4 (3.33%) in group B. Poor Apgar score of < or = 7 at 1 minute was observed in 6 (4%) and at 5 min was observed in 5 (3.33%), while none of the neonates in group B was born with Apgar score of less < or = 7 at 1 or 5 minute. Meconium aspiration syndrome was observed in 7 (4.3%) cases in group A, and 2 (1.66%) in group B. The study concluded that perinatal mortality was twice as high in high risk group compared to low risk group.<sup>49</sup>

➤ **SECTION-II STUDIES RELATED TO RISK FACTORS ASSOCIATED WITH HYPERTENSIVE DISORDERS IN PREGNANT WOMEN PREGNANCY.**

- *Chun Ye, Ruan Y, Liying Zou, Guanghui Li, Changdong Li, Yi Cheng et al. (2014)* conducted a survey that represented a multicenter cross-sectional retrospective study to estimate the prevalence and analyze the risk factors for hypertensive disorder in pregnancy among the pregnant women who had referred for delivery between January 1st 2011 and December 31st 2011 in China Mainland. A total of 112,386 pregnant women were investigated from 38 secondary and tertiary specialized or general hospitals randomly selected across the country, of which 5,869 had hypertensive disorders in pregnancy, accounting for 5.22% of all pregnancies. There were significant differences in the prevalence of hypertensive disorders in pregnancy between geographical regions, in which the North China showed the highest (7.44%) and Central China showed the lowest (1.23%). Of six subtypes of HDP, severe preeclampsia accounted for 39.96%, gestational hypertension for 31.40%, mild preeclampsia for 15.13%, chronic hypertension in pregnancy for 6 %, preeclampsia superimposed on chronic hypertension for 3.68% and eclampsia for 0.89%. A number of risk factors for hypertensive disorders in pregnancy were identified, including twin pregnancy, age of 35 years, overweight and obesity, primipara, history of hypertension as well as family history of hypertension and diabetes. The prevalence of pre-term birth, placental abruption and postpartum haemorrhage were significantly higher in women with hypertensive disorders in pregnancy than those without hypertensive disorders in pregnancy. The possible risk factors confirmed in this study may be useful for the development of early diagnosis and appropriate treatment of hypertensive disorders in pregnancy. <sup>50</sup>
- *Abalos E, Cuesta C, Carroli G, Qureshi Z, Widmer M, Vogel JP et al. (2013)* conducted a secondary analysis of the World Health Organization Multicountry Survey on Maternal and Newborn Health at 357 health facilities in 29 countries from Africa, Asia, Latin America and the Middle East to assess the incidence of hypertensive disorders of pregnancy and related severe complications, identify other associated factors and compare maternal and perinatal outcomes in women with and without these conditions among 8542 women. The results reported were the Incidences of pre-eclampsia; eclampsia and chronic hypertension were 2.16%, 0.28% and 0.29%, respectively. Maternal near-miss cases were eight times more frequent in women with pre-eclampsia, and increased to up to 60 times more frequent in women with eclampsia, when compared with women without these conditions. In both the pre-eclamptic and eclamptic groups, the induction of labour, caesarean sections and preterm births were relatively more frequent than in the group of women without these conditions. In accordance with maternal figures, the proportions of stillbirths, low birth weight, low Apgar score at birth and neonatal complications were more frequent among the group of babies born from pre-eclamptic and eclamptic mothers. The risk of death was nearly four times higher for women with pre-eclampsia when compared with non pre-eclamptic women. <sup>51</sup>
- *Pierre M, Pascal F, Robinson M, Gisèle F, and Joseph N (2011)* This case control study was conducted to identify the possible risk factors for hypertensive disorders in pregnancy among 152 deliveries complicated with hypertension and were compared and analyzed with 414 pregnancies that were not complicated with the disease. The study concluded that several factors that linked to hypertensive disorder in pregnancy included early adolescence, nulliparity, and illiteracy, lack of occupation and family history of hypertension. The risk of having hypertension during pregnancy remained greater for illiterate women , housewives, nulliparae, women with family histories of hypertension and women with histories of hypertension during pregnancy. <sup>52</sup>
- *Caroline A, Kátia G Dos Santos, Mariana Rodrigues , Israel Roisenberg (2011)* conducted a prospective case-control study was developed considering 161 patients with hypertensive disorders and 169 control subjects matched by age and ethnicity to identify the frequency of risk factors among them. Subjects were recruited in the maternity of a tertiary public hospital in Southern Brazil and they were followed until 90 days postpartum (late puerperium). The study confirmed that the family history of preeclampsia , previous preeclampsia history, high BMI, diabetes, chronic hypertension, schooling and prenatal were demonstrated to be more frequent in hypertensive disorders in pregnancy when compared to normotensive women. Regarding nulliparity, multifetal gestation and smoking habits, there were no significant differences between patients and controls. The study suggested that if effective prenatal care is available, it may have greater potential in the treatment of these diseases. <sup>53</sup>

❖ **Summary**

This chapter dealt with review of literature that is based on observing the perinatal outcomes and its associated risk factors among mothers with hypertensive disorders.



### CHAPTER THREE RESEARCH METHODOLOGY

Methodology is the most important part of any research study which enables the researchers to form a blueprint for the study that is undertaken.

The present study is aimed to determine the perinatal outcomes and its associated risk factors among hypertensive mothers in Hyderabad, Telangana.

This chapter deals with the methodology the researcher adopted which includes research approach and design, setting of the study, sample, sampling technique, criteria for sample selection, and development of the tool, description of the tool, pilot study and data collection.

➤ *Research approach*

Quantitative research is the systematic empirical investigation of observable phenomena via statistical, mathematical, or computational techniques. The objective of quantitative research is to develop and employ mathematical models, and hypotheses pertaining to phenomena. Quantitative data is any data that is in numerical form such as statistics, percentages, etc. The researcher analyses the data with the help of statistics and hopes the numbers will yield an unbiased result that can be generalized to some larger population.<sup>39</sup>

The quantitative research approach was considered best to evaluate the perinatal outcomes and its associated risk factors among pregnant women with a hypertensive disorder.

➤ *Research design*

The research design is the master plan for specifying the methods and procedures for collecting and analysing the needed information in a research study. It is an overall strategy that chooses to integrate the different components of the study in a coherent and a logical way. The research design adopted for the present study was Cross sectional Descriptive retrospective design.

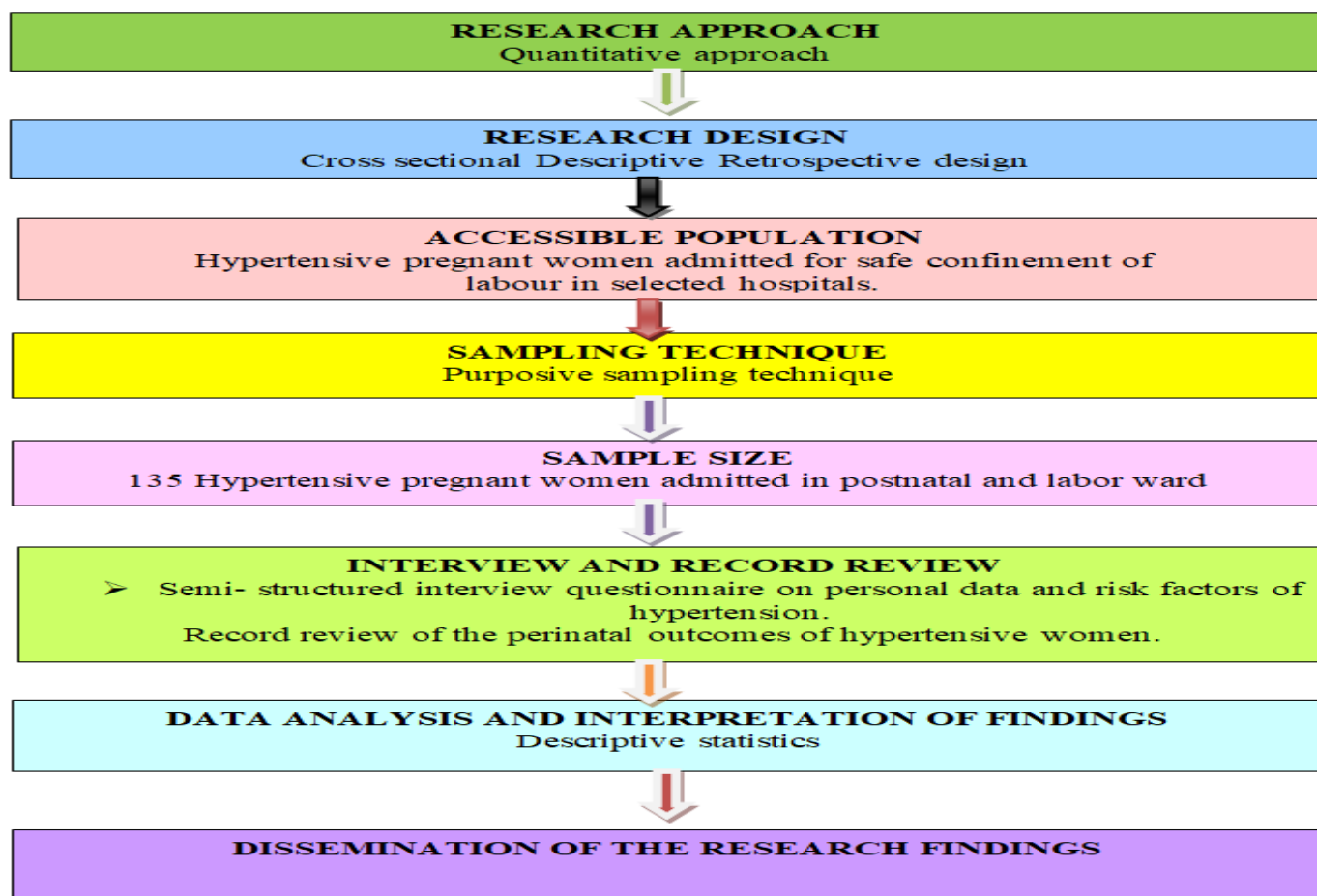


Fig 2 Schematic Representation of Research Methodology

➤ *Setting of the study*

Research setting is defined as the physical location and condition in which data collection takes place. Settings are the more specific places where data collection occurs.

The current study was conducted on hypertensive pregnant women admitted for labour in Modern Government Maternity Hospital, Hyderabad and Gandhi Hospital, Secunderabad.

Government Maternity Hospital is a 700 bedded hospital established to meet the health requirements and maternity services for poor people. The number of deliveries conducted on a whole during a month is 764 deliveries approximately and among them the incidence of pregnant women with hypertension among them are 84 mothers, That concluded about 10.99% of the mothers who delivered with hypertension in a month. And so the researcher has chosen this hospital to conduct the main study.

Gandhi Hospitals was established in 1851, with present bed strength of 1200. It is a general hospital. The maternity services that include the deliveries that take place per month are approximately 700 deliveries, and among them the women who delivered and are diagnosed with hypertension are 60 mothers. That concluded about 8.5% of the women. And so the researcher has selected this hospital to conduct the main study.

➤ *Population*

Population is defined as all elements (people, objects, events or substances) that meet the researchers sample criteria for inclusion in the study.

In the present study, we considered, pregnant women with a diastolic blood pressure of at least 90 mm Hg or a systolic blood pressure of at least 140 mm Hg to have hypertensive disorder in pregnancy.

➤ *Accessible population*

The population of present study comprises of hypertensive pregnant women who have delivered in the selected hospitals of the interest of the researcher.

➤ *Sample*

The sample in present study consists of hypertensive pregnant women admitted in postnatal and labour wards in selected hospitals.

➤ *Sample size*

A sample size of 135 hypertensive pregnant women who fulfilled the inclusion criteria was included in the study.

➤ *Sampling technique*

The sampling technique adopted for the study was purposive sampling technique. All the hypertensive pregnant women who fulfilled the inclusion criteria were included in the study.

➤ *Inclusion criteria*

- Pregnant women diagnosed with a hypertensive disorder.
- Admitted for confinement of delivery.
- Women with or without the control of hypertension with antihypertensive drugs.
- Women admitted in postnatal ward after delivery up to 7 days of delivery.

➤ *Exclusion criteria*

- Pregnant mothers who had a pre-existing co-morbidity such as renal disease, diabetes mellitus, and active urinary tract infection and women with multiple pregnancies.

➤ *Description of tool*

Semi-structured interview schedule and case sheet record review for diagnosis and adverse events was utilized.

The semi-structured interview schedule has 4 sections. The details were given below.

• *Section A:*

Deals with demographic details of the hypertensive pregnant women which deals with age of the mother, age at menarche, educational status, family income, religion, employment status, previous knowledge about hypertension and height.

- *Section B:*

Deals with perinatal outcomes of hypertensive pregnant women are measured as normally healthy new born or adverse neonatal outcomes. The adverse neonatal outcomes were measured as stillbirth, intrauterine death, preterm death, neonatal respiratory distress, APGAR score less than 7 at 1 min, APGAR score less than 7 at 5min, low birth weight, required resuscitation, admission to NICU, immediately/early neonatal death, abortion, intrauterine growth retardation, meconium aspiration syndrome.

- *Section C:*

Deals with maternal outcomes occurred in antenatal, intranatal and postnatal period such as uterine inertia, vulval edema, premature rupture of membranes, delayed labour, retained of placenta, postpartum haemorrhage, acute renal failure, pulmonary edema and maternal death in the current pregnancy. It also measured mode of delivery and parity for the current pregnancy.

- *Section D:*

Deals with associated risk factors related to the adverse perinatal outcomes that includes previous obstetrical history, previous history of hypertension, antenatal checkups, family history and lifestyle related risk factors that include excessive intake of salt and processed foods, alcohol intake, smoking habits, chewing tobacco, exposure to stress and adaptation of mind relaxation techniques at home.

In the previous obstetrical history all the women were interviewed for the retrospective data about their each gravida and their perinatal and maternal outcome.

In the previous history of hypertension sample were interviewed about their diagnosis in the current and previous pregnancies, pre-conceptional history of hypertension, history of treatment on regular basis and reasons for non compliance with antihypertensive drugs. Case sheet review was done for identifying the diagnosis of pre-eclampsia including both severe and non severe pre-eclampsia, eclampsia, pregnancy induced hypertension, chronic hypertension and pre eclampsia superimposed on chronic hypertension.

➤ *Content validity*

Content validity is a judgement regarding how well the instrument represents the characteristics to be observed and assessed. Judgements of the content validity may be subjective and is based on previous researchers and expert opinion about the adequacy, appropriateness, and completeness of the content of instrument.

