CHAPTER I

INTRODUCTION

“I feel normal but I am not like before”

“I am two, not one what I need more?”

“I never felt like this before”

-Feeling of pregnant women.

1.1: Background of the study

Women though the embodiment of a life giver, is vulnerable to loosing life in the process of giving birth. Maternal death is an avoidable tragedy. Therefore we can prevent it. -Theme of White Ribbon Alliance. (2000).

Pregnancy is a unique event that occurs in every woman’s life. Giving birth fulfills her life as woman. Women of all societies in their roles as mothers, form the nucleus and backbone of the family. Though, the women play pivotal role, their needs have gone unanswered for too long. This neglected care for women forced her to take low profile in a society.

If family members do not recognize the demands of mothers during pregnancy, women may not feel the joy of pregnancy, sometimes; it may result in disability or death. It is estimated that globally half-a million mothers die due to pregnancy and childbirth.

As a woman, her contacts towards health professionals are minimal. The pregnancy is the time where, she has regular contact and this is the only time for
midwives to focus and enhance her healthy behavior throughout her life. **Swain S. Prakash (2000),** estimated that, out of 466 women, 167 were found with risk (35.8%) but only 15(9%) women availed the referral services. It indirectly brings out higher rate of maternal mortality, which continues to affect the women’s children, as they become older. A recent study at Bangladesh (2006) found that children up to 10 years old are 3-10 times more likely to die within 2 years of their mother’s death than their counterparts with living parents.-**Population Resource Center (PRC) 2006.**

A study in Kagera region of Tanzania also demonstrated that the death of a prime aged female adult resulted in delayed school enrollment for 7-11 year old children and early dropout rates for 15-19 year old children. This signifies the mother’s health for the future children wealth. The risk of death for a mother’s children under age of 5 can increase by 5 times when the mother dies. *(PRC 2006),*

In India itself, the rate of death differs between States (Table 1);

The worldwide maternal mortality is over 3 million and it adds up to 600,000 women each year. Every minute, one woman dies from complications of pregnancy and childbirth. More than 18% of these were from India, as per the **NFHS. (2003).**

<table>
<thead>
<tr>
<th>STATES OF INDIA</th>
<th>MATERNAL DEATHS</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bihar/Jharkhand</td>
<td>563</td>
<td>12.6</td>
</tr>
<tr>
<td>Uttar Pradesh/Uttaranchal</td>
<td>1028</td>
<td>22.9</td>
</tr>
<tr>
<td>Karnataka</td>
<td>186</td>
<td>4.1</td>
</tr>
<tr>
<td>Kerala</td>
<td>67</td>
<td>1.5</td>
</tr>
</tbody>
</table>
The same disparity exists in the world with regard to maternal deaths. In developed countries, there are approximately 27 maternal deaths per 100,000 live births each year but in developing countries, the average is 18 times higher with 480 deaths per 100,000 live births. Country level differences in maternal mortality are even more dramatic as follows (Table 2);

**Table 2 Distribution of MMR in developed and developing countries.**

<table>
<thead>
<tr>
<th>Country</th>
<th>MMR (100,000 livebirths/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nepal</td>
<td>1500</td>
</tr>
<tr>
<td>Uganda</td>
<td>1200</td>
</tr>
<tr>
<td>Haiti</td>
<td>1000</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>850</td>
</tr>
<tr>
<td>Bolivia</td>
<td>650</td>
</tr>
<tr>
<td>Brazil</td>
<td>220</td>
</tr>
<tr>
<td>India</td>
<td>106</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>&lt;50</td>
</tr>
<tr>
<td>USA</td>
<td>&lt;5</td>
</tr>
</tbody>
</table>

(Source: WHO 2006)

This data represents one of the widest health gaps between developed and developing countries with 99% of all maternal deaths occurring in developing countries. This indicates that maternal deaths could be avoided if the proper health resources and
services are available. Majority of pregnancy related deaths occur after delivery (61%), in comparison to 24% during pregnancy and 16% present during delivery. 42% of 129 million that gave birth expected complications during pregnancy, in which 15% of women worldwide develop long-term complications.

About 80% of maternal deaths are due to causes that are directly related to childbirth and pregnancy. The five major direct causes of maternal deaths are hemorrhage, sepsis, hypertensive disorders, prolonged or obstructed labour and unsafe abortion. Most of these conditions could be prevented with proper medical monitoring, information and services.

Table 3 Percentage Distribution of Causes of MMR

<table>
<thead>
<tr>
<th>Causes</th>
<th>1997</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haemorrhage</td>
<td>24%</td>
<td>37%</td>
</tr>
<tr>
<td>Sepsis</td>
<td>13%</td>
<td>9%</td>
</tr>
<tr>
<td>Hypertensive disorders/Eclampsia</td>
<td>12%</td>
<td>10%</td>
</tr>
<tr>
<td>Obstructed or prolonged labour</td>
<td>8%</td>
<td>4%</td>
</tr>
<tr>
<td>Abortion</td>
<td>15%</td>
<td>7%</td>
</tr>
<tr>
<td>Others</td>
<td>28%</td>
<td>33%</td>
</tr>
</tbody>
</table>

Source: Census India, 2003

The distribution of causes (Table 3), indicates that, hypertensive disorders are contributing 10% of maternal deaths, which can be easily prevented.

