# A STUDY OF PREGNANCY OUTCOME IN VARIOUS HIGH RISK PREGNANCIES

*Dissertation Submitted For*

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## BRANCH - II

## OBSTERTICS & GYNAECOLOGY


**MADRAS MEDICAL COLLEGE**

**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**CHENNAI.**

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# CERTIFICATE

This is to certify that this student **Dr.M.BOBBY** is a bonafide Postgraduate student of M.D. Degree in Obstetrics and Gynaecology, has carried out this dissertation work entitled **"A Study of Pregnancy Outcome in various High Risk Pregnancies"** in Institute of Obstetrics and Gynaecology, Egmore, Chennai, under my guidance and supervision in fulfilment of the regulations laid down for the examination of M.D. Obstetrics & Gynaecology Degree of the Tamil Nadu Dr. M.G.R. Medical University, Chennai to be held during September 2008.

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# CONTENTS

# INTRODUCTION - HIGH RISK PREGNANCY

**DEFINITION** : A High risk pregnancy is identified as pregnancy in which there is a risk of adverse outcome in the mother and / or baby that is greater than the incidence of that outcome in general population.

**INCIDENCE:**

Incidence of high risk pregnancies varies from

1. Region to region & country to country.
2. Socioeconomic status
3. Environmental factors.
4. Literacy.

It is higher in urban slums & rural areas and among illiterate mothers. Incidence is also high in tertiary care centres.

**Prevalence** : prevalence of high risk pregnancy is 5-40% (2) (WHO 1972: Shah 1981; Das et al 1987, ICMR 1988, Dutta et al 1990; Ambiye etal 1990)

Around 25% mothers & neonates are at risk.

- However incidence of high risk pregnancy & neonate in India is double and this could be lowered to near 10 % by adequate MCH care.

- According to WHO incidence in South East Asia & some countries in Africa & Latin America exceeds 30%.

Those cases with added risk factors, are prone to develop morbidity & mortality both in the mother & her unborn child.

Intensive antenatal care is provided for them by the obstetric specialist at the hospitals.

**Intensive care provides**

1. More repeated clinical check-ups than routine 10 times checkups
2. Antenatal hospital ward admission & care.
3. Intensive maternal & foetal monitoring
4. Bed rest & treatment.

- All pregnancies must be identified entered and grouped under high risk as early as possible. At the end of pregnancy, risk factors are finally evaluated as following:

**ETIOLOGY :**

**(A) <u>Obstetric factors</u>** :

1. Gravidity → All primi gravidas
   Grand Multipara (more than 4 pregnancies).
2. Age → Elderly at & above 35yrs; below 19 Years.
3. Height → A11 gravidae lesss than 145cm
   Under weight (a pregnancy weight 10% or over less). Over weight (20% or over) as per height weight standard.

4. Multipara and Bad Obstetric history :

   - difficult labour & loss of baby.
   - caesarean section
   - hypertension in previous pregnancy.
   - recurrent pregnancy loss and premature labour.
   - Intrauterine fetal death.
   - Previous 3rd stage abnormalities.
   - Congenital malformations.
   - Neonatal deaths

5. Cephalopelvic disproportion

6. Malpresentations & Multiple pregnancy.

7. Obstetric complications-

   - Pregnancy haemorrhage

     (Early pregnancy loss, Ante partum haemorrhage) (pre-eclampsia; eclampsia)

8. High risk foetus - Premature labour .

   Intra- uterine growth restricted foetus.

   Post maturity

**(B) MEDICAL FACTORS :**

1. Anaemia & undernutrition.
2. Cardiac disease.
3. Hypertension
4. Diabetes Milletus.

5. Renal disease.
6. Chest disease( pulmonary TB)
7. Hepatitis
8. Syphilis
9. Psychiatric disorders.
10. Thyroid disorders.
11. Obesity.
12. 0thers.

**(C) SOCIAL FACTORS**

1. Pregnancy in unweds.
2. No or less than 3 Antenatal visits.
3. Pregnancy in women with illiteracy.
4. Husbands unemployment.
5. Poor habitation
6. Social customs & beliefs

In western centres the incidence of high risk pregnancy comes to about 1/3 rd of all pregnancies.

However this incidence at least doubles in the developing countries because of anaemia, under nutrition, Multiparity, Poor social factors & poverty.

# HIGH RISK CONCEPT

The progress of any nation depends on improvement of health of mothers and children and this consideration led to the formation of special maternal & child health (MCH) care services all over the world. As the problems affecting the health of mothers and children are multifactorial in origin, the strategy is to provide MCH services as an integrated package programme in order to achieve a greater impact.

High risk concept in maternity care has been an important aspect of MCH services and will continue to be a priority in obstetrics. In February 1987 , an international safe motherhood conference at Nairobi, Kenya has drawn attention to the appallingly high maternal death rates prevailing in developing countries and has issued guidelines to prevent this neglected tragedy.

Motherhood is so unsafe and perinatal outcome so poor because of certain risk factors which need early identification and proper management.

**Causes of unsafe mother hood are** :

1. Direct or obstetric causes - Resulting from complications of pregnancy, labour and puerperium which account for 75% of all causes.

2. Indirect causes - Associated medical disorders complicating pregnancy.

3. Contributory causes - social & environmental causes like poverty, female illiteracy, lack of family planning services and lack of accessibility to health care.

**Perinatal factors associated with increased risk**

**A. Maternal conditions**:

Maternal age over 35 years, Maternal age under 16 years, Poverty, Infertility, Smoking, Drug/alcohol abuse, Diabetes, Thyroid disease, Renal Disease, Urinary infections, Heart /lung disease, Hypertension, Anemia, Isoimmunization (red cell), Isoimmunization (Platelets), Thrombocytopenia, Polyhydramnios, Bleeding in early pregnancy, Bleeding in third trimester, Premature rapture of membranes, Past history of infant with jaundice, Malnutrition, Hyperthermia, Trauma, TORCH infections, Maternal group B streptococcusinfection.

**B. fetal conditions :**

Multiple birth, Poor fetal growth, Excessive fetal size, Abnormal presentations, Abnormal fetal heart rhythm, Decreased activity, Polyhydramnios, Oligohydramnios, Fetomaternal haemmorage

**C. Conditions during Labour :**

Premature labor >28 to <37 weeks, Post date labours>42 weeks, Maternal fever, Precipitate labor, Prolonged labour, Abnormal presentation, uterine tetany, Meconium stained liquor. Forcepsdelivery, Maternal hypotension, Cesarean section transient, Analgesia / anesthesia

**Đ. Immediate Neonatal conditions**

Prematurity, Low 1 Minute APGAR, Low 5 minute APGAR, Pallor or shock, IUGR, Postmaturity.

# REVIEW OF LITERATURE

**Identification of high risk mothers:**

Certain characterstics of the mother have been shown to be associated with poor outcome of pregnancy. Risk factors are, in fact, characteristics that have significant association with a defined end point i.e., outcome for which each risk factor or a group of factors is sought. Identification of risk factors, therefore begins with the observation of its association with undesired outcome.

## RISK FACTORS - THEIR IMPACT ON MOTHER *&* CHILD

Knowledge of risk factors which predictably increase the risk of child bearing would help in their early identification & effective management. They are :

**I Reproductive history factors :**

1. Age
2. Parity
3. Past obstetric History
    a) Abortion/infertility
    b) Postpartum hemorrhage / Manual removal
    c) Baby >4Kg.
    d) Baby < 2.5 Kg.
    e) Pregnancy induced hypertension

f) Previous section

g) Still birth / neonatal death

h) Prolonged Labour / difficult labour

**II <u>Associated Medical diseases</u> :**

1. Diabetes
2. Cardiac Disease
3. Chronic renal disease
4. Infective Hepatitis
5. Pulmonary Tuberculosis
6. Undernutrition
7. Other diseases
8. Previous Gynaecological Surgery

**Ill <u>Present pregnancy factors</u>** :

1. Bleeding
2. Anemia
3. Hypertension
4. Oedema
5. Albuminuria
6. Multiple pregnancy
7. Breech
8. Rh - isoimmunisation

9. Breech
10. Prolonged pregnancy
11. Polyhydramnios
12. Small for dates

**Elderly mother**

Maternal mortality rate is 10 times and perinatal mortality rate is 3 times that of mothers is their mid twenties.

As age advances women can acquire conditions that can influence their health and health of fetus, so risk of hopsitalisation is also increased.

Specific complications that are common in older women are :

1. Pregnancy induced hypertension - eclampsia
2. Abruptio placenta
3. Increased risk of associated medical diseases like diabetes, ischemic Heart disease etc.
4. Increased risk of Intrauterine growth retardation, fetal chromosomal abnormalities.
5. Preterm labour
6. Abnormal placentation

The two most common medical problems complicating pregnancy are hyypertension (pre existing and pregnancy related) and diabetes (pre

gestational and gestational)

**Parity**

Repeated pregnancies from menarche to menopause in the absence of contraception lead to maternal illhealth and high maternal and perinatal death rates. With increase in the parity unhealthy mothers give birth to unhealthy babies. High parity is associated with an increased likelihood of abnormal fetal presentation and obstetric hemorrhage.

Problems in primigravidae -

1. Pregnancy induced hypertension and Ante partum hemorrhage.
2. Premature labour
3. Prolonged labour

Problem in Multipara —

During Pregnancy: Malpresentations
Placenta Praevia
Medical disorders
Pemature labour

During Labour: Cephalopelvic disproportion
Obstructed labour
Rupture uterus
Post partum haemorrhage - Atonic
↑Operative interference

**Previous H/O Abortion / infertility** :

Previous Abortion increases the risk of Abortion in present pregnancy.

| No. of Abortions | Risk of subsequent Abortion |
|---|---|
| 0 | 1<br>5% |
| 1 | 2<br>0% |
| 2 | 3<br>5% |
| 3 | 4<br>7% |

Previous history of infertility and its treatment makes the present pregnancy precious. Also there is increased incidence of multiple pregnancy with ovulation induction.

**History of post partum haemorrhage / manual removal of placenta** -

Post partum hemorrhage is described as loss of 500 ml of blood after completion of III stage of labour.

