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Clinical Study of Respiratory Distress in Newborn

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1. Introduction

- A variety of disorders of respiratory system and non respiratory system can manifest clinically with respiratory distress.
- Improved diagnosis and treatment due to technological advancements and increased pediatric and neonatal specialization have led to an impressive fall in neonatal
- Nonetheless, the continued high incidence of premature birth and infants receiving poor prenatal care continues to test the abilities of the neonatologist. Early recognition and appropriate therapy of neonatal respiratory disease has impressive result.
- Continued efforts in the prevention of premature birth, early identification of fetal distress, maternal risk factors for neonatal sepsis and, in diagnosis of diseases inutero will lead to further improvements in neonatal outcome.

2. Aims and Objectives

- Identification of risk factors associated with development of severe distress.
- Early diagnosis of respiratory distress is for better clinical outcome.

3. Material & Method

1) **Study Design: Hospital based Prospective study**
   Setting : GSL Medical College and General Hospital
2) **Study Size:** A total number of 100 newborn with respiratory distress
3) **Study Period: 1** year (November 2021 –December 2022)
4) **Inclusion Criteria**
   - All newborns admitted to NICU of GSL Medical College, Rajahmundry, within 72 hrs of birth due to respiratory distress.
5) **Exclusion Criteria:**
   - All Newborns admitted to NICU with onset of respiratory distress after 72 hrs.
   - Outside born newborns admitted with respiratory distress

4. Data Collection

- Data shall be collected for all newborns included in the study with respiratory distress. General information, socioeconomic status, history and clinical examination findings of mother and newborn will be documented.
- Newborn with respiratory distress shall be shifted to NICU for further management. Time of onset of distress will be documented, and the severity of the distress shall be recorded, and the severity will be assessed by using Silverman &Anderson clinical scoring.
- Serial x-rays shall be done at 1 hour and 6 hours in all newborns and will be reported by the radiologist for abnormal findings.
- Depending on the clinical diagnosis of respiratory distress, relevant investigations will be sent, and newborns shall be managed as per protocol.
- Duration of O2 therapy, intervention done in the form of surgical / ventilator/surfactant therapy/ treatment, and mortality will be documented to assess the clinical outcome against the final diagnosis.

5. Statistical Methods

- All statistical analysis will be performed by using SPSS (statistical package for social sciences) version 20.0 and MS-EXCEL 2017.
- All the descriptive statistics will be presented in the form of mean+/-SD and Percentages.
- For all statistical analysis, independent T-test will be used for comparison of data between 2 groups.
- For all statistical analysis, P <0.05 will be considered statistically significant.
- Correlations will be used to assess the relativity among various continuous variables.

