CHAPTER 1

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CHAPTER – 1

INTRODUCTION

आशा स्नेहुण्यायत्त रक्षणार्थ च मातर :।
सहन्ते सर्व दुःखानी मातिवी चात्र कियते।।

This is a quotation from Maharshi Kashyap, which means: “Out of sheer love, affection and compassion that would be mother, bears all the agony to protect the child with grace and dignity”. That is really the greatness of “Motherhood”. (The Journal of Family Welfare, 1997).

Dharmasastra, a writer has declared that the father is a hundred times more venerable than the teacher; but the mother is a thousand times more venerable than the father! This symbolism of the mother figure as the teacher of bravery, sacrifice and morality is coincidental with the abstract concept of all – embracing motherhood. Mother earth – ‘Dharti – Maata’; Mother country; ‘Bharat Maata’, Mother of destruction – ‘Kali Maata’ are other such symbolisms. Traditionally, therefore the image of motherhood is upheld. In real life, it is paradoxical that the mother is the silent hard worker, and the assimilater of major crises – (Indian women, 1975).

Motherhood is a beautiful experience, which can turn into a tragedy as well, when the family loses the most precious member of the family – the mother. Each year, more than half a million women die in the world from complications of pregnancy and millions more suffer from permanent disabilities following these complications. The risk of maternal death for a woman varies from 1 in 10,000 in well developed countries and 1 to 50 in the developing countries. This tragedy is multifactorial in origin involving inter – related factors. (Krishna, Coyaji and Raghavan, 1988)

Though pregnancy and childbirth are natural processes, they are not by any means, risk-free. India has 18 percent of the total births globally, and 25 percent of maternal deaths. Several community based studies in different parts of the country
Assuming that a woman on an average is pregnant 3 – 5 times during her lifetime, it means that she has a one in 40 risk of dying from pregnancy related causes. By comparison, a woman in Sri Lanka has only a one in 200 risk and her counterpart in Northern Europe a one in 10,000 risk. (Krishna et. al., 1988).

The evidence points to the familiar medical causes of maternal deaths, found the world over. Haemorrhage, anaemia, sepsis, eclampsia, obstructed labour and abortion account for 80 per cent of maternal deaths in the developing world, including India. (Krishna et. al., 1988).

Anaemia is an important risk factor for death following “Pregnancy – related haemorrhage,” according to the World Health Organization standard, “no woman should approach the end of pregnancy with a haemoglobin level below 11 g/dl.” In practice, however, not only do many women start their reproductive lives with inadequate iron stores, but also because of inadequate child spacing, they have little time to build up their haemoglobin level between pregnancies. Thus they may face a downward spiral with each pregnancy rendering them more vulnerable to serious ill health and death. The aetiology of anaemia in pregnancy is usually multiple.

There is a growing body of evidence that implicates anaemia as a contributory factor in many of the 500,000 maternal deaths that occur each year. Women who are anaemic have a lower resistance to infection and are more vulnerable to anaesthetic risks. Even women with mild or moderate anaemia face increased risks during child birth.

The criteria used for diagnosing true anaemia in pregnancy often vary. In 1972, the World Health Organization definition was a haemoglobin level of less than 11 g/dl but many doctors begin to investigate and treat anaemia only when the haemoglobin falls below 10.5 g/dl. Studies in developing countries have demonstrated that many women show no ill effects with haemoglobin of 10 g/dl. Therefore 10 g/dl haemoglobin level is considered as a cut out point or line of demarcation.

Haemoglobin surveys have indicated that 40-70 percent of pregnant Indian women have a haemoglobin level of less than 11 g/dl. Such mothers are prone to high
incidence of complications during pregnancy. Any acute or chronic disease affects the foetus by altering placental functions, if early in pregnancy it results either in congenital malformation or abortion and later, either premature delivery or intrauterine growth retardation or foetal death. (Bennett, Brown and Myles, 1993).

Post-partum haemorrhage, i.e. blood loss greater than 500 cc affects around one in ten woman during delivery. Non-anaemic women can tolerate blood loss up to one litre during delivery, whereas those with moderate anaemia are vulnerable to the blood loss associated with a normal delivery. Where maternal mortality is high, anaemia is often cited as a contributory factor. Studies in Bangladesh, India, Malawi and Pakistan have found that anaemia was a cause of death in a significant proportion of maternal death. The nutritional deficiency suffered by women during childhood, adolescence and their reproductive years have an impact not only on their own health but also on the health of their infants.

A classic pattern of fertility in societies where women’s status is low and maternal mortality is high, is that of “too many children, too early”, “too late and too close together”. This pattern has adverse health consequences for mothers, babies and indeed for families as a whole, where women’s status is low, and they are denied educational and economic opportunities, they can prove their worth only by bearing many children from an early age. Studies have repeatedly shown that pregnancies in women aged below 18, are at higher risk, especially where malnutrition is prevalent and health care is minimal. (Krishna et. al., 1988).