A history of post partum hemorrhage or retained placenta increases the relative risk of post partum hemorrhage in subsequent birth by 2-4 times, as many a times the same cause may prevail during next pregnancy. Causes of post partum hemorrhage -

- uterine atony,
- Multiparity,
- Trauma,
- Retained placenta,
- precipitate labour,
- overdistended uterus,
- placental abnormalities,
- coagulation disorders.

Post partum hemorrhage in previous pregnancy renders patient anemic in present pregnancy which itself is a known risk factor for poor pregnancy outcome, if it is not corrected in time.

**History of Big baby**

Causes of Big baby are hereditary, size of the parents particularly mother, poorly controlled diabetes, post maturity, Multi parity.

**Impact on mother**

1. Cephalopelvic disproportion leading to operative intervention
2. Shoulder dystocia
3. Post Partum hemorrhage

**Fetal risks**

Birth Trauma

Asphyxia & Meconium Aspiration_____

_____**History of Baby < 2,5 Kg.**

Low birth weight baby may be either small for gestational age (Intrauterine Growth Restriction) or preterm.

**Causes of small for Gestational Age/ Intrauterine growth Restriction**

1. Maternal complications like pregnancy induced hypertension, Anemia, uncontrolled Diabetes mellitus, renal failure.

2. Fetal causes like congenital anomalies, multiple pregnancy.

Complications of Intrauterine growth retardation: Birth Asphyxia, Hypoglycemia, Hypothermia, Hyper bilirubinemia, Polycythemia.

**Causes for preterm labour**

1. Maternal causes like anaemia, pregnancy induced hypertension, Medical disorders complicating pregnancy, chorioamnionitis uterine anomalies, infections, low socio - economic factors, extremes of age, latrogenic and idiopathic.

**Risk of preterm labour in next Pregnancy**

| **No. of preterm labours** | **Risk** |
|---|---|
| 0 | 5-10% |
| 1 | 15% |

| | |
|---|---|
| 2 | 25% |

**Complications of preterm labour**

Birth Asphyxia

Respiratory distress syndrome

Intraventricular hemorrhage

Infections

Jaundice

Anemia

Retinopathy of prematurity

Necrotizing enterocolits

**History of still birth - Neonatal death**

Causes are pregnancy induced hypertension, eclampsia, Ante partum hemorrhage, diabetes, congential anomalies, Rh isoimmunization, preterm labour, congenital infections, obesity, smoking, Rupture uterus, cord prolapse, difficult - prolonged labour, unplanned delivery at home.

25% of deaths are due to prolonged or difficult labour. 20% are due to pregnancy complications. 40% of causes remain undetermined.

**History of prolonged labour/ difficult labour**

Perinatal mortality in prolonged labour is 20% causes are uterine inertia and incoordinate uterine action, Cephalopelvic disproportion, cervical

dystocia, Malpresentations, malpositions, Injudicious use of sedatives and epidural analgesia.

**Dangerous to the mother**

1) Prolonged labor might end up in obstructed labour & Rupture uterus.
2) Trauma to Genital Tract
3) Post partum hemorrhage
4) Puerperal sepsis

**Impact on fetus**

Birth Asphyxia

Infections

Intracranial hemorrhage

**Diabetes**

It is variously estimated that 3 % to 5 % pregnancies are complicated by diabetes.

Approximately 0.2% to 0.5% of all pregnancies occur in women with a preexisting diagnosis of type 1 diabetes mellitus and a similar number have type 2 diabetes milletus.

An additional 1% to 6% of women will develop sufficient hyperglycemia during pregnancy and are termed as gestational diabetes.

The World Health Organization (WH) had predicted that between 1995 and 2005 there will be a 35% increase in the world wide prevalence of diabetes.

Incidence of diabetes is increasing at an alarming rate due to rapid changes in lifestyle.

Although typically diabetes is a western disease of the affluent, Indians seem to be particularly prone and prevalence is rapidly rising in India. Malnutrition in early life predisposes to diabetes and this problem is of great significance.

**Certain peculiarities of diabetes in India are**

1) The commonest variety is type 2 and occurs a decade earlier.

2) The major risk factor is central obesity which is relatively common even though obesity is not very common.

3) Treatment of diabetes is influenced by social dogmas and also by practitioners of alternative medicine. Many patients cannot afford even the basic treatment, as facilities for diagnosis, treatment and follow-up are extremely poor especially in rural areas.

**Diabetes in pregnancy can cause a number of problems**

1) Decreased Fertility
2) Increased Abortions
3) Increased Congential anomalies in fetus
4) Serious infections in mother
5) Pregnancy induced hypertension & associated complications.
6) Macrosomia
7) Polyhydramnios
8) Sudden demise of fetus near term and still births
9) Increased perinatal mortality and morbidity due to birth trauma, congenital anamolies respiratory distress syndrome preterm labour, hypoglycaemia, hypocalcemia, hyper bilirubinemia, hyper viscosity syndrome.

Perinatal mortality is 2-3 times increased, as uncontrolled diabetes contributes to fetal and maternal morbidity and mortality, it is imperative that it is diagnosed early and treated well.

**Heart disease**

Incidence of heart disease in pregnancy is 1%

During the last few decades, the etiology of heart disease changed from primarily rheumatic to predominately congenital.

Amongst the non obstetric causes of maternal mortality it is the commonest cause and is responsible for 3-3 .5% of all maternal deaths in India.

Causes of maternal death are pulmonary edema, congestive heart failure, pulmonary embolism, Acute rheumatic carditis, sub acute bacterial endocarditis. Periods of gestation with high incidence of complications of heart disease are :

1) During 28-32 weeks of pregnancy
2) During labour
3) Immediately following delivery
4) At the end of first week of puerperium.

**Causes of perinatal mortality**---------

In classes I & II fetal prognosis is unaffected. In classes III and IV perinatal mortality may be upto 30%. Prematurity and intrauterine death due to maternal anoxia contribute to increase perinatal mortality rate.

Despite the potential for significant maternal morbidity, in most patients with cardiac disease, a satisfactory outcome can be expected with careful antenatal, intra partum and post partum management.

Early diagnosis, prevention and control of complications improves the prognosis.

The risk of a cardiac lesion in the fetus is also increased when other first-degree

family members have a congenital heart lesion.

**Infective Hepatitis**

Jaundice in pregnancy occurs 1 in every 1500 pregnancies.

Viral hepatitis is the commonest cause of Jaundicein pregnancy contributing to 50 -75% of cases .

Though self-limiting it may prove fatal. Incidence of viral hepatitis in pregnancy is 3-20% in developing countries, especially type -E is more fatal. Causes of maternal death —

1) Post partum hemorrhage

2) Hepatic coma due to hepatocellular necrosis

3) Coagulopathy

Risk to the fetus -

1) Abortion
2) Preterm birth
3) Intrauterine death

Proper sanitation and good hygiene is helpful in prevention of hepatitis - A & E.

Maternal screening for Hbs Ag Antigen, usage of syringes and needles

for Hepatitis - B patients etc., are useful in prevention of Hepatitis- B.

**Pulmonary Tuberculosis**

Incidence ranges from 1-2% amongst hospital deliveries in tropics. Prognosis is good when the disease is in quiescent phase.

**Anemia**

The WHO defines anemia in pregnancy as a hemoglobin concentration of less than llg/dl (in developing countries Hb% <10gm/dl).

Anemia is a major global problem affecting 20-70% of population. In India it is a major public health problems seen in children and pregnant women affecting their scholastic and reproductive performance. It is responsible for 17-23% of maternal deaths in rural India (Register General 1991).

Commonest cause of Anemia is deficiency of iron, folic acid and Vit.B12 in diet. Other causes are Blood loses, parasitic infestations, chronic illness, infections etc.

**Risk to mother**

1) Congestive heart failure
2) Intercurrent infections
3) Pre eclampsia

4) Preterm labour

5) Sub involution

6) Thrombo - embolism

**Risk to the fetus**

1) Prematurity

2) Intrauterine growth retardation

3) Intrauterine death due to chronic anoxia

Morbidity and Mortality from Anemia can be reduced by Iron and Folic acid Prophylaxis and treatment.

**Pregnancy induced hypertension**

It is the most common high risk complication in pregnancy. Incidence of pregnancy induced hypertension 8%. it accounts for 18% of total small for gestational age.

**Risk factors for pregnancy induced hypertension**

Primi parity, extremes of age, Family history of pregnancy induced hypertension, chronic renal disease, multiple pregnancy, Hydramnios, hydatidiform mole.

**Complications - maternal**

1) Eclampsia 2% - The incidence of Eclampsia is approximately 1 in 1600 pregnancies[19]
2) Antepartum haemorrhage
3) Renal failure
4) Blind ness
5) Preterm labor
6) Post partum hemorrhage

Fetal : Intrauterine death, intrauterine growth retardation.

History of pregnancy induced hypertension in previous pregnancy can lead to 25% recurrence rate in subsequent pregnancy.

A great part of resources in Antenatal clinic is spent for identification and surveillance of suspected.

**Cases of hypertension in pregnancy.**

Complications of Eclampsia - Maternal mortality rate 5-15% in India. Perinatal mortality rate is 30-50%.

**Maternal Mortality is due to**

1) Injuries to the mother
2) A.R.D.S
3) Renal failure
4) Cerebral hemorrhage
5) Acute left ventricular failure - Pulmonary edema.
6) Pulmonary embolism.

Most eclamptic patients die due to inadequate facility poor transport, certain cultural and social taboos. So Eclampsia needs critical and continuous care both from obstetrician and supportive health care personnel.

**Antepartum hemorrhage**

Ante partum hemorrhage is a major disaster in obstetrics especially in developing countries. It is one of the common causes of maternal and perinatal mortality. Incidence of Ante partum hemorrhage in India is 1-2 % of all hospital deliveries.

1) Placenta praevia - 1/3 of cases of Ante partum hemorrhage belong to placenta praevia. Incidence ranges from 0.5-1% of hospital deliveries. High birth order, multiple pregnancy, age above 35 years are risk factors for placenta praevia.

Causes of maternal death - Hemorrhage and shock. Maternal mortality

rate 1-5%.

Causes of fetal death - Preterm birth and birth asphyxia. Perinatal mortality rate- 10-25%

Antenatal vigilance to detect suspected cases of placenta praevia, adequate care, family planning and limitation of births and prompt attention towards warning hemorrhage are essential to minimise risks.

