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BURDEN, TYPES OF DISEASES AND OUTCOME IN LBW (LOW BIRTH WEIGHT) BABIES ADMITTED AT A TERTIARY CARE HOSPITAL.

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ABSTRACT… Objectives: LBW has long been labeled as one of the major risk factor for mortality as well as morbidity in neonates. South Asia is said to have highest number of LBWs which estimated to be 1 in 4 newborns that weigh < 2500 grams. This study was planned with an aim to note the burden, types of diseases and outcome in LBW newborns admitted at a tertiary care hospital. **Study Design:** Descriptive analytical study. **Setting:** Included all neonates admitted to NICU of Sheikh khalifa Bin Zaid Al Nahyan Teaching Hospital, Rawlakot. **Period:** 1st July 2018 to 31st December 2018. **Material & Methods:** The prevalence of LBW amongst all admissions was calculated along with demographic features of all LBW babies like disease, reasons for the admission, duration of hospital stay along with outcome was noted on a predesigned proforma. **Results:** Out of total of 1410 admission in NICU during the study period, 512 (36.3%) were noted to be LBW. Amongst LBW babies, mean weight was 1.91 kg while 269 (52.5%) were male and 243 (47.5%) female. There were 364 (67.6%) babies born at full term. There were 82 (16.0%) with birth weight of less than 1.5 kg, 166 (32.4%) between 1.5 to 2 kg while 264 (51.6%) were above 2 kg. Amongst all LBW babies, mortality was reported in 185 (36.1%) while 112 (60.5%) died on the 1st day of admission. Respiratory distress syndrome (31.4%), sepsis (20.3%) and neonatal jaundice 58 (11.3%) were the commonest diseases seen. Highest mortality (56.1%) was seen in babies who had birth weight below 1.5 kg (p value = 0.001). **Conclusion:** LBW is a major cause of hospitalization and mortality. RDS and sepsis were the most frequent diseases noted in LBW babies. Immediate care following birth is vital for babies already at risk of LBW.

Key words: Low Birth Weight, Mortality, NICU, Respiratory Distress, Sepsis.

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INTRODUCTION

Neonatal mortality is estimated to be responsible for 45% deaths under the age of 5 years. Out of these, low birth weight (LBW) are documented to contribute somewhere between 60-80% of deaths.[1,2] The worldwide prevalence of LBW is approximation 16% whereas more than 95% of these are from developing countries.[3]

LBW has long been labeled as one of the major risk factor for mortality as well as morbidity in neonates.[4] South Asia is said to have highest number of LBWs which estimated to be 1 in 4 newborns that weigh < 2500 grams. Pakistan is ranked third globally when it comes to newborn mortality rates, while in 2013, UNICEF declared Pakistan to have 32% rates of LBW newborns, considered to be 2nd highest in the world.[5,6,7]

World Health Organization describes low birth newborns as those born having weight < 2500 grams.[8] LBW newborns are considered to be more prone to various kinds of infection that may go on to cause deaths in those newborns. Those surviving the early phase usually grow up to be malnourished while many of these children have limited physical as well as intellectual abilities in the years to follow. These LBW newborns are also considered to be more susceptible to diabetes and cardiovascular diseases.[9,10]

Considered to be a complex phenomenon, pre-terms and small for gestation age newborns seem to form a major part of LBW newborns.[11]

Better healthcare facilities especially in developing countries at preconception phase along with improved antenatal, intrapartum and postnatal stages are thought to reduce the neonatal mortality by 71% by year 2025.[12]

Documentation and analysis of burden, patterns and outcome related to LBW forms the basis for devising a viable strategy for future in a country like Pakistan where not much research is seen over the years in LBW neonates, this study was planned with an aim to note the burden, types of diseases and outcome in LBW newborns admitted at a tertiary care hospital.

MATERIAL & METHODS

This was a descriptive analytical study included all neonates admitted to NICU of Sheikh Khalifa Bin Zaid Al Nahyan Teaching Hospital, Rawlakot, from 1st July 2018 to 31st December 2018. The study was approved by institute's ethical and research committee. Consent was sought from parents or guardians of all neonates.

The prevalence of LBW (<2500 grams) amongst all admissions was calculated whereas demographic features of all LBW babies like disease, reasons for the admission, duration of hospital stay along with outcome was noted on a predesigned proforma.

Neonates were placed in three weight categories, less than 1.5 kg, 1.5 to 2 kg, 2 kg to 2.5kg and compared for various study variables like gender, gestational age, duration of hospital stay and outcome were recorded. Chi square test was applied to note the association of studied variables whereas a p value of less than 0.05 was taken as of statistical significance.

RESULTS

Out of total of 1410 admission in NICU during the study period, 512 (36.3%) were noted to be LBW. The mean weight amongst LBW babies was noted to be 1.91 kg with a standard deviation of 0.32 kg.

Among these 512 LBW babies, 269 (52.5%) were male and 243 (47.5%) female. There were 166 (32.4%) babies who were born as pre-terms (before 37 weeks) while 364 (67.6%) who were born at full term (37 to 42 weeks).

There were 82 (16.0%) babies who had birth weight of less than 1.5 kg, 166 (32.4%) between 1.5 to 2 kg while 264 (51.6%) were above 2 kg.

The mean duration of stay among all the babies was 5.6 days with a standard deviation of 2.4 days. The duration of stay amongst 296 (57.8%) babies was noted to be less than or equal to 3 days whereas 66 (12.9%) had a stay over 10 days or more.

Amongst all LBW babies, mortality was reported in 185 (36.1%) whereas 327 (63.9%) survived and got discharged. It was noted amongst babies who died that 112 (60.5%) died on the 1st day of admission.