- The Mother-Baby Package presents global goals and targets and outlines the general strategies needed to attain them. The major goals of this package are;
- reduction of Maternal Mortality Ratio to half of 1990 levels by the year 2000
- substantial reduction in maternal morbidity, perinatal and neonatal mortality rate from 1990 levels by 30 to 40%
- substantial improvement in newborn health.
- The impact of mother baby package on perinatal mortality is described in Table 4 as follows;

**Table 4 Impact of Mother-Baby Package interventions on deaths of mothers and newborns**

<table>
<thead>
<tr>
<th>Causes</th>
<th>Number of Deaths</th>
<th>Potential impact in deaths averted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Percentage</td>
</tr>
<tr>
<td>Haemorrhage</td>
<td>127 000</td>
<td>55%</td>
</tr>
<tr>
<td>Sepsis</td>
<td>76 000</td>
<td>75%</td>
</tr>
<tr>
<td>Eclampsia and HDP</td>
<td>64 000</td>
<td>65%</td>
</tr>
<tr>
<td>Obstructed labour</td>
<td>38 000</td>
<td>80%</td>
</tr>
<tr>
<td>Unsafe abortion</td>
<td>67 000</td>
<td>75%</td>
</tr>
<tr>
<td>Other direct causes</td>
<td>39 000</td>
<td>-</td>
</tr>
<tr>
<td>Indirect causes</td>
<td>100 000</td>
<td>20%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>510 000</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Causes</th>
<th>Number of deaths</th>
<th>Potential impact in deaths averted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Percentage</td>
</tr>
<tr>
<td>Birth asphyxia</td>
<td>840 000</td>
<td>40 - 60%</td>
</tr>
<tr>
<td>Diarrhoea</td>
<td>60 000</td>
<td>40 - 60%</td>
</tr>
<tr>
<td>Tetanus</td>
<td>560 000</td>
<td>80%</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>755 000</td>
<td>40%</td>
</tr>
<tr>
<td>Sepsis and meningitis</td>
<td>290 000</td>
<td>40 - 60%</td>
</tr>
<tr>
<td>Birth injuries</td>
<td>420 000</td>
<td>40 - 60%</td>
</tr>
<tr>
<td>Congenital anomalies</td>
<td>440 000</td>
<td>-</td>
</tr>
<tr>
<td>Prematurity</td>
<td>410 000</td>
<td>-</td>
</tr>
</tbody>
</table>
1. This table represents 1993 estimates of 1990 data. Applying the 1996 maternal mortality model to the 1990 data gives a higher total of 585000 maternal deaths.


3. Estimates based on clinical experience

Though the mother-baby package had an impact, still MMR is high in all regions. The worldwide statistics on MMR & PMR insist on need for more prenatal care.

Maternal mortality resulting from hypertensive disorders in pregnancy is preventable. Early and regular antenatal care would help detect hypertension at the right time. PIH remains one of the major obstetrical problems in less developed countries. It is largely preventable provided, the pregnant women get regular antenatal care. Despite of all preventable measures, diagnostic modalities and intensive treatment, it is still one of the leading causes of maternal mortality in the developing world.

Normal pregnancy and normal labour was thought even in ancient days. In Atharvana Veda there are prayers and charms for a safe labour. One such prayer is ‘o shoshana’ loosen her womb, joints, and the vagina, separate the mother and the son, a fetus, 10 months old, fall along with the placenta and let the placenta be eaten by a dog’. (Bloomfield -1897). The obstetric problems are mainly discussed in the chapters on sarira (anatomy) and the chikitsa (therapeutics) of the charaka and susruta samhitas. Charaka mostly deals with normal pregnancy. Prenatal care preparations for delivery and
normal labor was mentioned like, they were advised to be clean, happy, and joyful, to eat fresh, cooked food, milk, curd, rice and the flesh of deer.

Though advice regarding prenatal care is mentioned in charaka and susruta samhitas, the importance of prenatal care for safe motherhood was first emphasized by pinard (1883) in France and later by William Ballan Tyne in Edinburgh. In 1990’s MCH clinics were started in Calcutta (1909), Bombay (1911) and in Maldives (1918).

The term social medicine was introduced in 1848 by Jules Guerin in France, which indicates the importance of social factors in the causation of disease and ill health. After a long time Baird (1962) showed clearly those social factors like occupation, income, housing and nutrition may influence the perinatal outcome. As a result WHO focused its attention on social obstetrics (1968) to lower the reproductive mortality and morbidity rates

In 1929, Ministry of Health of Great Britain approved guidelines for prenatal care. During world war-II, when food rationing was in practice in England the expectant and nursing mothers were identified and offered special dietary requirements. This programme was initiated in U.K. But after the report given by Ministry of Public Health in 1985; other countries also started implementing MCH programmes.

In 1942, vitamin tablets were provided to all women during the last 6 months of pregnancy, and they found that MMR was decreased from 319/10,000 live births in 1936 to 15 in 1985.
In 1970’s little systematic evaluation has been carried out to assess the effectiveness of antenatal care (Hall et al 1985). In 1990’s researches in antenatal care were enhanced regarding number of visits, continuity of care, and perinatal outcome.

In 1999, prenatal care was provided by OBG people and considered as comprehensive, continuous, coordinated health care.

But still, hypertension is the most common high-risk complication in pregnancy. The countries like Sweden (Hogberg 1986) has 8% of pregnancy induced Hypertension (PIH) and 18% of fetal and infant mortality rate with 50% of small for Gestational age (Monter et al). PIH is the third leading cause of maternal death in USA (2007), which has 5% of PIH, and it constitutes 18.1% of fetal death.

In Nigeria (2004), incidence of eclampsia was 1 out of 76 (1.32%).

500 perinatal deaths per year was noted.

WHO population-based prospective study on the incidence of hypertensive disorders of pregnancy found the following rates of eclampsia: 0.17% (China), 0.34% (Viet Nam), 0.40% (Burma), 0.93% (Thailand), 0.2% (Egypt), 1.14% (Lesotho), and 0.14% (Botswana). The Objective was to reduce maternal death due to eclampsia and the target was to provide effective management to 50% of women with severe pre-eclampsia or eclampsia by 1997 and 80% by the year 2000. The strategies recommended was, efforts should be made to raise community awareness of signs and symptoms of hypertensive disorders of pregnancy. This should stress the need for pregnant women to seek care if they experience severe headache, generalized oedema, blurred vision and or convulsions.
In India, more than half of the cases being diagnosed with PIH (NJI; vol-III 2003). But, PIH occurs in 7.9% of pregnant women and it constitutes 17.2% maternal death and 22% perinatal death. Because, the term hypertension itself was confusing and misleading till 1986.

