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Maternal Risk Factors for Perinatal Mortality

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Abstract:

Objective: This prospective clinical study was designed on maternal risk factors for perinatal mortality.

Material and Methods: This is cross sectional study conducted in the Department of Obstetrics & Gynae and Department of pediatrics Sylhet M A G Osmani Medical College Hospital, Sylhet, during the period from 1st July 2008 – 30th June 2009. Here study population were all fresh & macerated stillborn & early neonatal death cases during the study period. For convenience sampling total 100 cases were studied for this study during the study period.

Results: During this period 8398 deliveries were done & there were 715 perinatal deaths. In Sylhet region neonatal mortality rate is higher (53 /1000 total birth) than our national neonatal mortality rate (37/1000 total birth) (BDHS, 2007). From this study it was revealed that most important maternal risk factor for perinatal mortality was pre-eclampsia, eclampsia and obstructed labour.

Conclusion: Perinatal mortality rate serves as the most sensitive index of maternal and neonatal care.

Key words: Maternal risk Factors, Perinatal mortality.

Introduction:

Perinatal mortality rate is defined as the number of still births and the first week death per thousand total births. It is the most sensitive index of maternal and neonatal care. The rate of infant mortality has decreased world wide. However perinatal mortality has not followed the same pattern. 98% of perinatal death is occurring in developing countries [1]. Perinatal mortality is an important indicator for monitoring progress towards Millennium Development Goal-4.

In 1995, WHO estimated the number of perinatal deaths world wide to be greater than 7.6 million. In developed countries, the perinatal mortality rate has fallen to 10-20 per thousand total births as compared to an alarmingly high rate of 60-120/1000 total births in developing countries[2] .Without reducing perinatal mortality it is not possible to reduce neonatal mortality rate, infant mortality rate & under 5 mortality rate.

Among the main causes of perinatal mortality high risk pregnancies comprise the commonest one. Among perinatal death 70% were still births. 15.5% in 24 hours of birth and rest of deaths occurred between 2-7 days after birth. Pregnancy & delivery-related causes were responsible for 21% of perinatal death. Women who had less than two visits were more likely to experience perinatal death than those who had more[3].

High risk pregnancy is broadly defined as one in which the mother, fetus or newborn is at risk of morbidity or mortality before, during or after delivery (Shobha. 2007). Factors associated with high risk pregnancies are maternal age, length of gestation, complications during pregnancy and labour, previous bad obstetric history, maternal disease, poor economic condition, cigarette smoking[4].

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Adolescents are at increased risk for preeclampsia, eclampsia, IUGR, and maternal malnutrition. Women > 35yrs are at higher risk of pregnancy induced hypertension, diabetes and obesity, increased risk of cesarean section, preeclampsia and placenta praevia[5]

Primi & grand multi have been associated with poor perinatal outcome. Premature labour accounted for 27% of perinatal mortality. Complications during pregnancy and labour such as, prolonged or obstructed labour, abnormal fetal position and hypertensive diseases of pregnancy increased the risk of perinatal mortality five fold. All these factors are responsible for 30% of perinatal deaths. Maternal diseases such as Diabetes mellitus, hypertension, congenital heart disease, TORCH infection, sexually transmitted diseases are also a perinatal risk factor.

Identification of maternal risk factor with effective & timed intervention may help to reduce the perinatal mortality. The present study was conducted to find out perinatal mortality rate in a tertiary level hospital and to assess the maternal risk factors responsible for perinatal death & to assess other associated factor for it in order to formulate the measure for prevention. It was found that most important maternal risk factors for perinatal mortality are pre-eclampsia, eclampsia and obstructed labour.

Material and Methods:

This is a cross sectional study conducted in the Department of Obstetrics & Gynae and Department of pediatrics Sylhet M A G Osmani Medical College Hospital, Sylhet, during the period from 1st July 2008 – 30th June 2009. Purpose of study was designed on maternal risk factors for perinatal mortality. Here study population were all fresh & macerated stillborn & early neonatal death cases during the study period. For convenience sampling total 100 cases were studied for this study during the study period. The inclusion criteria were gestational age >28 weeks. Birth weight <1 kg, gestational age < 28 wks & congenital anomaly of the fetus were excluded from the study. Data was be collected by using pre designed questionnaire. Relevant information's were collected from medical records. Data was analyzed by using appropriate computer software.