The common cause of anaemia is deficiency of iron, folic acid and B_{12} in the diet. Normally, haemoglobin present in the red cells contains iron, which is needed to carry oxygen to all parts of the body. For the formation and normal growth of red cells, iron and vitamins like folic acid and B_{12} can be obtained through meat, milk or eggs. Iron and folate deficiency could result from:

(a) Inadequate intake – it is obvious that intake of iron and folic acid is far below the recommended allowances in even non pregnant women – since iron is related to caloric intake,

(b) Poor intestinal absorption due to the presence of inhibiting factors like phytates, tannins etc;
(c) Deficiency of protein, calcium and vitamin C, and which reduces absorption:
(d) Deficient iron stores and iron/folate;
(e) Infections and infestations; and
(f) Increase demands by foetus.

Normal Indian vegetarian diet contains 18 – 22 mg. of iron. To meet the pregnancy requirement, 4 – 6 mg of iron should be absorbed daily from the diet (WHO Report 1970). This is possible only if the diet has 40 – 60 mg of iron. Even in the best of diets, the iron absorption is not adequate to meet the requirements in pregnancy. Although iron absorption is increased in pregnancy, (Apte and Iyengar, 1970) to meet the pregnancy need, extra supplements are mandatory. In diets where proteins contribute less than 10 percent of calories, iron needed during pregnancy is around 10 – 12 mg daily. Since most of the women are not able to replenish stores with iron because of their poor diet, about 50 percent of the women enter the first pregnancy with almost zero iron stores and anaemia. (Iyengar and Apte, 1970).

Measurement of haemoglobin by single finger prick is the simplest method of identifying anaemia. Clinically extreme pallor, flat or spoon shaped nails, pale conjunctiva/tongue would only reveal mild, moderate/severe anaemia. Maternal consequences and foetal outcome are a direct result of anaemia during pregnancy. In the adult woman, anaemia results in poor work output since the work capacity is reduced considerably due to muscle fatigue. Lack of concentration in work also results in mistakes, sometimes fatal ones. All these have significant effects on productivity.

Oral iron is the treatment of choice for anaemia, for preventing anaemia low doses of iron are adequate. Based on this principle, the National Anaemia Prophylaxis Programme has been functioning since 1971. In this programme pregnant women are administered iron and folic acid (60 mg and 500 ug respectively) supplements, for at least 100 days. However, the programme has not been very successful due to various factors like lack of awareness and realisation of the consequences of anaemia, a poor distribution system, and irregular intake by the beneficiary.
Nutritional anaemias are by far the most common type of anaemia worldwide, and they mainly include iron, folate and B₁₂ deficiencies. Iron deficiency anaemia in itself is caused by insufficient dietary intake of iron, chronic gastrointestinal tract bleeding, especially from hookworm, malabsorption conditions, and infection. It is due to deficiency of iron, folic acid, essential amino acids, etc., caused by inadequate intake of these essential ingredients in food. It is further aggravated by factors like repeated pregnancy at too short intervals, less intake, abortions, haemorrhage and other disease conditions etc., most of which are associated with illiteracy, poor hygiene and poverty.

Anaemia can affect psychological and physical behaviour as well. Even very mild forms influence the sense of well being, lessen resistance to fatigue, aggravate other disorders and affect work capacity. For pregnant women, anaemia can result in severe morbidity and reduces the resistance to blood loss with the result that even death may occur from the blood loss associated with a normal delivery.

In North-Bengal Medical College and Hospital a study was conducted to observe maternal and perinatal outcome in mothers with severe anaemia; 10.5 percent of all admitted mothers were found to be severely anaemic, of which about half of them improved with standard hospital management. Maternal mortality was 22.6 percent; still birth was 32.2 percent and perinatal loss 52.6 percent compared to 2.63 percent, 8.5 percent and 10.9 percent respectively of the total mothers. In general low birth weight babies, 80 percent of all babies delivered in this group against an incidence of 40 percent in general were found anaemic. Hence pregnant women are easily prone to iron-deficiency anaemia. As a result, the cycle of maternal malnutrition sets in. She has to face complications during pregnancy such as abortion, still births, pregnancy induced hypertension, and eclampsia. The features observed due to anaemia are, giddiness, pain in legs, fatigue, loss of appetite, soreness of mouth, inflamed tongue pallor, feeling of pins and needles in the lower limb and swelling of feet and hands, pain in backbone, headache, irritation, insomnia, burning micturation infection, etc. In order to prevent such a situation, pregnant women should have a nutritious diet and adequate rest. She should get appropriate health advice, supplements and above all, proper guidance. (Krishna et al., 1988).
In the modern era of health care systems, health education is an important factor. Health education is concerned with establishing and / or inducing changes in the attitudes and behaviour of individuals and groups that promote healthier living. Education, information and communication provide the base of knowledge, skills and practices to equip individuals and families, and enable them to make positive health choices. In order to reduce the incidence of anaemia during pregnancy, it is necessary to assess the knowledge and practices of antenatal mothers regarding prevention and management of anaemia during pregnancy. So health education programme can be planned to increase their knowledge, which will help to improve their practices in relation to anaemia during pregnancy. It may help the mother and foetus to remain healthy throughout the antenatal period. (Park and Park, 1991).