In 1958 Macgillivary stated that, preeclampsia is a primary disorder in first pregnancy, when a woman gets exposed chorionic villi first time. Then Chesleyin (1978) stated that,

Pre-eclampsia as a disease of theories. But in 1979, Cooper and Liston declared that occurrence of pre-eclampsia is dependent upon a single recessive gene. In 1986 American College of Obstetricians and Gynecologists suggested the following definition,

“A person with blood pressure of diastolic 90mmHg and systolic of 140mmHg or rise over the baseline of at least 30mmHg of systolic and 15mmHg of diastolic, it should be noted on two occasions that is 6hour or more apart alone”.

In 1988, Friedman & S.W.Walid said,”imbalance of placental prostaglandin’s causes vasoconstrictions and aggregation of platelets leads to PIH and decreased foetal perfusion”. In 1993, Bobak & Jenson explained the PIH as “Endothelial cell activation theory”. It is a common medical complication of pregnancy, where 4.5% have chronic hypertension, and another 4.5% of complications due to PIH.

Safe motherhood and women’s health initiatives have had great success. In Honduras, increased resources for maternal health contributed to a reduction of the Maternal Mortality Ratio (MMR), although Sri Lanka has a low per capita income, over
94% of its births occur in hospitals, causing its MMR to decline from over 1500 deaths per 100,000 live births between 1940 and 1945 to 239 per 100,000 in 1980 and, finally, 30 deaths per 100,000 live births in 1999. (WHO 2006)

The United States (2007), through the U.S. Agency for International Development (USAID), provides voluntary family planning and reproductive health services in over 60 developing countries. According to USAID, 50 million couples used these services. The U.S also contributes to UNFPA, one of the funding organizations of the safe Motherhood Initiative to bring down the MMR & PMR.

Safe motherhood depends on proper perinatal care. East Asia has 90% perinatal coverage compared to only 25% in South Asia. In India it is around 50% with 15% of institutional delivery. Though many programmes (RCH-I & RCH-II) related to MCH care is introduced by the Government of India, still home delivery, and unbooked cases are existing. The 95% of maternal deaths are from unbooked cases.

The Government of India has announced a free routine antenatal care with minimum requirements like free supply of 100 iron tablets, 2 doses of tetanus taxed, free consultation till delivery cost free delivery, free food and bed during delivery. Even after this only 40-50% of pregnant women are receiving the institutional care, in which only 12% are from rural areas.

The above data invites the evidence-based research to be conducted on strengthening the information on perinatal care to prevent complications. This is because,
the implementation of government schemes, can easily be done by the nurses than any other person in the health team.

Though PIH occurs frequently, its prevention and treatment is still a subject of debate, and only a limited number of studies which fulfills the criteria of “evidence based medicines are available, but it is possible to minimize the hazards on mother and on fetus through early detection and prompt action. So, this particular study, focused on the information regarding antenatal care towards promoting perinatal outcome-Nowickim (2002),

**Blood pressure in normal pregnancy:**

Blood pressure depends on cardiovascular system, circulatory volume, the size of the blood vessels (the dilation or constriction of blood vessels) and the cardiac force propelling the blood through the vessels. In pregnancy, the physiological changes may affect the above factors. The alterations like, increase in pulmonary volume and cardiac output about 40%, retaining of nearly 1000 MEQ sodium and 6 liters of water, raise of pressure substances like Angiotensin-II and rennin substrate requires appropriate balance to maintain normal blood pressure. (Dutta 2003)

In normal pregnancy, during second trimester, the blood pressure will decrease and increase in the third trimester. This decrease in blood pressure in second trimester is due to low peripheral vascular resistance, which is caused by the presence of the utero placental circulation and vasodilatation from progesterone.
The balance between pressure substances like angiotensin-II, prostaglandin or thromboxone (vasoconstrictors) and prostocyclin and progesterone (vasodilators) must be maintained, if not the blood pressure will increase and it ends up in PIH.

**PIH (Pregnancy Induced Hypertension)**

The term PIH was replaced by the term preeclampsia in current obstetrics. But, Williams declared that PIH includes three entities, preeclampsia, eclampsia, hypertension without proteinuria and edema. Therefore, pre-eclampsia / eclampsia and PIH could be used.

In 2200 BC Kahun Ppyrus described pre-eclampsia, as, “it is a condition of use of wooden stick to prevent the mother from biting her tongue during delivery” (Sarojini 2003).

Indian Athervaveda mentions like, an anglet to be worn by the mother at her eighth month of pregnancy for warning of convulsions

In Indian Sushrutha Samhita, it has been mentioned that, the child moving in the womb of a dead mother, who had just expired from convulsions, should be delivered by cutting of the abdomen.

HippoCrates in his aphorisms (VI no 39), wrote “convulsion takes place either from repletion or depletion of blood products.”

Pregnant uterus causes convulsion, particularly if it contains a malformed fetus. *Gaebel khouver (1596)* and Pan (1664), mentioned about clonic spasms in pregnancy.
Mauriceau (1668), & Lever (1843) recognized primigravidae are more at risk of convulsion than multigravidae and the disease can be treated by prompt delivery.

Demanet (1797) was the first to realize the convulsion with edema. Rayer (1840), found protein in the urine of the pregnant edematous patients.

In 1884, Delore was certain that, it is caused by bacillus eclampsia. Then Ahlfeld, (1894) identified existence of specific toxins of pregnancy, which was produced by the placenta and thus it came to be called as toxemia.

Zuspan (1984) classified the hypertensive disease of pregnancy as follows;

1. PIH (toxemia, preeclampsia/eclampsia, acute hypertension)
2. Chronic hypertension
   - Primary hypertension (unknown cause)
   - Secondary hypertension (known cause)
3. Chronic hypertension with super imposed preeclampsia/ eclampsia.
4. Transient hypertension occurs during labor or immediate postpartum period.