2) Abruptio Placentae - The precise cause for this placental detachment is uncertain. Prevalence is associated with multiparity, elderly mothers , poor socio economic conditions and malnutrition.

Maternal complications - 1) Hemorrhage and shock
2) Coagulopathies
3) Renal failure.

Maternal mortality varies from 2-8% and depends on the general condition of the patient, severity of hemorrhage, interval between abruption and management.

Fetal complications - Perinatal mortality rate is 10-20% in well equipped centres whereas in developing countries it is 50%. Causes of fetal death are preterm birth and anoxia causing Intrauterine death.

Successful management of Abruptio depends on early diagnosis and

effective treatment - which includes treatment of shock and termination of pregnancy.

**Multiple pregnancy**:

It is defined as more than one fetus developing simultaneously in the uterus.

The incidence of Monozygous twinning is relatively constant worldwide at 3.5 per 1000 births.

Maternal complications during pregnancy and labour are

1) Anemia, abortions
2) Pregnancy induced hypertension
3) Hydramnios
4) Ante partum hemorrhage
5) Malpresentations
6) Premature rupture of membranes and cord prolapse
7) Prolonged labour
8) Operative interventions
9) Post partum hemorrhage
10) Postnatal problems

**Fetal risks are**

1) Abortions
2) Preterm birth
3) Intrauterine death

Perinatal mortality is 4-5 times higher than in singletons, mostly due to Prematurity. The second baby is more at risk than the first one due to : Retraction of uterus leading to placental insufficiency.

1) Cord prolapse
2) Operative interference

**Polyhydramnios**

It is defined as a state where liquor amnii exceeds 2000 ml. Incidence is 0.5-1%. It is commonly seen in multipara.

**Maternal complications**

1) Pregnancy induced hypertension
2) Malpresentations
3) Premature Rupture of membranes and cord prolapse.
4) Preterm labour
5) Antepartum hemorrhage
6) Uterine inertia
7) Operative interference
8) Post partum hemorrhage

Fetal complications - Perinatal mortality extends upto 50%. Deaths are mostly due to Prematurity and congential anomalies.

**Breech**

It is the commonest malpresentation where podalic pole presents at the brim in a longitudinal lie. Incidence at term in singleton pregnancies - 3 %.

**Risk to the mother** - Trauma to genital tract, | operative interventions.

**Risk to the fetus** - Perinatal mortality rate in uncomplicated breech is 3-10% and in complicated breech it is 5-10%. The factors which significantly increase the risk are :

a) Skill of the obstetrician.

b) Weight of the baby.

c) Type of breech

d) Type of pelvis.

Fetal dangers during vaginal delivery are :

a) Birth Asphyxia

b) Intracranial Hemorrhage

c) Birth Injuries

**Prevention of fetal hazards**

a) Incidence of breech can be minimised by external cephalic version.

b) Selective use of L.S.C.S.

c) Vaginal delivery to be conducted by skilled obstetrician with utmost gentleness in an appropriate setup.

**Rh isoimmunisation**

It is the production of immune antibodies in an individual in response to an antigen derived from another individual , provided the first one lacks the Antigen and effects the same species of the individual. Isoimmunization occurs in 2 stages - Sensitižation and Immunisation.

Rh isoimmunisation mainly affects Rh+ve fetus. The manifestations of hemolytic disease of the fetus, depending on the severity are -

1. Hydrops fetalis - Most serious form where the fetus invariably dies.
2. Items gravis neonaturum - moderately severe form.
3. Congenital Anemia of New born - mildest form.

Mother is rarely affected by pregnancy induced hypertension, Big baby, Hydramnios, post partum hemorrhage.

**Prevention of Rh isoimmunisation**

1. Active immunization soon after the delivery of Rhesus fetus.

2. Immunization at 20-32 weeks prophylactically to minimize the risk due to fetomaternal leaks.

3. Immunization after certain procedures like external cephalic version, Amniocentesis, chorionic villous sampling, cordocentesis abortions, APH, etc.

4. Avoid manual removal of placenta and with hold prophylactic ergometrine.

5. Avoid giving unmatched blood.

6. Avoid stripping and artificial rupture of membranes.

As long as the Rh negative mother remains unimmunized, fetus is unaffected. With isoimmunisation prognosis of the baby depends on -

1. Genotype of the father

2. History of previous affections of baby by haemolytic disease.

3. Availability of sophisticated diagnostic therapeutic facilities for the affected babies.

# AIM OF THE STUDY

- The present study is a prospective study of pregnancy outcome in various high risk pregnancies at Institute of Obstetrics and Gynaceology IOG, Egmore, Chennai.

- The co-relation between the pregnancy outcome and various risk factors in pregnancy was studied in 1000Antenatal cases, during the year 2006 at Institute of Obstetrics and Gynaceology.

# MATERIALS AND METHODS

The study was conducted prospectively at the Institute of Obstetrics and Gynaecology, Egmore, Chennai from Jan 2006 to May 06. 1000 pregnant women with pregnancy beyond 28 weeks of Gestational Age associated with high factors were recruited. Both booked and unbooked cases were included in study.

All these Antenatal cases had come to attend casualty, antenatal out patient department and got admitted in Institute of Obstetrics and Gynaecology, this is a tertiary care hospital.

Case details were noted down by eliciting history from the patient. Case sheet details were also taken down. Some cases had more than one risk factor and they were also considered.

**Inclusion criteria**:

1. Cases with any risk factor (Medical risk, Obstetric in present & previous pregnancies).
2. Gestational age >28 weeks with live fetus.
3. All booked and unbooked cases.
4. All cases which had regular antenatal check-up outside and came for the first time to our hospital.
5. In case of preterm labour, gestational age < 34 weeks were alone included.

**Exclusion criteria:**

1. Cases with Gestational age <28 weeks.
2. Antenatal cases with Intra uterine death before admission.
3. Cases with previous Caesarean section as a sole risk factor.

Detailed present and previous obstetric history, present and previous medical history taken.

A thorough clinical examination including height, weight, presence of Anemia, Oedema and Icterus, was done.

The vitals - temperature, pulse rate, blood pressure and respiratory rate noted. Systemic examination of the antenatal case done.

By obstetric palpation gestational age, presentation, position noted. The fetal heart rate was auscultated.

All preliminary baseline investigations like :

- Haemoglobin percentage
- Blood grouping & typing
- Complete blood picture
- Random Blood sugar
- Serum creatinine
- Blood urea
- HIV
- Complete urine examination

Other investigations for specific medical complications like Liver function test, Sr-Uric acid, Plasma fibrinogen, Oral Glucose Tolerance test, Fasting & Post prandial blood sugars, complete Haemogram, Peripheral smear, Malarial parasite smear, Blood culture etc. were done whenever necessary.

Measurement of neonatal outcome included incidence of still born, dead born, neonatal death, mode of delivery, birth asphyxia, birth weight and admission to NICU.

## RESULTS AND ANALYSIS

**Table - 1**
**Distribution of various risk factors**

| Risk factor | n | % |
|---|---|---|
| Abruptio placenta | 18 | 1.8 |
| Anemia | 29 | 2.9 |
| Antiphospholipid antibody syndrome | 4 | 0.4 |
| AP Eclampsia | 23 | 2.3 |
| Asthma | 21 | 2.1 |
| Heart problems | 40 | 4 |
| BOH | 5 | 0.5 |
| Uterine anatomical problems | 7 | 0.7 |
| Malpresentations | 116 | 11.6 |
| Infectious disease | 10 | 1 |
| Diabetes Mellitus | 7 | 0.7 |
| Elderly primi > 35 years of age | 2 | 0.2 |
| Epilepsy | 34 | 3.4 |
| GDM | 35 | 3.5 |
| Gestational hypertension | 8 | 0.8 |
| Thyroid Problems | 35 | 3.5 |
| Other medical problems | 15 | 1.5 |
| Oligohydramnios | 14 | 1.4 |
| PET mild | 269 | 26.9 |
| PET recurrent | 29 | 2.9 |
| PET severe | 111 | 11.1 |
| Placenta Previa | 21 | 2.1 |
| Polyhydramnios | 3 | 0.3 |
| Preterm | 101 | 10.1 |
| Residual polio | 17 | 1.7 |
| Rh Negative | 139 | 13.9 |
| Short stature | 27 | 2.7 |
| Twin gestation | 56 | 5.6 |

Of the 1000 antenatal cases studied, 41% of them had pre eclampsia. Pre-eclampsia was further categorized as mild, severe and recurrent. They were 27%, 31, 11% respective. Rh negative pregnancies contributed to about 14% and malpresentation were 12%. Other medical problem includes cases with

chronic hypertension, hepatitis, caries spine.

**Table - 2**

**Booking status of Anternatal Mothers**

| Booking | n | % |
|---|---|---|
| Booked | 993 | 99.3 |
| Unbooked | 7 | 0.7 |

Percentage of booked and unbooked cases in the 1000 cases studied. Among the 1000 cases 99.3% were booked and only 0.7 were unbooked.

**Table - 3**

**Mode of delivery in these 1000 high risk cases**

| Mode of delivery | n | % |
|---|---|---|
| LSCS | 385 | 38.5 |
| Repeat LSCS | 131 | 13.1 |
| Assisted breech Delivery | 45 | 4.5 |
| Forceps | 18 | 1.8 |
| NVD | 417 | 41.7 |
| VBAC | 17 | 1.7 |

Caesarean section rate is 52% (51.6%). It is slightly on higher side than that of vaginal births. Out of these 38.5% were primary caesarean section and 13.1% were repeat section. Normal vaginal deliveries were 41.7% number of vaginal births after caesarean section were 1.7%. Instrumental deliveries were 1.8% and assisted Breech deliveries 4.5%. So total vaginal births forms 48%.