1.1 NEED FOR THE STUDY

It is estimated globally, that about half a million mothers' die due to pregnancy and childbirth, 99 percent of them occur in developing countries. (W.I.I.O., 1987). From time immemorial, there have been records of human reproduction care in pregnancy, the pangs of labour, rejoicing at the birth of a new child and not infrequently tears of grief due to a maternal death in childbirth. Even royalty was not spared of an occasional tragedy. About 2,500 years ago, Siddharth’s mother, queen Mahamaya, delivered at Lumbini, enroute to her mother’s place. She was an elderly primipara and died on the seventh post partum day and the little prince (who later became the Buddha) was brought up by his aunt, Prajapati. (Carus, 1961). Mumtaj, the queen of the Moghul emperor Shah Jahan, died in Agra in 1631 at her 14th delivery, presumably due to postpartum haemorrhage. (Muller, 1860).

The Rig Vedas date to about 1500 BC and the Atharva too are over 3000 years old. In the Atharva Veda there are prayers and charms for a safe labour. In the Upanishadic period, which followed, there are references to menstruation, fertility, gestation and diet in pregnancy. In the Grihya sutras, there is a prayer to Tvastri to prevent miscarriage so that “the foetus may lie in the womb for 10 months”. In the Samhita period, which followed, there is abundant information on safe motherhood. 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, preparation for delivery and labour.

Pregnancy was diagnosed by nausea and amenorrhoea due to blocking of menstrual ducts by the foetus resulting in the caking up of the blood to form the placenta. Details of prenatal care are mentioned; the pregnant woman was advised to be clean, happy and joyful and to eat fresh cooked food, milk, rice and flesh of deer. There are references to haemorrhages of pregnancy, eclampsia, rapture uterus and puerperal sepsis. The situation was not different in other early civilisations like the Egyptian, Greek, Chinese or the Roman civilisations. (Brihadaranyaka Upanished, 1951).

Though there is advice regarding prenatal care in both the Charaka and Susruta Samhitas, it is hardly 100 years since the importance of prenatal care for safe motherhood was first emphasised by Pinard (1883) in France and later by William Ballantyne in Edinburgh. Soon MCH clinics were started in Calcutta (1909), Mumbai (1911) and in Madras (1918). The term ‘Social Medicine’ was first introduced in 1848 by Jules Guerin in France to indicate the importance of social factors in the causation of disease and ill health. Much later, Baird (1962) showed clearly those social factors like occupation, income, housing and nutrition influence pregnancy outcome. As a result, the World Health Organization called attention to this problem of social obstetrics (WHO, 1963) so that with preventive social measures one could lower the reproductive mortality and morbidity rates. Further research in community obstetrics has resulted in the ‘risk approach to MCH care’ an important and useful concept in the health care delivery system.

In 1960, Maternal and Child Health was integrated with family planning and the Integrated Child Development Scheme project was started in 1975. An important landmark was the Alma Declaration in 1978 when MCH and family planning were considered as integral parts of primary health care.

It has been known for a long time that motherhood was unsafe in India. Mudaliar started systematic investigations into the magnitude of maternal mortality in
1933 in Madras, in 1936 in Calcutta by Neal Edwards and in 1937 in Bombay by Jhiard. The Maternal mortality rates varied from 13.5 per 1,000 births in Bombay to 24.4 in Calcutta. The leading causes were sepsis (30-40 percent), anaemia (15-25 percent), haemorrhage (10 – 15 per cent) and eclampsia (10 –15percent) (Pandit 1948).

Almost half a century later, the multicentric study by the Federation of Obstetric and Gynaecological Societies of India (hereafter, FOGSI) covering 42 teaching institutions and a total of over 4,700 maternal deaths reported a Maternal Mortality Rate of 703 per 1.000. The World Bank study in Anarthpur highlighted a significant under reporting of these deaths. The WHO Inter Regional Meeting on this subject held in Geneva in November 1985 was a “very important milestone”, as it laid down the groundwork for the prevention of maternal deaths. It heralded the safe motherhood conference in Nairobi in February 1987 (sponsored by the UNFRA, WHO and World Bank), which gave a call for the Safe Motherhood Initiative as a global effort to reduce maternal mortality and morbidity with a target to reduce maternal deaths by 50 percent by 2000 AD.