Mabie & Sibai (1994) defined the cause as endothelial cell damage, rejection phenomenon, decreased placental perfusion, changed vascular reactivity, prostacyclin, thromboxane imbalance, decreased GFR, with sodium and water retention, dietary and genetic factors. But the exact cause was not known till date.
Risk factors for preeclampsia

- Nulliparity
- Primigravidae women, <15 or >35 years of age,
- Women with diabetes mellitus and hypertension,
- Any previous history of PIH
- Family history of PIH
- Women with multiple gestation
- Molar pregnancy
- Hydrops fetalis
- Obesity

In pregnancy, the vascular endothelium releases a nitric oxide or endothelin-I and prostocyclin, which may collaborate with tissue plasminogen activator and act on the smooth muscle cells towards contractile response can lead to prevention of intra vascular coagulation and integrity of intra vascular compartments maintenance.

If vascular damage occurs, it increases the sensitivity to pressor agents and damages the endothelial cells. The other causes of endothelial are abnormal placental implantation and decreased placental perfusion, because it stimulates the production of substances in blood which bring about an activation of injury to endothelial cells and ends in multi organ disturbance (PIH).

In 1993 Sowers reported that Insulin resistance would be associated with hypertension. In 1994, Robillard stated that exposure to antigen on sperm before
conception may protect against pre-eclampsia. The greater length of sexual cohabitation before conception has a lesser incidence of pre-eclampsia than those who conceive soon after sexual exposure.

These literatures have not give any definite picture of etiology.

**PIH and its effects**

PIH will decrease the utero placental circulation that may cause IUGR, 62-84% of reduction in renal blood flow and GFR. So, the level of creatinine, blood urea nitrogen increases in the blood. Serum urate level will be raised up to > 5.5mg / 100ml. Other blood values like alkaline phosphatase bilirubin, LDH, uric acid also raised, but the platelets and PTT values will decrease.

PIH is a major direct cause of both maternal and foetal morbidity and mortality worldwide. 0-17% of perinatal death was reported by eclampsia. In USA preeclampsia predisposes, abruptio placenta, ARF, DIC, cerebral hemorrhage, shock, in a mother and in a baby prematurity, shock, asphyxia, IUGR, and foetal death (10-37%) were found.

PIH is described 100 years ago, but the etiology and pathophysiology remains limited. Women with proteinuric in preeclampsia have a poorer outcome than those with Gestational hypertension (non proteinuric) alone. ISSHP (International society for the study of hypertension in pregnancy) declared the adverse maternal and foetal outcome (renal insufficiency, liver disease, hematological disease and SGA, IUGR, IUD) is very common among mothers with protein >300mg in 24hours urine.
In severe pre-eclampsia the perinatal outcome were worst than mild pre-eclampsia. Because in a mild condition only triad symptoms are present (hypertension, proteinuria, odema), but in severe condition, triad symptoms are associated with warning symptoms like puffiness in the face, vulva, eyelids, blurring of vision, oliguria, and drowsiness. So, the present study focuses on mothers in both conditions.

Another study (Vigil et al. 2004), also describes the serious obstetrical outcomes with hypertension in pregnancy. Among 154 women, 78% of them developed severe pre-eclampsia, and the mean weeks of gestation was 34.5± or -4.6weeks. The average birth weight was 2329= or -1011grams and foetal growth rate was 18.5%, 4 mothers had dead fetus, and there were 6 neonatal deaths which resulted in perinatal mortality of 11.4%. 38 babies were in NICU with average stay of 14.8 days. The study concluded that preterm deliveries, cesarean section, are common in severe pre-eclampsia, and in placental abruptions. Therefore the total PMR remain high. So, midwives care is much important in the prevention of hypertension in all the antenatal mother which needs health education to all mothers.

Cost effective approach to reduce maternal mortality rate is possible by providing EMOC (Emergency Obstetrical Care) to mothers who develop complications during delivery. There are many non-pharmacological therapy to decrease hypertension,. The specific therapy related to pregnancy is, supplementation of calcium, relaxation therapy, increase in dietary potassium and fibre in diet, > 25 gms of vegetarian intake Per day will decrease blood pressure
Foetal growth is influenced by increased perfusion. High blood pressure will decrease the perfusion. Many factors influence the foetal growth as well as the health of mothers. Poor growth occurs when the mother has low caloric intake.

The main causes of prematurity are reproductive tract infections, STD, and maternal complications. Perinatal and neonatal mortality are more in underweight newborns. Iron, folic acid, calcium and vitamins to be given as per the Recommended Daily Allowance (RDA) to all pregnant women. 1gm of calcium and 60mgm of elemental iron and minimum of 500mgm of vitamin C to be taken daily and regularly to minimize complications. Because the significant calcium transfer from the mother to the fetus and infant occurs during pregnancy and lactation. An alteration in calcium metabolism is a pathogenesis of hypertension during pregnancy. Low intake of calcium is linked to pre-eclampsia / eclampsia. The supplementation of calcium may lower the blood pressure and prevent the occurrence of PIH.

Mehar’s Duley L (2006), assessed preventing PIH and its complications in women with normal blood pressure. and found that, compared to normal activity, rest of 30 minutes /day plus nutritional supplementation was associated with a reduction in the risk of preeclampsia and also of gestational hypertension.

The mother needs to rest on her side for 2 hours in the daytime and 8 hours of sleep in the night, which may improve the foetal health by increased perfusion. Short periods of rest in between the physical work can improve the foetal health. Maternal health can be enhanced through the efforts of paramedical staff and reduce the risk of ill health through overlapping sphere of health education.
Health promotion is a process of enabling people to enhance their health (WHO 1994). It requires individuals to participate in the health promoting behaviors. The nurses have a mandate and a unique opportunity in working situation to provide information and service. Women are becoming more demanding consumer, their needs to be met by the nurses by making a partnership with them to extend their abilities to care for themselves.

Many researches showed that participatory care would bring behavioral change in women towards the better perinatal outcome -Sibai & Rodriguez (1992).

The investigator has taken up this study based on the above concepts.

1.2 NEED FOR THE STUDY

“WOMEN” a word which describes the innate characteristics in her.