Results:

Table-I

Rate of perinatal death, still births and early neonatal death during study period (1st July 2008-30th June 2009)

Total delivery- 8398	
Perinatal death- 715	Perinatal mortality rate- 85.13
Still births- 544	Still births rate- 64.78
Early neonatal death- 171	Early neonatal death rate- 20.35

Table- I. Shows that the perinatal mortality rate was 85.13 per 1000 total births; still birth rate was 64.78 per 1000 total births and early neonatal death rate was 20.35 per 1000 total births.

Table-II

Perinatal death among the study population (n-100)

Perinatal death	Number	Percentage (%)
Still birth	76	76
Early neonatal death	24	24

Table-II: Shows still birth rate was 76% and early neonatal death rate was 24%.

Table-III

Socioeconomic and educational status of the patient with perinatal death (n= 100).

Factors		Number	Percentage
Socioeconomic condition	Lower class	39	39
	Lower middle class	34	34
	Middle class	27	27
Educational status	No education	42	42
	Primary	35	35
	Secondary	15	15
	Higher secondary	06	06
	Higher education	02	02

Table-III: Shows that perinatal mortalities are associated with lack of education 42% and lower socio-economic condition 39%.

Table-IV

Causes of delay in getting admission (n-100)

Causes	Number	Percentage (%)
Economic	32	32
Distance	35	35
Decision making	39	39
Ignorance	21	21

Table-IV: Shows that decision making (39%) is the main cause of delay in getting admission. Some patients have more than one cause

Table-V

Maternal factors for Perinatal death (n-100)

Factors	Case	Number	Percentage
Maternal age	<18 year	32	32
	19-34 year	63	63
	>35 year	05	05
Parity	Primigravida	58	58
	Multigravida	42	42
Antenatal visits	Regular ANC	11	11
	Irregular	52	52
	No ANC	47	47
Bad obstetrical	Absent	77	77
history	Present	23	23

*(ANC-Antenatal care)

Table- V: Shows that 32% of mothers had age below 18 years, about 58% are primigravida, only 11% cases had regular antenatal visit ,23% cases had bad obstratical history.

Table-VI

Risk factors for perinatal death identified on admission (n-100)

Risk factors	Number	Percentage
Risk factors present	87	87
One risk factor	56	56
Multiple risk factors	31	31
Risk factors absent	13	13

Table-VI: Shows 87% of cases were admitted with risk factors.

Table-VII

Maternal risk factors for perinatal death identified on Admission (n-100)

Risk factors	Number	Percentage
Eclampsia	09	09
Pre-eclampsia	14	14
Heart diseases	01	01
Diabetes	01	01
Bronchial Asthma	01	01
Bad obstetrical history	06	06
Placenta Praevia	08	08
Cord prolapse	07	07
Obstructed labour	19	19
Ruptured uterus	07	07
Intra uterine death	07	07
Abruptio placenta	04	04
Previous caesarean section	07	07
Others	06	06

Table- VII. Shows eclampsia & pre eclampsia & obstructed labour are most important causes for perinatal death. Some patients have more than one risk factor

Table-VIII

Mode of delivery (n-100).

Variables	Number	Percentage
Vaginal delivery	41	41
Ventouse	05	05
Forceps	07	07
Breech extraction	12	12
Caesarean section	27	27
Caesarean Hysterectomy	03	03
Repair of rupture uterus	05	05

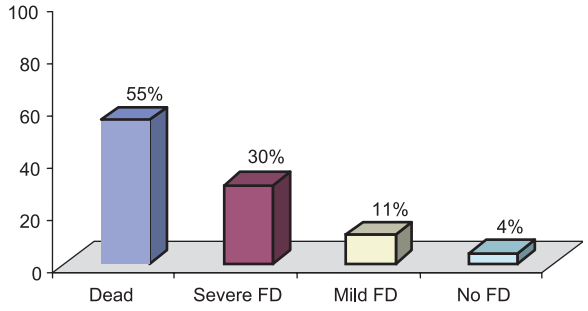
Table-VIII: Shows 41% cases had vaginal delivery and 27% had Caesarean section.