To ensure the content validity, the tool was submitted to 8 experts, 5 nursing faculty, 2 obstetricians and a statistician. The experts gave their valid opinion with relevance to items, clarity and appropriateness of the content. Based on corrections and suggestions given by experts very few modifications were made to the data collection tool.

The Institutional research committee clearance to conduct the research was taken from Apollo Institute of Medical Science and Research and Apollo College of Nursing, Hyderabad

➤ *Pilot study*

Pilot study is the trial study conducted before actual study in different populations with similar characteristics. The purpose of the study was, to find out feasibility of conducting the study and to decide on the plan of statistical analysis. The study was conducted among 15 postnatal women diagnosed with hypertensive disorders admitted in postnatal and labour wards in St Theresa Hospital, Hyderabad from 25-04-2019 to 28-04-2019. The investigator had used purposive sampling technique and selected 15 postnatal mothers diagnosed with hypertensive disorders. Consent was taken in assurance to maintain the anonymity and confidentiality of the data. The hypertensive pregnant women's perinatal outcomes were documented by assessing the medical records and her basic data was documented by interviewing her.

Inter Observer reliability was adopted to see for the reliability of the study and statistical computation could not be utilised due to descriptive form of data

➤ *Main study*

The data collection for the study was done from 1-04-2019 to 28-04-2019. A formal written permission was obtained from the concerned authorities of Gandhi Hospital and Modern Government Maternity Hospital. Purposive sampling technique was used to select 135 hypertensive pregnant women in the study from both the hospitals. There were 67 hypertensive pregnant women from Gandhi hospital and 68 hypertensive pregnant women from Modern maternity hospital. The investigator initially established rapport with the samples and personally requested consent to be given by them to carry forward the research. The purpose of the study was explained to them in Telugu or Hindi, whichever the native language of the sample was and which they understood well. Confidentiality was assured to all subjects as it was believed that would help in obtaining free, accurate and frank responses. Initially the case sheet/case records of the hypertensive pregnant women were reviewed and the perinatal outcomes and diagnosis were recorded in the labour room and postnatal ward, after which the mother was interviewed using a semi-structured

interview schedule when she felt right to give the data. The data was then collected from the hypertensive pregnant women retrospectively. The responses were noted during the course of the interview to maintain the accuracy of the responses. The duration of the interview was around 30 to 40 minutes for each sample. After collection of the data, an instructional booklet was given to each sample on understanding and managing hypertension during pregnancy.

➤ *Plan for Data analysis*

The analysis and interpretation was done based on objectives of the study. The purpose of analysis was to reduce the data to an interpretable form, so that the research problems could be studied and tested.

In the current study the data collected was coded and transferred to the master data sheet for statistical analysis. The following plan was made for data analysis:

- Organize the data in master sheet and compute
- Demographic data in the form of frequencies and percentages
- Perinatal outcomes in the form of frequencies and percentages
- Associated risk factors in the form of frequency and percentages

❖ *Summary*

The present chapter dealt with the methodology adapted for the present study to find the perinatal outcomes and its associated risk factors of mother with hypertensive disorders. It includes research approach, research design, setting, population, sample, sample size, sampling technique, sampling criteria; inclusive and exclusive criteria, description of the tool, content validity of the tool, reliability of the tool, pilot study, procedure for main study data collection and plan for data analysis.

## CHAPTER FOUR DATA ANALYSIS AND INTERPRETATION

Analysis is the appraisal of data and interpretation of the inferences that emerges from the findings of the study. Interpretation of the data consists of relative findings of the study to known facts. An important function of the process of interpretation is linking the findings of the study to the main stream of scientific knowledge in the concerned field.<sup>40</sup>

The analysis and interpretation of the data were done with the help of descriptive statistics to meet the objectives of the study.

In the current study descriptive statistics such as frequency and percentage distribution was used to describe perinatal outcomes of hypertensive pregnant women and also the associated risk factors of hypertension.

### ➤ Objectives of the study

- To determine the perinatal outcomes among hypertensive pregnant women.
- To assess associated risk factors among perinatal outcomes of hypertensive pregnant women.
- To develop instructional booklet on understanding and managing hypertension during pregnancy

### ➤ Presentation of the data

- *Section I* :  
Deals with the Frequency and Percentage Distribution according to Sample Characteristics
- *Section II* :  
Deals with Frequency and Percentage Distribution according to the Perinatal Outcomes of Hypertensive Pregnant Women.
- *Section III* :  
Deals with the frequency and Distribution according to Associated Risk factors of Hypertension During Pregnancy
- *Section IV* :  
Frequency and Percentage Distribution according to Normal and Adverse Perinatal Outcomes during All Previous Pregnancies
- *Section- I*

Table 1 Frequency and Percentage Distribution according to Age of Hypertensive Pregnant Women  
n=135

Characters	Minimum	Maximum	Mean
1. Current Age	19	36	24.57
2. Age at Marriage	15	31	20.71
3. Age at Menarche	11	15	11.73

From the above table it is evident that the mean age of the sample who had a hypertensive disorder was 24.57 years old. The minimum age of the sample was 19 years old and the maximum age of the sample was 36 years old.

The mean age of the sample at their marriage was 20.71 years old. The minimum age of the sample at marriage was 15 years old and the maximum age was 31 years old.

The mean age of the sample at menarche was 11.73 years old. The minimum age at menarche was 11 years old and the maximum age at menarche was 15 years old.

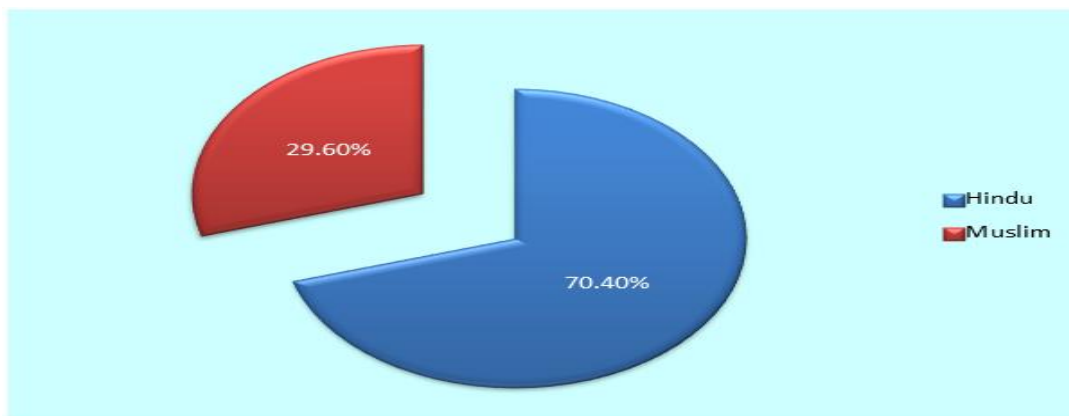


Fig 3 Percentage Distribution According to Religion n= 135

The above Pie chart portrays that, the majority of the sample (70.4%) were Hindus and the remaining (29.65%) were Muslims.

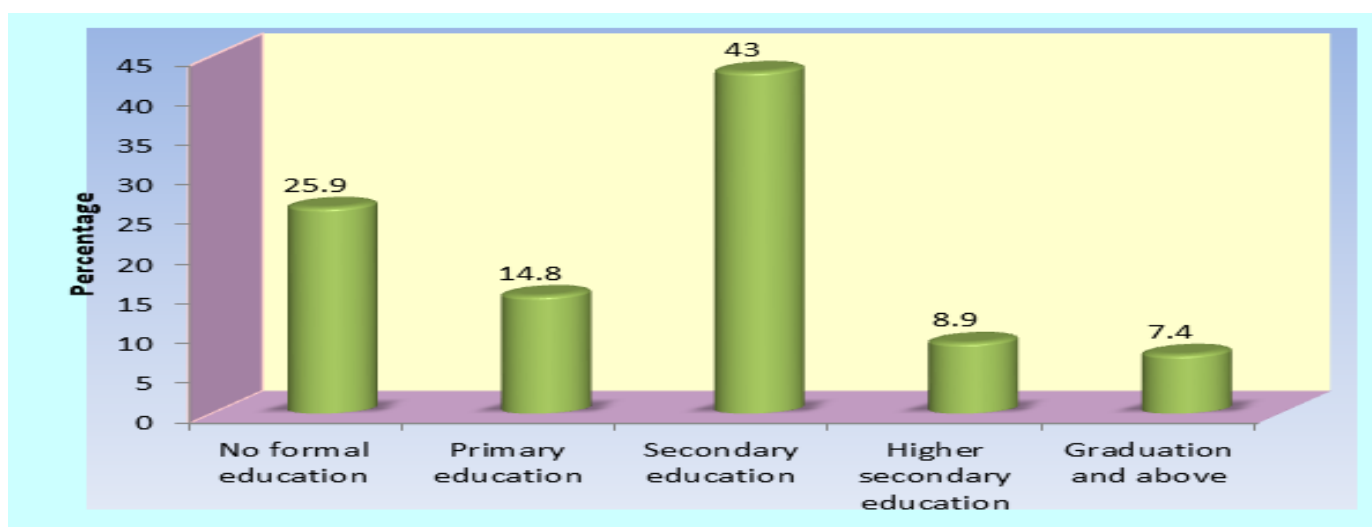


Fig 4 Percentage Distribution According to Education n= 135

The above bar chart shows that the majority of the sample (43%) was having secondary education, a quarter of the sample (25.9%) were having no formal education. About 14.8% sample were having primary education. 8.9% of the sample were having higher secondary education and a very few that is 7.4% sample were graduated.

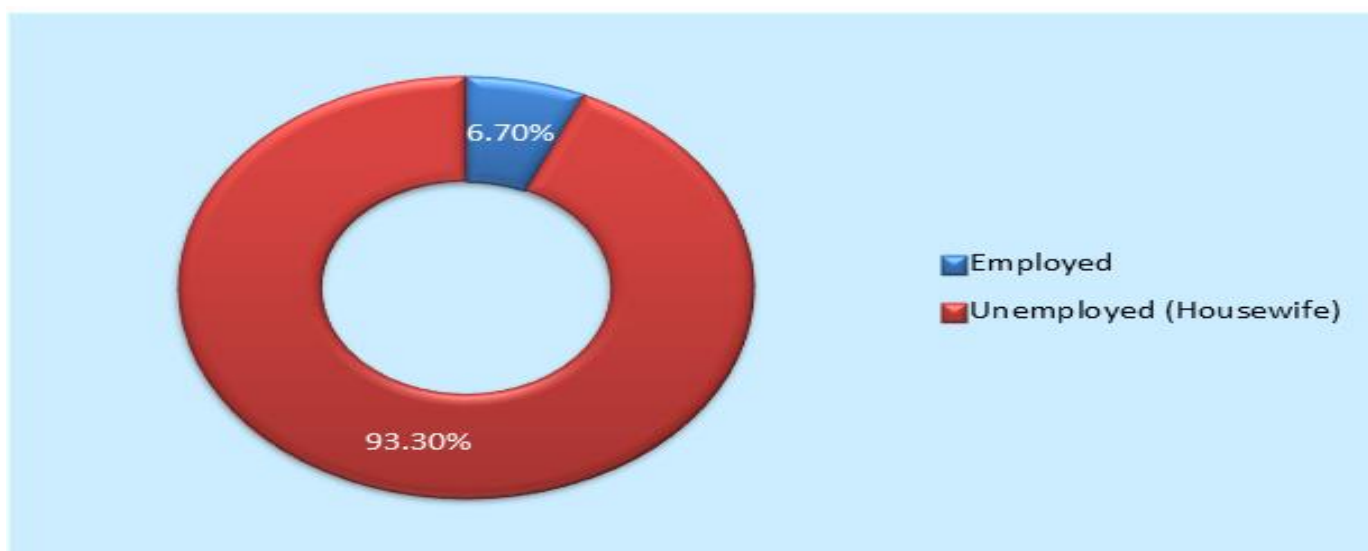


Fig 5 Percentage Distribution According to Employment n= 135

The above pie chart states that majority of the sample (93.3%) were unemployed while a very few that is (6.7%) were employed.

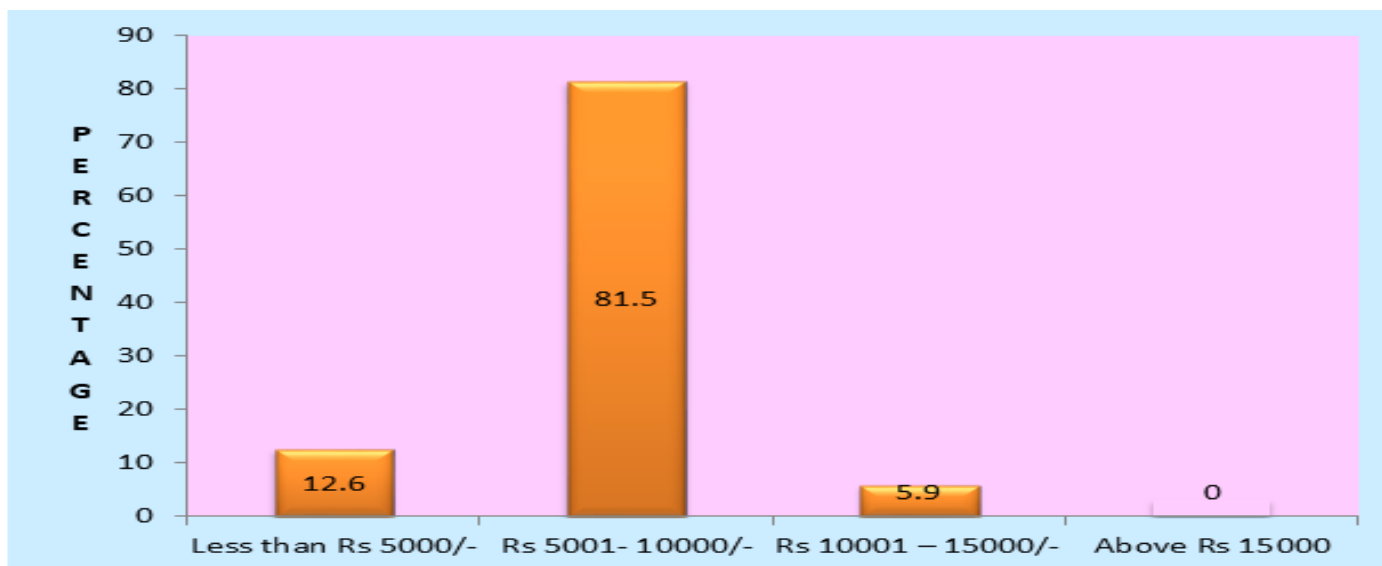


Fig 6 Percentage Distribution According to Monthly Income n=135

The above table portrays that a little more than three quarters of the samples 81.5% were earning Rs 5001- 10,000/- , where none of the families had an income of above Rs 15,000, 12.6% earned Less than Rs 5000/- and 5.9% earned Rs 10,001 – 15,000/-