**Table - 4**

**Analysis of Caesarean sections**

| Risk factor | LSCS | | | | p-value |
|---|---|---|---|---|---|
| | Done (N=516) | | Not done (N=484) | | |
| | n | % | n | % | |
| Abruptio placenta | 13 | 2.5 | 5 | 1.0 | 0.08 |
| Anemia | 7 | 1.4 | 22 | 4.5 | 0.003 |
| Antiphospholipid antibody syndrome | 4 | 0.8 | 0 | 0.0 | 0.05 |
| AP Eclampsia | 15 | 2.9 | 8 | 1.7 | 0.19 |
| Asthma | 12 | 2.3 | 9 | 1.9 | 0.61 |
| Heart problems | 14 | 2.7 | 26 | 5.4 | 0.03 |
| BOH | 4 | 0.8 | 1 | 0.2 | 0.20 |
| Uterine anatomical problems | 5 | 1.0 | 2 | 0.4 | 0.29 |
| Malpresentations | 86 | 16.7 | 30 | 6.2 | 0.00 |
| Infectious disease | 3 | 0.6 | 7 | 1.4 | 0.17 |
| Diabetes Mellitus | 4 | 0.8 | 3 | 0.6 | 0.77 |
| Elderly primi > 35 years | 2 | 0.4 | 0 | 0.0 | 0.01 |
| Epilepsy | 11 | 2.1 | 23 | 4.8 | 0.02 |
| GDM | 30 | 5.8 | 5 | 1.0 | 0.00 |
| Gestational hypertension | 5 | 1.0 | 3 | 0.6 | 0.54 |
| Thyroid Problems | 17 | 3.3 | 18 | 3.7 | 0.72 |
| Other medical problems | 10 | 1.9 | 5 | 1.0 | 0.24 |
| Oligohydramnios | 13 | 2.5 | 1 | 0.2 | 0.002 |
| PET mild | 134 | 26.0 | 135 | 27.9 | 0.49 |
| PET recurrent | 20 | 3.9 | 9 | 1.9 | 0.06 |
| PET severe | 56 | 10.9 | 55 | 11.4 | 0.80 |
| Placenta Previa | 19 | 3.7 | 2 | 0.4 | 0.0003 |
| Polyhydramnios | 2 | 0.4 | 1 | 0.2 | 0.60 |
| Preterm | 21 | 4.1 | 80 | 16.5 | 0.00 |
| Residual polio | 13 | 2.5 | 4 | 0.8 | 0.04 |
| Rh Negative | 60 | 11.6 | 79 | 16.3 | 0.03 |
| Short stature | 19 | 3.7 | 0 | 0.0 | 0.02 |
| Twin gestation | 17 | 3.3 | 39 | 8.1 | 0.001 |

Cesarean rate was about 100% in case of short statured mothers and elderly primigravida. Though elderly primigravida was alone not an indication for cesarean, they had associated risks leading to cesarean section. Other main factors are oligohydramnios, placenta praevia, malpresentations and abruption placenta, Residual polio, AP Eclampsia. Preeclampsia had equal occurrence of cesarean and vaginal deliveries, but because preeclampsia forms bulk of cases it forms majority of cases undergoing cesarean. Vaginal delivery was the main mode in case of heart disease and preterm labour.

**Table - 5**

**Low Birth weight in 1000 high risk cases**

| Term | N | % | Low Birth Weight | | | |
|---|---|---|---|---|---|---|
| | | | Yes | | No | |
| | | | n | % | n | % |
| Term | 840 | 84.0 | 147 | 17.5 | 693 | 82.5 |
| Preterm | 160 | 16.0 | 132 | 82.5 | 28 | 17.5 |
| Total | 1000 | 100.0 | 279 | 27.9 | 721 | 72.1 |

28% (27.9%) are low birth weight. Most of the preterm babies (82.5%) are low birth weight. Only 17.5% of term babies are low birth weight.

**Table - 6**

**Association of low birth weight with high risk factor**

| Risk factor | Low Birth Weight | | | | p-value |
|---|---|---|---|---|---|
| | Yes (N=279) | | No (N=721) | | |
| | n | % | n | % | |
| Abruptio placenta | 12 | 4.3 | 6 | 0.8 | 0.0002 |
| Anemia | 18 | 6.5 | 11 | 1.5 | 0.00003 |
| Antiphospholipid antibody syndrome | 1 | 0.4 | 3 | 0.4 | 0.90 |
| AP Eclampsia | 17 | 6.1 | 6 | 0.8 | 0.00 |
| Asthma | 3 | 1.1 | 18 | 2.5 | 0.16 |
| Heart problems | 7 | 2.5 | 33 | 4.6 | 0.13 |
| BOH | 1 | 0.4 | 4 | 0.6 | 0.69 |
| Uterine anatomical problems | 0 | 0.0 | 7 | 1.0 | 0.10 |
| Malpresentations | 28 | 10.0 | 88 | 12.2 | 0.34 |
| Infectious disease | 1 | 0.4 | 9 | 1.2 | 0.20 |
| Diabetes mellitus | 1 | 0.4 | 6 | 0.8 | 0.42 |
| Elderly primi > 35 years | 0 | 0.0 | 2 | 0.3 | 0.38 |
| Epilepsy | 1 | 0.4 | 33 | 4.6 | 0.001 |
| GDM | 4 | 1.4 | 31 | 4.3 | 0.03 |
| Gestational hypertension | 1 | 0.4 | 7 | 1.0 | 0.33 |
| Thyroid Problems | 4 | 1.4 | 31 | 4.3 | 0.03 |
| Other medical problems | 2 | 0.7 | 13 | 1.8 | 0.21 |
| Oligohydramnios | 5 | 1.8 | 9 | 1.2 | 0.51 |
| PET mild | 58 | 20.8 | 211 | 29.3 | 0.007 |
| PET recurrent | 7 | 2.5 | 22 | 3.1 | 0.65 |
| PET severe | 59 | 21.1 | 52 | 7.2 | 0.00 |
| Placenta Previa | 9 | 3.2 | 12 | 1.7 | 0.12 |
| Polyhydramnios | 0 | 0.0 | 3 | 0.4 | 0.28 |
| Preterm | 85 | 30.5 | 16 | 2.2 | 0.00 |
| Residual polio | 3 | 1.1 | 14 | 1.9 | 0.34 |
| Rh Negative | 17 | 6.1 | 122 | 16.9 | 0.00 |
| Short stature | 4 | 1.4 | 23 | 3.2 | 0.12 |
| Twin gestation | 42 | 15.1 | 14 | 1.9 | 0.00 |

Low birth weight was mainly associated with prematurity, Anaemia, AP Eclampsia, twin gestation, severe pre-eclampsia and malpresentations. 84%

of preterm babies are of low birth weight.

**Table - 7**

**Occurrence of IUGR in 1000 cases studied**

| IUGR | N | % | Outcome | | | |
|---|---|---|---|---|---|---|
| | | | Bad (N=67) | | Good (N=933) | |
| | | | n | % | n | % |
| Yes | 86 | 8.6 | 20 | 23.3 | 66 | 76.7 |
| No | 914 | 91.4 | 47 | 5.1 | 867 | 94.7 |
| Total | 1000 | 100.0 | 67 | 67.0 | 933 | 93.2 |

In our study there was about 8.6% of IUGR babies in the 1000 cases studied. Among the cases of IUGR about one third of babies had bad outcome. The criteria for diagnosing IUGR was based on birth weight and clinical features.

**Table - 8**

**Association of IUGR and high risk cases**

| Risk factor | IUGR | | | | p-value |
|---|---|---|---|---|---|
| | Yes (N=86) | | No (N=914) | | |
| | n | % | n | % | |
| Abruptio placenta | 2 | 2.3 | 16 | 1.8 | 0.70 |
| Anemia | 9 | 10.5 | 20 | 2.2 | 0.00 |
| Antiphospholipid antibody syndrome | 0 | 0.0 | 4 | 0.4 | 0.54 |
| AP Eclampsia | 1 | 1.2 | 22 | 2.4 | 0.46 |
| Asthma | 2 | 2.3 | 19 | 2.1 | 0.88 |
| Heart problems | 3 | 3.5 | 38 | 4.2 | 0.77 |
| BOH | 1 | 1.2 | 4 | 0.4 | 0.36 |
| Uterine anatomical problems | 0 | 0.0 | 7 | 0.8 | 0.41 |
| Malpresentations | 11 | 12.8 | 105 | 11.5 | 0.72 |
| Infectious disease | 1 | 1.2 | 9 | 1.0 | 0.87 |
| Diabetes mellitus | 0 | 0.0 | 7 | 0.8 | 0.42 |
| Elderly primi > 35 years | 0 | 0.0 | 2 | 0.2 | 0.66 |
| Epilepsy | 1 | 1.2 | 33 | 3.6 | 0.23 |
| GDM | 2 | 2.3 | 33 | 3.6 | 0.54 |
| Gestational hypertension | 0 | 0.0 | 8 | 0.9 | 0.38 |
| Thyroid Problems | 1 | 1.2 | 34 | 3.7 | 0.22 |
| Other medical problems | 1 | 1.2 | 14 | 1.5 | 0.79 |
| Oligohydramnios | 1 | 1.2 | 13 | 1.4 | 0.84 |
| PET mild | 20 | 23.3 | 249 | 27.2 | 0.42 |
| PET recurrent | 1 | 1.2 | 28 | 3.1 | 0.32 |
| PET severe | 25 | 29.1 | 86 | 9.4 | 0.00 |
| Placenta Previa | 3 | 3.5 | 18 | 2.0 | 0.35 |
| Polyhydramnios | 0 | 0.0 | 3 | 0.3 | 0.59 |
| Preterm | 12 | 14.0 | 89 | 9.7 | 0.21 |
| Residual polio | 0 | 0.0 | 17 | 1.9 | 0.20 |
| Rh Negative | 2 | 2.3 | 137 | 15.0 | 0.001 |
| Short stature | 1 | 1.2 | 26 | 2.8 | 0.36 |
| Twin gestation | 9 | 10.5 | 47 | 5.1 | 0.04 |

IUGR was associated mainly with Anemia (31%), severe pre-eclampsia (29%) preterm, malpresentation, (10.5%). Other main factors were prematurity and Twin gestation.

**Table - 9**

**Birth asphyxia among 1000 cases**

| Birth asphyxia | n | % |
|---|---|---|
| Yes | 59 | 5.9% |
| No | 941 | 94% |

59 cases out of the total no. of 1000 cases had birth asphyxia. It was about 6%. Babies with Apgar score less than 7 at 5 minutes was taken as the criteria for birth asphyxia.