The WHO has since brought out important guidelines on ‘essential obstetric functions at the First Referral level’ (1985) and technical reports on ‘Partography’(1986; 1989) ‘Postpartum Haemorrhage’(1991), ‘Anaemia of Pregnancy’(1990) and on ‘Toxaemia of Pregnancy’ which are the leading causes of maternal deaths.

In 1988 at the pre-Congress meet at Rio, the Federation of Obstetric and Gynaecological Societies of India / World Health Organization issued a statement which stressed that the FOGSI and its constituent national societies must orient the major part of their activities for the safe motherhood initiative and its target to reduce maternal mortality by 50 percent by 2000 A.D.

Also the International Confederation of Midwives at Kobe (Japan) in 1990 resolved to further the cause of Safe Motherhood with improved education and training of midwives for better maternity care, keeping safe motherhood in view.
One of the most important objectives in maternal care is to identify the high risk mothers during antenatal, intranatal and post natal periods. Hence it is essential to take necessary steps to assess the high risk factors during antenatal period. Anaemia is one of the commonest health problems seen during pregnancy.

For the past few years, regional, national and state level conferences on safe motherhood have been held to advance the cause of Safe Motherhood and Child Survival. The Government of India has also chosen some of the ‘vulnerable’ districts in the country for intensive supervision and perinatal care, keeping the above objectives in mind. (Bhatia, 1990).

In India, women in the reproductive age group (15 – 45 years) constitute 22.5 percent of the total population, and are grossly neglected. The mortality and morbidity among this group is higher in comparison to other groups, mainly due to the reproductive complications. Efficient screening and identifying the risk factor on time prevents most of them. (W.H.O., 1987).

In any community, mothers and children constitute a priority group. In sheer number, they comprise approximately 60 to 70 percent of the population of the developing countries, thus they are not only a large group but they are also a ‘vulnerable’ or ‘social-risk’ group. WHO has been using the risk approach in the M.C.H. services. (Park et al, 1991).

The primary health care approach is based on principles of social equity, nation wide coverage self – reliance, intersectoral co-ordination, and people’s involvement in the planning and implementation of health programmes in pursuit of common health goals. This approach has been described as “Health by the people” and placing people’s health in people’s hands”.

As per the declaration of Alma Ata “primary health care includes eight main components. out of that, the maternal and child health care, includes family planning. The primary health care approach integrated all the factors required for improving the health status of the population at the community level. But in reality, what is the health status of women? Women of all societies in their roles as mothers, form the
nucleus and backbone of the family. Despite the vital role played by women, their needs have gone unanswered for far too long. They are neglected and are forced to take a low profile in society. Each year, more than 500,000 women die from complications of pregnancy and childbirth, most of which are preventable.

Little attention has been given to the health and welfare of women in the developing countries. Governments have channelled their limited resources into expensive hospital-based curative medicine and technology. It is estimated that less than 20 percent of most national health budgets are allocated to maternal and child health and family planning activities, with a major share going to child care.

A great deal of ill health, sapping of energy and productiveness and tragedies in childbirth are due to anaemia. (W.H.O. et al. 1987). Anaemia of pregnancy is a mixture of several entities with various causes. The major causes of anaemia in pregnancy in the developing countries are poverty, ignorance, under-nutrition and food taboos, aggravated by repeated pregnancies, recurrent infections, parasitic and helminthic infestations.

Immediate medical causes generally account for approximately 75 percent of all maternal deaths, viz.: haemorrhage, sepsis, obstructed labour, eclampsia and abortion. The root cause of these complications may be due to the mother having anaemia earlier.

Another important contributory factor to maternal death, although not listed as a direct cause of maternal mortality in the developing countries; is anaemia. It is estimated that more than two thirds of pregnant women in the developing countries (excluding China) are anaemic; with a haemoglobin level of below 11 g/dl as compared to 14 g/dl in the developed countries. Although in practice 10 g/dl is considered borderline or cut out point.

In the developing countries, discrimination against women is apparent. Women receive inadequate education, often bear the brunt of nutritional stresses, and are subjected to an early marriage, early child birth and to prolonged exposure to risks of pregnancy which lead to maternal death.
In the developing countries, discrimination against women is apparent, women receive inadequate education, often bear the brunt of nutritional stresses, and are subjected to an early marriage, early child birth and to prolonged exposure to risks of pregnancy which lead to maternal death.

It is estimated that about 30 percent of the world’s population are anaemic. Amongst them pregnant women and young children are the most affected. It has been recognized that anaemia is a major nutritional problem in pregnancy in poor segments of the population in developing countries. Studies conducted in India indicate that maternal anaemia is associated with increased maternal morbidity and mortality. Association between maternal anaemia and low birth weight, prematurity and high perinatal mortality has been documented by many studies in India. (W.H.O., 1973).

Iron is important to carry oxygen and essential for foetal growth, brain function, muscle activity, protection from infection etc. Folic acid and $B_{12}$ are essential for cell growth and for rapidly growing tissue like the foetus.