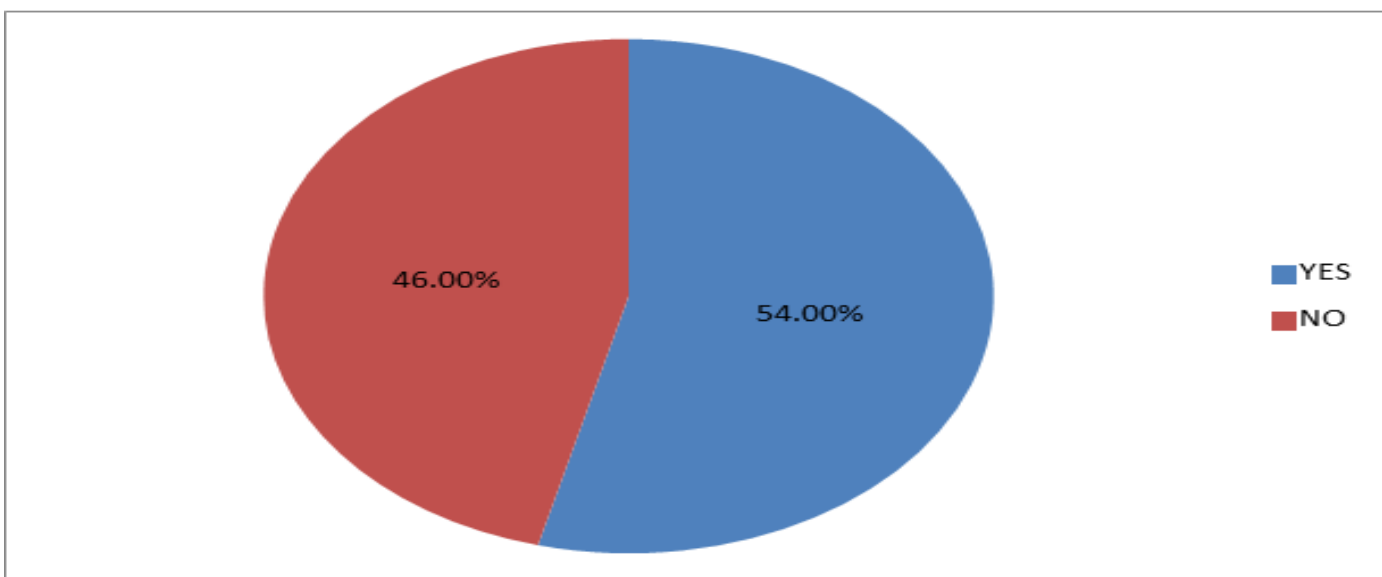


Fig 7 Percentage Distribution According to Previous Knowledge about Hypertension n=135

The above figure portrays that almost half of the sample that is 54% had a previous knowledge about hypertension whereas 46% did not have a previous knowledge about hypertension.

Table 2 Frequency and Percentage Distribution According to Sources of Knowledge about Hypertension in Hypertensive Pregnant Women n=73

Sl No	Sources	Frequency	Percentage
1.	Television	2	2.73
2.	Newspaper	0	0
3.	Magazine	0	0
4.	Health care provider	35	47.9
5.	Books	2	2.73
6.	Internet	2	2.73
7.	Friends and relatives	32	43.8

In the above table about 47.9% sample were educated about hypertension by their health care provider and about the same percentage of sample that is 43.8% had a previous knowledge from their friends and relatives, where a very few percentage of sample got their knowledge from television (2.73%), books (2.73%), and internet (2.73%). Surprisingly none of them received any knowledge from magazines and newspaper.

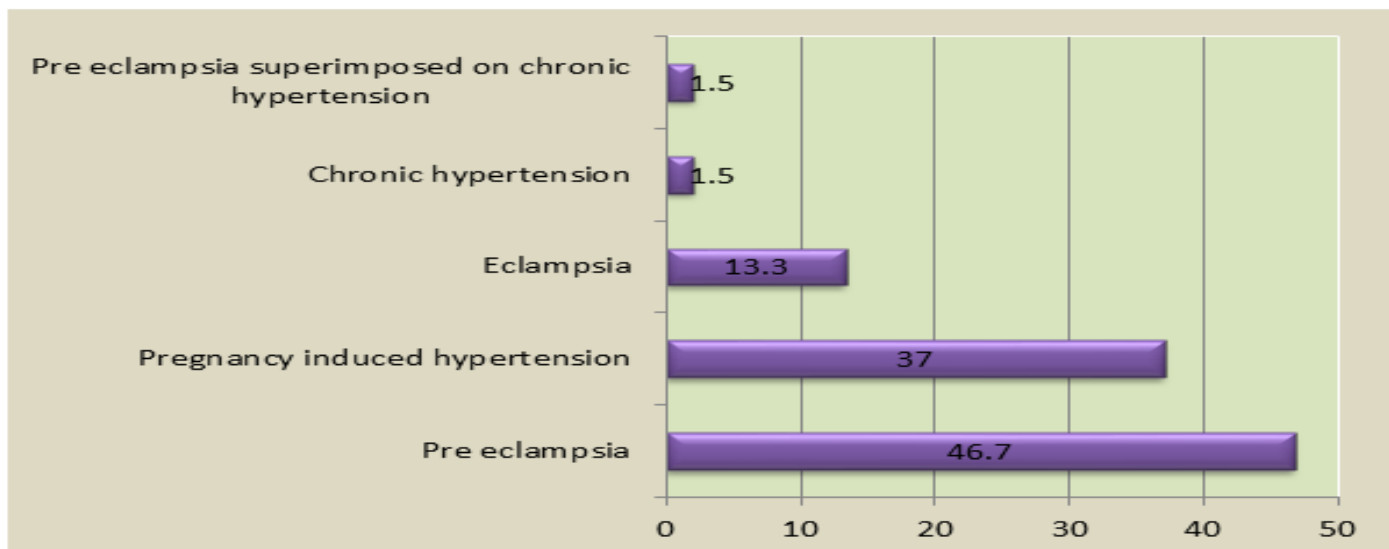


Fig No 8 Percentage Distribution according to Diagnosis of Hypertension during Current Pregnancy n=135

Figure no 8 reveals that about a half that is 46.7% (63) of samples were diagnosed having Pre eclampsia. And about 37% (50) of the samples were diagnosed having Pregnancy induced hypertension, and 13.3% (18) were diagnosed with Eclampsia. An equal percentage that is 1.5% (2) was having Chronic hypertension and pre eclampsia superimposed on chronic hypertension.

The mean height of the hypertensive pregnant women was 154.59 cm.

• Section- II

Table 3 Frequency and Percentage Distribution of Perinatal Outcomes of Hypertensive Pregnant Women n= 135

	Perinatal Outcomes	Frequency	Percentage
1.	Normal	76	56.29
2.	Adverse outcomes	59	43.70

The above table shows the overall perinatal outcomes of women with hypertensive disorder. Normal neonatal outcomes were found in 56.29% (76) and 43.70% (59) of the sample had adverse perinatal outcomes.

Table 4 Frequency and Percentage Distribution according to Perinatal Outcomes of Women with Hypertensive Disorder n=59

SI No	Perinatal outcome	Frequency	Percentage
1.	Stillbirth	0	0
2.	Preterm birth	53	39.3
3.	IUD	6	4.4
4.	Neonatal respiratory distress	7	5.2
5.	APGAR score less than 7 at 1 min	32	23.7
6.	APGAR score less than 7 at 5 min	5	3.7
7.	Low birth weight	44	32.6
8.	Required resuscitation	2	1.5
9.	Admission to NICU	43	31.9
10.	Immediate/early neonatal death	3	2.2
11.	Normally healthy new born	76	56.29
12.	Abortion	0	0
13.	Meconium aspiration syndrome	7	5.2
14.	IUGR	12	8.9
15.	Other specify	7	5.18



The above table shows that among the 43.7% of the adverse perinatal outcomes of hypertensive mothers, Majority (39.3%) of the neonates were born prematurely, and next to it is neonates born with low birth weight (32.6%) and (31.9%) of the neonates born were admitted in NICU, about (23.7%) of the neonates had APGAR score less than 7 at 1 min and (3.7%) of the neonates had an APGAR score less than 7 at 5 minutes. About (8.9%) of the neonates were born with intrauterine growth restriction and a similar percentage that is (5.2%) of the neonates were born with distress and had meconium aspiration syndrome. About (4.4%) of the neonates died intrauterine. About (2.2%) of the neonates born had an immediate or early neonatal death. A few that is (1.5%) of the neonate required resuscitation. Five percent of neonates were post dated as adverse perinatal outcome under other's category.

Table 5 Frequency and Percentage according to Various Combinations of the Adverse Perinatal Outcomes. n= 59

		Frequency	Percentage
1.	Single outcome	6	10.16
2.	Combination of 2 outcomes	10	16.94
3.	Combination of 3 outcomes	23	38.98
4.	Combination of 4 outcomes	8	13.55
5.	Combination of 5 outcomes	4	6.77
6.	Combination of 6 outcomes	2	3.38
7.	Combination of 7 outcomes	2	3.38
8.	Combination of 8 outcomes	1	1.69
9.	Early neonatal deaths	3	5.08
	Total	59	100%

The above table shows that the adverse perinatal outcomes in 59 sample were found to be in various combinations. In which the minimum, that is a sample having a single outcome is 10.16% and constitutes for the intrauterine death as an adverse outcome. Whereas the combinations of two outcomes were found to be 16.94%, three outcomes in combination were in majority and were 38.98%. The combinations of four outcomes were seen in 13.55% of the sample. The combinations in five outcomes were 6.77%. A similar percentage, 3.38% of the sample had 7 and 8 combinations of the adverse neonatal outcomes. About 5.08% of the sample had an immediate/early neonatal death as an outcome.

Table 6 Frequency and Percentage Distribution According to Various Combinations of the Adverse Perinatal Outcomes n=10

	Perinatal outcomes	Frequency	Percentage
1.	APGAR score less than 7 at 1 min + Low birth weight	2	20%
2.	Preterm + Low birth weight	4	40%
3.	Low birth weight + Admission to NICU	1	10%
4.	Meconium aspiration + Admission to NICU	2	20%
5.	Others + NICU	1	10%
	TOTAL	10	100%

The above table shows that among the 10 sample who had a combination of 2 adverse perinatal outcomes. The majority that is 40% of the sample were born preterm and with a low birth weight. A similar 20% of the sample was born with a combination of low birth weight and APGAR score less than 7 at 1 minute, and the other combination was meconium aspiration syndrome and admission to NICU. Similarly, 10% of the sample were born preterm and admitted to NICU and the other 10% was born with hypoplastic penis and was admitted in NICU.

Table 7 Frequency and Percentage According to Three Combinations of the Adverse Perinatal Outcomes. n=23

	Perinatal outcomes	Frequency	Percentage
1.	APGAR score less than 7 at 1 min + Low birth weight + Admission to NICU	11	47.82
2.	Preterm + Low birth weight + APGAR score less than 7 at 1 min	3	13.04
3.	Preterm + Low birth weight + Admission to NICU	3	13.04
4.	Low birth weight + Admission to NICU + Meconium aspiration syndrome	1	4.34
5.	APGAR score less than 7 at 1 min + Admission to NICU + Meconium aspiration syndrome	2	8.69
6.	Low birth weight + Admission to NICU + IUGR	1	4.34
7.	Distress + APGAR score less than 7 at 1 min + Admission to NICU	1	4.34
8.	Distress + Admission to NICU + Meconium aspiration syndrome	1	4.34
	TOTAL	23	100%

The above table portrays that among the 23 sample that had an adverse perinatal outcome, the majority 47.82% gave birth to a neonate in a combination of low birth weight, APGAR score less than 7 at 1 minute and admission to NICU. A similar 13.04% of the sample gave birth to a neonate with a combination of preterm, low birth weight and APGAR score less than 7 at 1 minute and the other sample group gave birth to preterm, low birth weight and admission to NICU. About 8.69% of the sample gave birth to a neonate with APGAR score less than 7 at 1 minute, admission to NICU and meconium aspiration syndrome.

There were four perinatal outcomes (4.34% each) who had Low birth weight with admission to NICU and meconium aspiration syndrome.

Another 4.34% were born with low birth weight and admission to NICU and meconium aspiration syndrome.

Another 4.34% were born with low birth weight and admission to NICU and intrauterine growth retardation.

Another 4.34% were born with Distress with APGAR score less than 7 at 1 min and admission to NICU.

Another 4.34% were born with Distress with admission to NICU and meconium aspiration syndrome.

Table 8 Frequency and Percentage according to Four Combinations of the Adverse Perinatal Outcomes. n=8

	<b>Perinatal outcomes</b>	<b>Frequency</b>	<b>Percentage</b>
1.	APGAR score less than 7 at 1 min + Low birth weight + Admission to NICU + IUGR	2	25
2.	Preterm + APGAR score less than 7 at 1 min + Low birth weight + Admission to NICU	6	75
	<b>TOTAL</b>	<b>8</b>	<b>100</b>

The above table shows that among 8 samples who had an adverse perinatal outcome, 75% of the sample gave birth to a neonate with a combination of preterm with APGAR score less than 7 at 1 min with low birth weight and admission to NICU and 25% of them gave birth with a combination of APGAR score less than 7 at 1 min with low birth weight with admission to NICU and IUGR.

Table 9 Frequency and Percentage Distribution According to Five Combinations of the Adverse Perinatal Outcomes. n=4

	<b>Perinatal outcomes</b>	<b>Frequency</b>	<b>Percentage</b>
1.	Preterm + APGAR score less than 7 at 1 min + Low birth weight + Admission to NICU + IUGR	3	75
2.	Preterm + APGAR score less than 7 at 1 min + APGAR score less than 7 at 5 min Low birth weight + Admission to NICU	1	25
	<b>TOTAL</b>	<b>4</b>	<b>100</b>

The above table portrays that among the 4 samples that had an adverse perinatal outcome, 75% of the sample gave birth to a neonate with a combination of Preterm with APGAR score less than 7 at 1 min with Low birth weight with admission to NICU with IUGR and 25% of the sample gave birth to a neonate with a combination of preterm with APGAR score less than 7 at 1 min with APGAR score less than 7 at 5 min with low birth weight and admission to NICU.