**Table - 10**

**Association of birth asphyxia with high risk factors**

| Risk factor | Birth asphyxia | | | | p-value |
|---|---|---|---|---|---|
| | Yes (N=59) | | No (N=941) | | |
| | n | % | n | % | |
| Abruptio placenta | 2 | 5.1 | 16 | 1.6 | 0.10 |
| Anemia | 1 | 2.6 | 28 | 2.9 | 0.91 |
| Antiphospholipid antibody syndrome | 0 | 0.0 | 4 | 0.4 | 0.68 |
| AP Eclampsia | 6 | 15.4 | 17 | 1.5 | 0.00 |
| Asthma | 0 | 0.0 | 21 | 2.2 | 0.35 |
| Heart problems | 0 | 0.0 | 40 | 4.1 | 0.19 |
| BOH | 0 | 0.0 | 5 | 0.5 | 0.65 |
| Uterine anatomical problems | 0 | 0.0 | 7 | 0.7 | 0.59 |
| Malpresentations | 10 | 25.6 | 106 | 11.3 | 0.00 |
| Infectious disease | 1 | 2.6 | 9 | 1.0 | 0.33 |
| Diabetes Mellitus | 0 | 0.0 | 7 | 0.5 | 0.65 |
| Elderly primi > 35 years | 0 | 0.0 | 2 | 0.2 | 0.77 |
| Epilepsy | 0 | 0.0 | 34 | 3.5 | 0.23 |
| GDM | 0 | 0.0 | 35 | 3.5 | 0.23 |
| Gestational hypertension | 1 | 2.6 | 7 | 0.7 | 0.22 |
| Thyroid Problems | 1 | 2.6 | 34 | 3.6 | 0.73 |
| Other medical problems | 1 | 2.6 | 14 | 1.5 | 0.59 |
| Oligohydramnios | 0 | 0.0 | 14 | 1.5 | 0.44 |
| PET mild | 6 | 15.4 | 263 | 27.7 | 0.09 |
| PET recurrent | 1 | 2.6 | 28 | 2.9 | 0.91 |
| PET severe | 7 | 17.9 | 104 | 10.3 | 0.13 |
| Placenta Previa | 3 | 7.7 | 18 | 1.8 | 0.01 |
| Polyhydramnios | 0 | 0.0 | 3 | 0.3 | 0.72 |
| Preterm | 14 | 35.9 | 87 | 8.4 | 0.00 |
| Residual polio | 0 | 0.0 | 17 | 1.8 | 0.40 |
| Rh Negative | 2 | 5.1 | 137 | 14.3 | 0.10 |
| Short stature | 0 | 0.0 | 27 | 2.9 | 0.28 |
| Twin gestation | 3 | 7.7 | 53 | 5.6 | 0.59 |

There was a strong association between birth asphyxia and prematurity and pre-eclampsia, 36% each. Other were malpresentations & AP eclampsia.

**Table - 11**

**Association of congenital anamolies with high risk factors**

| Risk factor | Congenital anomaly | | | | p-value |
|---|---|---|---|---|---|
| | Yes (N=14) | | No (N=986) | | |
| | n | % | n | % | |
| Abruptio placenta | 0 | 0.0 | 18 | 1.8 | 0.61 |
| Anemia | 0 | 0.0 | 29 | 2.9 | 0.51 |
| Antiphospholipid antibody syndrome | 0 | 0.0 | 4 | 0.4 | 0.81 |
| AP Eclampsia | 0 | 7.1 | 23 | 2.2 | 0.22 |
| Asthma | 0 | 0.0 | 21 | 2.1 | 0.58 |
| Heart problems | 0 | 0.0 | 40 | 4.1 | 0.44 |
| BOH | 1 | 7.1 | 4 | 0.4 | 0.00 |
| Uterine anatomical problems | 0 | 0.0 | 7 | 0.7 | 0.75 |
| Malpresentations | 4 | 28.6 | 112 | 11.4 | 0.05 |
| Infectious disease | 0 | 0.0 | 10 | 1.0 | 0.70 |
| Diabetes Mellitus | 1 | 7.1 | 6 | 0.6 | 0.004 |
| Elderly primi > 35 years | 0 | 0.0 | 2 | 0.2 | 0.87 |
| Epilepsy | 1 | 7.1 | 33 | 3.3 | 0.44 |
| GDM | 0 | 0.0 | 35 | 3.5 | 0.47 |
| Gestational hypertension | 0 | 0.0 | 8 | 0.8 | 0.74 |
| Thyroid Problems | 0 | 7.1 | 35 | 3.4 | 0.46 |
| Other medical problems | 0 | 0.0 | 15 | 1.5 | 0.64 |
| Oligohydramnios | 0 | 0.0 | 14 | 1.4 | 0.65 |
| PET mild | 3 | 28.6 | 266 | 26.9 | 0.89 |
| PET recurrent | 1 | 7.1 | 28 | 2.8 | 0.34 |
| PET severe | 0 | 0.0 | 111 | 11.3 | 0.18 |
| Placenta Previa | 0 | 0.0 | 21 | 2.1 | 0.58 |
| Polyhydramnios | 1 | 7.1 | 2 | 0.2 | 0.00 |
| Preterm | 2 | 14.3 | 99 | 10.0 | 0.60 |
| Residual polio | 0 | 0.0 | 17 | 1.7 | 0.62 |
| Rh Negative | 0 | 14.3 | 139 | 13.9 | 0.97 |
| Short stature | 0 | 0.0 | 27 | 2.7 | 0.53 |
| Twin gestation | 0 | 0.0 | 56 | 5.7 | 0.36 |

These were so far undignosed anomalies. The association with malpresentations-34%, Polyhydramnios-33% & diabetes-14%. 28.6% of the anomalies were limb anomalies, 28%- Genitourinary tract anomalies.

**Table - 12**

**Association of Pregnancy loss with high risk factors**

| Risk factor | Pregnancy Loss | | | | p-Value |
|---|---|---|---|---|---|
| | Yes (N=43) | | No (N=957) | | |
| | n | % | n | % | |
| Abruptio placenta | 1 | 2.3 | 17 | 1.8 | 0.79 |
| Anemia | 1 | 2.3 | 28 | 2.9 | 0.82 |
| Antiphospholipid antibody syndrome | 0 | 0.0 | 4 | 0.4 | 0.67 |
| AP Eclampsia | 4 | 9.3 | 18 | 1.9 | 0.001 |
| Asthma | 0 | 0.0 | 21 | 2.2 | 0.33 |
| Heart problems | 1 | 2.3 | 39 | 4.1 | 0.57 |
| BOH | 0 | 0.0 | 5 | 0.5 | 0.63 |
| Uterine anatomical problems | 0 | 0.0 | 7 | 0.7 | 0.57 |
| Malpresentations | 7 | 16.3 | 109 | 11.4 | 0.33 |
| Infectious disease | 0 | 0.0 | 10 | 1.0 | 0.50 |
| Diabetes Mellitus | 0 | 0.0 | 7 | 0.7 | 0.57 |
| Elderly primi > 35 years | 0 | 0.0 | 2 | 0.2 | 0.76 |
| Epilepsy | 1 | 2.3 | 33 | 3.5 | 0.69 |
| GDM | 0 | 0.0 | 35 | 3.7 | 0.20 |
| Gestational hypertension | 1 | 2.3 | 7 | 0.7 | 0.25 |
| Thyroid Problems | 1 | 2.3 | 34 | 3.6 | 0.67 |
| Other medical problems | 3 | 7.0 | 12 | 1.3 | 0.003 |
| Oligohydramnios | 1 | 2.3 | 13 | 1.4 | 0.60 |
| PET mild | 10 | 23.3 | 259 | 27.1 | 0.58 |
| PET recurrent | 0 | 0.0 | 29 | 3.0 | 0.25 |
| PET severe | 9 | 20.9 | 102 | 10.7 | 0.04 |
| Placenta Previa | 0 | 0.0 | 21 | 2.2 | 0.33 |
| Polyhydramnios | 0 | 0.0 | 3 | 0.3 | 0.71 |
| Preterm | 15 | 34.9 | 86 | 9.0 | 0.00 |
| Residual polio | 0 | 0.0 | 17 | 1.8 | 0.38 |
| Rh Negative | 2 | 4.7 | 137 | 14.3 | 0.08 |
| Short stature | 0 | 0.0 | 27 | 2.8 | 0.26 |
| Twin gestation | 8 | 18.6 | 48 | 5.0 | 0.0002 |

Out of 43 Pregnancy loss, 44% were from pre eclamptic mothers, 35% were preterm, 19% were twin gestation, 16% were molpesented fetus. But as far as association is considered, pregnancy loss occurred in 17% of AP eclampsia cases, 15% of preterm babies, 14% of twin babies and 8% of babies of severe pre-eclamptic mothers.

**Table - 13**

**Association of dead born with high risk factors**

| Risk factor | Dead born | | | |
|---|---|---|---|---|
| | Yes (N=19) | | No (N=981) | |
| | n | % | n | % |
| Abruptio placenta | 0 | 0.0 | 18 | 1.8 |
| Anemia | 1 | 5.3 | 28 | 2.9 |
| Antiphospholipid antibody syndrome | 1 | 5.3 | 3 | 0.3 |
| AP Eclampsia | 3 | 15.8 | 19 | 1.9 |
| Asthma | 0 | 0.0 | 21 | 2.1 |
| Heart problems | 0 | 0.0 | 40 | 4.1 |
| BOH | 0 | 0.0 | 5 | 0.5 |
| Uterine anatomical problems | 0 | 0.0 | 7 | 0.7 |
| Malpresentations | 1 | 5.3 | 115 | 11.7 |
| Infectious disease | 0 | 0.0 | 10 | 1.0 |
| Diabetes Mellitus | 1 | 5.3 | 6 | 0.6 |
| Elderly primi > 35 years | 0 | 0.0 | 2 | 0.2 |
| Epilepsy | 1 | 5.3 | 33 | 3.4 |
| GDM | 2 | 10.5 | 33 | 3.4 |
| Gestational hypertension | 0 | 0.0 | 8 | 0.8 |
| Thyroid Problems | 0 | 0.0 | 35 | 3.6 |
| Other medical problems | 0 | 0.0 | 15 | 1.5 |
| Oligohydramnios | 0 | 0.0 | 14 | 1.4 |
| PET mild | 4 | 21.1 | 265 | 27.0 |
| PET recurrent | 0 | 0.0 | 29 | 3.0 |
| PET severe | 5 | 26.3 | 106 | 10.8 |
| Placenta Previa | 1 | 5.3 | 20 | 2.0 |
| Polyhydramnios | 0 | 0.0 | 3 | 0.3 |
| Preterm | 8 | 42.1 | 93 | 9.5 |
| Residual polio | 0 | 0.0 | 17 | 1.7 |
| Rh Negative | 2 | 10.5 | 137 | 14.0 |
| Short stature | 0 | 0.0 | 27 | 2.8 |
| Twin gestation | 3 | 15.8 | 53 | 5.4 |

Out of 19 dead born, 47% were from pre eclamptic mothers, 42% were preterm, 16% were AP eclampsia. When association is considered 13% babies of AP eclampsia mothers were dead born and 8% of preterm babies were dead

born.

