

## *INCIDENCE, CAUSES AND OUTCOMES OF NEONATAL RESPIRATORY DISTRESS*

**By**

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### **ABSTRACT**

**Background:** *respiratory disorders are the most frequent cause of admission to the special care NICU both in term and preterm infants.*

**Objectives:** *to find out the incidence, causes and outcomes of neonatal respiratory distress.*

**Patients and Methods:** *a retrospective study was conducted in the Neonatal Intensive Care Unit (NICU) of Ahmed Maher Teaching Hospital on neonates presenting with respiratory distress who were admitted over a period of 2 years from January 2016 to December 2017.*

**Results:** *Out of all 657 neonates admitted, 470 developed Respiratory Distress, The incidence of neonatal respiratory distress (NRD) was (71.53%). Among newborn with respiratory distress (55.5%) were males, (44.44%) were females. (57.02%) were full-term, and (42.98%) were pre-term. (67.8%) were delivered by caesarian section and (32.1%) delivered by vaginal delivery. The most common risk factors of NRD were diabetes mellitus (19.14%) and PROM (14.89) which significantly correlated with causes of NRD with p value <0.001 and 0.031. the most common causes of respiratory distress were Respiratory Distress Syndrome (RDS) (31.9%) which significantly more in male (38.3%) ,preterm (64.1%) followed by infection (27.62%) which significantly more in male (29.11%) ,term (37.3%), then Congenital anomalies (13.19%) which significantly more in term (17.91%) ,then TTN (12.74%) which significantly high in full term (19.4%) and asphyxia (8.51%) which was significantly high in females (13.39%). Tachypnea (97.87%) was the most common symptom of NRD .ground glass opacities and air bronchogram (29.78%) was the most common chest x-ray finding .There were significant difference in various factors on comparison between inborn and outborn newborn. The longest duration of hospitalization was for cases with RDS (31.9±1.35) and the least for TTN (4±1). For outcomes (77.44%) were discharged and the mortality rate was (22.9%), the most common causes of death were infection (30.55%), respiratory distress syndrome (25%), Congenital Anomalies (20.37%) and Asphyxia (13.33%).*

**Conclusion:** *Neonatal respiratory distress stays the major reason for increased morbidity and mortality among newborn, so early recognition of signs and symptoms of NRD, differentiate of its causes and early start of proper treatment to prevent its*

complications and improve the prognosis of these babies. In the present study the incidence of respiratory distress was 71.53 % with more cases occur in full terms who were delivered by cesarean section .History of maternal illness and uneven obstetric history had an important role in neonatal morbidity especially maternal DM and PROM were significantly related to causes of NRD . Tachypnea was the most common symptom .ground glass opacities and air bronchogram most common x-ray findings In this study, the most common causes of neonatal respiratory distress were respiratory distress syndrome (RDS) followed by infection .there difference between inborn and outborn cases. RDS cases had the longest duration of hospitalization. TTN had the least. (77.44%) were discharged while he mortality rate was 22.93%; the most common causes of death were infection, RDS, congenital anomalies and asphyxia.

**Key words:** Respiratory Distress, Neonate, Respiratory Distress Syndrome (RDS), Transient tachypnea of the newborn (TTN).

## INTRODUCTION

Respiratory disorders are the most frequent causes of admission to the special care nursery both in term and preterm infants. (1) Respiratory distress is common, affecting up to 7% of all term newborns, and is increasingly common in prematurity. (2 )with increased survival of preterm and late preterm neonates , management of respiratory distress in neonates has become challenging .(3),(4) certain risk factors increase the incidence of neonatal respiratory distress include prematurity ,meconium stained amniotic fluid ,cesarean section , gestational diabetes , maternal chorioamnonitis or prenatal ultrasonographic findings as oligohydramnios or structure lung abnormalities .(5),(6). Clinical presentation of respiratory distress involves tachypnea (rate

more than 60 /minute), nasal flaring, chest retractions, expiratory grunting and cyanosis (7). The causes of respiratory distress in neonates are non - pulmonary and pulmonary: upper airway diseases (Choanal atresia), pulmonary diseases congenital e.g. congenital diaphragmatic hernia or acquired: TTN, RDS, pneumonia. Chest wall deformities, metabolic, hematologic, neuromuscular diseases and miscellaneous (asphyxia, acidosis) (1). It can be caused by acute and chronic maternal disease such as: diabetes mellitus and hypertension and acute infection of the neonates, some congenital anomalies of the respiratory and other systems (cardiac, renal and gastrointestinal) and rare genetic mutations of surfactant protein (8).