If there is iron deficiency, enough oxygen is not carried by the blood and vital tissues like the brain and muscles suffer from lack of oxygen and there is a decrease in their function. Some of the manifestations of anaemia are dullness, lack of concentration, reduced activity, fatigue – all these lead to poor performance.

Adverse pregnancy outcome, such as intra-uterine growth retardation (IUGR), prematurity, etc are some of the foetal consequences of anoxia due to severe anaemia during pregnancy and is related to iron deficiency along with deficiencies of folate and $B_{12}$.

The foetus is born with poor stores of iron and folate at birth and suffers from anaemia from early infancy due to poor availability of these two nutrients from breast milk (Iyengar et.al 1970).
It is reported that anaemia directly results in 10-15 percent of maternal deaths and in another 5-30 percent it indirectly contributes to the mortality and morbidities (Rao, 1990). The foetus depends entirely on maternal oxygen supply, acute/chronic anoxia due to anaemia results in intrauterine deaths. Anaemic mothers also have lower resistance against infections and are more prone to thromboembolic episodes. In the postpartum period, they are more prone to sepsis. (Iyengar, et.al., 1970).

Preventing and controlling iron deficiency anaemia through primary health care, a guide for health administrators and programme managers, report that: in developing countries where laboratory testing is organisationally and financially difficult, the most cost effective approach to treating iron deficiency anaemia is to provide iron supplements to the entire high risk groups. Parenteral administration is usually given only to individuals who are found to be intolerant of oral iron, and in severe anaemia. Problems associated with iron tablets include side effects like gastrointestinal upset, nausea, vomiting, constipation and diarrhoea. There are four approaches to the prevention of iron deficiency anaemia and they are:

1) Supplementation with medicinal iron
2) Education (including modification of diet).
3) Control of infection; and
4) Fortification of staple foods with iron.
(DeMayer, 1989).

A woman’s own perception of pregnancy and her health status are major factors that will influence her health care decision making. These health perceptions, not only reflect her cultural background, but also her role and status within the family and community.

Pregnant women are expected to carry on with their daily activities the same way as they would in a non-pregnant state and often the side effects of pregnancy are de-emphasized. In addition, the community may look unfavourably on women who complain about symptoms associated with pregnancy. Thus, health problems associated with nutritional anaemia may not be recognized or may be ignored.
Cultural idioms may play important roles in a pregnant woman's decision to seek health care and to comply with a prescribed treatment regime. In India, for example, women from low socio-economic groups seldom take tablets with any regularity, yet, will readily accept injections.

Many pregnant women in India and Thailand believe that taking iron and vitamin tablets will cause them to have big babies yet big babies are not desired as they are associated with difficult deliveries (Al-Darazi 1987, Nichter and Nichter 1983, Vallyasevi 1988). If anaemia is known to be a disorder, which affects the blood, iron tablets then may be considered as an acceptable treatment measure. (W.H.O./M.C.H./1990).

A study was undertaken to determine the amount of iron required for the treatment of anaemia during pregnancy; to determine whether folic acid and/or vitamins B₁₂ should also be given. The study was conducted in India, and eight hundred women in the first 24 weeks of pregnancy were included for the prophylactic trial. The women were then placed in one of the four treatment groups: placebo; 30 mg element iron daily; plus 500 mg folic acid and vitamin B₁₂ daily. The tablets were provided at one week intervals and women were instructed on administration.

The findings indicate that a daily supplement of 30 mg of iron given from the 24th week of pregnancy is sufficient not only to maintain haemoglobin levels above 10g/dl, but also to raise haemoglobin. In many pregnant women simultaneous administration of folic acid and vitamin B₁₂ seems to bring about no significant improvements in haematological status. (Iyengar, et.al., 1970).

In many developing countries nutrient intake is low simply because food intake is low. It may be due to many factors such as dietary shortcomings related to cost, as well as dietary and cooking habit taboos and beliefs.

Anaemia might be one manifestation of over all maternal dietary inadequacy and consequent under nutrition. In the developing countries malnutrition is like an iceberg as most of the women.
When the mother’s diet is not nutritionally adequate she cannot transfer the required nutrients to the foetus, the foetus then tries to draw its nourishment from the mother’s body reserves. This can affect the mother’s health, and if she is already malnourished, then both mother and infant will be affected.

To overcome this problem the best approach is to develop knowledge, awareness and right attitudes towards anaemia, its causes, signs and symptoms, maternal and foetal complications, prevention and management of anaemia, supplementary drugs, health practices, hand washing techniques, cooking practices, eating habits etc., among the women. This will enable them to take proper care of themselves and their children, as they are the main vulnerable group.

National Institute of Nutrition suggest that a single haemoglobin estimation done around the 20th week of pregnancy might be sufficient to detect the high risk anaemic pregnant women. It is essential to make them aware regarding the importance of testing haemoglobin level. Twentieth week of pregnancy is the period of positive signs of pregnancy and foetal growth is faster in this period so the mother tries to balance both. Therefore antenatal care in terms of diet and supplementary drugs is very essential.