W-Will power
O- Owning
M-Mending
E-Energetic
N-Nesting

She always owns her family and mends herself for her family members under any Circumstances. She never says no for anything for the sake of her family growth. She builds her energy level with a lot of will power and confidence. Above all she become a nest for her child and other family members.

Pregnancy is a unique power for a woman to enjoy and feel her role. If her family and the professionals do not care during this period, she may invite complications for herself and her baby. Efficient antenatal care is a preventive medicine at its best. (Stall Worthy 2000).
The care is to be established to all women, not only for high-risk cases, because, the unpredictable events can occur at any time during pregnancy.

Antenatal care is a branch of therapeutic and preventive medicine in obstetric practice. It includes medical activities as well as education of girls and women to understand the potential benefits of antenatal care, dietary advices, and provision of social conditions to the mothers, if so, the pregnant mother can place herself under medical supervision from the earliest stage. Pregnancy is often termed as “healthy” “progressing well” or “normally”. The empathy and support commonly used by midwives help women to realize the effects of diseases in pregnancy. Medical referral is unlikely, unless the disorder occurs.

Health of the nation is indicated by morbidity and mortality rates of the country. Major portion is IMR & MMR. In 1996 >60 and our target is 5-7% by 2021. The current rate of IMR is around 50%. Over 3 million neonatal deaths occur each year during the first week of life due to inadequate or inappropriate care in pregnancy, delivery and following delivery.

Pre-eclampsia is a major cause of increase in IMR & PMR. In 1992 at Georgia, the MMR was 21.9/10,000 live births, 6% of the death was by PIH. WHO has done a survey and found that maternal deaths are more than live births in some regions.

Table 5 Ratio of Live birth vs. Maternal death (WHO 1992)

<table>
<thead>
<tr>
<th>Country</th>
<th>Live birth (%)</th>
<th>Maternal death (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developed countries</td>
<td>14</td>
<td>1</td>
</tr>
<tr>
<td>Developing countries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>East Asia</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Africa</td>
<td>18</td>
<td>30</td>
</tr>
<tr>
<td>South Asia</td>
<td>41</td>
<td>59</td>
</tr>
</tbody>
</table>
This data clearly indicates that, mothers are able to give birth, but they die due to other complications like embolism (22%), hemorrhage (28%), pulmonary problems (8%), cardiac disorders (21%).

Since 1940, the PMR has been evaluated and it has comedown abruptly in USA, as it was 47 in 1940 and in 2004 it was only 5.5.

But in India the rate does not come down like this. Fretts (1993) found that foetal death reduced to 70% by increased prenatal visits and incidence of pre-eclampsia from 13.1 to 1.2/1000. This report insists on prenatal visits.

The World Bank (2005), has estimated that 74% of maternal deaths could be prevented if all women have access to the interventions for addressing complications of pregnancy and childbirth.

There are so many studies, which have proved that PIH has poor outcome of pregnancy. The Institute of Medicine Reported (2004) that, money spent for antenatal care would bring down the cost of newborn care in the first year of life. This will help the mothers who belong to poor background and illiterates. Among 2644 mothers 938 (35.5%) mothers had PIH, 22.4% had stillbirth, and 11.6% were undelivered, 479 (18.2%) mothers died due to PIH.

Hellman (1971) stated that “Whether preeclampsia is preventable or not is unknown”, but, early diagnosis of preeclampsia can arrest the toxemia to eclampsia; to do this we need effective prenatal care. A study identified that, hypertensive disorders are very common in unbooked cases than booked cases. The study showed in 100-booked
hypertensive mothers 44 mothers had preeclampsia, but only 17 had eclampsia. In unbooked mothers only 38 mothers had preeclampsia but 21 mothers had eclampsia. This indicates eclampsia is preventable in the mothers who booked themselves with preeclampsia (Praba Singhal et al. 2003).

Schawer et al (1992)., found out the causes for foetal deaths after 20 weeks. It revealed that Ante partum haemorrhage constitutes 12to17%, IUGR 7to 15%, hypertension 1.9 to 18.7%, where these causes could be easily preventable.

Mersey (1982)., found that, among 309 perinatal deaths, 182 (58.9%) mothers were having avoidable factors, 157 stillbirth and 152 deaths in 1st stage of life.

The Public Health Scheme (2000)., formulated risk reduction objectives like,
-
- reduce the low birth weight to <5%, very low birth weight to <1%.
- 85% of women to go for appropriate weight gain
- Lower the LSCS rate <15%
- 90% to receive prenatal care
- 90% to have risk appropriate care.

This is a wide spread agreement that prenatal care is effective in improving pregnancy outcome especially for a woman at high risk.

Antenatal health education is a cornerstone of health promotion in midwifery (Tones, 1992). It is an empowerment approach. Women in developing countries often lack the economic resources and education to make informed decisions about their health and nutrition. Some women are denied or lack of access to reproductive health
information and services because of logistical, social or cultural barriers. Lack of decision making power, excessive physical labor and poor nutrition also influence maternal mortality (Dines. A., Cribbs. 1993).

Proper medical attention is needed only for 15% of the mothers who experience life-threatening complications and 40% of pregnant mothers who require special care. Health professionals attend 53% of deliveries and only 40% of deliveries occur in hospital or health centre. So, the midwife has to involve actively and have a unique relationship with the women and her family to influence the adoption of a healthy lifestyle.

Antenatal care during pregnancy is an opportunity for promotion and education; prophylactic measures, such as iron and folate supplementation; management of diseases, such as malaria and STDs; and to ensure the early detection and management of complications.

Bradshaw’s (1972), identified 4 needs such as normative, felt need, expressive and comparative need. Antenatal mother needs comes under normative need, which are essential needs.

The Institute of Medicine and American Nurses Association (1988), established recommendations for the reduction of barriers to prenatal care. One of it is to give specific information on where to go or call for prenatal services to be provided for all the mothers.
Inadequate use of antenatal care has also been associated with increased risk of maternal mortality. In developing countries, 70% of births are preceded by only one antenatal visit while 38 million women receive antenatal care.