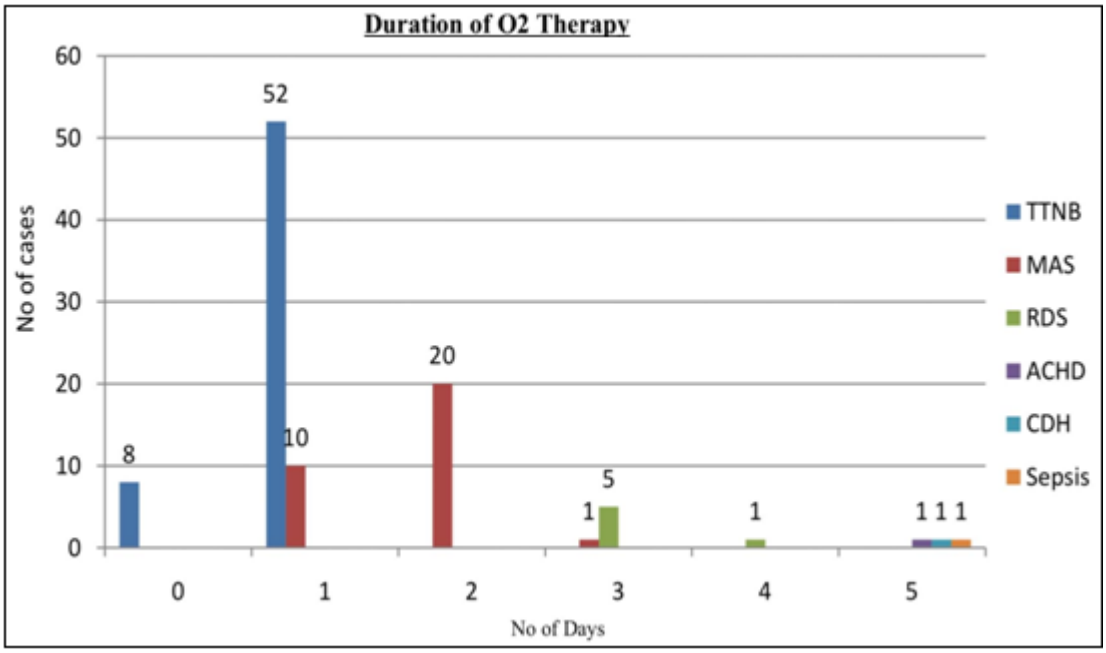


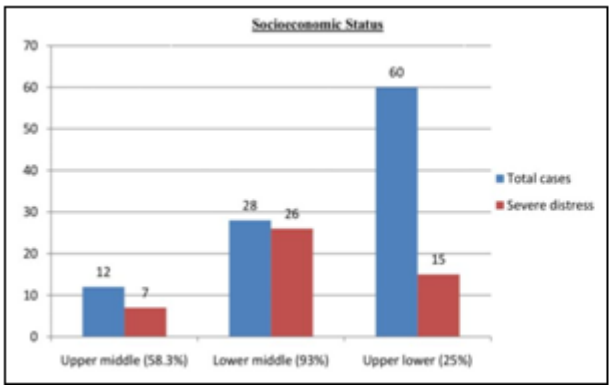
Table 6: Duration of Oxygen Therapy versus severity of Respiratory Distress

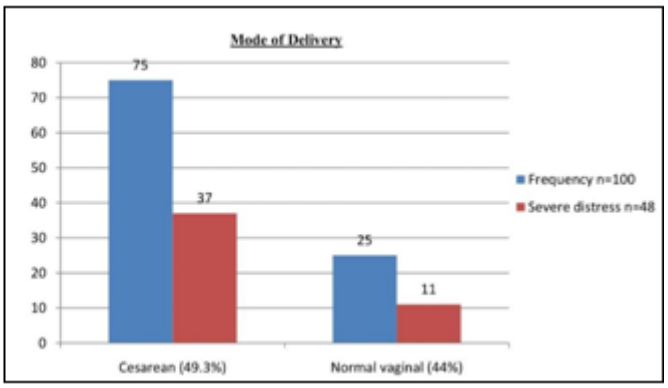
Final Diagnosis	Frequency (n= 100)	Severe Distress (n= 48)	No. of days on Oxygen Therapy					
			0	1	2	3	4	5
TTNB	60	18	8	52				
MAS	31	22		10	20	1		
RDS	6	6				5	1	
ACHD	1	1						1
CDH	1	1						1
Sepsis	1	0						1

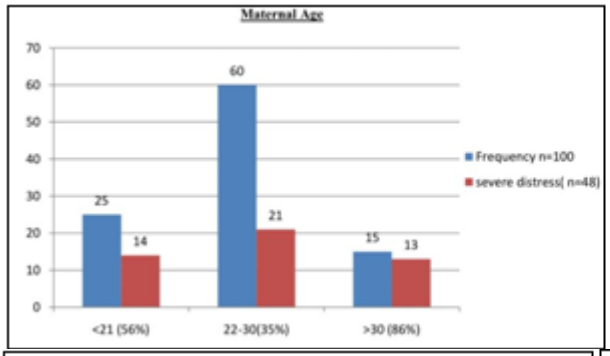
Risk Factors for Development of Respiratory Distress

