

**CLINICAL STUDY OF OUTCOME OF PRETERM VERY LOW BIRTH WEIGHT BABY  
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**ABSTRACT**

**Background:** Clinicians and researchers alike have noted the wide variability in developmental outcome of preterm, very low birth weight (VLBW) infants. An increasingly common assumption is that medical complications, rather than degree of prematurity/VLBW per se, drive developmental outcomes. **Method:** This study was carried out in the Neonatal Unit of Sher-e-Bangla Medical College and hospital, Barisal between August 2019 to August 2021 to determine the magnitude of the problem and observe short term outcome of preterm-very low birth weight babies. A total number of 200 preterm very low birth weight babies consecutively admitted in this ward were enrolled in to this study. The information about the babies gathered from the history and physical examination and recorded in data collection sheet within 24 hours of admission. Each infant was reassessed daily to record the progress and to document any new complication. In this study among 200 babies 50% was male and 50% was female babies. Among them 8.5% was extremely Low birth weight, 1.5% was incredibly low birth weight babies. About 64.5% of preterm VLBW babies were associated with multiple pregnancy (57.1% twin pregnancy and 7.5% triplet pregnancy). Each baby had one or more problems. Infection 33% (septicemia, congenital pneumonia and umbilical sepsis), perinatal asphyxia 30%, poor feeding 10%, neonatal jaundice 28.5%, neonatal seizure 14 %, apnea 16.5%, RDS 5 %, Hypoglycemia 7%, hypocalcaemia 2.5 % were the major problems. **Result:** Among the studied neonates mortality rate was 32.5 %. Perinatal asphyxia (30%), septicemia. (20.50 %) were the major cause of death in this study group. Immediate outcome of preterm VLBW infants was closely related to maternal illness during pregnancy. We found mortality rate was related to gestational age; highest (100 %) among the babies of gestational age less than 28 weeks and lowest in babies of gestational age 35 weeks or more. Lower gestational age was associated with higher mortality rate. Higher mortality rates were observed among babies delivered per vaginally (24.7 %) compared to caesarian section (16.7 %). In addition to prematurity-birth weight was the important factor influencing the mortality observed in the present study. **Conclusion:** This study was an enthusiastic approach towards finding out the outcome in preterm very low birth weight babies in neonatal period.

**KEYWORDS:** Preterm, very low birth weight, neonates, gestational age.**INTRODUCTION**

Preterm infants account for the majority of high-risk newborn. The preterm infant faces a variety of physiological handicaps.<sup>[1]</sup> A live born infant delivered before 37 weeks from the first day of the last menstrual period is termed-preterm by the World health organization.<sup>[2]</sup>

In Bangladesh the incidence of preterm babies it is about 16.3% and 9.57% -shown in two different study.

Incidence of preterm very low birth weight babies is 4 to 5 %.<sup>[3]</sup>

There are multiple factors responsible for preterm. It is difficult to completely separate factors associated with prematurity from those are associated with IUGR.<sup>[4]</sup> Low socioeconomic status measured by family income, educational level, residency, social class or occupation is associated with preterm.<sup>[5]</sup>

In case of twin and triplet pregnancy preterm low birth weight delivery occurs in about 50% of cases. Birth weight specific mortality is not high in multiple gestational infants compared with singleton. The higher, rate of neonatal mortality of preterm infants is primarily related to their degree of prematurity.<sup>[6]</sup> Poor birth outcome of the prior birth is the strongest predictor of poor birth outcome.<sup>[6]</sup>

In preterm infants impaired absorption of substrate by the intestine compromise the nutritional management.<sup>[7]</sup> Necrotizing enterocolitis is the most common acquired emergency in neonate. Prematurity contributes 20% of the affected infants with necrotizing enterocolitis.<sup>[8]</sup> Preterm very low birth weight infants are more vulnerable to infection than term babies.<sup>[9,10,11]</sup> The mode of delivery was found to influence the outcome of the preterm infants. It is found that outcome of preterm babies is better in babies delivered by caesarian section than vaginal delivery.<sup>[9,10,11]</sup>

## OBJECTIVE

### General Objective

To determine the outcome of preterm very low birth weight babies in neonatal period.

### Specific Objective

1. To identify important perinatal risk factors associated with preterm very low birth weight delivery.
2. To determine the mortality rate of preterm very low birth weight babies in neonatal period.

## METHODS AND MATERIALS

**Types of study:** Prospective study

**Place of study:** Special care Neonatal Unit of Pediatrics department of Sher-e- Bangla medical college hospital, Barisal

**Period of study:** Two years (from August 2003 to August 2005)

**Sample size:** 200 case (Male baby- 100, Female baby- 100)

## SELECTION CRITERIA

### Inclusion criteria

- a. Preterm -Gestational age from 28 weeks to <37 weeks.
- b. Very low birth weight -Birth weight from 700 gm to <1500 gm.
- c. Post natal age 0-48 hours.