Additional factors that prevent women in developing countries from receiving the lifesaving health care includes distance from health services, costs, poor quality of available services and substandard treatment by health providers.

The safe motherhood Initiative, launched by the United Nations Population Fund (UNFPA), the World Bank and WHO in 1987, is now further supported by the United Nations Children’s Fund (UNICEF), the United Nations Development Programme (UNDP), the International Planned Parenthood Federation (IPPF) and the Population Council initiated the incorporation of many of the facets of comprehensive education, information, prevention services, and follow up of care. This model requires collaboration at numerous levels, between general women’s health and reproductive health practitioners, between public and private health providers, between community members and leaders. It is therefore implemented to varying degrees in different location. The investigator of this study used this concept in the particular study.

Goldenberg RL. (2004). assessed the important pregnancy outcomes like, stillbirth and neonatal mortality, long-term neurological handicap, and maternal mortality. Research conducted with the support of NICHD (National Institute of child health department) and other agencies in the last four decades has provided us with the ability to substantially improve many of these outcomes. In fact, in recent years, in the U.S. and other developed countries, childbirth has become a relatively safe undertaking.
for the mothers, and the majority of the infants are born healthy and they survive. In many developing countries, the risk of each of the adverse outcomes mentioned above is increased from 10- to 100-fold compared to U.S. rates, with many of the differences explained by inadequately organized healthcare systems and low levels of health expenditures. At present, we have the knowledge to substantially reduce adverse pregnancy outcomes throughout the world; so far we have not had the will.

The world Health Organization (2004) and World Bank’s analyses estimate that the entire safe motherhood package costs about $ 3 per person per year in low-income countries and $6 in middle-income countries. The comprehensive package includes following components:

1. **Education and information services** comprise community education about safe motherhood, education about pregnancy danger signs and complications, and reproductive health and family planning information and services for adolescents and adults.

2. **Prevention services** include nutrition and vitamin supplementation, counselling, prenatal and general health care and monitoring, and screening and treatment for STDs, HIV and other infections.

3. Subsequent to skilled assistance during childbirth, **follow up** care encompasses care for complications and emergencies, and postpartum care.

4. **Safe abortion and post abortion services**

This particular study focuses on first two components towards prevention of occurrence of PIH and improvement of perinatal outcome.
**Bolte Ac et al (2006),** stated that, preeclampsia is associated with increased maternal and perinatal mortality and morbidity. The hypertension is multifactorial, multisystem disorder in pregnancy, which causes the volume contraction, decreased cardiac output, and enhanced vascular reactivity, increased vascular permeability and platelet consumption that may harm the mother and fetus. Though there are controversial issues in management of preeclampsia, but preventive measures can be utilized to control PIH.

However, all pregnancies involve some risk to the mother or infant and it is important to prevent, detect and manage complications early before they become life-threatening emergencies. Pregnant women, their families and all persons attending deliveries should be aware of what they can do to promote and protect the health of pregnant women and to ensure early referral when problems arise. This is of particular importance in parts of the world where most deliveries continue to take place within communities and where many mothers deliver unaided or with the assistance of only relatives or traditional birth attendants.

Providing individuals and communities with the information they need to avoid harmful practices and promoting appropriate basic care including clean delivery can help prevent many pregnancy-related complications. Furthermore, giving people information about the signs and symptoms, which require urgent assistance from a higher level of care, helps to mobilize communities to seek timely referral when complications arise.

**Sibai & Rodriguez.(1992),** listed the methods to prevent the occurrence of PIH, as dietary manipulation, low calorie, high protein and low salt diet, nutritional
supplementation, like calcium, magnesium, fish oil, and pharmacological manipulations like low dose aspirin dipyridamid e dazoxiben, heparin, vitamin C, frequent prenatal care, daily rest in lateral position, and decreasing caffeine intake may decrease the incidence of PIH.

In 1994, **Lyal & Greer** declared that aspirin is effective in the control of PIH, but, how to prescribe this to all women, was the question. Therefore the women who are under risk to be identified before prescription.

Despite the advancement in the field of obstetrics, maternal as well as perinatal morbidity and mortality continues to be high in developing countries like India. Antenatal care plays a significant role in the outcome of pregnancy. Though the government has announced a free antenatal care at primary level and improvement in RCH-II strategies, only a little fraction of mothers are choosing and attending antenatal OPD.

Calcium supplementation may prevent the high blood pressure through production of endothelial nitric oxide and vasodilatation. 

**(Veena Agarwal & Navneet Gulshan. 2003).**

Many controlled trials (**Smith S.J et al. 1985**), have shown that potassium supplements by 50-80mmols will lower the blood pressure. Calcium supplementation will have many positive effects on child growth and indirectly prevents the preeclampsia. So this is also to be strengthened.

Epidemiological studies in our country, proved that fibre intake of less than 12gm/day was associated with 1.5% increase in risk for hypertension. 4 year follow up
study showed, no risk, when fibre intake was more than 25gm/day, and indirectly it lowers the blood pressure. *(Chemma B.S. et al. 1996).*

The environment plays a major role in maternal nutritional deprivation and it is linked to increased incidence of major affective disorders in their offspring *(Neugebaruer F.et al, 2000).* All these studies strengthen the importance of preventive measures for hypertension during pregnancy, this concept invites the nurse’s participation towards it.

All antenatal mothers who come for regular checkup were advised to take iron and calcium supplementation, but there are many factors that interfere in the intake of mothers. Traditional myths related to iron are more, because only 30% of the mothers were taking iron regularly, they also complaint of constipation, stomach upset and have withdrawn their intake after sometime.

Another group of mothers taking iron regularly (40-60mgm/day), but, their hemoglobin level will not increase due to mal absorption by their dietary habits. The antenatal mothers need to be advised to avoid certain foods like, egg, milk, cheese, tea, coffee, and whole gram bread, because it may interfere in iron absorption and also, they must be aware of the side effects of Iron. It is hard to get too much iron just from food. So, they need to take iron supplements. Because, low hemoglobin levels produce IUGR and poor perinatal outcome.