Most babies, 161 (31.4%) had respiratory distress syndrome at the time of admission, sepsis 104 (20.3%), neonatal jaundice 58 (11.3%), congenital heart disease 42 (8.2%), 18 (3.5%) seizures, meconium aspiration syndrome 5 (2.7%), and other diseases 38 (7.4%).

When babies were compared in terms of their birth weight, highest mortality was seen in babies who had birth weight below 1.5 kg, 56.1% of these newborns died.

Amongst the birth weight groups, statistical significance was seen (p value = 0.001). It was noted that lower the birth weight, more the mortality reported. It was also noted that 48 (58.5%) babies in the birth weight group of less than 1.5 kg were pre-terms while 52 (31.3%) with a birth of 1.5 to 2 kg and 66 (25.0%) in the birth weight group as more than 2 kg.

The relation between birth weight and gestational age status was found to be statistically significant (p value = 0.001). There was no difference in terms of gender between the studied populations (p value > 0.05).

Study Variables	Birth Weight (kg)			P-Value
	<1.5 (n=82)	1.5 – 2 (n=166)	>2 (n=136)	
Gender				
Male	34 (41.5%)	73 (44.0%)	136 (51.5%)	0.155
Female	48 (58.5%)	93 (56.0%)	128 (48.5%)	
Term/Preterm				
Preterm	39 (45.9%)	114 (68.7%)	198 (75.0%)	0.001
Term	43 (44.1%)	52 (31.3%)	66 (25.0%)	
Outcome				
Died	46 (56.1%)	65 (39.2%)	74 (28.0%)	0.001
Survived	36 (43.9%)	101 (60.8%)	190 (72.0%)	

Table-I. Relation of Birth Weight With Regards to Gender, Term/Preterm and Outcome.

Disease	Number (%)
Respiratory Distress Syndrome	161 (31.4%)
Sepsis	104 (20.3%)
Neonatal Jaundice	58 (11.3%)
Congenital Heart Disease	42 (8.2%)
Seizure	18 (3.5%)
Meconium Aspiration Syndrome	16 (3.1%)

Table-II. Frequency of Common Diseases among LBW babies.

DISCUSSION

LBW contributes significantly in terms of morbidity and mortality not only in infancy but in the later years of life as well. The burden of LBW is increased in developing countries. We noted the prevalence of LBW as 36.3% during the study period. Our results were quite close to some other studies like a study conducted at NICU of a Military Hospital in Rawalpindi during 2013-2014[13] recorded 38% babies having LBW while in another study from Peshawar Teaching Hospital[14], this was noted to be 41%. A study from Sir Ganga Ram Hospital from Lahore[15] noted a much increased prevalence of LBW as 49.3% during the study Period. A study from Nigerian population[16] noted 40% newborns with LBW while from India[17], figures of around 20% are seen.

Predominance of male among LBW newborn was evident in our study where we noted 52.5% to be male. Similar findings were seen by other local as well as international studies[16,18] where they got more males as compared to females but this difference did not seem to be of statistical significance.

In the present study, it was noted that 60.5% deaths were documented on the 1st admission day. A study from Rawalpindi[13] depicted similar findings where they noted that 55% of deaths happened on the 1st day of life. A first day mortality rate of 44% was reported from another study conducted in Rawalpindi.[19] Being a tertiary care hospital, most complicated and serious cases are reported in our hospital which emphasizes the need for better healthcare facilities.

An overall survival rate of 63.9% was noted in our study that is much better than another local study conducted in 2015[13] where they noted the survival rate to be 56%. Our results were closer to findings noted in Peshawar[14] but better than those found from Lahore (53%).[15] Studies from developed countries like the one conducted in Johannesburg[13] showed a survival rate of 72% amongst LBW babies, again proving better healthcare facilities in developed countries. It is commonly seen that many LBW babies die even before being reported to tertiary care centers.[13] Increased gestational age has been seen to improve the survival rate of the newborns. It was noted in the present study that 48 (58.5%) babies

in the birth weight group of less than 1.5 kg were pre-terms where highest mortality was reported while 52 (31.3%) preterm with a birth of 1.5 to 2 kg and 66 (25.0%) in the birth weight group as more than 2 kg. A local study from Rawalpindi found minor difference in terms of mortality between babies of different gestational ages.[13]

We found RDS (31.4%), sepsis (20.3%), and neonatal jaundice (11.3%) to be commonest problems with LBW babies. It has been found earlier in another local study[13] that RDS (28%) was the most frequently associated disease with LBW newborns while a study from Peshawar[14] noted LBW newborns to be 25% with RDS. Our data showed very similar finding to study conducted at Lahore[15] in terms of sepsis where they noted 19% LBW neonates while another local study from Lahore noted these numbers to be as high as 41% while a study from South Africa[18] got 29% newborns with LBW to have sepsis. RDS and sepsis were noted to be most frequent from another local study conducted in Karachi[20] as well. These differences between disease frequencies could be attributed to difference in diagnostic criteria and definition among different researchers.

There were few limitations of this study as we did not evaluate the risk factors among LBW newborns which could have given us direction towards minimizing the risk for development of this phenomenon. This was a study conducted at a one center so we cannot generalize these results for other centers as studies with bigger sample sizes involving multiple centers will further verify the results of these findings. We could not keep proper tracking of the referred cases in terms of time taken to reach our healthcare facility.

CONCLUSION

LBW is a major cause of hospitalization and mortality. RDS and sepsis were the most frequent diseases noted in LBW babies. Immediate care following birth is vital for babies already at risk of LBW.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

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1	Shahid Iqbal	Methodology, Data collection, Review of literature.	
2	Fazal Ur Rehman	Methodology, Literature review, Discussion, Data analysis, Drafting.	
3	Muhammad Haneef	Methodology, Literature review, Drafting, Proof Reading.	