Table 10 Frequency and Percentage Distribution According to Six Combinations of the Adverse Perinatal Outcomes. n= 3

	<b>Perinatal outcomes</b>	<b>Frequency</b>	<b>Percentage</b>
1.	Preterm + Distress + APGAR score less than 7 at 1 min + Low birth weight + Admission to NICU + IUGR	2	66.66
2.	Preterm + APGAR score less than 7 at 1 min + Low birth weight + Admission to NICU + IUGR + Immediate/Early neonatal death	1	33.33
	<b>TOTAL</b>	<b>3</b>	<b>100</b>

The above table shows that among the 3 samples who had an adverse perinatal outcome, 66.66% samples gave birth to a neonate who had a multiple combinations of preterm with Distress with APGAR score less than 7 at 1 min with Low birth weight with Admission to NICU and IUGR. And 33.33% were born with a combination of preterm with APGAR score less than 7 at 1 min with low birth weight with admission to NICU with IUGR and Immediate/Early neonatal death.

Table 11 Frequency and Percentage Distribution According to Seven Combinations of the Adverse Perinatal Outcomes n=2

	<b>Perinatal outcomes</b>	<b>Frequency</b>	<b>Percentage</b>
1.	Preterm + Distress + APGAR score less than 7 at 1 min + APGAR score less than 7 at 5 min + Low birth weight + Admission to NICU + IUGR	1	50%
2.	Preterm + Distress + APGAR score less than 7 at 1 min + APGAR score less than 7 at 5 min + Low birth weight + Admission to NICU +	1	50%

	Required resuscitation		
	TOTAL	2	100%

The above table shows that among the 2 sample who had an adverse perinatal outcome, 50% were born with a combination of Preterm with Distress with APGAR score less than 7 at 1 min with APGAR score less than 7 at 5 min with Low birth weight with Admission to NICU and IUGR and the remaining 50% were Preterm with Distress with APGAR score less than 7 at 1 min with APGAR score less than 7 at 5 min with Low birth weight with Admission to NICU and Required resuscitation.

Table 12 Frequency and Percentage Distribution According to Eight Combinations of the Adverse Perinatal Outcomes n= 1

	Perinatal Outcomes	Frequency
1.	Preterm + Distress + APGAR score less than 7 at 1 min + APGAR score less than 7 at 5 min + Low birth weight + Admission to NICU + IUGR + Required resuscitation	1
	TOTAL	1

The above table shows that there was only one neonate who was born with a combination of 8 perinatal outcomes that included Preterm with Distress with APGAR score less than 7 at 1 min with APGAR score less than 7 at 5 min with Low birth weight with Admission to NICU with IUGR and Required resuscitation.

• Section- III

Table 13 Frequency and Percentage Distribution According to Maternal Outcomes in Current Pregnancy n= 135

SI No	Maternal outcomes	Frequency	Percentage
1.	Healthy	133	98.5
2.	Adverse outcome	2	1.5

The above table shows that there was not more than (1.5%) of adverse maternal outcomes. The two mothers had postpartum haemorrhage and vulval edema as adverse outcome of hypertension in the current pregnancy

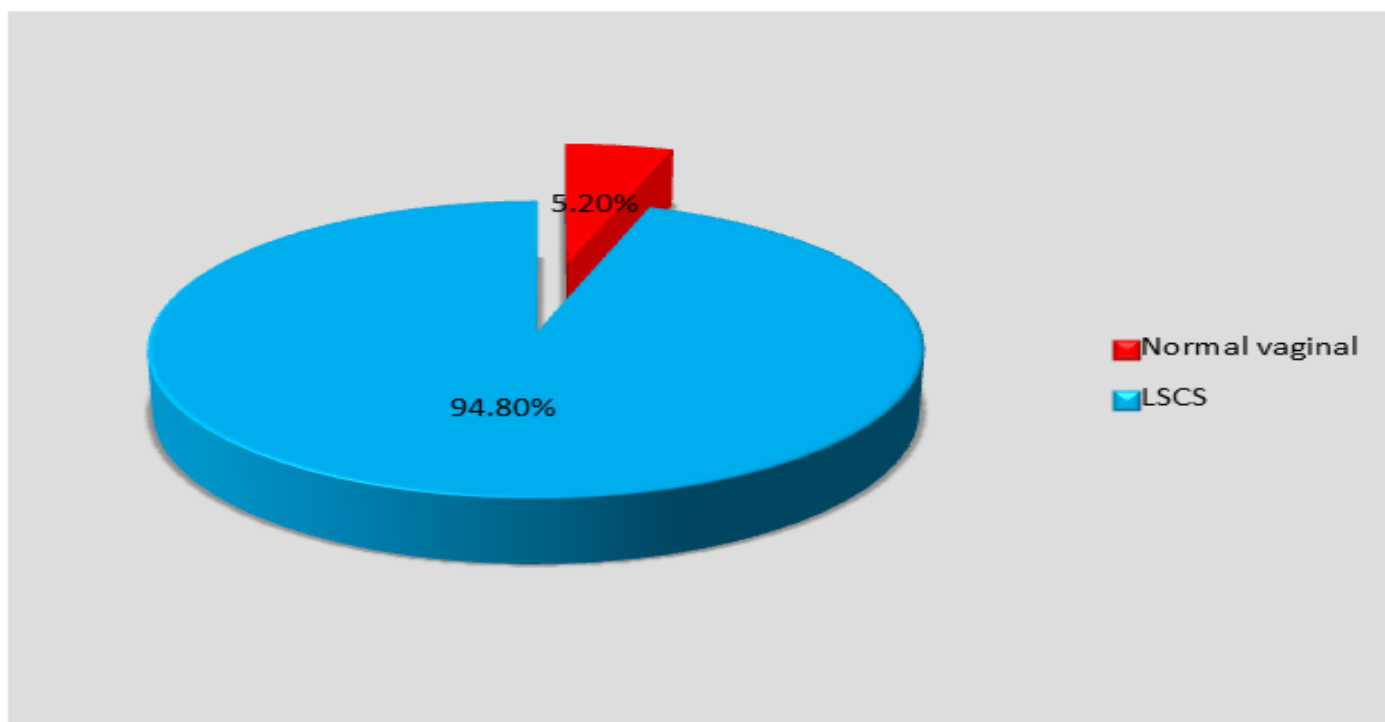


Fig 9 Percentage Distribution According to Type of Delivery of the Women in the Present Pregnancy n= 135

The above figure shows that about 94.8% of the samples underwent caesarean section where as only 5.2% of the samples had a normal vaginal delivery.

Table 14 Frequency and Percentage Distribution According to Mother as per Parity in Current Pregnancy n= 135

SI No		Frequency	Percentage
1.	Multipara	64	47.4%
2.	Primipara	71	52.6%

The above table portrays that about 52.6% of the samples were primiparous mother and the remainder 47.4% were multiparous mothers.

• **Section- IV**

TABLE 15 Frequency and Percentage Distribution According to Normal and Adverse Perinatal Outcomes During all Previous Pregnancies n=64

SI No	Fetal outcome	NORMAL Frequency	ADVERSE Frequency	TOTAL Frequency
1.	1 <sup>st</sup> Gravida	38	16	54
2.	2 <sup>nd</sup> Gravida	14	6	20
3.	3 <sup>rd</sup> Gravida	4	0	4
4.	4 <sup>th</sup> Gravida	1	0	1

The above table states that the perinatal outcome when checked in each gravida was found to be having a total of 57 normal outcomes and 22 were having an adverse outcome which were subsequently seen only in the first two gravidas.

Table 16 Frequency and Percentage Distribution According to Adverse Perinatal Outcomes During Previous Pregnancies n= 22

Sl.No	Neonatal outcome	Frequency	G1	G2	Percentage
1.	Early neonatal death	6	4	2	27.27
2.	Low birth weight	10	8	2	45.45
3.	Intrauterine death	4	2	2	18.18
4.	Still birth	1	1	0	4.54
5.	IUGR	1	1	0	4.54
	Total	22			100

The above table portrays that among the 22 adverse neonatal outcomes in the previous pregnancies, 45.45% of the neonates were born having a low birth weight, 27.27% of the neonates had an early neonatal death, 18.18% of the neonates had an intrauterine death and a similar 4.54% was born as still birth and with IUGR.

Table 17 Frequency and Percentage Distribution According to Normal and Adverse Maternal Outcome During All Previous Pregnancies n=64

Sl. No.	Maternal outcome	Normal	Adverse	ABORTION	PPH	TOTAL
		Frequency	Frequency	Frequency	Frequency	
1.	1 <sup>st</sup> gravida	52	12	10	2	64
2.	2 <sup>nd</sup> Gravida	20	4	4	0	24
3.	3 <sup>rd</sup> Gravida	4	3	3	0	7
4.	4 <sup>TH</sup> Gravida	1	1	1	0	2
5.	5 <sup>th</sup> gravida	0	1	1	0	1

The above table shows that among the 64% of sample who were multiparous, the normal maternal outcome during all the gravida's were 77 in total and there were 21 adverse maternal outcomes. Out of the 21 adverse maternal outcomes, there were 19 abortions observed in all the gravidas and two post partum haemorrhage in their previous pregnancies.

Table 18 Frequency and Percentage Distribution According to Status of Hypertension n= 135

Sl No	Hypertension status	Frequency	Percentage
1.	Current	135	100%
2.	Current and previous	16	11.8%
3.	Chronic	2	1.48%

The above table shows that all the samples selected had a hypertensive disorder in their current pregnancy. Whereas 11.8% among them were also having a previous history of hypertension and only 1.48% sample had a chronic hypertension during pregnancy.

Table 19 Frequency Distribution According to Risk Factors Related to Hypertension n= 135

Sl. No		Non Severe Pre-eclampsia	Severe pre Eclampsia	Eclampsia	PIH	chronic	Superim-posed	On regular medication	On regular follow up
1.	Current	55	11	18	47	2	2	133	133
2.	Previous	6	0	4	5	0	0	0	0
3.	Chronic	0	0	0	0	2	0	0	0

The above table shows that 55 sample were diagnosed having non severe pre-eclampsia, 11 were diagnosed having severe pre-eclampsia, 18 were diagnosed having eclampsia, 47 sample were diagnosed having pregnancy induced hypertension, two of the sample had chronic hypertension and two were diagnosed having pre eclampsia superimposed on chronic hypertension in the current pregnancy. Out of the 135 sample, 133 sample had a regular follow up and were on regular medications. Whereas only two sample considered self management at home and did not have any follow up.

The table also portrays that there were six sample who were diagnosed having non severe pre-eclampsia, four of the sample had eclampsia and five of the sample had pregnancy induced hypertension during their previous pregnancies.

Only two sample had a chronic hypertension.

Table 20 Frequency and Percentage Distribution According to Reasons for Irregular Follow up n= 135

Sl No	Reasons for Irregular Follow up	Frequency	Percentage
1.	Self management at home	2	1.48

Among 135 sample, 1.48% of the sample who did not have a regular follow up was found to be self managing at home with a DASH diet.

Table 21 Frequency and Percentage Distribution According to Specification of the Name of the Drug n=135

Sl No		Frequency	Percentage
1.	Knows the drug name	9	6.7%
2.	Doesn't know the drug name	124	85.9%
3.	Not advised with medication and on DASH diet	2	5.2%
	TOTAL	135	100

The above table portrays that when the sample were asked about the specification of the name of the drug, surprisingly only 6.7% knew the name of the drug that they were taking. Whereas majority of the sample that is 85.9% did not know the drug name. And 5.2% were not on medical management as they were on a dietary management.

Table 22 Frequency and Percentage Distribution According to Antenatal Visits n=135

Sl. No	VISITS	Frequency	Percentage
1.	3	2	1.5
2.	4	39	28.9
3.	5	74	54.8

4.	6	16	11.9
5.	7	4	3.0
	Total	135	100.0

The above table shows that 54.8% of the sample had atleast five antenatal visits, 28.9% had four antenatal visits, and surprisingly about 1.5% had three antenatal visits. Only 11.9% of the sample had six antenatal visits and only 3% of the sample had seven antenatal visits.

Table 23 Frequency and Percentage Distribution of Family History of Diseases n=59

Sl No	Family History	Frequency	Percentage
1.	Diabetes	12	20.33
2.	Hypertension	28	47.45
3.	Cardiac disease	0	0
4.	Renal disease	0	0
5.	Anemia	2	3.38
6.	Pregnancy induced hypertension	0	0
	Total	42	71.16
Combination of diseases		Frequency	Percentage
1.	Diabetes and Hypertension	14	23.72
2.	Hypertension and PIH	1	1.69
3.	Diabetes and PIH	1	1.69
4.	Anemia, Diabetes and Hypertension	1	1.69
	Total	17	28.79

The above table shows that 59 sample had a family history of diseases. Among which 47.45% of the sample had a family history of hypertension, 20.33% sample were having a family history of diabetes. 3.38% of the sample had a family history of anemia and the remaining 28.79% of the sample had a combination of the disease.

The above table also shows that the family members of the sample had a combination of various diseases which constituted of 28.79% on whole. Among them 23.72% of the sample had a combination of Diabetes and Hypertension. A similar percentage that is 1.69% had a combination of Hypertension and PIH, Diabetes and PIH and Anemia, Diabetes and Hypertension.

Table 24 Frequency and Percentage Distribution According to Lifestyle Factors n=135

Sl. No.	Factors	Yes		No	
		Frequency	Percentage	Frequency	Percentage
1.	Excess salt	53	39.3	82	60.7
2.	Processed foods	92	68.1	43	31.9
3.	Exercises	4	3.0	131	97.0
4.	Stress	82	60.7	53	39.3

The above table shows that 39.3% of the samples added excess salt in their diet on the table, 68.1% samples took processed foods during their pregnancy, 97% of the mothers did not do any exercise during their pregnancy period, 60.7% of samples stated that they faced stress during their pregnancy period. Whereas none of the samples had a habit of alcohol, tobacco chewing and cigarette smoking and practising any relaxation techniques at home.

## CHAPTER FIVE

### RECOMMENDATIONS AND DISCUSSION, SUMMARY, CONCLUSION, IMPLICATIONS

This chapter deals with the discussion, summary of the study, its findings and conclusion, identifying the perinatal outcomes and its associated risk factors of hypertensive pregnant women. The limitations are put forward and recommendations are suggested.

#### ➤ *Objectives of the study*

- To determine the perinatal outcomes among hypertensive pregnant women.
- To assess associated risk factors for perinatal outcomes among hypertensive pregnant women.
- To develop instructional booklet on understanding and managing hypertension during pregnancy.