Table-IX

At 1 and 5 minutes APGAR score in case of Early neonatal death (n=24)

APGAR	At 1 minute		At 5 minute	
SCORE	No	Percentage	No	Percentage
O	0	0	4	16.66
1-4	10	41.66	8	33.33
5-6	12	50	9	37.5
7-8	2	8.33	2	8.33
9-10	0	0	1	4.1

Table- IX: shows that among the 24 cases of early neonatal death 40% were born with an APGAR score 4 or below and 16.66% had APGAR score 0 at 5 minute. In about 12% cases APGAR score was 7-10 at 5 minutes but ultimately they died.



* FD= Fetal distress

Fig.-1: *Fetal Condition on Admission (n-100)*

Figure-1: Shows condition of fetus on admission of the patient at Sylhet MAG Osmani Medical College Hospital. More than half (55%) of the patient were admitted when the fetus was already dead and another 41% (Severe FD 30% and mild FD 11%) with fetal distress.

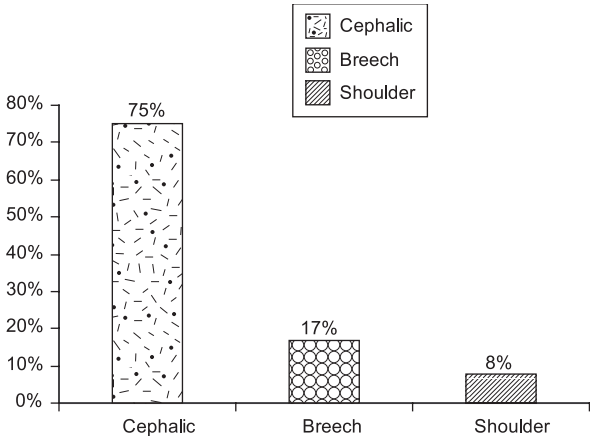


Fig.-2: *Presentation of the fetus on admission (n=100)*.

Figure – 2. Shows that in 75% of cases there were cephalic presentation and 17% cases had breech presentation.

Table-X

Probable cause of early neonatal death (n-24)

Causes	Number	Percentage
Perinatal asphyxia	15	62.5
Infection	06	25
Birth trauma	03	12.5

Table-X: Shows that the most common cause of early neonatal death is perinatal asphyxia (62.5%).

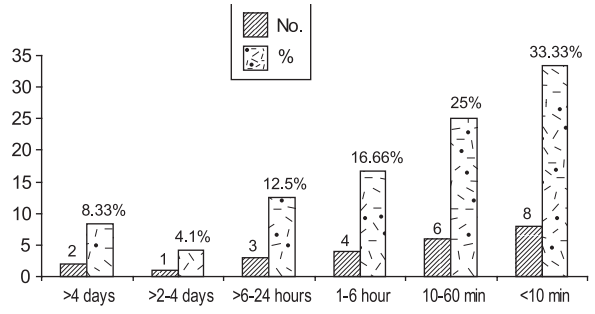


Fig.-3: *The time interval between birth and death in cases of early neonatal death (n=24).*

Figure- 3 shows 33.33% of neonatal death occurred within 10 minutes of birth and 87.94% within 24 hours of life.

Discussion:

The perinatal mortality rates in countries of the Indian subcontinent are three to four folds higher than in the developed countries. Lack of antenatal care, facilities for prenatal fetal health monitoring and institutional care and deficient neonatal care services contributes to the persistent high perinatal mortality.

In Bangladesh the perinatal mortality rate is higher. In Sylhet region this mortality rate is even higher than that of other regions of Bangladesh. Many factors such as lack of education, socioeconomic, cultural customs, decision making are the main cause of delay in getting admission. So the study was important to find out the actual causes associated with higher perinatal death in Sylhet region. In this study perinatal death rate is 85.35/1000 births which is higher than the findings of other study (66.4/1000 births) done in rural areas of Bangladesh [6].

Sylhet Osmani Medical College Hospital is a tertiary referral hospital. Still births & early neonatal deaths contributed about 76% and 24% respectively, which is similar to the findings of Rajshahi Medical College Hospital where still births were 78.6% and early neonatal deaths were 21.4%. Eclampsia came out as the most common risk factor where young age and under nutrition were the causative factors for Eclampsia[7].

