

## Original Article

# Outcome of Very Low Birth Weight Neonates in a Tertiary Level Hospital Outside Capital of Bangladesh: A Study in Faridpur Medical College Hospital

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### Abstract:

Very low birth weight (VLBW) is an important cause of infant mortality and still a challenge for achieving Millennium Development Goal (MDG) in Bangladesh. Our study was to see the risk factors and its outcome of VLBW neonates in a tertiary level Faridpur Medical College Hospital (FMCH), outside capital Dhaka. This prospective cross sectional study was conducted in neonatal Unit of pediatric department in FMCH. All neonates who were admitted here had been selected and we find out the very low birth weight neonates for our study purpose. All anthropometric measurements were taken by us in our department. We took all the informations about neonates within our study period of six months (November 2013 to April 2014) through a prescribed protocol. Total 1126 neonates admitted within our study period of 6 months. Among 1126 neonates 76 of them were VLBW. Among 76 VLBW neonates 38 (50%) were male and 38 (50%) were female, but 22 of them were expired, which was 28.94% of total VLBW neonates. Most expired on month of March which was 38.46%. Among expired VLBW neonates 10 (45.45%) of them were male and 12 (54.55%) of them were female. Total 48 (63.15%) mothers of VLBW neonates delivered at hospital of them Caesarean section occurs in 40 (52.63%) mothers of VLBW neonates and normal vaginal delivery (NVD) occurs in 36 cases (47.37%). Home delivery occurs in mothers of 28 VLBW neonates. Among them 15 (53.57%) were done by traditional birth attendance (TBA), 8 (28.57%) by local dai and 5 (17.86%) by relatives of the family of VLBW neonates. We found mothers of 41 (53.95%) VLBW neonates had premature rupture of membrane (PROM), 8 (10.53%) had eclampsia, 4 (5.26%) had leaking membrane and 4 (5.26%) had history of accident. Maternal age of VLBW neonates are more common between 18 to 24 years of age that was 53.95% (41 in number) but 27 mothers (35.52%) were below 18 years of age. We found in our study that the survival rate of VLBW neonates in our institute is not like developed countries but it is better than many developing countries around the world.

**Key words:** Very low birth weight, Neonate, PROM, Caesarean section.

### Introduction:

Infants with very low birth weight are one of the highest risk pediatric patient populations.

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One in 4 very low birth weight (VLBW) infants (<1500gm) dies in the first year of life; nearly all deaths (87%) occur in the first month<sup>1</sup>. VLBW infants who survive have higher rates of morbidity and disability, including developmental delays and cognitive impairment, than infants with normal birth weights<sup>2-5</sup>. By birth weight, infants under 2,500gm are categorized as low birth weight infants (LBW). Among these LBW infants, those under 1,500gm are categorized as very low birth weight infants (VLBW), and infants under 1,000gm as extremely low birth weight infants (ELBW)<sup>6-7</sup>. These infants need special care and treatments such as neonatal special care because they have high morbidity and mortality rates. Therefore, managing these neonates to survive without complication will ultimately be the most important method in reducing neonatal mortality rate. With the advancement of neonatal care allow survival of extremely Preterm infants, who are prone to arrange of long term complications in comparison to their term counterparts<sup>8-11</sup>. There is concern that improved rates of survival of very low birth Weight (VLBW), and particularly extremely low birth weight (ELBW) infants, may be associated with increased rates of neuro developmental handicap<sup>12</sup>, although some report improved survival without increased handicap<sup>13</sup>. There are many reports of factors affecting early survival of VLBW infants. The survival rate of VLBW infants

worldwide ranges between 43% in developing countries such as Jamaica<sup>14</sup> to more than 90% in developed countries, such as the Netherlands<sup>15</sup>, in India it is 63%<sup>16</sup>.

The purpose of this study was to find out the risk factors and survival rate of VLBW neonates in Special Care of Neonatal Unit (SCANU) at Pediatric department of Faridpur Medical College Hospital, a government tertiary level hospital outside the capital of Bangladesh. There was no enough previous study on VLBW outcome in a peripheral tertiary hospital in Bangladesh.

### Materials and Methods:

This was a prospective cross sectional study conducted in neonatal Unit of pediatric department in FMCH. All neonates who were admitted here had been selected. Among them we found out the very low birth weight neonates for our study purpose. We took all the informations about neonates within our study period of six months (November 2013 to April 2014). All informations have been documented in hospitals admission and discharge books and treatment papers of the patients. A structured questionnaire was prepared in light of the objectives. The purpose of the study was clearly explained to the respondents prior to taking informed consent from them. The data were analyzed by using the Statistical Package for the Social Sciences (SPSS), version 16.0.

### Results:

Total 1126 neonates were admitted within our study period of 6 months. Among them 727 were male and 399 were female. We found out VLBW neonates from them & collected our information. Among 1126 neonates 76 of them were VLBW, i.e. 6.75% of total neonates who were admitted within our study period. In every month a significant number of neonates were admitted in pediatric department. Among them November and March had highest admission, both had 198 admissions each. Among 76 VLBW neonates 38 (50%) were male and 38 (50%) were female (Table-I).