#### A. *Discussion*

##### ➤ *Major Findings of the Study*

##### • *Section- I Demographic Data*

- ✓ The mean age of the hypertensive pregnant women found in this study was 24.57 years old.
- ✓ The mean age of the hypertensive pregnant women at their marriage was 20.57 years old. The minimum age of the hypertensive pregnant women at marriage was 15 years old and the maximum age was 31 years old.

Women's mean age at marriage at all India level is in 2016 is at 22.2 years and the same in rural and urban areas are 21.7 years and 23.1 years respectively. Women's mean age at marriage in Telangana is 22.1% in 2016. Similarly the mean age of marriage was found to be 21 years old in this study.<sup>54</sup>

According to 2011 nationwide census of India 3.7% of females who married were less than 18 years of age. In the present study also the minimum age was found to be below 20.57 years of age.<sup>54</sup>

- ✓ The mean age of the hypertensive pregnant women at menarche was 11.73 years old.
- ✓ The mean height of the mother was 154.59 cm.
- ✓ In the present study 70.4% of hypertensive pregnant women were Hindus and the remaining (29.65%) were Muslims.
- ✓ The majority of the hypertensive pregnant women (74.1%) were educated and only a quarter of the hypertensive pregnant women (25.9%) were having no formal education

The female literacy rate according to the 2011 census is 64.63% whereas the male literacy rate is over 80%. Telangana state has shown the education rate of 66.46% and male and female literacy rates are 74.95% and 57.92% respectively. This shows that the literacy rates of women from the present study are significantly more than national literacy statistics.<sup>54</sup>

- ✓ The majority of the sample (93.3%) were unemployed while a very few that is (6.7%) were employed.
- ✓ National Sample Survey (68th Round) results indicate that the worker population ratio for females in rural sector was 24.8 and 54.3 for males in 2011-12. In urban sector, the ratio is 14.7 for females and 54.6 for males. The present study shows a decrease in the rate of occupation among women.<sup>54</sup>
- ✓ A little more than three quarters of the samples 81.5% were earning Rs 5001- 10,000/- , where none of the families had an income of above Rs 15,000, 12.6% earned Less than Rs 5000/- and 5.9% earned Rs 10,001 – 15,000/-.
- ✓ India's per capita Income was recorded to be INR 1, 13,000. It grew at a rate of 8.6% which was slower than the previous growth patterns. That indicates the monthly income would be INR 9,416 respectively.<sup>54</sup> The majority of the samples in the present study had monthly income that ranged between Rs 5001- 10,000/-
- ✓ Almost half of the sample that is 54% had a previous knowledge about hypertension whereas 46% had no previous knowledge about hypertension.

**Vineeta Singh, Manushi Srivastava (2015)** conducted a cross-sectional study among all pregnant women between the age group of 15-49 years, who attended antenatal clinic in Gynae O.P.D, of Sir Sundar Lal Hospital, Banaras Hindu University, Varanasi to find out the association between PIH and knowledge, attitude, and preventive practices among pregnant women. The result shows that >50% (60.49%) of women are unaware about hypertension. Those women belong to the age group of 20-30, and they also diagnosed with prehypertension. The overall incidence of Eclampsia was 13.58% in study population. Lack of exercise is a major cause for hypertension. The study concluded that pregnancies complicated by hypertensive disorders lead to poor maternal and perinatal outcomes.<sup>55</sup>

Similarly to the above mentioned study, in the present study also there was >50% (56.3%) of hypertensive pregnant women who were unaware about hypertension.

- ✓ About 47.9% sample were educated about hypertension by their health care provider and about the same percentage of sample that is 43.8% had a previous knowledge from their friends and relatives, where a very few percentage of sample got their knowledge from television (2.73%), books (2.73%), and internet (2.73%). Surprisingly none of them received any knowledge from magazines and newspaper.
- ✓ A half that is 46.7% of samples was diagnosed having Pre eclampsia. And about 37% of the samples were diagnosed having Pregnancy induced hypertension, and 13.3% were diagnosed with Eclampsia. An equal percentage that is 1.5% was having Chronic hypertension and pre eclampsia superimposed on chronic hypertension.

**Vidya A and Afreen Anwar** (2017) conducted a study to analyze the case of pre eclampsia and eclampsia complicating pregnancy, its maternal outcome, study the consequences of hypertensive disorders contributing pregnancy and its management among patients beyond 20 wks of pregnancy with hypertensive disorders complicating pregnancy admitted in Al Ameen Medical College Hospital, Bijapur during the two year three months study period. The results showed that total hypertensive cases accounted were 234, out of which mild pre eclampsia accounted for 144 cases (61.5%), 64 cases(27.4%) were severe pre eclampsia and 26 cases (11.1%) were eclampsia. The study concluded that pre eclampsia and eclampsia is the leading causes of maternal morbidity and mortality worldwide. The early use of antihypertensive drugs, optimum timing of delivery and strict fluid balance, anticonvulsants in case of eclampsia will help to achieve successful outcome.

In the present study also the majority of the cases were found to be preeclampsia when compared to the other hypertensive disorders in pregnancy.<sup>56</sup>

#### • *Section- II Perinatal Outcomes Of Hypertensive Pregnant Women*

- ✓ Normal perinatal outcomes were found in 56.29% and 43.70% of the sample had adverse perinatal outcomes.
- ✓ Among the 43.7% of the adverse perinatal outcomes of hypertensive pregnant mothers, Majority (39.3%) of the neonates were born prematurely, and next to it is neonates born with low birth weight (32.6%) and (31.9%) of the neonates born were admitted in NICU, about (23.7%) of the neonates had APGAR score less than 7 at 1 min and (3.7%) of the neonates had an APGAR score less than 7 at 5 minutes. About (8.9%) of the neonates were born with intrauterine growth restriction and a similar percentage that is (5.2%) of the neonates were born with distress and had meconium aspiration syndrome. About (4.4%) of the neonates died intrauterine. About (2.2%) of the neonates born had an immediate or early neonatal death. A few that is (1.5%) of the neonate required resuscitation. Five percent of neonates were post dated as adverse perinatal outcome under other's category.
- ✓ Although there were various combinations of perinatal outcomes in hypertensive pregnant women, the least combinations observed were two and the maximum were eight combinations. The majority (38.98%) were found to have a combination of three perinatal outcomes, followed by (16.94%) were found having a combination of two outcomes, (13.55%) had a combination of four outcomes. A (6.77%) of them had a combination of five perinatal outcomes. A similar percentage (3.38% each) had a combination of six and seven outcomes. Only (1.69%) had a combination of eight outcomes. Intrauterine death was seen in (10.16%) and (5.08%) of immediate/early neonatal death was seen.
- ✓ In a combination of two perinatal outcomes, the majority (40%) of the neonates were born preterm and with low birth weight and the least (10% each) were born with either low birth weight and admitted to NICU or with hypoplastic penis and was admitted in NICU. The remaining (20% each) were born with either low birth weight and APGAR score less than 7 at 1 minute or admitted to NICU with a meconium aspiration syndrome.
- ✓ The neonates were assessed having three combinations of perinatal outcomes and it was found that majority (47.82%) gave birth to a neonate in a combination of low birth weight, APGAR score less than 7 at 1 minute and admission to NICU. A similar (13.04%) of the neonate were born either preterm with low birth weight and APGAR score less than 7 at 1 minute or preterm with low birth weight and admission to NICU. About 8.69% of the neonates were born with an APGAR score less than 7 at 1 minute, admission to NICU and meconium aspiration syndrome.
- ✓ There were four perinatal outcomes (4.34% each) and were born with:
  - ✓ Low birth weight + Admission to NICU + Meconium aspiration syndrome
  - ✓ Low birth weight + Admission to NICU + IUGR
  - ✓ Distress + APGAR score less than 7 at 1 min + Admission to NICU
  - ✓ Distress + Admission to NICU + Meconium aspiration syndrome
- ✓ The majority (75%) neonates were born as preterm with APGAR score less than 7 at 1 min, Low birth weight and Admission to NICU and (25%) were born with a combination of APGAR score less than 7 at 1 min, low birth weight, Admission to NICU and IUGR.



- ✓ In a combination of five perinatal outcomes, About (75%) neonates were born preterm with APGAR score less than 7 at 1 min, low birth weight, Admission to NICU and IUGR and (25%) neonates were born preterm with APGAR score less than 7 at 1 min and at 5 min, low birth weight and admission to NICU.
- ✓ The researcher in this study also found that in the combinations of six perinatal outcomes 2 neonates were born preterm with Distress with an APGAR score less than 7 at 1 min, Low birth weight, Admission to NICU and IUGR.
- ✓ Two neonates who had an adverse perinatal outcome showed (50%) born with a combination of Preterm + Distress + APGAR score less than 7 at 1 min + APGAR score less than 7 at 5 min + Low birth weight + Admission to NICU + IUGR and the remaining 50% were Preterm + Distress + APGAR score less than 7 at 1 min + APGAR score less than 7 at 5 min + Low birth weight + Admission to NICU + Required resuscitation.
- ✓ One neonate was born with a combination of eight perinatal outcomes that included Preterm + Distress + APGAR score less than 7 at 1 min + APGAR score less than 7 at 5 min + Low birth weight + Admission to NICU + IUGR + Required resuscitation.

**Kwame Adu-Bonsaffoh, Michael Y, Samuel A, Joseph D (2017)** conducted a cross sectional study at the Maternity unit of KBTH in Accra between 1st January and 28th February 2013 to analyze the perinatal outcomes of 368 hypertensive mothers. The mean gestational age at delivery was  $37.4 \pm 3.3$  weeks. Meconium staining of the liquor occurred in 64 women (17.4%). Caesarean birth occurred in 168 (45.7%) hypertensive mothers. Neonates who had respiratory distress or asphyxia were of 15.2%. The need for ventilator support occurred in 14 (3.8%) neonates. The frequency of low birth weight (LBW) was 24.7% which was highest in the pre-eclamptic group. On the other hand, macrosomia occurred in 7.9% of the babies which was most frequent in chronic hypertension. Preterm delivery also occurred in 21.7% of the babies. The occurrence of low birth weight, admission to NICU and low APGAR score after 1 minute of delivery remained significantly higher in preeclampsia compared the other HDP after adjusting for maternal age, parity, number of antenatal visits, gestational age at delivery and the mode of delivery. There was a perinatal mortality rate of 106 per 1000 births among women with hypertensive disorders in pregnancy.<sup>40</sup>

• *Section- III Maternal Outcomes*

- ✓ There was not more than (1.5%) of adverse maternal outcomes. The two mothers had postpartum haemorrhage and vulval edema as adverse outcome of hypertension in the current pregnancy.
- ✓ About 94.8% of the samples underwent caesarean section where as only 5.2% of the samples had a normal vaginal delivery.

**Ben-Haroush A, Yogev Y, Glickman H, Kaplan B, Hod M and Bar J (2005)** conducted a retrospective case-controlled study to evaluate the mode of delivery in pregnant women with hypertensive disorders and unfavorable cervix following induction of labor with vaginal application of prostaglandin E (2) (PGE (2) near or at term, and to define the predictors of successful vaginal delivery in such women. The results showed that the rate of cesarean section (CS) was significantly higher in pregnant women with hypertension, who underwent labor induction with PGE (2) tablets (25.3%) than in women, who underwent elective induction of labor (14.8%) and in and women with normal spontaneous onset of labor (9%). Exclusion of the nulliparous women from the study and control groups yielded similar CS rates in the study group (16.9%) and in group 2 (11.1%). Women with preeclampsia and the women with chronic hypertension or pregnancy-induced hypertension had similar rates of CS.<sup>57</sup>

- ✓ In the present study 52.6% of the samples were primiparous mother and the remainder 47.4% were multiparous mothers.
- ✓ **Pierre M, Pascal F, Robinson M, Gisèle F, and Joseph N (2011):** This case control study was conducted to identify the possible risk factors for hypertensive disorders in pregnancy among 152 deliveries complicated with hypertension and were compared and analyzed with 414 pregnancies that were not complicated with the disease. The study concluded that several factors that linked to hypertensive disorder in pregnancy included early adolescence, nulliparity, and illiteracy, lack of occupation and family history of hypertension. The risk of having hypertension during pregnancy remained greater for illiterate women, housewives, nulliparae, women with family histories of hypertension and women with histories of hypertension during pregnancy.<sup>52</sup>
- ✓ The perinatal outcome when checked in each gravida of the previous pregnancies was found to be having a total of 57 normal outcomes and 22 were having an adverse outcome which were subsequently seen only in the first two gravidas. Among the 22 adverse neonatal outcomes in the previous pregnancies, 45.45% of the neonates were born having a low birth weight, 27.27% of the neonates had an early neonatal death, 18.18% of the neonates had an intrauterine death and a similar 4.54% was born as still birth and with IUGR.
- ✓ Among the 64% of sample who were multiparous, the normal maternal outcomes during all the gravida's were 77 in total and there were 21 adverse maternal outcomes. Out of the 21 adverse maternal outcomes, there were 19 abortions observed in all the gravidas and 2 post partum haemorrhage in their previous pregnancies.

**G Singh and K Sidhu (2010)** conducted a prospective study from 2003 to 2007 in 79 pregnancies having BOH (history of unexplained stillbirth/neonatal death, three or more consecutive abortions etc). Test group was analyzed in terms of age, gravida, parity, risk factors and outcome in terms of preterm delivery, stillbirth, and mode of delivery, birth weight, pregnancy complications and fetal distress. These parameters were compared with a systematic, randomly selected sample from rest of the

deliveries. Necessary advice and treatment was given in cases of hypothyroidism, hypertension, antiphospholipid antibody (APLA) syndrome, gestational diabetes and other risk factors. The results showed that there was significantly higher incidence of malpresentations, hypertension, APLA, cervical incompetence, preterm deliveries and caesarean section in test group ( $p < 0.05$ ). In this study, only 47 (59.49%) women out of 79 in BOH group were identified to have possible factor responsible for pregnancy losses. In 32 (40.51%), no probable causes could be identified. Nine (11.39%) patients were identified with more than one risk factor. The study concluded that APLA, hypertension, malpresentation, cervical incompetence, preterm deliveries and caesarean section were found significantly more in bad obstetric history group.<sup>58</sup>

• *Section-IV Associated Risk Factors*

- ✓ In the current pregnancy About 55 sample were diagnosed having non severe pre-eclampsia, 11 were diagnosed having severe pre-eclampsia, 18 were diagnosed having eclampsia, 47 sample were diagnosed having pregnancy induced hypertension, 2 of the sample had chronic hypertension and 2 were diagnosed having pre eclampsia superimposed on chronic hypertension. Out of the 135 sample, 133 sample had a regular follow up and were on regular medications. Whereas only 2 sample considered self management at home and did not have any follow up.
- ✓ There were six sample who were diagnosed having non severe pre-eclampsia, four of the sample had eclampsia and five of the sample had pregnancy induced hypertension during their previous pregnancies.
- ✓ Only two sample had a chronic hypertension.