Pregnancy itself can be regarded as a form of exercise. During pregnancy the muscles work progressively and harder. They adapt to the extra workload by becoming
more efficient. Clapp, Hatchshu McLean, Wolfe, Brenna & Mottola (1994) suggested that either continuing or beginning exercise during pregnancy has many positive effects and no negative effects on the pregnancy and the outcome as long as, it is normal pregnancy and it does not adversely affect the pregnancy. Chamberlain and Pipkin (1998) stated that, mild exercise in pregnancy strengthen the pereneal muscles, decrease the birth injuries, and good progress of labor.

The mothers need to be told about the importance of strengthening of pereneal muscles by Kegle’s exercise, and abdominal strengthening exercises. The exercises and activities which increase the intra uterine pressure to be avoided.

A myth towards intake of water is existing among mothers, like more amount of water will enter into the uterine cavity and bloat the uterus (Hydro uterus), which may harm the baby. So, most of them were avoiding more the amount of water. But ideal is to take at least 10 glasses of water (1500-2000ml) to increase the perfusion, avoid constipation, increase metabolism absorption of nutrients. Midwives have a significant role in educating mothers. Because, protein intake, fiber rich food, avoiding added salt food proved positive effect on foetal outcome. (Abrams B. 1994).

Many technological advances have come in obstetrics to assess the foetal well being, It is important. But it is costly and possible only when the mother is in the hospital. It is important to assess the foetal well being every day by the mother at home even if it is normal pregnancy. Every mother needs to be taught about counting of foetal movements and maintaining a kick chart.
In 1976, Pearson & Weaver suggested that, less than 10 movements in 12 hours to be reported immediately. Sadovsky (1977), informed that, if, less than 2 fetal movements /hour in 2 or 3 consecutive times needs to be evaluated. In 1988, the concept was changed as if the fetal movement < 10 / hour, it need to be evaluated. Maria D (2000), brought a category of assessing the fetus using ABCDE criteria is best in identifying the fetal distress early. That is like, how many minutes to feel 10 movements is another way of assessing foetal well being. If, the mother counts 10 movements for >60 minutes or less than 15 minutes, it is for reevaluation.

Fetal well being is maintained through increased perfusion. The position of the mothers contributes towards more perfusion. Left lateral position can reduce the venocaval compression and increase the perfusion to the fetus. This is to be informed to the mothers by the midwives.

Above-mentioned measures all contribute to the foetal and maternal health. Only the mothers can do these measures, but enabling people to take control is not as simple as saying for example, “it is up to you to make a choice or it’s your responsibility”. This directs total responses towards the client and assures understanding, accurate interpretation and also an ability to make inferences about the information received and making a right choice is difficult particularly among the consumers of maternity services. Individuals may require help and support with regards to resources and their power in making decisions about maternity care.

Change of philosophy in health care system took place due to the efforts by Robert Wood Johnson Foundation (1992) and few charitable trust health professionals
(1995) restructured the relationship between the health provider and the client than just follow physician’s orders. The health related instructions on a diet, exercises and enhancing behaviors that involves self-care and it could motivate the antenatal mothers towards prenatal care. Mother with adequate number of visits have improved maternal foetal outcome.

Pre-eclampsia is usually without any symptom, Hence its detection depends on signs or investigations. Nonetheless, one symptom is crucially important because it is so often misinterpreted. The epigastric pain, which reflects hepatic involvement and is typical of the HELLP syndrome, may easily be confused with heartburn, a very common problem of pregnancy. However, it is not burning in quality, does not spread upwards towards the throat, is associated with hepatic tenderness, may radiate through to the back, and is not relieved by giving antacids. It is often very severe, described by sufferers as the worst pain that they have ever experienced. Affected women are not uncommonly referred to general surgeons as suffering from an acute abdomen, for example acute cholecystitis.

In general, none of the signs of Pre-eclampsia is specific; even convulsions in pregnancy are more likely to have causes other than eclampsia in modern practice. Diagnosis, therefore, depends on finding a coincidence of several Pre-eclamptic features, the final proof being their regression after delivery.

Nurses generally concentrate on health promotion than disease prevention. It is a key concept of this study. There are 3 levels of health promotion, primary, secondary and tertiary levels. Primary approach is an ideal approach to be used in health promotion.
Primary level of promotion includes mainly self-empowerment and educational approach. Self-empowerment approach involves people, identifying their strengths, experiences and skill to increase control over their own life.

The question is which system of health education is more effective? Learning is a change in behavior that persists overtime. It is to be practiced regularly for which, it need to be reinforced repeatedly.

The investigator of this study considered all these facts and followed a self-empowerment approach towards mothers by inculcating self-care strategies. It includes regular visit and checkup, periodic rest, sleep, exercise, dietary modifications, regular medicine intake. Assessment of fetal well being, identification of warning signs and management of minor discomforts in pregnancy. Many studies proved these strategies and its effect on maternal and fetal outcome but significance of this study is implementing all these strategies at the same time for the normal pregnant women from the time of 12-16 weeks of gestational age. This is because of the incidence of PIH continues to be raised in health statistics.

Research in the past, decades has identified some major risk factors for PIH, and manipulation of these factors might result in a decrease in its frequency, asprin then calcium trials were done and no evidence, but proper antenatal care and timed delivery are of utmost importance in tertiary prevention of preeclampsia.

Though we instruct the mothers that how do they adopt?, why they don’t adopt? is to be followed. In 2001, WHO addressed the issue of including the nurses to follow up to
the extent of how the patient follows the instructions. Haynes (2001) suggested involving
the nurses to follow the persons, whether they are following the prescribed diet, 
medications and, modification of lifestyle and also how much they are able to correspond 
with agreed recommendations with a health care provider. He prescribed 5 dimensions to 
be included while giving instructions and asked them to come for follow up. The 
dimensions are social/economic, therapy relations, patient relations, healthcare systems 
and condition related dimensions. So, the investigator included all dimensions in this 
study and instructions given accordingly.