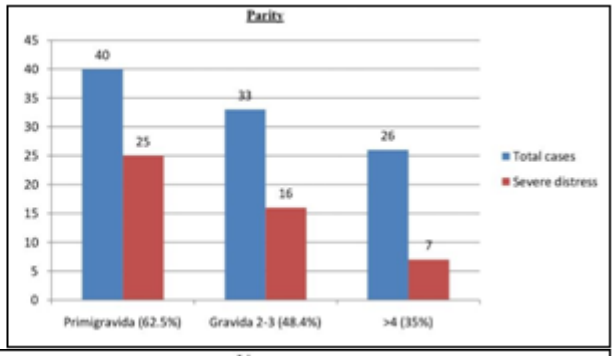
Treatment Intervention

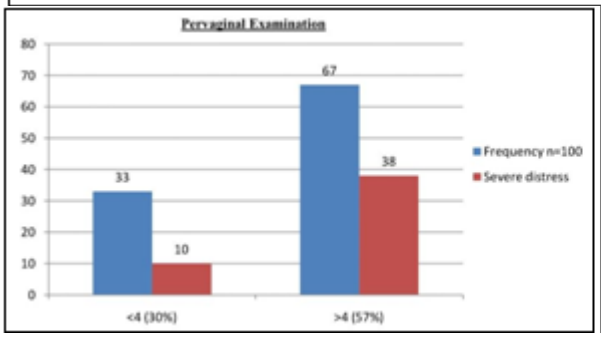
Final Diagnosis	Frequency (n= 100)	Surgical Intervention	Ventilator Support	Surfactant Therapy
Transient Tachypnea of Newborn (TTNB)	60	0	0	-
Meconium Aspiration Syndrome (MAS)	31	0	0	-
Respiratory Distress Syndrome (RDS)	6	0	0	0
Acyanotic Congenital Heart Disease (ACHD)	1	0	0	-
Congenital Diaphragmatic Hernia (CDH)	1	1	1	-
Sepsis	1	0	0	-