**Table - 14**

**Association of still birth with high risk factors**

| Risk factor | Still birth | | | | p-value |
|---|---|---|---|---|---|
| | Yes (N=6) | | No (N=994) | | |
| | n | % | n | % | |
| Abruptio placenta | 1 | 16.7 | 17 | 1.7 | 0.006 |
| Anemia | 0 | 0.0 | 29 | 2.9 | 0.67 |
| Antiphospholipid antibody syndrome | 0 | 0.0 | 4 | 0.4 | 0.88 |
| AP Eclampsia | 0 | 0.0 | 22 | 2.2 | 0.71 |
| Asthma | 0 | 0.0 | 21 | 2.1 | 0.72 |
| Heart problems | 1 | 16.7 | 39 | 3.9 | 0.11 |
| BOH | 0 | 0.0 | 5 | 0.5 | 0.86 |
| Uterine anatomical problems | 0 | 0.0 | 7 | 0.7 | 0.84 |
| Malpresentations | 0 | 0.0 | 116 | 11.7 | 0.37 |
| Infectious disease | 0 | 0.0 | 10 | 1.0 | 0.80 |
| Diabetes Mellitus | 1 | 16.7 | 6 | 0.6 | 0.00 |
| Elderly primi > 35 years | 0 | 0.0 | 2 | 0.2 | 0.91 |
| Epilepsy | 0 | 0.0 | 34 | 3.4 | 0.64 |
| GDM | 0 | 0.0 | 35 | 3.5 | 0.64 |
| Gestational hypertension | 0 | 0.0 | 8 | 0.8 | 0.83 |
| Thyroid Problems | 0 | 0.0 | 35 | 3.5 | 0.64 |
| Other medical problems | 0 | 0.0 | 15 | 1.5 | 0.76 |
| Oligohydramnios | 0 | 0.0 | 14 | 1.4 | 0.77 |
| PET mild | 1 | 16.7 | 268 | 27.0 | 0.57 |
| PET recurrent | 1 | 16.7 | 28 | 2.8 | 0.04 |
| PET severe | 3 | 50.0 | 108 | 10.9 | 0.002 |
| Placenta Previa | 0 | 0.0 | 21 | 2.1 | 0.72 |
| Polyhydramnios | 0 | 0.0 | 3 | 0.3 | 0.89 |
| Preterm | 3 | 50.0 | 98 | 9.9 | 0.001 |
| Residual polio | 0 | 0.0 | 17 | 1.7 | 0.75 |
| Rh Negative | 0 | 0.0 | 139 | 14.0 | 0.32 |
| Short stature | 0 | 0.0 | 27 | 2.7 | 0.68 |
| Twin gestation | 1 | 16.7 | 55 | 5.5 | 0.24 |

Most of the still birth was associated with pre eclampsia and pre term.

Strength of association was more with prematurity and still birth.

**Table - 15**

**NICU Admission**

| NICU admission | n | % |
|---|---|---|
| Yes | 316 | 31.6% |
| No | 659 | 65.9% |

**Table - 16**

**Association of NICU Admission with high risk factors**

| Risk factor | NICU admission | | | |
|---|---|---|---|---|
| | Yes (N=316) | | No (N=684) | |
| | n | % | n | % |
| Abruptio placenta | 13 | 4.1 | 5 | 0.7 |
| Anemia | 15 | 4.7 | 14 | 2.0 |
| Antiphospholipid antibody syndrome | 1 | 0.3 | 3 | 0.4 |
| AP Eclampsia | 16 | 5.1 | 7 | 1.0 |
| Asthma | 3 | 0.9 | 18 | 2.6 |
| Heart problems | 5 | 1.6 | 35 | 5.1 |
| BOH | 3 | 0.9 | 2 | 0.3 |
| Uterine anatomical problems | 1 | 0.3 | 6 | 0.9 |
| Malpresentations | 38 | 12.0 | 78 | 11.4 |
| Infectious disease | 2 | 0.6 | 8 | 1.2 |
| Diabetic mellitus | 3 | 0.9 | 4 | 0.6 |
| Elderly primi > 35 years | 0 | 0.0 | 2 | 0.3 |
| Epilepsy | 4 | 1.3 | 30 | 4.4 |
| GDM | 29 | 9.2 | 6 | 0.9 |
| Gestational hypertension | 2 | 0.6 | 6 | 0.9 |
| Thyroid Problems | 5 | 1.6 | 30 | 4.4 |
| Other medical problems | 6 | 1.9 | 9 | 1.3 |
| Oligohydramnios | 4 | 1.3 | 10 | 1.5 |
| PET mild | 63 | 19.9 | 206 | 30.1 |
| PET recurrent | 9 | 2.8 | 20 | 2.9 |
| PET severe | 58 | 18.4 | 53 | 7.7 |
| Placenta Previa | 9 | 2.8 | 12 | 1.8 |
| Polyhydramnios | 2 | 0.6 | 1 | 0.1 |
| Preterm | 88 | 27.8 | 13 | 1.9 |
| Residual polio | 0 | 0.0 | 17 | 2.5 |

| | | | | |
|---|---|---|---|---|
| Rh Negative | 17 | 5.4 | 122 | 17.8 |
| Short stature | 7 | 2.2 | 20 | 2.9 |
| Twin gestation | 36 | 11.4 | 20 | 2.9 |

316 babies required admission in NICU among the 1000 high risk cases Among the 316 babies 59 babies were admitted due to birth asphyxia. 33 babies of mothers with gestational diabetes mellitus and 5 babies of diabetic mothers were also admitted. Many babies were admitted for observation. Babies with congenital anomalies were admitted for evaluation of other system involvement. Out of the 316 babies admitted, 18 babies died before discharge.

Out of 316 babies admitted in NICU, 41.1% were babies of preeclamptic mothers, 27.8% were preterm babies, 11.4% were twin babies, 12% were malpresented babies, 9.2% babies of mothers with gestational diabetes mellitus.

But again when we consider the association of high risk factor with NICU admissions, it is as follows.

87% of preterm babies were admitted in NICU

Similarly 83% of GDM babies

72% of babies of cases with abruptio placenta

69% of babies of AP eclampsia mothers

67% of babies of mother with polyhydramnios

64% of babies loss in twin delivery.

52% of babies of severe pre-eclamptic mother

50% of babies of Anemic mothers.

**Table - 17**

**Requirement of blood and blood products**

| Requirement of blood and blood products | n | % |
|---|---|---|
| Yes | 66 | 6.6% |
| No | 934 | 93.4% |

About 66 cases out of 1000 high risk cases required transfusion of blood or blood products.

**Table - 18**

**High Risk cases requiring blood and blood Product transfusion**

| Risk factor | Requirement of blood and blood products | | | | p-value |
|---|---|---|---|---|---|
| | Yes (N=66) | | No (N=934) | | |
| | n | % | n | % | |
| Abruptio placenta | 12 | 18.2 | 6 | 0.6 | 0.002 |
| Anemia | 21 | 31.8 | 8 | 0.9 | 0.001 |
| Antiphospholipid antibody syndrome | 0 | 0.0 | 4 | 0.4 | 0.59 |
| AP Eclampsia | 5 | 7.6 | 18 | 1.9 | 0.003 |
| Asthma | 0 | 0.0 | 21 | 2.2 | 0.22 |
| Heart problems | 2 | 3.0 | 38 | 4.1 | 0.68 |
| BOH | 0 | 0.0 | 5 | 0.5 | 0.55 |
| Uternine anatomical problems | 0 | 0.0 | 7 | 0.7 | 0.48 |
| Malpresentations | 1 | 1.5 | 115 | 12.3 | 0.01 |
| Infectious disease | 0 | 0.0 | 10 | 1.1 | 0.40 |
| Diabetic Mellitus | 0 | 0.0 | 7 | 0.7 | 0.48 |
| Elderly primi > 35 years | 0 | 0.0 | 2 | 0.2 | 0.71 |
| Epilepsy | 2 | 3.0 | 32 | 3.4 | 0.86 |
| GDM | 1 | 1.5 | 34 | 3.6 | 0.36 |
| Gestational hypertension | 0 | 0.0 | 8 | 0.9 | 0.45 |
| Thyroid Problems | 2 | 3.0 | 33 | 3.5 | 0.83 |
| Other medical problems | 2 | 3.0 | 13 | 1.4 | 0.29 |
| Oligohydramnios | 0 | 0.0 | 14 | 1.5 | 0.32 |
| PET mild | 12 | 18.2 | 257 | 27.5 | 0.10 |
| PET recurrent | 0 | 0.0 | 29 | 3.1 | 0.15 |
| PET severe | 14 | 21.2 | 97 | 10.4 | 0.01 |
| Placenta Previa | 7 | 10.6 | 14 | 1.5 | 0.00 |
| Polyhydramnios | 0 | 0.0 | 3 | 0.3 | 0.64 |
| Preterm | 9 | 13.6 | 92 | 9.9 | 0.32 |
| Residual polio | 0 | 0.0 | 17 | 1.8 | 0.27 |
| Rh Negative | 3 | 4.5 | 136 | 14.6 | 0.02 |
| Short stature | 0 | 0.0 | 27 | 2.9 | 0.16 |
| Twin gestation | 5 | 7.6 | 51 | 5.5 | 0.47 |

About 72% of Anaemic mothers required blood transfusion 67% of mothers with Abruptio placenta and 33% of mother with placenta previa were

given blood transfusion.AP Eclampsia required more of FFP transfusion.