Anaemia especially during pregnancy is a major nutritional problem associated with maternal and perinatal morbidity and mortality. There is usually two to three fold increase in perinatal mortality rate when the maternal haemoglobin falls below 8 g/dl and eight to ten times increase when maternal haemoglobin falls below 6 g/dl. A significant fall in birth weight due to increase in prematurity rate and intrauterine growth retardation has been reported.

The association between anaemia and urinary tract infection and low birth weight babies was well documented. Anaemic pregnant women are prone to urinary tract infections. The effect of anaemia and urinary tract infection in pregnancy could also be the cause of low birth weight infants. (Gopalan, and Suminder kaur, 1989).

Female literacy, employment and women’s status are closely inter-linked with maternal health in any society. In all countries where the female literacy rates are
high the birth rate and reproductive mortality rate is low. The crucial reason for this is the educational status and knowledge of the women themselves and it is well known that literacy of women is a good indicator. With education, the social status of women will improve. A woman who is educated and economically independent will regulate her fertility and understand the need for routine antenatal care. A mother is the centre of the family. If the mother dies, it is not only a catastrophe for her children but often for the rest of the family.

Health education is an essential tool for preventing and controlling anaemia during pregnancy. It is a process that informs, motivates and helps antenatal mothers to adopt and maintain healthy practices and lifestyles. It is a cost effective intervention. It is a basic element of all health activity. It is of paramount importance in changing the views, behaviour and habits of antenatal mothers.

There are various stages concerning changes after health education. The first one is a change in knowledge, a change in attitude followed by a change in behaviour or beliefs, and then a change in custom. It requires reinforcement and constant efforts of all personnel.

The standard of health services varies considerably from place to place. In most developing countries, there is a gross disparity in the availability and utilisation of health services between urban and rural contexts. (Park et al, 1991)

The investigator during her field experience in 1996-97 at urban and rural areas made observations, as well as conducted a small study also. In the Health Unit at Palghar antenatal clinic, she observed that more than 60 percent of the women were anaemic. Their haemoglobin level was between 8 g/dl to 10 g/dl. Women belonged to lower and middle class societies and their educational status was low. With the help of students, she had conducted health education sessions to some groups using role play, health exhibitions in relation to anaemia, group discussion, etc. After a week, she found that antenatal mothers were showing an improvement in terms of asking doubts regarding care in relation to prevention and management of anaemia during pregnancy. In the post-natal ward at the J.J. Group of Hospitals the investigator had conducted a small study on finding out haemoglobin level before and
after deliveries and birth weight of infants. It was found that 50 percent of the women were anaemic and their haemoglobin levels were between 8 g/dl to 10 g/dl. And birth weight of infants was between 2 kg to 2.6 kg. The above women also belonged to lower and middle strata of the society.

These motivational factors further lead the investigator to undertake the said study about antenatal mothers as an appropriate group. All the mothers wanted their children to be healthy. They could also be approached conveniently as a group at the antenatal clinic. Hence the investigator thought it worthwhile to find out the effect of health education on the “Knowledge and practice of antenatal mother” with regard to anaemia during pregnancy.

It is the responsibility of the community health nurse to identify the antenatal mothers suffering from anaemia and motivate them to take care of themselves in deficit areas. Community health nurses can extend their services and make mothers realise the need for preventive and curative care, and to reduce anaemia during pregnancy. They can motivate the family members too, to some extent. The family members can take an active role in caring and supporting antenatal mothers to reduce anaemia during the pregnancy period.

It is the overall duty of the community health nurses to have a clear understanding of the religious beliefs and practices prevailing in the community. This assessment will help them to appreciate the rationale behind the antenatal mother’s behaviour and would facilitate communication and health education programme and also to impart knowledge, regarding anaemia during pregnancy and health practices to be adopted to prevent further complications. Hence the need to conduct such a study was strongly felt.

1.2 STATEMENT OF PROBLEM

“The effect of planned health education on knowledge and practices of antenatal mothers attending Antenatal clinic at J.J. Hospital with regard to prevention and management of anaemia during pregnancy”.
1.3 OBJECTIVES OF THE STUDY

1) To find out the awareness of antenatal mothers regarding prevention and management of anaemia during pregnancy before and after planned health education. Some of the selected areas of prevention and management of anaemia during pregnancy are:

- Meaning of anaemia.
- Haemoglobin and its importance
- Investigations to detect anaemia.
- Pre-disposing factors
- Causes of anaemia
- Early and late symptoms.
- Early and late signs.
- Complication: maternal and foetal
- Preventive measures
- Supplementary drugs
- Dietary modifications
- Food hygiene
- Cooking knowledge
- Health habits
- Deworming
- Curative measures.