**Bharti Mehta, Vijay Kumar, Sumit Chawla, Sandeep Sachdeva and Debjyoti Mahopatra (2015):** conducted a cross-sectional study in 20 sub centers under Community Health Center (CHC) Chiri, Block Lakhanmajra Haryana among 931 pregnant women registered. Prevalence of hypertension in pregnancy was found to be 6.9%. Maternal age  $\geq 25$  years, gestational period  $\leq 20$  weeks, history of cesarean section, history of preterm delivery, and history of hypertension in previous pregnancy were found to be significantly associated with prevalence of hypertension in pregnancy.<sup>59</sup>

- ✓ When the sample was asked about the specification of the name of the drug, surprisingly only 6.7% knew the name of the drug that they were taking. Whereas majority of the sample that is 85.9% did not know the drug name. And 5.2% were not on medical management as they were on a dietary management.
- ✓ Around 54.8% of the sample had atleast 5 antenatal visits, 28.9% had four antenatal visits, and surprisingly about 1.5% had three antenatal visits. Only 11.9% of the sample had six antenatal visits and only 3% of the sample had 7 antenatal visits.
- ✓ The four-visit focused ANC (FANC) model does not offer women adequate contact with health-care practitioners and is no longer recommended. The latest recommendation by WHO is Antenatal care models with a minimum of eight contacts are recommended to reduce perinatal mortality and improve women’s experience of care.

WHO FANC model	2016 WHO ANC model
<i>First trimester</i>	
Visit 1: 8–12 weeks	Contact 1: up to 12 weeks
<i>Second trimester</i>	
Visit 2: 24–26 weeks	Contact 2: 20 weeks Contact 3: 26 weeks
<i>Third trimester</i>	
Visit 3: 32 weeks	Contact 4: 30 weeks
Visit 4: 36–38 weeks	Contact 5: 34 weeks
	Contact 6: 36 weeks
	Contact 7: 38 weeks
	Contact 8: 40 weeks
Return for delivery at 41 weeks if not given birth.	

Fig 10 WHO Recommendations of Antenatal Visits.

- ✓ A family history of diseases was seen in 59 sample. Among which (47.45% ) of the sample had a family history of hypertension, 20.33% sample were having a family history of diabetes. 3.38% of the sample had a family history of anemia and the remaining 28.79% of the sample had a combination of the disease.

- ✓ The sample who added excess salt in their diet on the table were (39.3%), (68.1% ) samples took processed foods during their pregnancy, (97%) of the mothers did not do any exercise during their pregnancy period,(59.3%) of samples stated that they faced stress during their pregnancy period . Whereas none of the samples had a habit of alcohol, tobacco chewing and cigarette smoking and practicing any relaxation techniques at home.

#### *B. Implications*

The findings of the present study has several implications in the field of Nursing education, Nursing practice, Nursing administration, and Nursing research

#### *C. Nursing Practice*

A mother with a hypertensive disorder during pregnancy is at a high risk of having and adverse maternal and perinatal outcome. The complications can be avoided with proper antenatal education and care. The investigator, a midwife plays an important role in managing the hypertension during pregnancy. It is the primary role of the midwife to educate the women in the community to have regular antenatal checkups and have a regular follow up if she falls in the high risk category. Educating the women with the dietary habits and adaptive lifestyle factors will help the women to adapt to the hypertensive disorder in the current situation and prevent it in future pregnancies.

#### *D. Nursing Administration*

Nursing administrators should take an initiative in increasing the awareness about hypertension among women in the community. Midwifery in-service training programmes should be encouraged to update the midwifery knowledge, skills and to help midwives and others develop into skilled practitioners who are able to think critically and make clinical decisions on the basis of sound knowledge and understanding of these complications.

#### *E. Nursing Research*

The main goal of the nursing research should be to improve the maternal and perinatal outcomes in a hypertensive pregnant woman. Further more research studies can help the researcher to have an in depth knowledge about the hypertension and how the adverse perinatal and maternal outcome could be reduced. This will also help in improving the maternal and perinatal mortality and morbidity rates.

#### *F. Nursing Education*

In the midwives curriculum, Hypertension is dealt extensively, but the curriculum should also focus on providing opportunities to students to care for the women with a hypertensive disorder specifically. It will help the student to have a critical skill in identifying the women who are at risk of developing hypertension and various measure a midwife would take to manage hypertension.

#### *G. Limitations*

The study is limited to few hospitals in Hyderabad, Telangana

#### *H. Recommendations*

- ✓ A descriptive study can be done on prevalence of hypertension during pregnancy on a larger sample.
- ✓ A comparative study can be done to know the adverse perinatal outcomes among normotensive and hypertensive pregnant women.
- ✓ A comparative study can be done among hypertensive pregnant women who are with or without treatment of hypertension.
- ✓ A similar study can be conducted on a larger sample which may yield more reliable results.

#### *I. Conclusion*

The present study aimed to find out the perinatal outcomes and its associated risk factors in hypertensive pregnant women in selected hospitals in Hyderabad. Data was collected using a purposive sampling technique from 135 hypertensive pregnant women. Using a semi structured tool, an interview was conducted to know the data related to hypertension in pregnancy retrospectively and the case sheet records review was done to find out the diagnosis and perinatal outcomes in the current and previous pregnancies. The data was analysed using descriptive statistics and presented in the form of graphs and tables.

The findings of the study reveal that 43.7% of the women had adverse perinatal outcomes due to hypertension in the current pregnancy. The adverse perinatal outcomes were prematurity, low birth weight, admitted to NICU, APGAR score less than 7 at 1 min and at 5 min, neonatal respiratory distress and meconium aspiration syndrome, neonatal resuscitation, IUGR, intrauterine death and immediate/early neonatal death. The associated risk factors found in the study was no previous knowledge about hypertension, bad obstetric history in the multiparty women, previous history of hypertension, familial history of hypertension and maladaptive lifestyle factors such as excessive salt intake on table, processed foods, lack of exercises during pregnancy, increased exposure to stress and not adapting any mind relaxation techniques at home.

The study concluded that effective antenatal care, adaptive lifestyle factors and awareness about hypertension will help to reduce the adverse complications in hypertensive pregnant women.

❖ *Summary*

This chapter includes objectives, discussion, implications, limitations, recommendations and conclusion.

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ANNEXURE

➤ Annexure – A

**APOLLO COLLEGE OF NURSING**  
(APOLLO HOSPITALS EDUCATIONS & RESEARCH FOUNDATION)  
Apollo Health City Campus, Jubilee Hills, Hyderabad - 500 096.  
Ph : 040-23607777, Extn. : 5507 (CON) 23556950, Fax : 040-23556950  
E-mail : aconhyderabad@yahoo.com, principal\_nursing@apolloimr.edu.in



From  
Ms. Jennifer D'lima  
Apollo College of Nursing  
Jubilee Hills, Hyderabad.

Date: 23-03-2019

To  
The Medical Superintendent  
St. Theresa Hospital  
Erragadda  
Hyderabad.

Subject: Request for permission to conduct research study at your esteemed hospital.

“Through Proper Channel”

Respected Sir/Madam,

I, Ms. Jennifer D'Lima, 2nd year M.Sc. Nursing student of Apollo College of Nursing, Jubilee Hills, Hyderabad is intending to conduct a retrospective study on perinatal outcomes and its associated risk factors of hypertensive pregnant women in Hyderabad. Hence I request you to kindly permit me to conduct this study at your esteemed hospital in Hyderabad. I assure you that the confidentiality will be maintained and I will not collect any details pertaining to hospital.

Thanking you,

Signature of the Principal:

Date: 23/3/19

Place: Hyderabad

PRINCIPAL  
Apollo College of Nursing  
Jubilee Hills, Hyderabad, TG



Yours sincerely,

Jennifer D'Lima

*Free*

To meet Dr. Aparna, HOD, ObGyn.



➤ Annexure – B

**APOLLO COLLEGE OF NURSING**  
(APOLLO HOSPITALS EDUCATIONS & RESEARCH FOUNDATION)  
Apollo Health City Campus, Jubilee Hills, Hyderabad - 500 096.  
Ph : 040-23607777, Extn. : 5507 (CON) 23556950, Fax : 040-23556950  
E-mail : aconhyderabad@yahoo.com, principal\_nursing@apolloimsr.edu.in



Date: 22-01-2019

From  
Ms Jennifer D'lima  
Apollo College of Nursing  
Jubilee Hills, Hyderabad.

To  
The Medical Superintendent  
Gandhi Hospital  
Padmarao Nagar, Secunderabad  
Hyderabad.

Subject: Request for permission to conduct research study at your esteemed hospital.

“Through Proper Channel”

Respected Sir/Madam,

I, Ms. Jennifer D'lima, 2<sup>nd</sup> year M.Sc. Nursing student of Apollo College of Nursing, Jubilee Hills, Hyderabad is intending to conduct a retrospective study on perinatal outcomes and its associated risk factors of hypertensive pregnant women in Hyderabad. Hence I request you to kindly permit me to conduct this study at your esteemed hospital in Hyderabad. I assure you that the confidentiality will be maintained and I will not collect any details pertaining to hospital.

Signature of the Principal:

Date: 23/1/19

Place: Hyderabad

Thanking you,

Prof. (Dr.)  
Ganes  
24/1/19

Permitted  
8/1/19  
Yours Sincerely  
Jennifer D'lima  
D'lima

**APOLLO COLLEGE OF NURSING**  
(APOLLO HOSPITALS EDUCATIONAL & RESEARCH FOUNDATION)  
Apollo Health City Campus, Jubilee Hills, Hyderabad - 500 096.  
Ph : 040-23607777, Extn. : 5507 (CON) 23556950, Fax : 040-23556950  
E-mail : aconhyderabad@yahoo.com, principal\_nursing@apolloimr.edu.in



From,

Date: 19-03-2018

Ms Jennifer D'lima

Apollo College of nursing

Jubilee hills, Hyderabad.

To,

The Medical superintendent

Modern Government Maternity Hospital

Pardiwada Colony, Puranapool

Hyderabad.

Subject: Request for permission to conduct research study next year at your esteemed hospital.

“Through Proper Channel”

Respected Sir/Madam,

I Ms. Jennifer D'lima, 1<sup>st</sup> year M.Sc. Nursing student of Apollo College of Nursing, Jubilee Hills, Hyderabad is intending to conduct a research study in “Modern Government Maternity Hospital” next year to assess the perinatal outcomes of hypertensive disorders in pregnancy and to identify the breastfeeding problems among post-natal mothers, hence I will be requesting you to permit me to conduct this study in your esteemed hospital and data will be collected next year 2019.

Thanking you,

Yours sincerely,

Jennifer D'lima

Signature of the Principal:

Place: Hyderabad

PRINCIPAL  
Apollo College of Nursing  
Jubilee Hills, Hyderabad, TG



*Principals of Modern Govt. Maternity Hospital*  
*19/3/18*  
*9847902791*  
Superintendent  
Modern Govt. Maternity Hospital  
PetlaBurj, Hyderabad-500 064.

➤ *Annexure – C*

**LETTER SEEKING EXPERTS OPINIONS ON CONTENT VALIDITY OF TOOL**

From,  
Ms. Jennifer D’Lima  
2<sup>nd</sup> year M.Sc. Nursing,  
Apollo College of Nursing,  
Jubilee Hills,  
Hyderabad.

To,  
.....,  
.....,

**“Through Proper Channel,**

**Sub: Expert opinion on content validity of tool.**

Respected Sir/Madam,

I am doing a research study on “Perinatal outcomes and its associated risk factors among Hypertensive Pregnant women in Hyderabad: A Retrospective study” For partial fulfilment of my Masters of Nursing, under KNR University. Henceforth, I am requesting for your expert opinion, kindly go through the tool and give valuable suggestions.

I also request to certify my content if you feel that I can continue my study with modifications and suggestions.

Thanking You

Yours Sincerely,

**Signature of Guide:**

**Signature of Investigator:**

**Signature of Principal:**

**Date:**

➤ *Annexure – D*

### **CERTIFICATE FOR VALIDATION**

This is to certify that the tool developed by Ms. D'Lima Jennifer Bernadine , M.Sc. Nursing 2<sup>nd</sup> year student of Apollo College of Nursing, Hyderabad is validated by under signed and can proceed with this tool with suggested modifications before conducting main study for dissertation entitled as “**Perinatal outcomes and its associated risk factors among Hypertensive pregnant women in Hyderabad. A retrospective study**”

**Name:**

**Designation:**

**Date:**

**Signature:**

➤ *Annexure – E*

**LIST OF EXPERTS WHO VALIDATED THE TOOL**

- 1. Dr Salver Sujatha**  
Assistant Professor  
Government College of Nursing
  
- 2. Mrs D Vijaylaxmi**  
Lecturer  
NIMS College of nursing
  
- 3. Mrs T Sudha**  
Lecturer  
NIMS College of nursing
  
- 4. Ms Madhulika Sandra**  
Manger Nursing Education  
Apollo Medskills
  
- 5. R Shivaiah**  
Statistician  
Apollo College Of Nursing
  
- 6. Mrs Jabila Gnana Thiah**  
Associate Professor[OBG]  
Apollo College of Nursing
  
- 7. Mrs Archana Morey**  
Associate Professor [OBG]  
Apollo College of Nursing
  
- 8. Mrs K Harika Priyanka**  
Assistant Professor[OBG]  
Apollo College of Nursing

**INFORMED CONSENT FORM**

**CODE NO: .....**

**STUDY TITLE: “Perinatal outcomes and its associated risk factors among Hypertensive pregnant women in Hyderabad. A retrospective study”**

**NAME OF THE RESEARCHER: .....**

**DATE: .....**

**PLEASE INITIAL IN THE BOX (SUBJECT)**

i.I confirm that I have been explained the study and I have understood the information sheet dated..... for the above study and have had the opportunity to ask questions and they have been answered. ( )

ii.I understand that my participation in the study is voluntary and that I am free to withdraw at any time during the process. ( )

iii.I understand that my identity will not be revealed in any information released to other concerned or published. ( )

iv.I agree not to restrict the use of any data or results that arise from this study provided such a use is only for scientific purpose(s). ( )

v.I agree to take part in the above study. ( )

**SIGNATURE OF SUBJECT**

By signing this form, I willingly agree to participate in the research it describes and authorize the use and disclosure of my information in connection with the study.