**Table - 19**

**ICU Admission**

| ICU admission | n | % |
|---|---|---|
| Yes | 74 | 74% |
| No | 926 | 93% |

7.4% of patients required ICU Admission

**Table - 20**

**Association of ICU Admission with High Risk Factors**

| Risk factor | ICU admission | | | | p-value |
|---|---|---|---|---|---|
| | Yes (N=74) | | No (N=926) | | |
| | n | % | n | % | |
| Abruptio placenta | 3 | 4.1 | 15 | 1.6 | 0.13 |
| Anemia | 1 | 1.4 | 28 | 3.0 | 0.41 |
| Antiphospholipid antibody syndrome | 0 | 0.0 | 4 | 0.4 | 0.57 |
| AP Eclampsia | 26 | 21.6 | 2 | 0.8 | 0.00 |
| Asthma | 2 | 2.7 | 19 | 2.1 | 0.71 |
| Heart problems | 22 | 29.7 | 18 | 1.9 | 0.00 |
| BOH | 0 | 0.0 | 5 | 0.5 | 0.53 |
| Uterine anatomical problems | 0 | 0.0 | 7 | 0.8 | 0.45 |
| Malpresentations | 4 | 5.4 | 112 | 12.1 | 0.08 |
| Infectious disease | 0 | 0.0 | 10 | 1.1 | 0.37 |
| Diabetes Mellitus | 0 | 0.0 | 7 | 0.8 | 0.45 |
| Elderly primi > 35 years | 0 | 0.0 | 2 | 0.2 | 0.69 |
| Epilepsy | 3 | 4.1 | 31 | 3.3 | 0.75 |
| GDM | 1 | 1.4 | 34 | 3.7 | 0.30 |
| Gestational hypertension | 0 | 0.0 | 8 | 0.9 | 0.42 |
| Thyroid Problems | 0 | 0.0 | 35 | 3.8 | 0.09 |
| Other medical problems | 1 | 1.4 | 14 | 1.5 | 0.91 |
| Oligohydramnios | 0 | 0.0 | 14 | 1.5 | 0.29 |
| PET mild | 1 | 1.4 | 268 | 28.9 | 0.00 |
| PET recurrent | 0 | 0.0 | 29 | 3.1 | 0.12 |
| PET severe | 26 | 41.9 | 85 | 8.6 | 0.00 |
| Placenta Previa | 0 | 0.0 | 21 | 2.3 | 0.19 |
| Polyhydramnios | 0 | 0.0 | 3 | 0.3 | 0.62 |
| Preterm | 12 | 16.2 | 89 | 9.6 | 0.07 |
| Residual polio | 0 | 0.0 | 17 | 1.8 | 0.24 |
| Rh Negative | 1 | 1.4 | 138 | 14.9 | 0.001 |
| Short stature | 0 | 0.0 | 27 | 2.9 | 0.14 |
| Twin gestation | 3 | 4.1 | 53 | 5.7 | 0.55 |

About 91% of AP Eclampsia cases required ICU admissions 55% of cardiac diseases were admitted in ICU. Among pre-eclampsia 26% of severe pe-eclampsia were admitted in ICU. ICU admissions included cases on ventelatory support and cases required critical care.

**Table - 21**

**Maternal morbidity**

| Maternal morbidity | n | % |
|---|---|---|
| Peripartum cardiomyopathy | 3 | 0.3 |
| CVT | 1 | .1 |
| DIVC | 1 | .1 |
| Prongled hospital stay > 10 days | 449 | 45 |

Out of 1000 high risk patients, 3 developed peripartum cardiomyopathy, 1 developed cerebral venous thrombosis, 1 developed disesminated intervascular coagulation. In case of peripartum cardio myopathy they required long period of hospital stay, particularly in ICU. DIVC occurred in 5 cases. But only one case survived.

Prolongd stay of the patients was mainly due to maternal factor. Most of patients with AP ecelampsia, heart problems, severe PET, GDM, Antepartum hemorrhage and anemia. Some patients had to stay in hospital for a long period because their babies were admitted in NICU. 27 cases had to stay long due to wound sepsis.

**Table - 22**

**Maternal mortality**

| Maternal mortality | n | % |
|---|---|---|
| Yes | 7 | 0.7% |
| No | 993 | 99.3% |

7 patients out of 1000 high risk patients died.

Out of these 7 cases,

2 of the Maternal death occurred in cases of AP eclampsia. They were taken up for immediate cesarean section and connected to ventilator. But death occurred in one due to Disseminated Intravascular coagulation and other due to pulmonary edema.

2 of them were cases of severe pre-eclampsia death occurred due to coagulation failure.

One death was in a case of Eisenmenger is syndrome two other due to Hepetorenal failure. Among two one was due to chronic liver disease and other due to heptospinosis leading to heptorenal shutdown.

# DISCUSSION

I have studied 1000 Antenatal cases with high risk factors, in our hospital. They had variety of risk factors. I have studied about the pregnancy outcome in all these 1000 high risk pregnancies.

Our hospital being a tertiary care centre, many of the high risk cases are referred here from surrounding peripheral centers.

Preeclampsia formed a bulk of these 1000 cases, (i,e) about 41% . It was further categorized into mild, severe and recurrent preeclampsia. They were 27%.

11%, ands 3% respectively. The other major contributors were Rh negative mothers (14% ), Malpresentations ( 11.6%) , and preterm deliveries (10%).

Among these 1000 high risk cases, 993 were booked either in our hospital or some other hospitals and health care centres. 7 cases were unbooked but immunized.

According to Beneditti et al ninety patients with severe preeclampsia were reviewed. In our study there were 111 cases of severe preeclampsia. In my study maternal mortality was 1.8% compared to 2.2% in their study.

*Yucesoy et al in 2005, studied about the Maternal and Perinatal outcome in pregnancies complicated with hypertensive disorders. In severe preeclampsia 63.8% of patients had emergency caesarean section*

*compared to 51% in my study. In my study 22% of severe preeclampsia patients had IUGR compared to 29.4% had in their study.*

Caesarean rate was about 100% in case of short statured mothers and elderly primigravida. Though elderly primigravida is alone not an indication for cesarean, they had associated risks leading to cesarean section. Other main factors are oligohydramnios, placenta previa, malpresentations and abruption placenta. Preeclampsia had equal occurrence of cesarean and vaginal deliveries, but because preeclampsia forms bulk of cases it forms majority of cases undergoing cesarean. Clark et al in their study mentioned about the rate of caesarean section in patients with eclampsia is 11% to 57%. In my study it is about 65%.

In my study 22 patients had asthma as a risk factor associated with their pregnancies. Out of them one patient had mild preeclampsia. All were term. 50% had caesarean section (most common indication was foetal distress - 45%). 3 babies out of 22 were low birth weight. 2 babies were IUGR. 2 mothers required intensive care admission. According to Perlow et al in their study of Severity of asthma and perinatal outcome, Preterm delivery occurred significantly. Overall cesarean section rate was significantly increased. Cesarean delivery for fetal distress was also more common. Lehrer et al in their study mentioned that there was a significant association between pregnancy-induced hypertension and asthma during pregnancy, but in my study only one case had mild preeclampsia associated with asthma during pregnancy.

In our study there were totally 36 patients with Gestational Diabetes Mellitus (GDM). Out of these 36 patients 8 were on meal plan and 2 with out any treatment and remaining 26 were on Insulin. The most common associated risk factor with GDM is Preeclampsia (17%). 85% had caesarean section. 5.5% were preterm. Two of the babies born were dead born. 4 babies were Low birth weight babies and 2 were IUGR. 87% babies were admitted in Neonatal Intensive care unit. Yugav et al in their study they mentioned about fetal size and cesarean section rate are associated with the degree of carbohydrate intolerance. Naylor et al mentioned that risk of macrosomia is 28.7% in untreated borderline GDM. In their study they mentioned about cesarean delivery rate as 29.6% in their GDM patients compared to 85% in my study. Nathanson et al in their study found that macrosomia occurrence in GDM is 40% compared to 6% in my study. Siddiqi et al in their study, mentioned about incidence of PET as 15 % in case of abnormal carbohydrate metabolism compared to 17% in my study.

According to Midei et al maternal mortality is 52% and fetal wastage is 42% in Eissenmenger's syndrome. But out of 1000 cases I had only one case of Eissenmenger's syndrome where both mother and baby died after delivery.

Tang et al in their study they mentioned that Outcome of pregnancies in patients with MVPS is similar to that who do not have it. Similarly all my patients with MVPS had uneventful pregnancy outcome.

In my study there were 14 cases of Oligohydramnios. Chhabra et al in their series of Oligohydramnios patients, the rate of caesarean section was around 42.4% compared to 93% in my study. There was incidence of 4.15% of congenital anomalies compared to 0% in my study.

Abu-Heija et al in their study they mentioned about high parity, preeclampsia and hypertension are significant etiological determinants of abruptio placenta. There was 100% association between preeclampsia and abruption placenta in my study. Dafallah et al in their study they mentioned that infants born after abruptio placentae were small for gestational age and had lower Apgar scores than the control infants. In my study 62.5% babies born to abruption placenta mothers were low birth weight. Most of the deliveries (70%) were caesarean delivery. There was one still born and one dead born out of 16 abruptio placenta mothers.

IUGR babies formed 8.6% of total 1000 deliveries. 31% of anaemic mothers delivered IUGR babies, 10.5% of malpresented babies were growth restricted. Fernando Arias text book on High risk pregnancies 2$^{nd}$ edition, mentions that maternal vascular disease eg, Preeclampsia, chronic hypertension as a frequent cause of IUGR. In my study also it contributes to 22% of total IUGR babies. As per American journal obstete and Gynecol 1979, 21% of twin pregnancies had IUGR, but in my study it was only 16%.

Birth asphyxia is more with preterm babies and malpresentations. It also occurs in 26% of cases of eclampsia.