**Table-I:** Distribution of very low birth weight (VLBW) baby according to months

Month	Total	VLBW (Male, Female)
November	198	2 (1,1)
December	178	18(7,18)
January	193	16(8,8)
February	184	8(4,4)
March	198	13(8,5)
April	175	19(10,9)
Total	1126 (100%)	76(38,38)(6.75%)

Among 76 VLBW neonates 22 of them were expired i.e. 28.94% of total VLBW neonates. Among them most expired on March which was 38.46%. Among 22 (28.95%) expired VLBW neonates 10 of them were male and 12 of them were female. That was 45.45% and 54.55% respectively. (Table-II).

**Table-II:** Distribution of VLBW neonates expired during study period

Month	Total VLBW baby	Expired baby(Male, Female)	Percentage (Male, Female)
November	2	1 (1,0)	50%
December	18	6(1,5)	33.33%
January	16	4(2,2)	25%
February	8	2(1,1)	25%
March	13	5(3,2)	38.46%
April	19	4(2,2)	21.05%
Total	76	22 (10,12)	28.94% (45.45%, 54.55%)

Table III shows among 76 VLBW neonates 48 (63.15%) were delivered at hospital and 28 (36.85%) were delivered at home.

**Table-III:** Distribution of VLBW neonates according to place of delivery

Place of delivery	VLBW neonate (%)
Hospital	48 (63.15)
Home	28 (36.85)
Total	76 (100)

Table IV shows total caesarean section occurs in 40 (52.63%) mothers of VLBW neonates and normal vaginal delivery (NVD) occurs in 36 cases (47.37%).

**Table-IV:** Distribution of VLBW neonates according to mode of delivery

Mode of delivery	VLBW neonate (%)
Caesarean section	40 (52.63)
Normal Vaginal Delivery(NVD)	36 (47.37)
Total	76 (100)

Table-V shows total 28 VLBW neonates had home delivery. Among them 15 (53.57%) were done by traditional birth attendance (TBA), 8 (28.57%) by local dai and 5 (17.86%) by relatives of the family of VLBW neonates.

**Table-V:** Distribution according to Birth Attendant of Home delivery.

Performed by	VLBW neonate (%)
TBA	15 (53.57)
Dai	8 (26.57)
Relatives	5 (17.86)
Total	28 (100)

Table-VI shows among mothers of 76 VLBW neonates 19 (25%) had no diseases or problems, 41 (53.95%) had premature rupture of membrane (PROM), 8 (10.53%) had eclampsia, 4 (5.26%) had leaking membrane and 4 (5.26%) had history of accident.

**Table-VI:** Distribution of VLBW neonates according to maternal problems

Maternal problems	VLBW neonate (%)
Premature rupture of membrane (PROM)	41 (53.95)
Eclampsia	8 (10.53)
Leaking membrane	4 (5.26)
Accident	4 (5.26)
No problem	19 (25)
Total	76 (100)

Table-VII shows maternal age of VLBW neonates are more common between 18 to 24 years of age that was 53.95% (41 in number) but 27 mothers (35.52%) were below 18 years of age, only 10.53% were 25 years and above.

**Table-VII:** Distribution of VLBW neonates according to maternal age.

Maternal age	Number (%)
Below 18 years	27 (35.52)
18 years to 24 years	41 (53.95)
25 years and above	8 (10.53)

Table-VIII shows 4 (5.26%) mothers had gestational age within 34 to 36 weeks and 14 (18.42%) had gestational age below 28 weeks but in majority of mother of VLBW neonates gestational age were within 28 weeks to 34 weeks.

**Table-VIII:** Distribution of VLBW neonates according to maternal gestational age

Gestational age	VLBW neonate (%)
36 completed weeks and above	--
34 completed weeks upto 36 weeks	4 (5.27)
28 weeks upto 34 weeks	58 (76.31)
Below 28 weeks	14 (18.42)

Table-IX shows birth weight of 55 (72.37%) VLBW neonates were within 1001 gm to 1500 gm, 20 (26.31%) were within 800 gm to 1000 gm and 1 (1.31%) was below 800 gm.

**Table-IX:** Distribution according to birth weight of VLBW neonates

Birth weight	Number (%)
1001 gm –1500gm	55 (72.37)
800 gm – 1000 gm	20 (26.31)
Below 800 gm	1 (1.31)

Table-X shows 93.42% mother had their 1<sup>st</sup> parity while 6.58% had their second parity.