2) To compare the practices adopted in relation to prevention and management of anaemia in antenatal mothers during pregnancy, before and after health education on selected areas.

- Identify signs of anaemia
- Recognize preventive measures
- Consumption of supplementary drugs
- Dietary practices
- Food hygiene
- Deworming
- Curative treatment.

3) To find out the relation of selected variables in relation to prevention and management of anaemia during pregnancy; the selected variables are age, education, income, parity, gestational age anthropometric measurement, birth weight of the child and haemoglobin status of mothers.

1.4 OPERATIONAL DEFINITION

According to Polit and Hugler (1989), "The operational definition of a concept is the specification of the procedure and tools required to make the needed measurement". For this study the operational definitions used are listed below.

Anaemia: A disorder due to a deficiency in the number of red blood cells or their haemoglobin content or of both.

In this study anaemia refers to antenatal mothers having clinical features of pallor, easy fatigability, giddiness, palpitation, dyspnea, loss of appetite, pain in legs, tiredness, spoon shaped nails and haemoglobin level less than 10 g/dl. Therefore in this study a haemoglobin level below 10g/dl is considered an anaemic condition.

Effect: - Outcome in the form of observable behaviour or verbal response (Oxford Dictionary).

In this study effect refers to the change in the knowledge and practice of antenatal mothers in relation to prevention and management of anaemia during pregnancy.

Knowledge: - According to the Oxford English Dictionary knowledge means knowing, what is known to a person, things, facts, subjects, sum of what is known to mankind.

In this study knowledge refers to the antenatal mother’s range of information regarding anaemia during pregnancy in relation to:

1) Meaning of anaemia.
2) Haemoglobin.
3) Investigation.
4) Pre-disposing factors and causes.
5) Early and late signs and symptoms.
6) Maternal and foetal complications.
7) Preventive measures: supplementary drugs, dietary modification, food hygiene, cooking knowledge, health habits, deworming and curative measures.

**Practices:** According to the Oxford Dictionary practice means habitual action or carrying on repeated exercise to improve skill.

In this study practice refers to the act of antenatal mothers taking care of themselves with regard to prevention and management of anaemia during pregnancy in relation to:
1) Identifying signs of anaemia.
2) Recognizing and practicing preventive measures.
3) Consumption of supplementary drugs.
4) Adopting dietary modification.
5) Maintaining food hygiene.
6) Practicing cooking knowledge.
7) Awareness and maintaining health habits.
8) Consumption of deworming.
9) Awareness regarding curative measures.

**Selected areas:** In this study selected areas refers to certain chosen areas which are vulnerable and important. These are: meaning of anaemia, causes and pre-disposing factors, haemoglobin status, signs and symptoms, foetal and maternal complications, dietary pattern, dietary practices, other health practices, preventive and curative measures of anaemia.

**Health Education:** According to National Conference on preventive medicine U.S.A. “Health education is a process that informs, motivates and helps to adopt and maintain health practices and life style, advocates environmental changes as needed to facilitate this goal and conduct professional training and research in the same end” (Park and Park 1997).

In this study, health education refers to the planned instructions given to the antenatal mothers regarding preventive and curative measures in relation to anaemia.
during pregnancy which help the antenatal mothers to achieve healthy living by modification of behaviour. It is formal teaching on a purely selected content, presented in a systematic manner.

**Antenatal mother**: It refers to a mother who is pregnant. Antenatal means before birth, the period between conception and delivery of the child which is normally 40 weeks or 280 days. In this study, period from 20th week of gestation onward is selected as the antenatal period.

### 1.5 ASSUMPTION

The study is based on the following assumptions.

1. It is generally assumed that mothers will have some knowledge regarding prevention and management of anaemia during pregnancy.
2. It is often assumed that selected demographic variables have an influence on mother's knowledge regarding prevention and management of anaemia during pregnancy.
3. It is assumed that mother's responses to the interview schedule items will reflect their actual knowledge regarding prevention and management of anaemia during pregnancy.
4. Antenatal mothers often have prior beliefs and cultural practices regarding prevention and management of anaemia during pregnancy.
5. Health education can bring changes in knowledge and practices.
6. It is further assumed that antenatal mothers will honestly respond to the tool.

### 1.6 LIMITATIONS

The study is limited to the antenatal mother's having haemoglobin level 10 g/dl and less than 10 g/dl of blood.

1. The study is limited to selected components of prevention and management of anaemia during pregnancy.
2. The study is confirmed to mothers speaking Marathi, Hindi and English, only.
3. The sample size is 340.
4) This study is restricted to the antenatal mothers attending antenatal clinic at J.J. Group of Hospitals.

1.7 SCOPE OF THE STUDY

1. This study may bring out relevant data pertaining to knowledge and practices regarding prevention and management of anaemia during pregnancy.