### Exclusion criteria

- a. Gestational age from <28 weeks and >37 weeks.
- b. Birth weight from <700 gm &>1500 gm.
- c. Post-natal age >48 hours.
- d. Babies with any obvious congenital anomaly and moribund patient.

## Study procedure

After fulfilling the inclusion criteria verbal consent was taken from attendant or mother of the baby. Two hundred (200) preterm very low birth weight babies were included in this study. They were admitted to neonatal unit of pediatrics ward of Sher-e-Bangla Medical College Hospital, Barisal during the period from August 2019 to August 2021.

For each infant history was taken and physical examination was done as per set questionnaire. Obstetrical history was taken from the attended and from the birth record. Gestational age of the infant was determined by the history of date of mother's last menstrual period and was confirmed by New Ballard Scoring (NBS) system.

Weight was taken by the digital weight machine. Daily weight was taken by the same machine and at the same time before feeding.

There were junior doctors on duty round the clock in neonatal unit and supervised by the pediatrics consultant. I visited every VLBW baby twice daily.

Any pathological state if present was recorded and management reviewed according to the clinical stat.

Handling of the baby was kept at minimum level for prevention of infections.

## RESULT

In this study 200 VLBW neonates were enrolled. Out of 200 babies 100 (50%) were male and 100 (50%) were female babies.

Distribution of babies according to age at follows: Out of 200 babies 75 babies got admitted within 12 hours of birth, 90 babies within 13-24 hours and 35 babies at >24 but <48 hours of birth.

**Table-I: Distribution of babies according to age at admission.**

Age at admission	Number	Percent(%)
Up to 12 hours	75	37.5%
13-24 ours	90	45%
>24 hours but <48 hours	35	17.5%

Distribution of Preterm VLBW Babies in Relation to Gestational Age The gestational age of studied neonates were from 28 weeks to <37 weeks.

**Table-II: Distribution of babies in relation to gestational age.**

Gestational age (week)	Number babies (n)	Percent (%)
28	03	1.5%
29	07	3.5%
30	12	6%
31	15	7.5%
32	40	20%
33	35	17.5%
34	34	17%
35	29	14.5%
36	20	10%
<37	05	2.5%
Total	200	100%

**Distribution of Preterm VLBW Babies in Relation to Birth Weight**

Out of 200 neonates 180 were very low birth weight, 17 were extremely low birth weight and 3 were impossibly low birth weight.

**Table-III: Distribution of babies in relation to their birth weight.**

Very low birth weight		Extremely low birth weight		Impossibly low birth weight	
Birth weight (gm)	Number	Birth weight (gm)	Number	Birth weight (gm)	Number
1000	05	800	02	700	01
1200	07	850	02	745	01
1250	30	900	02	750	01
1300	21	950	03	-	
1350	21	985	01	-	
1400	34	995	07	-	
1450	42	-	-	-	
1480	30	-	-	-	
Total	180	Total	17	Total	03

**Distribution of Mothers According to Their Age at The Birth of Baby****Table-IV: Distribution of mothers according to their age.**

Maternal age group	Number (n)	Percent (%)
16-20	46	34.6%
21-24	39	29.3%
26-30	37	27.8%
31-35	08	6%
>35 - <40	03	23%
Total	133	

**Clinical Outcome In Relation To Gestational Age of The Babies**

Babies born with gestational age between 28 weeks to 32 weeks - all the babies died but gestational age >34 weeks all the babies survived. Babies with gestational age 33-34 weeks death occurs 16.33%.

There was significant association ( $P < 0.05$ ) between gestational age and death.

**Table V: Outcome in relation to gestational age of the babies.**

Gestational age	Number (n)	Survival	Percent	Death	Percent(%)	X <sup>2</sup>	P value
28 weeks	03	00	00	03	100%	47.61	0.00 <sup>8</sup>
29-30 weeks	19	00	00	19	100%		
31-32 weeks	35	00	00	35	100%		
33-34 weeks	49	41	83.7	08	16.3%		
35-36 weeks	49	49	100	00	0%		
<37 weeks	45	45	100	00	00%		
Total	200	135		65			

### Clinical Outcome In Relation To Birth Weight Of Babies

Out of 200 babies 65 babies death. Babies with birth weight <1200 gm all (32) died and babies with birth weight from 1250 gm to 1480 gm 33 babies died.

In this study significant correlation ( $P < 0.05$ ) was found between birth weight and mortality among babies with birth weight in between 1000-1500 gm and 751-999 gm.