It was found that most of the perinatal deaths were associated with lack of education (21%) and poor socio-economic condition (32%), 32% of mother was below 18 years, 58% were primigravida, only 11% cases had regular ante-natal visit and 23% cases had a history of perinatal deaths, which is similar with study of Gazi shows lack of education (67%) and poor socio-economic condition (60%), 35% of mother was below 20 years, 46% were primigravida and 33% cases had a history of previous still birth[8]. In this study it was revealed that 87% of perinatal mortality cases had one or more risk factor. Among them 56% cases were presented with one risk factor and 31% cases with multiple risk factors. Eclampsia (09%), Pre-eclampsia (14%), Obstructed labour (19%) were major risk factors. Another study of Kusiako showed that more than half of the women diagnosed with an obstructed labour lost their babies during and shortly

after the delivery. Eclampsia (32%) and pre-eclampsia (15%) were associated with very high perinatal mortality[9].

In the present study 41% cases had vaginal delivery and 27% had LUCS. Here presentation of fetus was cephalic in 75% and breech in 17% cases. In 55% cases fetus were already dead and in another 30% cases there were severe fetal distress on admission which is similar to the findings of another study of Gazi.

Among the 24 cases of early neonatal death 40% were born with an APGAR score 4 or below and 16.66% had APGAR score 0 at 5 minute. In about 12% cases APGAR score was 7-10 at 5 minutes but ultimately they died. About 33.33% of neonatal death occurred within 10 minutes of birth and about 87.49% within 24 hours of life. Most common cause of early neonatal death was perinatal Asphyxia (62.5%). Several studies done in developing countries identified asphyxia and birth trauma is important causes for perinatal death[10, 11].

A survey by Gaddi and Seetharam shows the common causes of perinatal mortality includes low birth weight (16%), perinatal asphyxia (17%), infections (12%), congenital malformations (7%), birth trauma (5%), and respiratory distress syndrome (13%).[12]. The most frequent cause of neonatal death in USA is congenital malformations, chromosomal disorders (37%), and complication of pregnancy. Neonatal mortality can be reduced by early diagnosis and pregnancy termination in case of congenital malformations [13].

Another study identified the risk factors for perinatal deaths in a rural community in Manikgang district, Bangladash. 186 infant deaths were recorded, the perinatal death rate was 64.5/1000 births. Another clinical trial conducted between 1994 and 1997 at MCH/FP hospital in Mirpur, Dhaka, Bangladesh. The risk of perinatal mortality was as high as 2.7 times more likely in women with hypertensive disorders, 5 times as high for women who had ante partum haemorrhage[14]. The six leading risk factors for perinatal death were preeclampsia, antepartum haemorrhage, post maturity, hypertension, prolonged labour and severe anaemia.

Increasing maternal age is associated with increasing risks for infant mortality[15]. Teenagers remained a higher risk group[16].In Bangladesh, a study at Matlab, Chandpur during the period 1978-1993 showed the perinatal mortality rate was 71.4/1000 births. Another risk factor were age (<18 & > 35), parity (primi and grand multi) and bad obstetrical history. Complication during labour and delivery increase the risk of perinatal mortality to five fold. Other risk factors of Kusiako study were eclampsia, pre-eclampsia, breech presentation, prolonged labour, multiple pregnancies and ante partum haemorrhage

Intranatal care by untrained birth attendance is another risk factor for perinatal mortality. Trained supervision at delivery reduces the chance of fresh stillbirth 5 times[18]. Midwives have a major role to play in the management of labour complications during home deliveries[19]. So in this study was taken to find out the maternal risk factors for perinatal mortality.

Conclusion:

Perinatal mortality is a sensitive indicator of the quality of health care provided to pregnant women and the new born. As there is no national survey on perinatal mortality rate in Bangladesh, this study will demonstrate the facts regarding the prevalence of perinatal mortality which is unacceptably high. The main causes of stillbirth in this study were eclampsia, pre-eclampsia, obstructed labour. Other causes were home trial, injudicious use of oxytocin, lack of recognition of contracted pelvis, malpresentation and late referral at critical state.

The major cause of early neonatal death is birth asphyxia due to difficult labour. The increased deaths due to asphyxia reflect inadequate and inappropriate monitoring and late referral of fetal distress cases leading to still birth.

In order to improve the situation, the targeted population should be given health education, encouraged to take advantage of the available health services which are being under utilized. The legislation compelling antenatal care and hospital delivery can also be useful. The other options are to improve facilities of peripheral health infrastructure for managing the high risk cases.

The perinatal mortality among the institutionalized cases could be reduced by effective and timed intervention among high risk cases. Appropriate intrauterine monitoring and timely delivery of the babies are important .Advanced life support in the form of mechanical ventilation can improve the out come in sick babies.

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