## AIM OF THE WORK

To find out the incidence, causes and outcomes of respiratory distress in neonates admitted in neonatal intensive care unit (NICU) of Ahmed Maher Teaching Hospital.

### **PATIENT AND METHODS**

This is a retrospective study was conducted at neonatal intensive care unit(NICU) of Ahmed Maher teaching hospital, over a period of 2 years from January 2016 to December 2017. It included 470 neonates with diagnosis of Respiratory Distress out of 657 admitted neonates .Relevant data were extracted from medical records of the cases and analyzed. All neonates presenting with Respiratory symptoms characterized by any of the following were included:

1. Tachypnea (respiratory rate > 60/min).
2. Nasal flaring.
3. Intercostal or Subcostal retraction.
4. Grunting.
5. Cyanosis.

Full medical history (perinatal history), maternal history regarding diseases e.g. diabetes mellitus, Hypertension and others.

Neonatal history regarding gestational age (pre-term and full-term). Gender (male of female),

mode of delivery (cesarean section or normal vaginal delivery) and complete physical examination.

Results of laboratory tests, complete blood picture, CRP, blood culture and arterial blood gases and any special investigations done to facilitate to reach the diagnosis of the causes of neonatal respiratory distress. Results of chest x-rays that was done to all cases, echocardiography that was done as indicated.

Assessment of severity of respiratory distress was done using grading system (from I to IV).

Outcomes of neonates, whether alive and their future plan or need for surgery or dead were also extracted and recorded.

### **Inclusion criteria:**

(Inclusion criteria, all neonates presenting with respiratory distress during the period of study were included (inborn and outborn).Any case with incomplete data in its medical records was excluded.

### **Statistical Analysis:**

The continuous variables were analyzed using student "T" test and proportions by Chi-square test. Probability of 0.05 was considered significant but in table

6,  $p < 0.001$  was considered significant.

#### Ethical considerations:

- Approval of local ethical committee in the hospital was obtained before the study.

- The data of the cases are confidential.
- The author declared that there is no conflict of interest regarding the study and publications.
- There was no financial support regarding the research and publication.

### RESULTS

470 neonates were admitted with respiratory distress out of all admitted neonates (657) to neonatal intensive care

unit of Ahmed Maher Teaching Hospital over the study period of 2 years, with incidence of (71.35%) as in figure 1.

**Table (1): Demographic characteristics of studied cases**

Variable	No.	%	P value
<b>Neonatal</b>			
<b>Gender</b>			
1. Male	261	55.5 %	P> 0.05
2. Female	209	44.4%	
<b>Gestational Age</b>			
1. Full-term	268	57.02%	P <0.05*
2. Pre-term	202	42.9%	
<b>Route of delivery</b>			
1. Caesarian section	319	67.8%	P<0.05*
2. Vaginal delivery	151	32.12%	

This table shows that there were statistically significant difference between full-term and preterm

( $p < 0.05$ ) and also between who were delivered by cesarean section and by vaginal route ( $p < 0.05$ ).

**Table (2): Risk factors for RD in the studied cases**

Variable	No.	%
1. Maternal Diabetes Mellitus	90	19.14%
2. Maternal Hypertension	60	12.76%
3. Other Maternal Chronic diseases	30	6.38%
4. Premature rupture of membrane (PROM)	70	14.89%
5. Obstructed labor	40	8.5%
6. Antepartum hemorrhage	15	3.19%
7. Precipitated labor	4	0.85%

Table 2 shows that the most common risk factors in these cases were maternal diabetes mellitus (19.14%) followed by PROM(14.89%) and then hypertension (12.76%).