Name of the subject (BLOCK LETTERS).....

Signature of subject:

Time of signature

Date: .....

**SIGNATURE OF THE RESEARCHER**

I attest that the research subject named above had enough time to consider this information, had an opportunity to ask questions, and voluntarily agreed to be in this study, I have explained about the research study to the subject and answered all of his/her questions.

Signature of investigator: \_\_\_\_\_

**QUESTIONNAIRE TO ASSESS THE PERINATAL OUTCOMES AND ITS ASSOCIATED RISK FACTORS AMONG HYPERTENSIVE PREGNANT WOMEN IN HYDERABAD.**

**Code No:** \_\_\_\_\_

I request you to answer the following few questions related to your personal information, pregnancy and labour as necessary for the research and I assure you that these answers will be kept confidential and used for the research purpose only.

Thank you.

**SECTION –A: DEMOGRAPHIC DATA**

1. What is your current age?( in years)  
.....
2. What was your age at marriage? (in years)  
.....
3. What was your age at your first menstruation.....?
4. What is your religion?  
 4. a. Hindu  
 4. b Muslim  
 4. c Christian  
 4. d Others, please specify .....
5. What is your education level?  
 5.a No formal education  
 5.b Primary education  
 5.c Secondary education  
 5.d Higher secondary education  
 5.e Graduation and above
6. Are you employed?  
 6.a Yes  
 If yes, specify your job.....  
 6.b No
7. What is the average family monthly income?  
 7.a Less than Rs. 5000/-  
 7.b Rs. 5001 to 10000/-  
 7.c Rs. 10001 to 15000/-  
 7.d Above Rs. 15000
8. Do you have any previous knowledge about hypertensive disorders in pregnancy?  
 8. a No  
 8. b Yes  
 8.b.1 If yes, from which of the following sources did you know about hypertension disorders in pregnancy?

SL.NO	SOURCES	1.YES	2.NO
8.b.1.a	Television		
8.b.1.b	Newspaper		
8.b.1.c	Magazine		
8.b.1.d	Health care provider		
8.b.1.e	Books		
8.b.1.f	Internet		
8.b.1.g	Friends and relatives		

- 9. Diagnosis of the hypertensive mother
  - 9.a Pre eclampsia
  - 9.b Pregnancy induced hypertension
  - 9.c Eclampsia
  - 9.d Chronic hypertension
  - 9.e Pre eclampsia superimposed on chronic hypertension.
  
- 10. Height of the mother (in cm): .....



**SECTION: B – PERINATAL OUTCOMES AMONG HYPERTENSIVE PREGNANT WOMEN**

<b>SL.NO</b>	<b>B.1 PERINATAL OUTCOMES</b>	<b>1.PRESENT</b>	<b>2.ABSENT</b>
11.a	STILLBIRTH		
11.b	PRETERM BIRTH		
11.c	INTRAUTERINE DEATH		
11.d	NEONATAL RESPIRATORY DISTRESS		
11.e	APGAR SCORE LESS THAN 7 AT 1 MIN		
11.f	APGAR SCORE LESS THAN 7 AT 5 MIN		
11.g	LOW BIRTH WEIGHT		
11.h	REQUIRED RESUSITATION		
11.i	ADMISSION TO NICU		
11.j	IMMEDIATE/ EARLY NEONATAL DEATH		
11.k	NORMALLY HEALTHY NEW BORN		
11.l	ABORTION		
11.m	MECONIUM ASPIRATION SYNDROME		
11.n	INTRAUTERINE GROWTH RETARDATION		
11.o	ANY OTHER, SPECIFY.....		

**SECTION- C**

- 12. Maternal outcome:
  - 12. a. Healthy
  - 12. b. Adverse outcome Specify if any .....  
(Antenatal and/or Intranatal and/or Postnatal)
- 13. What was the mode of delivery for the current pregnancy?
  - 13. a. Normal vaginal delivery
  - 13. b. Caesarean section
  - 13. c. Instrumental delivery

**SECTION:D –ASSOCIATED RISK FACTORS AMONG WOMEN WITH HYPERTENSIVE DISORDERS.**

**RISK FACTORS- RELATED TO PREGNANCY**

- 14. Were you pregnant earlier?
  - 14.a. Yes
  - 14.b. No

**IF YES PROCEED TO QUESTION NO 15  
OR, SKIP TO QUESTION NO 16**

- 15. Please answer the below questions regarding your previous pregnancy.

15.a. Gravida	15.b. Parity	15.c. What was the neonatal outcome?		15.d. What was the maternal outcome?	
No of pregnancies	No of deliveries	15.c.1 Normal	15.c.2 Specify if any adverse outcome	15 d.1 Normal	15.d.2 Specify if any adverse outcome

**RISK FACTORS- RELATED TO HYPERTENSION**

KINDLY RESPOND FOR THE FOLLOWING QUESTIONS RELATED TO YOUR HYPERTENSION/HIGH BLOOD PRESSURE

SL.NO	Diagnosis Of Hypertension	a. Yes	b. No	c. Specify when was it diagnosed specify gestational week 1.pre eclampsia 2. PIH 3. Eclampsia	d. Whether On Regular Consumption Of Medicines 1.Yes, 2.No	e. Whether On Regular Follow Up 1.Yes 2.No	f. Specify Reasons For Irregular Treatment And Follow Up
16	Current Pregnancy						
17	Previous Pregnancy						
18	Chronic						

19. Can you specify the name of the drug/ drugs?

19.a Yes, Name the drug.....

19.b No

19.c Not advised with drugs/ On dietary management

20. How many antenatal checkups have you attended during your current pregnancy.....?

**RISK FACTORS- RELATED FAMILY HISTORY OF DISEASES**

21. Does any of your family members have any of these?

SL.NO	CONDITIONS	1.YES	2.NO
21.a	DIABETES		
21.b	HYPERTENSION		
21.c	CARDIAC DISEASE		
21.d	RENAL DISEASE		
21.e	ANEMIA		
22.f	PREGNANCY INDUCED HYPERTENSION		

**RISK FACTORS- RELATED LIFESTYLE**

22. Do you add excess salt to your food on the table?

- 22.a Yes
- 22.b No

23. Does your diet consist of processed foods such as pickles and papads?

- 23.a Yes
- 23.b No

24. Do you have a habit of doing physical exercises?

- 24.a. No
- 24.b. Yes ( Then specify how often do you exercise).....

25. Do you consume alcohol?

- 25.a Yes
- 25.b No

26. Do you smoke cigarettes?

- 26.a Yes
- 26.b No

27. Do you chew tobacco?

- 27.a Yes
- 27. a. 1 if yes , then how frequently, please specify .....
- 27.b No

28. Do you feel continuously stressed out to meet your responsibilities?

- 28.a Yes
- 28.b No
- 28.c I don't know

29. Do you perform any mind relaxing techniques (meditation) at home?

- 29.a Yes then, specify.....
- 29.b No

THANK YOU.....

**MASTER SHEET**

CODE NO.	1. CURRENT AGE	2. MARRIAGE AGE	3. MENSTRUATION AGE	4. RELIGION	5. EDUCATION	6 EMPLOYMENT	7. FAMILY MONTHLY INCOME	8. PREVIOUS KNOWLEDGE	D8.2.a. TELEVISION	D8.2.b NEWSPAPER	D8.2.C MAGAZINE	D8.2.d HEALTH CARE PROVIDER	D8.2.e BOOKS	D8.2.f INTERNET	D8.2.g FRIENDS AND RELATIVES	DIAGNOSIS OF HYPERTENSION	M10.a HEIGHT OF MOTHER
1	25	19	11	1	3	2	2	2	1	2	2	2	2	2	2	2	152
2	20	19	12	1	3	2	2	1	2	2	2	2	2	2	2	3	137
3	23	20	13	1	4	2	2	2	2	2	2	2	2	2	1	2	152
4	26	19	14	2	3	2	2	2	2	2	2	2	2	2	1	2	153
5	20	18	11	1	1	2	1	2	2	2	2	1	2	2	1	1	150
6	20	19	12	1	5	2	2	1	2	2	2	2	2	2	2	1	150
7	21	20	13	2	2	2	2	1	2	2	2	2	2	2	2	1	167
8	36	22	12	1	1	2	2	2	2	2	2	2	2	2	1	2	157
9	26	18	13	1	3	2	1	1	2	2	2	2	2	2	2	1	157
10	28	20	14	1	4	1	2	2	2	2	2	2	1	1	2	1	147
11	27	18	12	2	3	2	2	1	2	2	2	2	2	2	2	2	153
12	20	19	11	1	4	1	2	2	2	2	2	2	1	2	2	2	137
13	22	21	11	1	3	2	2	2	2	2	2	2	2	2	1	3	147
14	23	19	11	2	1	2	2	2	2	2	2	2	2	2	1	1	157
15	20	17	11	1	2	2	2	1	2	2	2	2	2	2	2	2	167
16	20	18	13	1	3	2	2	1	2	2	2	2	2	2	2	1	158
17	31	23	11	1	1	2	1	1	2	2	2	2	2	2	2	2	152
18	23	21	11	1	2	2	2	2	2	2	2	2	2	2	1	2	157
19	22	19	12	1	3	2	1	1	2	2	2	2	2	2	2	2	147
20	28	20	12	2	2	2	2	2	2	2	2	1	2	2	2	1	167
21	22	16	12	1	1	2	1	1	2	2	2	2	2	2	2	2	137
22	28	18	12	2	2	2	3	1	2	2	2	2	2	2	2	2	168
23	23	22	12	1	1	2	2	2	2	2	2	1	2	2	2	2	160
24	27	26	12	2	2	2	2	2	2	2	2	2	2	2	1	1	150
25	30	26	13	2	1	2	2	2	2	2	2	2	2	2	2	1	162
26	32	28	12	1	3	2	2	2	2	2	2	2	2	2	1	1	167
27	24	20	11	1	4	2	2	2	2	2	2	1	2	2	2	1	152
28	24	23	13	1	3	2	2	2	2	2	2	2	2	2	1	1	124
29	24	23	11	2	3	2	2	2	2	2	2	2	2	2	1	1	158
30	21	20	11	2	3	2	2	2	1	2	2	2	2	2	2	1	145
31	32	31	11	1	2	1	3	1	2	2	2	2	2	2	2	2	152
32	23	22	12	1	3	1	3	2	2	2	2	2	2	2	1	1	153
33	30	29	11	2	3	2	2	2	2	2	2	2	2	2	1	2	167
34	20	19	12	2	1	2	2	1	2	2	2	2	2	2	2	1	153
35	28	25	13	2	3	2	2	2	2	2	2	2	2	2	1	2	158
36	22	20	12	2	4	2	3	1	2	2	2	2	2	2	2	1	155
37	20	19	11	2	1	2	2	1	2	2	2	2	2	2	2	1	153
38	23	20	11	1	1	2	2	2	2	2	2	1	2	2	2	1	156
39	23	21	12	1	3	2	2	1	2	2	2	2	2	2	2	1	158
40	20	19	11	1	4	2	2	1	2	2	2	2	2	2	2	2	158
41	27	24	12	1	5	1	3	2	2	2	2	2	1	2	2	2	161
42	30	29	12	1	1	2	1	1	2	2	2	2	2	2	2	2	150
43	21	20	12	1	5	2	1	1	2	2	2	2	2	2	2	3	144
44	22	15	12	1	3	2	2	1	2	2	2	2	2	2	2	2	167
45	32	30	13	1	3	2	2	1	2	2	2	2	2	2	2	2	150
46	30	20	13	1	3	2	2	2	2	2	2	2	2	2	1	2	157
47	29	20	11	1	4	2	2	1	2	2	2	2	2	2	2	2	170
48	25	21	11	1	1	1	1	1	2	2	2	2	2	2	2	1	162

