

**ORIGINAL ARTICLE****CLINICAL AUDIT OF NEONATAL DISEASES IN ALLAMA IQBAL MEMORIAL TEACHING HOSPITAL A TERTIARY CARE HOSPITAL IN SIALKOT, IN PAST 5 MONTHS**

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**Introduction**

A healthy start in life is important for every newborn baby. A newborn baby till seven days is an early neonate while a newborn baby upto twenty eight days is called a neonate. The first 28 days is the neonatal period which is especially critical. It is the time when fundamental health and feeding habits develops. It is also the time when child is at higher risk of death. Any disturbance of normal state of body or organ and abnormal function of newborn baby is called neonatal disease.<sup>1</sup>

Mortality in infants has been a constant health concern. Mortality represents the number of deaths per unit population while

fatality is based on number of deaths per 100 cases of a given disease. In 2015 the worldwide total number of deaths in children under five were 45.1%. While the neonatal deaths with three leading causes e.g. prematurity (15.9%), causes related to child birth procedures (10.7%) and sepsis or meningitis (6-8%).<sup>2</sup>

Neonatal jaundice describes a condition in which infants' skin appears yellow within the first few days of life. The yellowish appearance is a sign of an increased serum bilirubin and usually its level is less than 15mg/dl.<sup>3</sup>

Neonatal jaundice upto 13 mg/dl is considered normal. At 15mg/dl we perform

phototherapy while at 20mg/dl we prepare for exchange transfusions.<sup>3</sup>

Another reason of increased bilirubin in neonates is Hepatitis. Hepatitis is a viral infection that causes an inflammation of the hepatic tissue.<sup>3</sup>

Hepatitis A is an inflammation of liver caused by HAV. The virus is primarily spread when an uninfected person ingests food or water that is contaminated with faeces of an infected person. Hepatitis B is a vaccine preventable liver infection caused by HBV, spread from blood, semen and body fluids of infected person. Hepatitis D never manifests alone but with HBV. Hepatitis C is a liver infection caused by HCV, spread through contact with blood from an infected person.<sup>4</sup> However neonatal jaundice, usually is due to physiological increase of unconjugated bilirubin due to immature liver functions. It may be pathological in pH and ABO incompatibility. Physiological jaundice needs usually no specific treatment but pathological jaundice needs phototherapy and same time exchange transfusion of the neonates.<sup>4</sup>

Respiratory distress syndrome also known as RDS is caused by not having enough surfactant in lungs. It is the most common lung disease in premature as lungs are not fully developed. Surfactant is a liquid made in the lungs at about 26 weeks of pregnancy. As the lung grows, the lungs make more surfactant. Surfactant coats tiny air sacs in the lungs and prevent them from collapsing. Some babies need more oxygen than others. Some may require a treatment of surfactant.<sup>5</sup>

Prematurity is another leading cause of neonatal morbidity and mortality. Preterm is defined as baby born alive before 37 weeks of gestation.<sup>6</sup>

There is a gap to explore causes and reasoning of neonatal diseases patterns but we had limited time and resources. Our rationalizations towards our topic is just a

primary step toward planning multi prolonged strategies to decrease neonatal mortality.

### Objective

This study aimed to evaluate the pattern morbidity and percentage of mortality of neonatal diseases among the newborns admitted in the Nursery ICU of Government Allama Iqbal Memorial Tertiary Care Hospital Sialkot and its comparison with the regional, national and international pattern.

### Methodology

A survey was conducted in May-June 2023 on the topic audit of neonatal diseases in past 5 months in Allama Iqbal Tertiary Care Hospital of Govt. Khawaja M. Safdar Medical College, Sialkot by students of Sialkot Medical College. This was a Retrospective descriptive observational study in which all cases admitted in last 05 months in NNU/ICU of Government Allama Iqbal Memorial Teaching Hospital, Sialkot were included.

### Results

A total of 250 neonates were admitted in the last 5 months at the neonatal unit of Allama Iqbal Teaching Hospital, Sialkot. Out of 250 neonates 65% were males and 35% were females. Total 164 out of 250 (65.6%) of the neonates were admitted during the first week of their life. Asphyxia, sepsis and RDS and JNN were the four most common causes of neonatal admissions contributing 27.6%, 30.8%, 29.6%, 12% respectively. Month-wise distribution of neonatal admission is shown in table. Mortality rate was 35% and most of deaths occur during first week of life.