**Table (3): Symptoms of neonatal respiratory distress**

Signs of RD	No.	%
Tachypnea (>60/min)	460	97.87%
Nasal flaring	420	89.36%
Subcostal and intercostal retractions	420	89.36%
Grunting	300	63.82%
Cyanosis	200	42.55%

Table 3 shows that tachypnea (97.87%) was the most common symptom of neonatal respiratory distress and the least was cyanosis (42.55%).

**Table (4): Neonatal causes of Respiratory Distress**

Cause	No.	%
1. Respiratory Distress Syndrome (RDS)	150	31.9%
2. Infection	130	27.62%
3. Congenital Anomalies (CA) e.g. CDH, TOF.	62	13.19%
4. Transient tachypnea of the newborn (TTN)	60	12.76%
5. Asphyxia	40	8.51%
6. Others	20	4.25%
7. Meconium Aspiration Syndrome (MAS)	8	1.70%

Table 4 shows that the most common causes of Respiratory Distress in newborns are: Respiratory Distress Syndrome

RDS (31.9 %), followed by infection (27.62%), and the least was MAS (1.70%).

**Table (5): X-ray findings in neonates with Respiratory Distress**

X-ray Finding	No.	%
Ground glass opacities and air bronchogram	140	29.78%
Lung infiltration	12	26.59%
Normal	120	25.53%
Hyperinflation	85	18.08%
Consolidation	10	2.12%

Table 5 shows that the most common chest x –ray finding was ground glass opacities, air

bronchogram (29.78%) followed by lung infiltration (26.59%) and (25.53%) was clear lung.

**Table (6): Correlation of Risk factors and causes of neonatal respiratory distress**

	RDS		Infection		CA		TTN		Asphyxia		others		MAS		Chi square test	
	No.	%	No .	%	N o.	%	N o.	%	No.	%	N o.	%	N o .	%	X <sup>2</sup>	P value
1. Maternal Diabetes Mellitus (90)	22	24.4 %	10	11.1 %	25	27.8 %	12	13.3 %	12	13.3 %	8	8.9 %	1	1.1 %	33.694	0.001 *
2. Maternal Hypertension (60)	6	10.0 %	13	21.7 %	6	10.0 %	5	8.3 %	16	26.7 %	11	18.3 %	3	5.0 %	11.292	0.079
3. Maternal Chronic diseases e.g. renal cardiac (30)	8	26.7 %	4	13.3 %	5	16.7 %	4	13.3 %	6	20.0 %	2	6.7 %	1	3.3 %	4.108	0.662
4. Premature rupture of membrane (70)	19	27.1 %	20	28.6 %	2	2.9 %	6	8.6 %	12	17.1 %	10	14.3 %	1	1.4 %	13.801	0.031 *
5. Obstructed labor (40)	4	10.0 %	10	25.0 %	1	2.5 %	6	15.0 %	11	27.5 %	6	15.0 %	2	5.0 %	10.168	0.117
6. Antepartum hemorrhage (15)	6	40.0 %	3	20.0 %	--	--	3	20.0 %	1	6.7 %	2	13.3 %	--	--	3.800	0.433
7. Precipitated labor (4)	--	--	1	25.0 %	--	--	1	25.0 %	2	50.0 %	--	--	--	--	0.357	0.836

Table 6 shows that there is statistically significant correlation between causes a risk factors of

NRD regarding maternal illness in form of maternal diabetes mellitus p value <0.001 and complications

during delivery in form of premature rupture of membrane p value 0.031.