49	24	22	11	2	3	2	2	1	2	2	2	2	2	2	2	3	152
50	21	17	12	2	3	2	2	2	2	2	2	1	2	2	2	3	152
51	28	18	12	1	1	1	1	1	2	2	2	2	2	2	2	1	152
52	21	20	12	2	1	2	2	1	2	2	2	2	2	2	2	1	157
53	19	18	11	1	2	2	2	1	2	2	2	2	2	2	2	3	157
54	24	23	12	2	5	2	2	1	2	2	2	2	2	2	2	1	161
55	25	17	11	1	1	2	2	1	2	2	2	2	2	2	2	3	167
56	32	25	11	1	1	2	1	1	2	2	2	2	2	2	2	1	157
57	27	23	12	1	5	2	2	1	2	2	2	2	2	2	2	1	160
58	26	25	11	1	2	2	1	1	2	2	2	2	2	2	2	3	157
59	22	21	11	1	3	2	2	1	2	2	2	2	2	2	2	1	157
60	25	24	12	1	3	2	2	2	2	2	2	2	2	2	1	1	155
61	20	19	11	2	1	2	2	1	2	2	2	2	2	2	2	2	157
62	24	17	11	2	1	2	2	1	2	2	2	2	2	2	2	1	150
63	27	23	11	1	1	2	2	1	2	2	2	2	2	2	2	2	157
64	22	21	11	1	3	2	1	1	2	2	2	2	2	2	2	3	150
65	28	26	11	2	3	2	2	1	2	2	2	2	2	2	2	1	160
66	24	17	11	1	3	2	2	1	2	2	2	2	2	2	2	1	153
67	20	19	12	2	3	2	1	2	2	2	2	2	2	2	1	2	153
68	24	21	11	1	3	2	2	1	2	2	2	2	2	2	2	2	160
69	25	23	11	1	4	2	2	2	2	2	2	1	2	2	2	1	154
70	28	20	11	1	1	2	2	2	2	2	2	2	2	2	1	1	155
71	25	18	12	1	4	2	1	2	2	2	2	1	2	2	2	1	150
72	32	30	11	1	3	2	2	2	2	2	2	1	2	2	2	2	157
73	25	21	11	1	1	2	1	2	2	2	2	1	2	2	2	3	153
74	21	20	12	1	3	2	2	2	2	2	2	1	2	2	2	4	150
75	28	19	12	2	1	2	2	1	2	2	2	2	2	2	2	1	165
76	29	27	14	2	3	1	2	2	2	2	2	1	2	2	2	2	160
77	20	19	11	1	3	2	2	2	2	2	2	2	2	2	1	3	155
78	24	17	11	1	3	2	3	2	2	2	2	1	2	2	2	1	153
79	23	18	11	1	3	2	2	1	2	2	2	2	2	2	2	1	152
80	21	17	12	2	2	2	2	2	2	2	2	1	2	2	2	1	150
81	23	22	11	2	3	2	2	1	2	2	2	2	2	2	2	4	150
82	24	22	11	1	3	2	2	2	2	2	2	1	2	2	2	3	152
83	21	20	11	1	1	2	1	1	2	2	2	2	2	2	2	2	160
84	21	18	11	2	2	2	2	2	2	2	2	1	2	2	2	2	153
85	28	21	12	2	3	2	2	2	2	2	2	2	2	2	1	1	160
86	22	17	11	1	1	2	2	2	2	2	2	2	2	2	1	2	153
87	22	21	11	1	5	2	2	2	2	2	2	2	2	1	2	1	160
88	24	22	11	2	2	2	2	1	2	2	2	2	2	2	2	2	150
89	32	22	12	1	3	2	2	2	2	2	2	1	2	2	2	1	160
90	21	18	12	1	3	2	2	2	2	2	2	2	2	2	1	2	153
91	20	19	11	1	3	2	2	2	2	2	2	1	2	2	2	1	155
92	27	20	12	2	3	2	2	1	2	2	2	2	2	2	2	1	150
93	25	19	11	1	4	2	2	2	2	2	2	2	1	2	2	1	150
94	29	27	15	1	5	2	2	2	2	2	2	1	2	2	2	2	155
95	21	19	12	1	5	2	2	2	2	2	2	1	2	2	2	1	155
96	25	19	11	2	1	2	2	1	2	2	2	2	2	2	2	1	145
97	25	17	11	1	1	2	2	1	2	2	2	2	2	2	2	2	150
98	27	23	11	1	1	2	2	1	2	2	2	2	2	2	2	2	155
99	25	24	11	1	5	1	3	2	2	2	2	2	2	2	1	2	152
100	26	20	12	1	3	2	2	2	2	2	2	1	2	2	2	1	155
101	22	21	12	1	5	2	2	1	2	2	2	2	2	2	2	3	155
102	22	18	11	1	4	2	2	1	2	2	2	2	2	2	2	2	150
103	20	19	12	1	3	2	2	2	2	2	2	2	2	2	1	2	150
104	24	18	12	1	3	2	2	2	2	2	2	1	2	2	2	2	158
105	23	21	11	1	3	2	2	2	2	2	2	2	2	2	1	3	155
106	30	22	12	1	1	2	2	1	2	2	2	2	2	2	2	1	158
107	32	17	12	1	2	2	2	1	2	2	2	2	2	2	2	1	152

108	24	21	12	1	3	2	2	2	2	2	2	1	2	2	2	3	150
109	27	21	13	1	3	2	2	2	2	2	2	2	2	2	1	2	152
110	24	20	11	1	3	2	3	2	2	2	2	1	2	2	2	1	158
111	21	18	12	2	1	2	2	2	2	2	2	2	2	1	2	2	155
112	22	20	11	2	3	2	2	2	2	2	2	2	2	2	1	3	160
113	21	20	11	2	1	2	2	2	2	2	2	2	2	2	1	1	154
114	20	19	12	1	3	2	2	2	2	2	2	1	2	2	2	3	154
115	24	19	12	1	3	2	2	2	2	2	2	2	2	2	1	1	154
116	30	28	12	1	1	2	2	1	2	2	2	2	2	2	2	2	150
117	24	20	12	1	2	2	2	2	2	2	2	1	2	2	2	1	152
118	23	20	12	2	1	2	2	1	2	2	2	2	2	2	2	1	154
119	27	21	12	2	2	2	2	2	2	2	2	1	2	2	2	2	158
120	20	18	12	2	2	2	2	2	2	2	2	1	2	2	2	2	160
121	24	20	13	1	3	2	2	2	2	2	2	2	2	2	1	2	150
122	30	23	13	2	3	2	2	2	2	2	2	1	2	2	2	5	155
123	34	19	12	1	2	2	2	1	2	2	2	2	2	2	2	2	158
124	22	21	11	1	1	2	2	2	2	2	2	1	2	2	1	3	152
125	21	20	12	1	3	2	2	1	2	2	2	2	2	2	2	1	148
126	23	18	12	1	2	2	2	2	2	2	2	1	2	2	2	1	152
127	33	26	13	1	4	2	2	2	2	2	2	1	2	2	2	5	158
128	20	15	11	1	1	2	1	2	2	2	2	2	2	2	1	1	154
129	22	21	13	1	3	2	2	2	2	2	2	2	2	2	1	1	158
130	20	19	12	2	2	2	2	2	2	2	2	2	2	2	1	2	152
131	29	25	12	1	3	2	2	2	2	2	2	1	2	2	2	2	158
132	23	19	12	1	3	2	2	1	2	2	2	2	2	2	2	1	152
133	22	20	11	1	2	2	2	2	2	2	2	1	2	2	2	1	154
134	24	19	12	1	1	2	2	1	2	2	2	2	2	2	2	1	158
135	25	20	12	1	3	2	2	2	2	2	2	2	2	2	1	1	160

P12.a STILLBIRTH	P12.b PRETERM BIRTH	P12.c INTRAUTERINE DEATH	P12.D NEONATAL RESPIRATORY DISTRESS	APGAR SCORE LESS THAN 7 AT 1 MIN	P12.FAPGAR SCORE LESS THAN 7 AT 5 MIN	P12.gLOW BIRTH WEIGHT	P12.h REQUIRED RESUSITATION	P12.IADMISSION TO NICU	P12.JIMMEDIATE/ EARLY NEONATAL DEATH	P12.kNORMALLY HEALTHY NEW BORN	P12.L abortion	P12.m MECONIUM ASPIRATION SYNDROME	P12.n INTRAUTERINE GROWTH RETARDATION	P12.o ANY OTHER, SPECIFY
2	2	2	2	2	2	2	2	2	2	1	2	2	2	2
2	1	2	2	2	2	1	2	1	2	2	2	2	2	2
2	2	2	2	2	2	2	2	2	2	1	2	2	2	2
2	2	2	2	2	2	2	2	2	2	1	2	2	2	2
2	2	2	2	1	2	2	2	2	2	1	2	2	2	2
2	1	2	2	1	1	1	2	1	2	2	2	2	2	2
2	2	2	2	2	2	2	2	2	2	1	2	2	2	2
2	2	2	2	2	2	2	2	2	2	1	2	2	2	2
2	2	2	2	2	2	2	2	2	2	1	2	2	2	2
2	1	2	2	1	2	1	2	1	2	2	2	2	1	2
2	2	2	1	2	2	2	2	1	2	2	2	1	2	2
2	2	2	1	1	2	2	2	1	2	2	2	2	2	2
2	2	2	2	2	2	2	2	2	2	1	2	2	2	2
2	1	2	2	1	2	1	2	1	2	2	2	2	2	2
2	1	2	2	2	2	1	2	1	2	2	2	2	2	2
2	2	2	2	2	2	2	2	2	2	1	2	2	2	2
2	2	2	2	2	2	2	2	2	2	1	2	2	2	2
2	2	2	2	2	2	2	2	2	2	1	2	2	2	2
2	1	2	2	2	2	1	2	1	2	2	2	2	2	2
2	2	2	2	2	2	2	2	2	2	1	2	2	2	2
2	2	2	2	2	2	2	2	2	2	1	2	2	2	2
2	2	2	2	2	2	2	2	2	2	1	2	2	2	2
2	1	2	2	2	2	2	2	2	2	1	2	2	2	2
2	1	2	2	2	2	2	2	2	2	2	2	2	2	2
2	2	2	2	2	2	2	2	2	2	1	2	2	2	2
2	2	1	2	2	2	2	2	2	2	2	2	1	2	1
2	1	2	2	2	2	2	2	2	2	1	2	2	2	2
2	2	2	2	2	2	2	2	2	2	1	2	2	2	2
2	2	2	2	2	2	2	2	2	2	1	2	2	2	2
2	1	2	2	2	2	1	2	1	2	2	2	2	2	2
2	1	2	2	1	2	1	2	1	2	2	2	2	1	2
2	1	2	1	1	1	1	2	1	2	2	2	2	1	2
2	1	2	2	1	2	1	2	1	2	2	2	2	2	2
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2	2	2	2	2	2	2	2	2	2	1	2	2	2	2
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<b>R.16.a GRAVIDA</b>	<b>R.16.b PARITY</b>	<b>R.16.c MODE OF DELIVERY</b>	<b>R.16.d NEONATAL OUTCOME</b>	<b>R.16.e MATERNAL OUTCOME</b>
MULTIPARITY	MULTIPARITY	MULTIPARITY	MULTIPARITY	MULTIPARITY
NIL	NIL	NIL	NIL	NIL
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MULTIPARITY	MULTIPARITY	MULTIPARITY	MULTIPARITY	MULTIPARITY
NIL	NIL	NIL	NIL	NIL
NIL	NIL	NIL	NIL	NIL
NIL	NIL	NIL	NIL	NIL
MULTIPARITY	MULTIPARITY	MULTIPARITY	MULTIPARITY	MULTIPARITY

MULTIPARIT Y	MULTIPARI TY	MULTIPARITY	MULTIPARITY	MULTIPARITY
NIL	NIL	NIL	NIL	NIL
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NIL	NIL	NIL	NIL	NIL
MULTIPARIT Y	MULTIPARI TY	MULTIPARITY	MULTIPARITY	MULTIPARITY
MULTIPARIT Y	MULTIPARI TY	MULTIPARITY	MULTIPARITY	MULTIPARITY
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NIL	NIL	NIL	NIL	NIL
MULTIPARIT Y	MULTIPARI TY	MULTIPARITY	MULTIPARITY	MULTIPARITY
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NIL	NIL	NIL	NIL	NIL
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MULTIPARIT Y	MULTIPARI TY	MULTIPARITY	MULTIPARITY	MULTIPARITY
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NIL	NIL	NIL	NIL	NIL
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MULTIPARIT Y	MULTIPARI TY	MULTIPARITY	MULTIPARITY	MULTIPARITY
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NIL	NIL	NIL	NIL	NIL
MULTIPARIT Y	MULTIPARI TY	MULTIPARITY	MULTIPARITY	MULTIPARITY
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MULTIPARIT Y	MULTIPARI TY	MULTIPARITY	MULTIPARITY	MULTIPARITY
NIL	NIL	NIL	NIL	NIL
MULTIPARIT Y	MULTIPARI TY	MULTIPARITY	MULTIPARITY	MULTIPARITY
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MULTIPARIT Y	MULTIPARI TY	MULTIPARITY	MULTIPARITY	MULTIPARITY
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MULTIPARIT Y	MULTIPARI TY	MULTIPARITY	MULTIPARITY	MULTIPARITY
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NIL	NIL	NIL	NIL	NIL
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NIL	NIL	NIL	NIL	NIL
NIL	NIL	NIL	NIL	NIL
NIL	NIL	NIL	NIL	NIL
MULTIPARITY	MULTIPARITY	MULTIPARITY	MULTIPARITY	MULTIPARITY
MULTIPARITY	MULTIPARITY	MULTIPARITY	MULTIPARITY	MULTIPARITY
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1		2	1	1	NIL
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1		2	1	1	NIL
1		3	1	1	NIL
1		3	1	1	NIL
1		3	1	1	NIL
1		3	1	1	NIL
1		2	1	1	NIL

1		1	1	1	NIL
1		1	1	1	NIL
1		2	1	1	NIL
1		2	1	1	NIL
1		2	1	1	NIL
1		5	1	1	NIL
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1		2	1	1	NIL
1		2	1	1	NIL
1		1	1	1	NIL
1		1	1	1	NIL
1		1	1	1	NIL
1		1	1	1	NIL





NIL	NIL	NIL	NIL	NIL	NIL
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<b>RH20 SPECIFY NAME OF DRUG</b>	<b>RH21 ANTENATAL CHECKUPS DURING PREGNANCY</b>
2	5
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1	7
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2	7
2	5
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2	4
2	4
2	5
2	5
1	5
2	5
2	5
2	5
1	4
2	5
2	5





RF22.a DIABETES	RF22.b HYPERTENSION	RF22.c CARDIAC DISEASE	RF22.d RENAL DISEASE	RF22.e ANEMIA	RF22.f PREGNANCY INDUCED HYPERTENSION
2	2	2	2	2	2
2	2	2	2	1	2
2	2	2	2	2	2
2	2	2	2	2	2
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2	2	2	2	2	2
1	2	2	2	2	2
2	2	2	2	2	2
1	1	2	2	2	2







<b>RL23 DO YOU ADD EXCESS SALT TO YOUR FOOD ON THE TABLE</b>	<b>RL24 Does your diet consist of processed foods such as pickles and papads?</b>
1	1
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<p style="text-align: center;"><b>APOLLO COLLEGE OF NURSING</b>                  (APOLLO HOSPITALS EDUCATIONS &amp; RESEARCH)                  Apollo Health City Campus, Jubilee Hills, Hyderabad                  Ph : 040-23607777, Extn. : 5507 (CON) 23556950, F                  E-mail : aconhyderabad@yahoo.com, principal_nursing@apollohospitals.com</p> <hr/> <p><b>From</b>                  Ms Jennifer D’lima                  Apollo College of Nursing                  Jubilee Hills, Hyderabad.</p> <p><b>To</b>                  The Medical Superintendent                  Gandhi Hospital                  Padmarao Nagar, Secunderabad                  Hyderabad.</p> <p><b>Subject:</b> Request for permission to conduct research in your hospital.</p> <p style="text-align: right;">“Through Proper Channel”</p> <p>Respected Sir/Madam,</p> <p>I, Ms. Jennifer D’lima, 2<sup>nd</sup> year M.Sc. Nursing student of Apollo College of Nursing, Jubilee Hills, Hyderabad is intending to conduct a study on the outcomes and its associated risk factors of hypertension in Hyderabad. Hence I request you to kindly permit me to conduct the study in your esteemed hospital in Hyderabad. I assure you that the study will be maintained and I will not collect any details pertaining to the hospital.</p> <p style="text-align: right;">Thanking you,                  Prof. (Dr.) G. Venkatesh</p> <p>Signature of the Principal: <i>J. D’lima</i>                  Date: 23/1/19                  Place: Hyderabad</p>	2	2	2
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1	2	2	2
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<b>RL29 Do you feel continuously stressed out to meet your responsibilities?</b>	<b>RL30 Do you perform any mind relaxing techniques at home?</b>
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1	2
1	2
2	2