DISEASES	JAN	FEB	MAR	APRIL	MAY
SNN	6	2	8	5	13
ANN	11	14	12	10	6
JNN	5	3	6	4	3
RDS	13	10	11	15	7

Total Cases=164 Age Group=0-7 Days

DISEASES	JAN	FEB	MAR	APRIL	MAY
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SNN	17	7	8	4	7
ANN	1	3	5	1	6
JNN	0	2	3	1	3
RDS	9	3	1	0	5

Total Cases=86 Age Group=8-28 Days

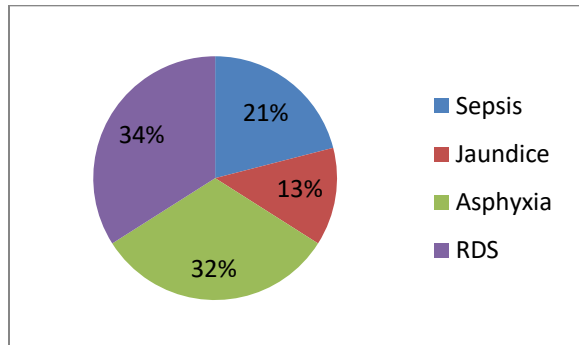


Figure-I percentage of Disease month wise

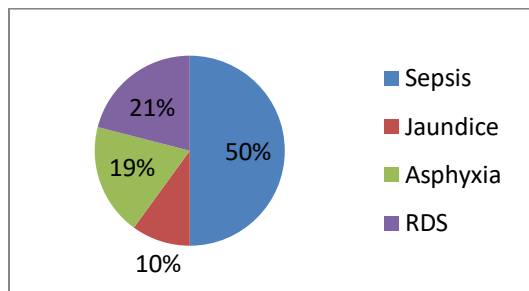


Figure-II percentage of Disease month wise

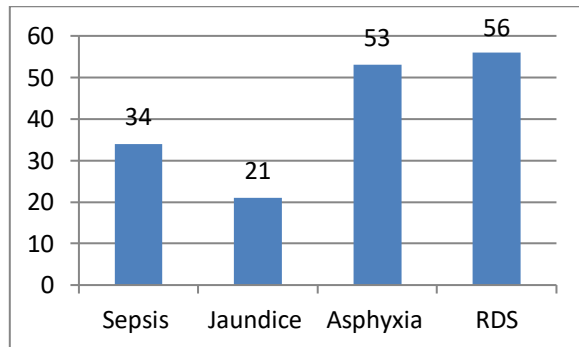


Figure-III Number of Disease month wise

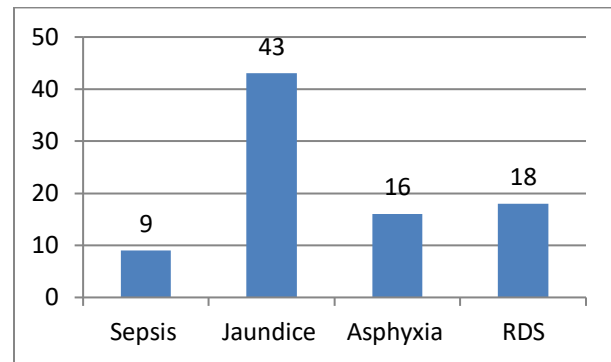


Figure-IV Number of Disease month wise

**Discussion**

Neonatal deaths are unequally distributed worldwide with 99% occurring in low and middle income countries.<sup>1</sup> The lack of basic neonatal care technologies low resources, weaken immunity, non-trained birth attendants, non-sterilization of surgical instruments and binding, are a major problems in Pakistan.<sup>2</sup>

Asphyxia, septicemia and jaundice are three leading neonatal diseases in Pakistan.

A retrospective clinical audit was conducted at a grade IIIA NICU, Rehman Medical institute, Peshawar. The data of all neonates was analyzed retrospectively from June, 2012 to June, 2016. A total of 4900 patients were admitted in the study period. Among them males were 3104 (63.3%) and females were 1796 (36.71%). Sepsis neonatorum (NNS) accounted for 2027 (41.36%), Neonatal Jaundice (NNJ) 1777 (36.2%), intrauterine growth retardation (IUGR) 941 (19.2%), prematurity 515 (10.5%), birth asphyxia (BA) 446 (9.1%) and meconium aspiration syndrome (MAS) 362 (7.3%) accounted for total admissions. Among total admissions 4331 (88.4%) were sent home after complete recovery, 407 (8.3%) expired, while 162 (3.3%) left against.<sup>8</sup>

Our study span consisted of 05 months, while this study is having a span of 06 years. We found 65% male while in this study males were 63% having almost same percentage of age.