2. This information can be used as a guide line to prepare health education programmes for antenatal groups.

3. This information may be useful for those personnel working as programme in charges, administrators, educators, etc.

4. This study will serve as a guide line in planning curriculum for various health personals like MPW (Multi Purpose health Worker) females/health assistants, supervisors, nurse midwives / supervisors / and post graduate nursing courses.

5. This information can be used in general education. In the subject of biology, it will be a motivating factor for general students. They will realise the magnitude of antenatal mother's health.

1.8 CONCEPTUAL FRAME WORK

Polit and Hungler have stated that, “Conceptual frame work deals with abstractions (concepts) that are assembled by virtue of their relevance to a common theme”. (Abdullah and Levine1965).

Conceptualization is a process of forming ideas. These ideas, concepts, and facts will form a conceptual frame work for development of the research design, and thus helps the researcher to know what data needs to be collected and give direction to the entire research process (Charter 1975). The frame work also provides the organisational scheme into which new findings of the research will fall into a broader field of knowledge. The findings of the conforming the structure, thereby add to the existing knowledge. Thus, it helps in providing a clear and concise statement of knowledge in the area under study. Conceptual frame work is designed as the interrelationships between concepts, described loosely, in order to provide a structure
to guide the development of testable hypothesis. (Akinsanya, Justus, Cox, Carol, Chem and Luky (1994).

A conceptual framework provides direction and designs the study. This study aims at assessing the level of knowledge and practices of antenatal mothers with regard to prevention and management of anaemia during pregnancy.

The conceptual framework prepared for the present study is based on the steps of the nursing process. The nursing process consists of assessing the patient’s needs, planning nursing actions to meet the requirements, implementing the planned nursing actions, evaluating the patient’s responses to the nursing action and reassessing the patient’s needs and its reapplication in a cyclic pattern. (Marriner and Ann 1980).

The present study aims at assessment of mother’s knowledge and practices regarding prevention and management of anaemia during pregnancy. The diagrammatic representation of the concepts in the present study is presented in Figure (1). The areas have been grouped and classified according to the objectives to be achieved.
Figure No.1 RATIONALE FOR STUDY
Model - 1 The effect of Planned Health Education for antenatal mothers & based on Self Care Model

Study Group and Control Group

Awareness / Knowledge among Antenatal mothers before Health education regarding anaemia

Practices followed by antenatal mothers before health education regarding anaemia

Assessment

Study Group

Imparting health education for prevention and management of anaemia in pregnancy

Increased Knowledge

Increased practices

More healthy mother
More healthy newborn

Control Group

Not imparting health education for prevention and management of anaemia in pregnancy

No change in knowledge

No change in practices

Less healthy mother
Less healthy newborn

-23A-
Knowledge gained by any individual varies with her period of exposure or experience to any phenomena. Education is the key to increase the knowledge of an individual. It can be expected that an individual improves qualitatively if she/he is supplemented with formal education. In this frame work the concept of the knowledge of antenatal mothers, refers to the knowledge in relation to prevention and management of anaemia during pregnancy. It is also expected that antenatal mothers will be able to apply this knowledge in their life, based on their participation and exposure to the formal health education session.

Knowledge and practises conceptualized under this study are knowledge of: anaemia, functions of haemoglobin, pre-disposing factors and causes, symptoms and signs, maternal and foetal complications, selected preventive and curative measures; and the related practices are: recognize pre-disposing factors, causes, identifying symptoms and signs recognize maternal and foetal complications consumption of supplementary drugs, side effects of drugs, cooking practices and dietary pattern, other health practices and curative measures in relation to prevention and management of anaemia during pregnancy.

While assessing all these variables, it is important to have certain demographic variables such as age religion, type of family, place of living nature of home educational status and occupational status of the couple, type of diet and general medical history.

Another concept conceptualized in this frame work is data of previous deliveries history of abortions and M.T.P. Problems of previous pregnancies. In present pregnancy, gravida, para, gestational age, last menstrual period date and expected delivery dates, and number of living children are included

All these variables are closely inter-related and influences the knowledge and practices of antenatal mothers with regard to prevention and management of anaemia during pregnancy.

The above variables will be considered in the assessment phase. After completing the assessment phase the next phase is planning the nursing action. In this
frame work, an instructional guide in relation to prevention and management of anaemia during pregnancy is included with supportive teaching aids like flip chart is prepared. And a question answer cum structured interview is planned.

Implementation is the next component of the nursing process. In this phase, whatever nursing actions are planned should be implemented. With the help of instructional guide and supportive teaching aids, health education session imparted and response recorded.

Antenatal mother’s knowledge and practices in relation to anaemia during pregnancy may / may not improve in the evaluation phase, which will be determined by an increased haemoglobin level and weight during antenatal period, as a positive evaluation.

The frame work further assumes that during post-natal period haemoglobin level will be normal and infant’s birth weight will be within the normal range. Therefore we will get healthy mother and healthy child as the fruits.