**Table-VI: Distribution of outcome in relation to birth weight of babies.**

Birth weight	Total	Alive	Percent	Death	Percent	X <sup>2</sup>	P value
<b>1. Very low birth weight (180)</b>							
1 kg	05	00	00	05	100%	88.01	0.001 <sup>9</sup>
1.2 kg	07	00	00	07	100%		
1.25 kg	20	10	50	10	50%		
1.3 kg	21	12	57.14	09	42.9%		
1.35 kg	21	12	57.1	09	42.9%		
1.4 kg	34	31	91.18	03	8.8%		
1.45 kg	42	40	95.24	02	4.7%		
1.48 kg	30	30	100	00	00%		
Total	180	135		45			
<b>2. Extremely low birth weight (17)</b>							
Birth weight	Total	Alive	Percent	Death	Percent	X <sup>2</sup>	P value
800gm	02	00	00	02	100%	30.12	0.001 <sup>S</sup>
850gm	02	00	00	02	100%		
900gm	02	00	00	02	100%		
950gm	03	00	00	03	100%		
985gm	01	00	00	01	100%		
995gm	07	00	00	07	100%		
Total	17	00	00	17	100%		
<b>3. Impossibly low birth weight (03)</b>							
Birth weight	Total	Alive	Percent	Death	Percent		
700gm	01	00	00	01	100%		
745gm	01	00	00	01	100%		
750gm	01	00	00	01	100%		
Total	03	00	00	03	100%		

### DISCUSSION

Low birth weight (LBW) is one of the common neonatal problems in our country & it is the single most important factor determining the survival chance of the child. Among the LBW babies VLBW infants represent a large proportion. LBW as well as VLBW thus an important guide to the level of care needed by individual babies. It also reflects inadequate nutrition & ill health of the mother. So, there is a strong & significant correlation between maternal nutritional status, age, length of pregnancy and the birth weight of the baby.

Out of total 200 studied neonates 100 (50 %) were male and 100 (50 %) were female. Out of them 135 (67.5 %) recovered & 65 (32.5 %) died. Out of total 100 male babies 63 (63%) recover and 37 (37%) died. Out of total 100 female babies 72 (72 %) recover and 28 (28%) died.

In this study mortality rate of female babies was 28% and in male babies was 37%. Mortality rate of male babies was 9% higher than female babies. Slight preponderance of male mortality probably male baby more fragile than female.

It is consistent with study of Ali Manajjir,<sup>[11]</sup> who found the mortality rate of male babies (55.17%) was higher than female babies (42.86%).

According to gestational age mortality rate -28 weeks-100 %, 29-30 weeks 100 %, 31-32 weeks 100 %, 33-34 weeks 16.33 %, 35-36 weeks 00 %, <37weeks 00 %.<sup>[12]</sup> Among them 28wks-00%, 29-30wks-00%, 31-32wks-00, 33-34 wks-83.61%, 35- 36wks-100%, 37wks-100%.

It is consistent with study of Ali Manajjir,<sup>[11]</sup> In his study the mortality rate was < 28 wks -100%, 29-32 wks- 70.00% 33-36 wks -32.75% & < 37 wks 00% gestational age group respective.

According to birth weight mortality rate -700 -750gm-100 %) 800-985 gm-100 %, 995 gm-24.57 %, 1 kg-26.67 %, 1.2 kg-55.56 %, 1.25 kg-18.87 %, 1.3 kg-21.74 %, 1.35kg-18.18%, 1.4 kg-7.35 %, 1.45 kg-13.51%, 1.48 kg-18.42 %.

It is consistent with study of Ali Manajjir. The survival rate of 1000-1249g & 1250-1499g weight group were 36% & 80% respectively.<sup>[13]</sup>

All the VLBW babies are preterm & they are more vulnerable to mortality than term, SGA babies.<sup>[14,15,16]</sup>

Birth weight is the single most important marker of adverse perinatal, neonatal, post neonatal outcome.<sup>[17]</sup>

The highest risk of neonatal mortality (100%) among infants who weight <1000gm at birth and whose gestational age was <32 wks.

In my study-out of 200 VLBW babies-According to gestational age group distribution as follows-28weeks - 03, 29 weeks-07, 30 weeks -12, 31 weeks -15, 32weeks - 40, 33weeks -35, 34 weeks- 34, 35weeks -29, 36weeks - 20, <37 week-05 Birth weight is one of the most important predictor for the survival of VLBW infants, liner rise of survival rate with increment of birth weight.<sup>[18,19]</sup>

Maternal age is a another important risk factor of VLBW delivery. In this series 200 VLBW babies found in 16-20 yrs, 21-25yrs, 26-30 yrs, 31-35 yrs, 36-<40 yrs maternal age groups respectively and 63.2%, 85.3%, 61.5%, 52.6%, 46.2% survived from specific maternal age group. Parity of mothers has a influence in the outcome of VLBW babies.

According to birth weight mortality rate -700 -750gm-100%, 800-985 gm..100 % 995 gm-24.57 %, 1 kg-26.67 %, 1.2 kg-55.56%, 1.25 kg-18.87 %, 13 kg-21.74 %,1.35 kg-18.18 %, 1.4 kg-7.35 %, L45 kg-13.51%, L48 kg-18.42 %.

It is consistent with study of Ali Manajjir, The survival rate of 1000-1249g & 1250-1499g weight group were 36% & 80% respectively.

## CONCLUSION

This study was an enthusiastic approach towards finding out the outcome in preterm very low birth weight babies in neonatal period. This is a hospital based study of 200 babies and are not representative of whole population. Hence a definite conclusion cannot be made. However it can be suggested from this study that VLBW babies is a major problem in Bangladesh.

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