**Table-X:** Distribution according to parity of the mother of VLBW neonates

Parity	Number (%)
1 <sup>st</sup> parity	71 (93.42)
2 <sup>nd</sup> parity	5 (6.58)
3 <sup>rd</sup> or more	0 (0)

### Discussion:

In millennium development goal (MDG) maternal health and infant mortality are two vital indicators which are achieved by our country and that was recognized by United Nation (UN). The global prevalence of LBW is 15.5%, but 96.5% of them in developing countries. There is a significant variation in LBW incidence rates across the United Nations regions, with the highest incidence in South-Central Asia (27.1%) and the lowest in Europe (6.4%)<sup>17-18</sup>. The result of our study shows 6.75% of neonate that were VLBW. Among them 28.95% expired during the treatment period. So, 71.05% of VLBW neonate survived after management in this hospital. The survival rate of VLBW infants worldwide ranges between 43% in developing countries such as Jamaica<sup>19</sup> to more than 90% in developed countries, such as

the Netherlands<sup>20</sup>. The mortality rate for VLBW infants in Soweto, Johannesburg, between 2000 and 2002 was reported at 71%<sup>21</sup>.

There has been gradual improvement in the survival of VLBW infants in developed and developing countries all over the world. From 81% in 1986 to 90.3% in 1998 in New Zealand<sup>22</sup> and from 62% in 1993 to 81.6% in 2003<sup>23</sup> in a developing country like Malaysia. Our country also improving in VLBW outcome in tertiary level hospitals and in specialized hospitals.

Our study shows among 76 VLBW neonates 48 of them (63.15%) were delivered at hospital and 28 of them (36.85%) were delivered at home. So, home delivery still is at higher rate here, although here hospital delivery includes private clinics, primary, secondary and tertiary level hospitals. The 2005 Lao Reproductive Health Survey found that among children born in the last 5 years, approximately 85% of births occurred at home<sup>24</sup>. In Nigeria, approximately 67% of births occur at home<sup>25</sup>. Total 64% of pregnant women (74% rural and 43% urban) in Pakistan deliver at home<sup>26</sup>. In developed countries all babies born at hospital care facilities.

Our study finds out caesarean section occurs in 40 (52.63%) mothers of VLBW neonates and normal vaginal delivery (NVD) occurs in 36 cases (47.37%). So, caesarean section was a very high level incidence, which was more than half of all very low birth weight neonate delivered. Although rates of caesarean section in many countries have increased from the recommended level of 15% in developed and many developing countries<sup>27</sup>, its rate is very high in our study. In Iran in 2000 the rate of caesarian section was 35%<sup>28</sup>.

We found, among 76 VLBW neonate mothers, 19 (25%) had no disease or problem, 41 (53.95%) had premature rupture of membrane (PROM), 8 (10.53%) had eclampsia, 4 (5.26%) had leaking membrane and 4 (5.26%) had history of accident. The mothers of VLBW neonates who had no disease they had to maintain whole family or doing physical work.

We also found total 28 VLBW neonates had home delivery. Among them 15 (53.57%) were done by traditional birth attendance (TBA), 8 (28.57%) were done by local dai and 5 (17.86%) were done by relatives of the family of VLBW neonates. One study found that since 2005 in Lao Peoples Democratic Republic, 63.4% of babies were delivered with the assistance of relatives compared to only 12.1% with traditional birth attendants. Health professionals assisted in 18.5% of births 8.1% were assisted by a doctor, 3.5% by a nurse, 3% by a midwife and 3.9% by a health worker<sup>24</sup>.

Our study shows maternal age of VLBW neonates are more common between 18 to 24 years of age that was 53.95% (41 in number) but 27 mothers (35.52%) were below 18 years of age, only 10.53% were 25 years and above. In Dhaka Shishu Hospital, it was found that the incidence of LBW was 46.08% among the young mothers (20-25 years), which is supported by another study conducted at the same hospital which showed an incidence rate of 34.31% among mothers below 20 years of age<sup>29</sup>.

We also found 4 (5.26%) mothers had gestational age within 34 to 36 weeks and 14 (18.42%) had gestational age below 28 weeks but majority of mother of VLBW neonates gestational age were within 28 weeks to 34 weeks. We did not find any VLBW neonates above 37 weeks of gestational age.

During our study period we found birth weight of 55 (72.37%) VLBW neonates were within 1001 grams to 1500 grams, 20(26.31%) were within 800 gm to 1000 gm and 1 (1.31%) was below 800 gm. The VLBW neonates who was below 800 grams he was a male child and his mother was primi.

To see the parity we found 93.42% mother had their 1<sup>st</sup> parity while 6.58% had their second parity. We did not find any 3<sup>rd</sup> parity mothers having VLBW neonates.

### **Conclusion:**

Bangladesh is a developing country with limited health resources and high patient numbers; it is not possible to provide full tertiary support to every VLBW infant outside the capital. Our study is to see the VLBW babies who are admitted in tertiary level hospital outside the capital of Bangladesh and their outcome after proper management in hospital. This study also tries to find out a significant relationship between VLBW and other factors like age of the mother, socio-economic status of the family, gestational age of the baby.

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