Congenital anomalies that I have encountered here were those that were so far undiagnosed. 33% of polyhydramnios was associated with anomalies. Kase 55 et al in their study mentioned that preterm rate in their study was about 11.2% and congenital anomalies rate were 3% compared to 10.1% and 1.4% respectively in my study. 28.6% of the anomalies in my study were limb anomalies. Another 28.6% were genito urinary tract problems.

Powers et al in their study on twin pregnancies mentioned about postpartum hemorrhage in 20% in multiple pregnancy compared to 6% in my study and 55.8% of twin have birth weight less than 2.5 kg compared to 77% in this study. 30.3% had caesarean section. 39% were preterm.

Regarding mode of delivery, Caesarean section rate was nearly equal to that of total vaginal births. (i,e) 52% as against 48% . During labour we monitor fetal well being by both intermittent auscultation and cardiotocography. As per Mangelli et al 1997, Didly et al 1999; Low et al 1999; Sweha et al 1999; Electronic fetal monitoring has high sensitivity and low specificity. We do not have the facility of fetal blood sampling, thus cesarean rate is high.

Pregnancy loss was high in case of preterm, eclampsia and twin pregnancy. Most of them were due to respiratory distress. Still births were also

more associated with prematurity.

Totally 28% of babies were low birth weight babies. About 84% of preterm babies were low birth weight. Other factors strongly associated with low birth weight babies were anemia , abruptio placenta , eclampsia and twin gestation .

Babies were admitted in Neonatal intensive care unit for treatment of birth asphyxia, some for observation as in case of babies of diabetic mothers and mothers with gestational diabetes mellitus. 87% of preterm babies and 83% of babies of mothers with gestational diabetes were admitted in Neonatal intensive care unit.

We have well maintained blood bank in our hospital. This helped to save many lifes of mothers. Anemia is the major risk factor requiring blood transfusion, next was abruption placenta.

Intensive care unit admissions include patients with ventilatory support and other critical care requiring patients. 91% of eclampsia cases and 55% of cardiac cases require intensive care. Cardiac conditions like Mitral valve Prolapse were managed in labour ward itself.

Maternal mortality occurred in 7 out of 1000 cases. Data from Sample Registration Bulletin, New Delhi 1998 Vol.32 No.1 shows the major causes of maternal mortality in India

| **A. Direct causes** | **Percent** |
|---|---|
| 1. Haemorrhage | 29.6 |
| 2.Pueperal complications | 16 |
| 3.Obstucted labour | 9.5 |
| 4.Abortions | 8.9 |
| 5.Pregnancy induced hypertension | 8.3 |
| **B.Indirect causes** | **Percent** |
| 1.Anemia | 19 |
| 2.Tuberculosis | 14.6 |
| 3.Malaria | 1.4 |
| 4.Viral hepatitis | 0.4 |
| **C.Other causes** | **2** |

In my study 2 cases of death were due to eclampsia and 2 were due to severe preeclampsia. 2 death were due to hepatorenal failure. Out of them one was a complication of leptospirosis and other due to chronic liver disease.

One death occurred in a case of Eissenmenger"s syndrome. So in my study more than 50% of maternal death occurred due to preeclampsia leading to eclampsia and coagulation failure. **Pritchard et al in their study of Parkland Memorial Hospital protocol for treatment of eclampsia: evaluation of 245 cases, maternal mortality is 4 – 5.8 % as against 8.6% in my study.** Preeclampsia is a disease with wide spectrum of maternal and fetal morbidity and also mortality in both. It forms the main bulk and burden, that needs even

more attention.

## *SUMMARY*


- *I have studied about pregnancy outcome in 1000 high risk Antenatal cases.*

- *Among them 993 cases were booked either in our hospital or some other hospitals or health centres. 7 cases were unbooked but immunised.*

- *Preeclampsia formed about 41% of total cases.*

- *Caesarean section rate was nearly equal to that of vaginal births. (i,e) 52% as against 48%. Caesarean rate was about 100% in short statured primigravidas and elderly primi. Elderly primigravida had associated risk factors leading to caesarean section. Other main factor were oligohydramnios, placenta previa, malpresentations and abruptio placenta. Pre-eclampsia had equal occurrence of caesarean and vaginal deliveries.*

- *Totally 28% of babies are low birth weight babies. About 84% of preterm babies were low birth weight. Other factors strongly associated with low birth rate were Abruptio placenta, AP eclampsia and twin gestation.*

- *IUGR babies formed 8.6% of total 1000 deliveries 31% of Anaemic*

*mother delivered IUGR babies.*

- *Birth asphyxia was more with preterm babies and malpresentations. It also occurred in 26% of cases of AP eclampsia.*

- *Pregnancy loss was high in case of preterm, AP eclampsia and burns. Most of them were due to Respiratory distress. Still birth were also more associated with prematurity.*

- *Babies were admitted in neonatal care for treatment of birth asphyxia. Babies suspected of Transient tachypnoea of new born and babies of gestational diabetes and diabetic mother were also admitted.*

- *Anaemia was the major risk factor requiring blood transfusion, next was abruptio placenta.*

- *91% of AP eclampsia cases and 55% of cardiac cases required intensive care*

- *Maternal mortality occurred in 7 out of 1000 cases.*

- *2 cases of death were due AP eclampsia and 2 were due to severe preeclampsia. 2 death were due to hepatorenal failure. Out of that one was due to leptospirosis and the other due to Chronic liver disease. One death was in a case of Eisenmengerls syndrome.*

# CONCLUSION

1. There is a high correlation between high risk pregnancies and poor perinatal outcome.

2. The main objective of the "At Risk Approach" is optimal use of existing resources for the benefit of majority. Through identification of mothers at risk, better care for all could be ensured, while providing guidelines for diversion of limited resources to those, who are atmost need. This kind of approach is very much essential in tertiary care centres like our hospital where not only patients belonging to high risk group but low risk category also seek medical attention.

3. This High risk pregnancy must be identified at primary health care centres, second referral units, and urban health posts, so that they can categorize the Antenatal mothers, thus identifying those at risk. These mothers can be referred to a tertiary care centre early, so that they can be managed better, thus improving the maternal and perinatal outcome. It also helps to avoid the problems of reaching the tertiary care centre as an emergency.

4. Identifying high risk pregnancies is important because it is the first step towards prevention of maternal and perinantal morbidity.

5. Institutional delivery must be promoted. This is because transferring a high risk baby in utero will be better than transfer after delivery. Same applies to high risk mother also, so that apt intervention will be done at

apt time.

6. Incorporating different medical professionals into one shared antenatal care program can be effective in providing appropriate antenatal care.

7. Information, Education and Communication are the modes of creating awareness in the public. This is done by mass media and health care providers. Thus Better communication skills by health care providers will improve their ability to inform patients about the high risk conditions.

8. The aim is to increase awareness among pregnant women, regarding high risk factors and their impact on pregnancy outcome so that they have proper compliance in antenatal care provided by health system.

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# PROFORMA

| | | |
|---|---|---|
| Name | : | |
| Wife of | : | |
| Address | : | |
| Age | : | |
| I.P No. | : | |
| Socio economic status | : | |
| Booked / Unbooked | : | |
| D.O.A | : | |
| LMP | : | |
| EDD | : | |
| Obstetric formula | : | G P L A |
| Complaints | : | |
| Present Obstetric History | : | |
| Past Obstetric History | : | |
| Menstrual History | : | Age at menarche |
| | | Duration of cycle |
| | | Regular / irregular |

| | | |
|---|---|---|
| Past Medical History | : | H/o TB, DM, HT, HD, Epilepsy<br>Bronchial Asthma / Tuberculosis |
| Past Surgical History | : | |
| Family History | : | |
| Personal History | : | Diet, Nutrition Sleep, Bowels &<br>Micturition<br>H/o cigarette smoking, Alcohol |
| General examination | : | |
| Height | : | Weight : |
| Nutritional Status | : | |
| Pallor | : | |
| Pedal Oedema | : | |
| Breast | : | |
| Thyroid | : | |
| Spine | : | |
| Gait | : | |
| Vitals | : | Temperature : P.R.<br>B.P. R.R. |
| Systemic Examination | : | CVS : RS: CNS : |

| | | |
|---|---|---|
| Local Examination | : | Fundal grip |
| | | Umblical grip |
| | | Pelvic grips |
| Per Vaginal Examination | : | Leaking membranes |
| | | Bishops Score |
| | | Pelvis |
| Investigations | : | Hb% |
| | | Urine Examinations |
| | | Blood Group & Type |
| | | Random Blood Sugar |
| | | HIV & VDRL |
| | | Renal Function Test |
| | | Complete Blood Picture |
| Ultrasonography | : | Presentation |
| | | Gestational Age |
| | | Amniotic fluid index |
| | | Placental position and grading |

Other relevant Investigations:

| | | |
|---|---|---|
| Mode of Delivery | : | Vaginal / Forceps / LSCS |
| Baby Details | : | Live / Still Birth |
| | | Term / Preterm |
| | | Date and Time of Birth |
| | | Birth Wt HC / AC |
| | | Gestational Age |
| | | Apgar Score at 1 mt / 5 mt |
| | | Any congenital anomalies |
| | | Admission to NICU : Yes / No |
| | | No. of days in NICU |
| | | Oxygen / Ventilator Support |
| | | Condition at the time of discharge |
| Maternal Outcome | : | ICU Admission - Yes / No |
| | | Blood Transfusion - Yes / No |
| | | Morbidity - Yes / No |
| Mortality | : | Yes / No. If Yes, cause of death |

# ABBREVIATION

| | | |
|---|---|---|
| AFI | - | Amniotic Fluid Index |
| AP | - | Ante Partum |
| APH | - | Antepartum Hemorrhage |
| CVT | - | Cerebral Venous Thrombosis |
| CPD | - | Cephalo Pelvic Disproportion |
| DIVC | - | Disseminated Intravascular Coagulation |
| FFP | - | Fresh Frozen Plasma |
| GDM | - | Gestational Diabetes Mellitus |
| ICU | - | Intensive care unit |
| IUGR | - | Intra Uterine Growth Restriction |
| LBW | - | Low Birth Weight |
| LSCS | - | Lower Segment Cesarean Section |
| NICU | - | Neonatal Intensive Care Unit |
| **NVD** | - | Normal Vaginal Delivery |
| PET | - | Preeclampsia |