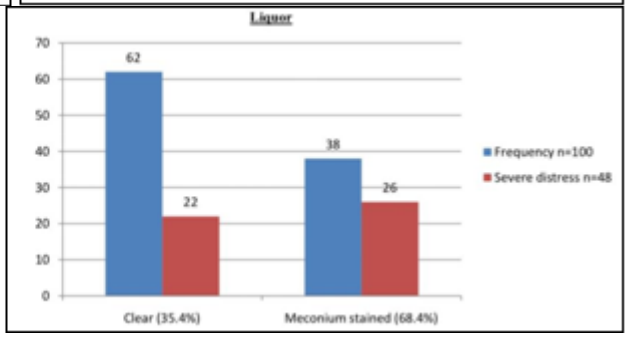


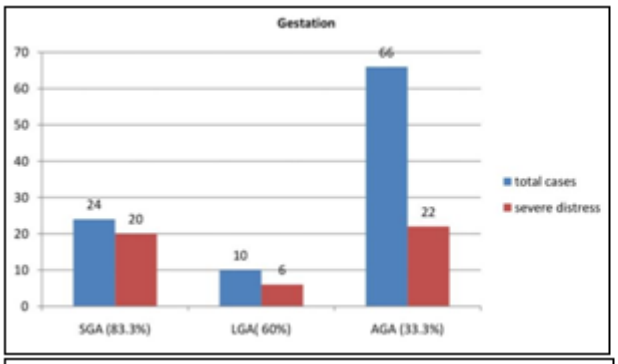


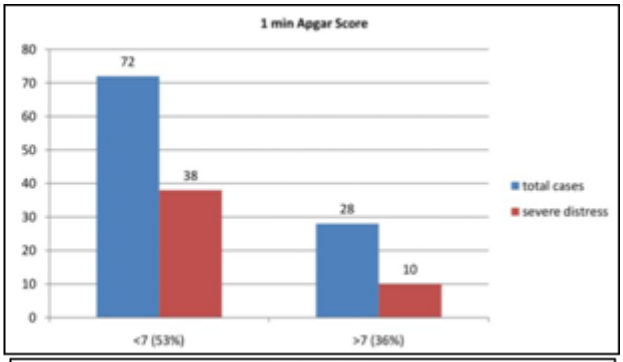


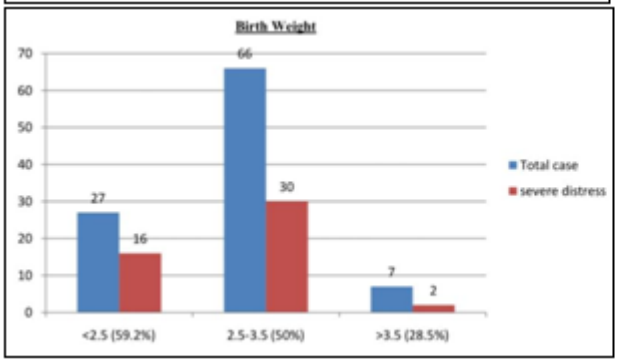


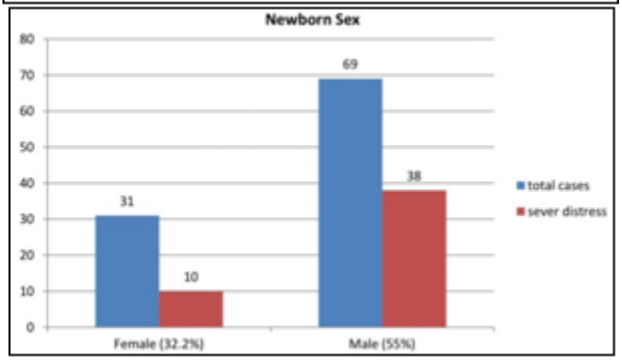




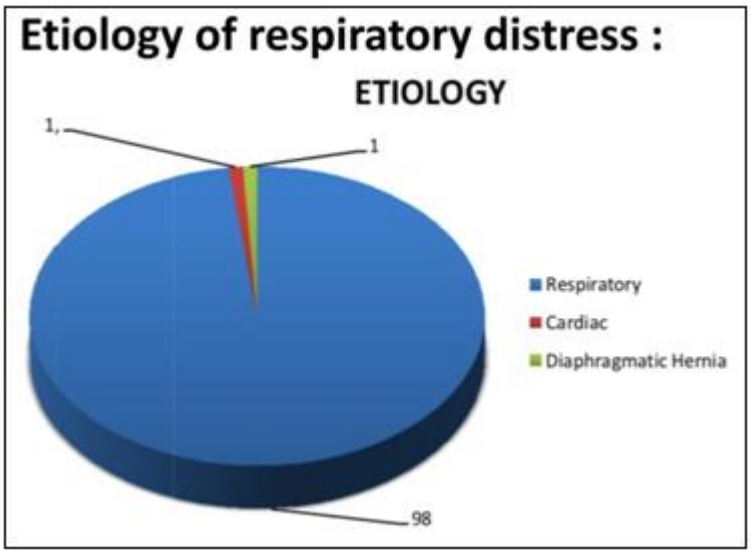


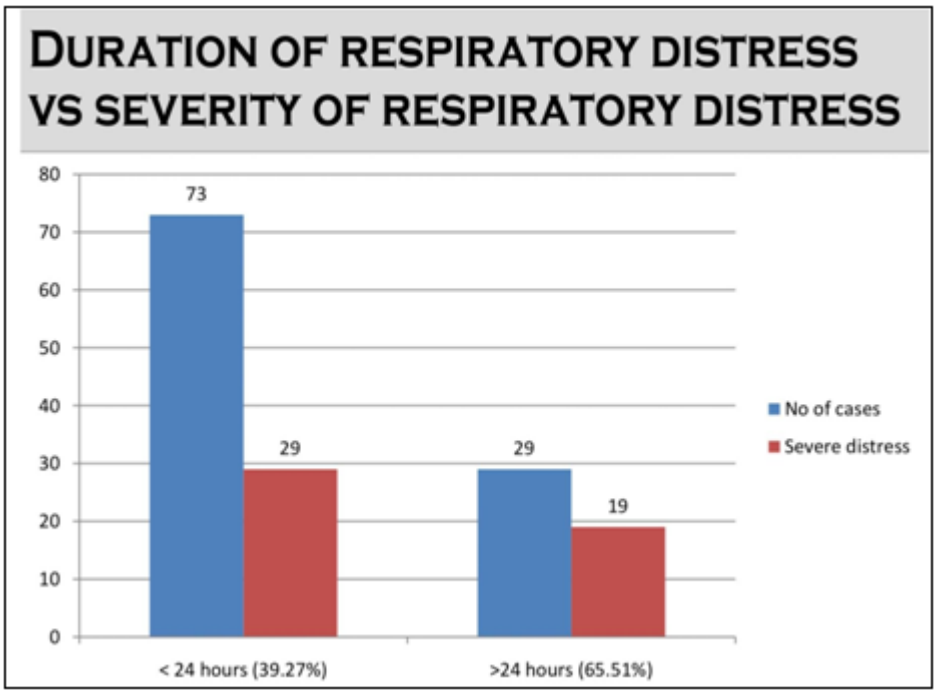






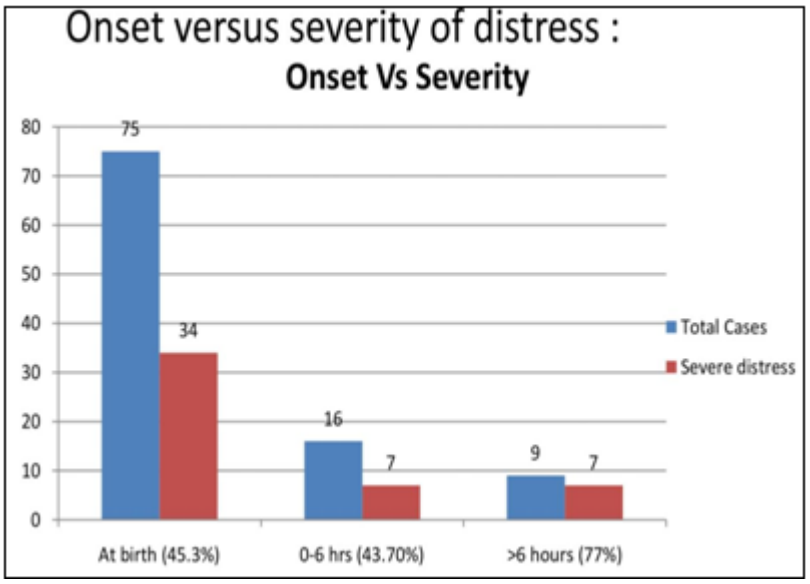
6. Results

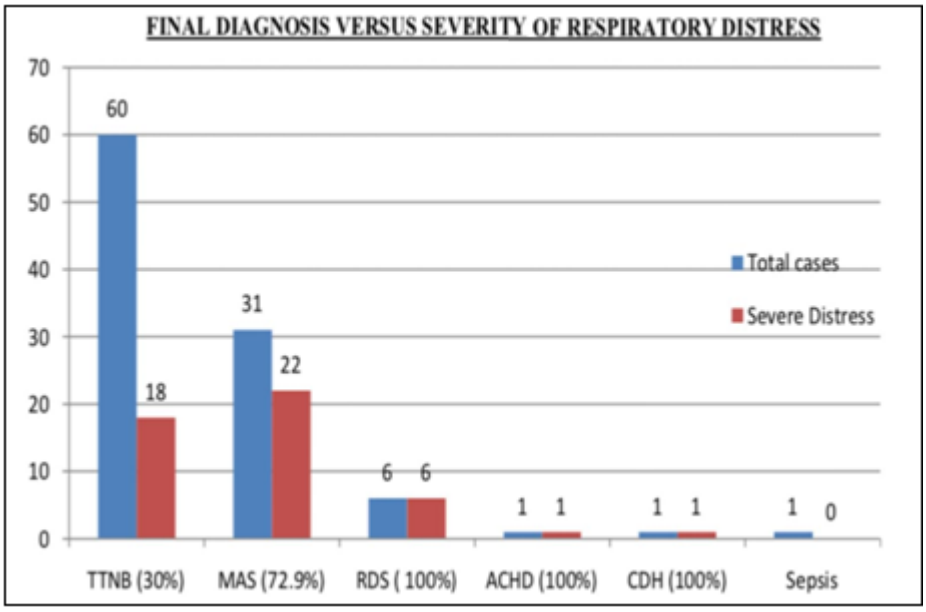




Final Diagnosis versus severity of Respiratory Distress

Final Diagnosis	Frequency n= 100	Severe Distress n= 48	%
Transient Tachypnea of Newborn (TTNB)	60	18	30%
Meconium Aspiration Syndrome (MAS)	31	22	72.9%
Respiratory Distress Syndrome (RDS)	6	6	100 %
Acyanotic Congenital Heart Disease (ACHD)	1	1	100 %
Congenital Diaphragmatic Hernia (CDH)	1	1	100 %
Sepsis	1	0	





7. Discussion

1) In the present study it was seen that 65.5% of newborns with duration of respiratory distress more than 24 hours developed severe respiratory distress compared to 39.72% new born with respiratory distress less than 24 hours.
2) 77% of newborns with the onset of respiratory distress after 6 hours of birth developed severe respiratory distress compared to 45.3% of newborn with onset of respiratory distress at birth and between 0-6 hours after birth respectively

8. Conclusion

1) Transient tachypnea of the newborn is the most common cause of respiratory distress in newborn.
2) Almost 50% of newborn with respiratory distress develop severe respiratory distress which require intensive monitoring.
3) Risk factors like high maternal age, primigravida mothers, more than 4 per vaginal examinations, meconium stained liquor, cesarean delivered newborns, Small for gestation age, and 1 min Apgar score less than 7, birth weight less than 2.5Kg & male sex of newborn were associated with severe respiratory distress in newborns.
4) Clinical assessment of severe respiratory distress against its onset and duration will help in early diagnosis.
5) Immediate clinical outcome of newborn respiratory distress in term of mortality rate is variable and depends on the cause of newborn distress.
6) Chest x-ray taken at 6 hours of onset of respiratory distress in newborn is important diagnostic tool for early identification of the cause.

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