Another descriptive study of the patients admitted to the neonatal unit of Sir Gangaram Hospital Lahore was conducted from 1<sup>st</sup> Jan 2007 to 31<sup>st</sup> Dec 2007. Data of all the patients admitted to the neonatal unit during study period was analyzed for weight, age, sex, gestational age, place and mode of delivery and duration of stay and their outcome. Total of 1391 patients were admitted during study period. 945 (67.9%) were admitted at the age of less than 24 hours, 595 (42.8%) were preterm babies, 686 (49.3%) were low birth weight, 1124 (80.8%) were delivered in Sir Gangaram Hospital. Main causes of admission were prematurity 327 (23.5%), sepsis 305 (21.9%), and birth asphyxia 250 (18%), JNN 157 (11.3%). Neonatal mortality was 430 (30.9%). The main causes of neonatal mortality were prematurity 159 (11.4%), birth asphyxia 97 (7%) and sepsis 58 (4.2%).<sup>9</sup>

In our study ratio of early neonates and neonates was 65:35 while in above mentioned study the ratio was 67:33 which shows agreement with our study. The mortality rate in our study was 30% while that of Gangaram hospital was 35% which is almost same as in our study.

A study was conducted in secondary care hospitals in Pakistan from January 2009 to December 2009. The total number of neonates admitted during the study period was 1,554, in which 979 (63%) were male and (37%) were female. Prematurity and infection were the main reasons for admission (27.9% and 20.33% respectively), followed by birth asphyxia (13%) and neonatal jaundice (11.3%). A total of 1,287 patients (82.8%) were discharged, 41 left against medical advice (2.6%), 59 were referred to tertiary care hospitals (3.79%) and 106(6.8%) died.<sup>10</sup>

Prematurity and infections were the main reason of admission to the neonatal unit i.e. 27.9% and 20.33% respectively. Birth asphyxia was the third most common cause of admission (13%) followed by NNJ (11.3%) and RDS (15.6%). The major cause of

infection was sepsis accounting for 70% of all cases, pneumonia (12.6%), acute gastroenteritis (8.22%) and meningitis (3.79%).<sup>11</sup>

While in our study we found that Asphyxia, Sepsis, RDS and JNN 27%, 30%, 29% and 12% respectively which is also expressed by this study of secondary care hospital. In percentage of JNN, we have almost same findings i.e. 11%.

A retrospective study done in South Africa from 1<sup>st</sup> January 2011 to 30<sup>th</sup> April 2011. It shows that 75 neonates were admitted to the general paediatric ward at Charlotte Maxeke Johannesburg Academic Hospital (CMJAH). Out of these the majority of neonates 41(54.6%) were male and 34(45.3%) were female. The most common diagnosis for neonates admitted to the ward were neonatal jaundice and infection including pneumonia and sepsis. Neonatal sepsis was among 27 (36%), jaundice 20 (26.6%) and pneumonia 22 (21.3%).<sup>12</sup> Our study revealed Sepsis 30% which coincides with this study.

Another audit was conducted in Lebanon third quarter 2021. 114 neonates were admitted to the hospital. Out of which RDS cases were 39 (34.2%). Prematurity and sepsis were among 27 (23.7%) and 9 (7.9%). Birth asphyxia cases were 4 (3.5%).<sup>13</sup>

### Conclusion

Sepsis 30.8%, RDS 29.6%, Asphyxia 27.6% and Jaundice 12% were the main causes of admission in our study as these were the main causes of mortality and the mortality rate was 30%. Our study concluded that upto 37% of admissions were delivered in tertiary care hospitals remaining in other hospitals but the majority cases of neonatal morbidity and mortality were preventable.

### Recommendation

Lot of efforts are needed to reduce the morbidity and mortality. Benefits from antenatal services are key to success. Trained birth attendants are the second most important factor in this regard. Role of family planning, parents education and fortified

nutrition for pregnant mothers cannot be underestimated

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