Sibley LM, Sipe TA. (2006), suggested that, in settings characterized by high 
mortality and weak health systems, trained TBAs and other health personnel can 
contribute to the Millennium Development Goal 4--a two-thirds reduction in the rate of 
mortality of children aged less than 14 years by 2015—through participation in key 
evidence-based interventions and also through information on perinatal care

Lara et al (1999), concluded that, a pregnant woman likely to die from PIH 
seems to be relatively older, multipara and 46% were primigravidae. The particular 
setting where this study was conducted, the incidence of PIH for 10 years as follows:

**Table 6 Incidence of PIH in SRMC&RI (SRU)**

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</tr>
</thead>
<tbody>
<tr>
<td>No of deliveries/yr</td>
<td>1396</td>
<td>1676</td>
<td>1864</td>
<td>2112</td>
<td>2450</td>
<td>3050</td>
<td>2900</td>
<td>2300</td>
<td>2600</td>
<td>2950</td>
</tr>
<tr>
<td>PIH Incidence</td>
<td>89</td>
<td>126</td>
<td>151</td>
<td>210</td>
<td>242</td>
<td>208</td>
<td>316</td>
<td>285</td>
<td>301</td>
<td>386</td>
</tr>
<tr>
<td>Percentage</td>
<td>6.4</td>
<td>7.5</td>
<td>8.1</td>
<td>9.8</td>
<td>9.9</td>
<td>6.8</td>
<td>10.9</td>
<td>8.6</td>
<td>11.8</td>
<td>13.8</td>
</tr>
</tbody>
</table>

**Source:** (SRH, PORUR, CHENNAI,)
Among these PIH mothers, 80% of them were primi mothers. So, the investigator selected the primigravidae in this study.

1.3 STATEMENT OF THE PROBLEM
A study to determine the effectiveness of self care strategies (SCS) on Pregnancy Induced Hypertension, maternal and perinatal outcome among primigravidae attending antenatal OPD at SRH, Chennai.

1.4 OBJECTIVES
1. To evaluate the effect of SCS on occurrence of Pregnancy Induced Hypertension, maternal and perinatal outcome
2. To correlate the level of adherence of SCS with Pregnancy Induced Hypertension, maternal and perinatal outcome in both groups.
3. To correlate the Pregnancy Induced Hypertension, with maternal and perinatal outcome in both groups.
4. To associate the background variables with their Pregnancy Induced Hypertension, maternal and perinatal outcome in both groups.

1.5 HYPOTHESES
1. There is a significant decrease in the occurrence of pregnancy-induced hypertension, better maternal and perinatal outcome among women who adhere SCS than those women who did not.
2. The women who adhere SCS more shows lesser occurrence of pregnancy-induced hypertension, better maternal and perinatal outcome than those mothers who adhere less.
1.6 ASSUMPTIONS

1. Facilitating the behavioral change in women will improve maternal health.

2. Reinforcement strengthens learning.

3. Improving reproductive health is one way of achieving a better balance between the growth of population and the resources needed for long-term survival.

4. Need based teaching motivates behavioral change.

5. Strategies are easy to implement, when it does not alter the routine life.

1.7 OPERATIONAL DEFINITIONS

Effectiveness

The effect of self care strategies on the ability of the antenatal mothers to prevent the occurrence of pregnancy induced hypertension which will be measured from the 24 weeks of pregnancy using assessment chart and perinatal outcome will be measured by using checklist from 28 weeks to till delivery and compared with control group.

Self Care Strategies

It is the series of activities to be practiced by the mother during antenatal period. It is explained to the mother to practice using the prepared module about antenatal care and prevention of complications that fall in the interventional group during the study.
period at their first visit between 12-16 weeks of pregnancy. The primigravidae were asked to practice the activities from the day of information and explanation. It is re-enforced minimum of 2 times with 4 weeks interval after assessing the level of adherence. It was followed up till delivery. It includes regular visit and checkup, periodic rest, sleep, exercise, dietary modifications, regular medicine intake, assessment of fetal well being, identification of warning signs and management of minor discomforts in pregnancy. The mother herself can follow these strategies. It was given individually to all women with instructions to practice it.

**Pregnancy induced hypertension**

The normal primigravidae with increased BP $\geq 140/90$ mmHg at first time after 20 weeks of pregnancy, associated with proteinuria or oedema or both.

**Maternal outcome**

It consists of maternal complications like eclampsia, Abruptio placenta, HELLP syndrome, Disseminated intravascular coagulation, Acute renal failure, shock, sepsis, pulmonary edema, preterm labor, maternal jaundice, postpartum hemorrhage, premature rupture of membranes, obstructed labor, Operative interventions, cord prolapse, prolonged labor, urinary tract infection, and pereneal injury. It is assessed from 24 weeks of pregnancy by checklist.

**Perinatal outcome**

The particular study defined perinatal outcome as outcome of baby from 28 weeks of pregnancy to till delivery. It includes weight of the baby, apgar scoring, intra uterine growth retardation, prematurity, congenital anomalies, intra uterine death, neonatal death,
respiratory distress syndrome, and asphyxia. It is assessed through using checklist after the delivery in both groups.

1.8 DELIMITATIONS

- The primigravidae mothers who planned to have delivery at Sri Ramachandra Hospital labor room in the new block were included in the study.

- Adherence of self-care strategies was left to the mother’s discretion in her natural environment, except that it was reinforced once during their visit at the time of 2nd and 3rd trimester of pregnancy in antenatal OPD at SRH.

- The 50% of primigravidae made their first visit after 16 weeks of pregnancy due to various reasons. But mothers who came between 12-16 weeks only were included in the study.

1.9 SIGNIFICANCE OF THE STUDY

The study significance as self care strategies will be given to the mother by using self instructional module to follow it towards prevention of pregnancy induced hypertension and improve the maternal and fetal outcome. The ultimate goal is safe mother and childhood.