**Table (7): Correlation of Sex and causes of neonatal respiratory distress**

Gender	Male		Female		p-value
	No.	%	No.	%	
<b>RDS (150)</b>	100	38.1	50	23.92	p<0.05*
<b>Infection (130)</b>	76	29.11	54	11.00	p<0.05*
<b>CA (62)</b>	35	13.40	27	12.91	p>0.05
<b>TTN (60)</b>	30	11.49	30	14.35	P>0.05
<b>Asphyxia (40)</b>	12	4.59	28	13.39	P<0.05*
<b>Others (20)</b>	5	1.91	15	7.17	P>0.05
<b>MAS (8)</b>	3	1.14	5	2.39	p>0.05

This table shows that RDS (38.1%), infection (29.11%), were statistically significant high in males, while asphyxia (13.39%) was high in females.

**Table (8): Correlation of Gestational age and causes of neonatal respiratory distress**

Gestational Age	Full-term		Pre-term		p-value
	No.	%	No.	%	
<b>RDS</b>	20	7.46	130	64.1	p<0.05*
<b>Infection</b>	100	37.3	30	14.85	p<0.05*
<b>CA</b>	48	17.91	14	6.93	P<0.05*
<b>TTN</b>	52	19.4	8	3.96	P<0.05*
<b>Asphyxia</b>	30	11.19	10	4.9	p>0.05
<b>Others</b>	10	3.73	10	4.9	P>0.05
<b>MAS</b>	8	2.98	-	0%	P<0.05*

Table 8 shows that there was a statistically significant difference between term and preterm. RDS was statistically significant high in

preterm cases, while infections, TTN, congenital anomalies, were statistically significant high in full-term. MAS was mainly in full-term.

**Table (9): Difference between Inborn and Outborn**

Item	Hospital born		Outborn		p-value
	No.	%	No.	%	
1. Incidence of Neonatal Respiratory Distress	285	66.38%	185	33.61%	P<0.05*
2. Neonatal					
Gender					
Male	174	61.05%	87	47%	P<0.05*
Female	111	38.00%	98	52.90%	P<0.05*
Gestational age					
Full-term	168	58.90%	100	54.09%	p>0.05
Preterm	117	41.05%	85	45.90%	p>0.05
Route of delivery					
C.S.	235	82.4%	84	45.40%	P<0.05*
V.D.	50	17.54%	101	54.50%	P<0.05*
3. Maternal risk factors					
Diabetes mellitus	50	17.5%	40	21.60%	p>0.05
HTN	30	10.52%	30	16.21%	p>0.05
Other chronic diseases	20	7.01%	10	5.40%	p>0.05
PROM	30	10.51%	40	21.60%	P<0.05*
Obstructed labor	15	5.26%	25	13.51%	P<0.05*
Antepartum hemorrhage	5	1.75%	10	5.40%	p>0.05
Precipitated labor	-	-	4	2.16%	
4. Causes of respiratory distress					
RDS	113	39.64%	37	20%	P<0.05*
Infection	55	19.29%	75	40.5%	P<0.05*
Congenital anomalies	30	10.52%	32	17.29%	p>0.05
TTN	50	17.54%	10	5.40%	P<0.05*
Asphyxia	15	5.20%	25	13.51%	P<0.05*
Others	15	5.20%	5	2.70%	p>0.05
MAS	7	2.45%	1	0.54%	P>0.05.
5. Outcomes					
Discharge	223	78.21%	139	75.13%	p>0.05
Death	62	21.79%	46	24.86%	p>0.05

Table 9 shows the differences between inborn and outborn cases with NRD there is significant difference between both regarding number of admission, gender, route of delivery, history of PROM and

obstructed labor. Concerning the causes of NRD, RDS and TTN in inborn asphyxia and infection in outborn. No significant differences concerning number of discharge and death between both.

**Table (10): Correlation of Mortality and causes of Neonatal Respiratory Distress**

<b>Causes of Mortality</b>	<b>No.</b>	<b>%</b>
1. Infection	33	30.55%
2. Respiratory Distress Syndrome (RDS)	27	25%
3. Congenital Anomalies (CA)	22	20.37%
4. Asphyxia	15	13.33%
5. Others	8	7.40%
6. Meconium Aspiration Syndrome (MAS)	3	2.77%

Table 10 shows that the most common causes of death in neonates with respiratory distress were infection (30.55%) respiratory

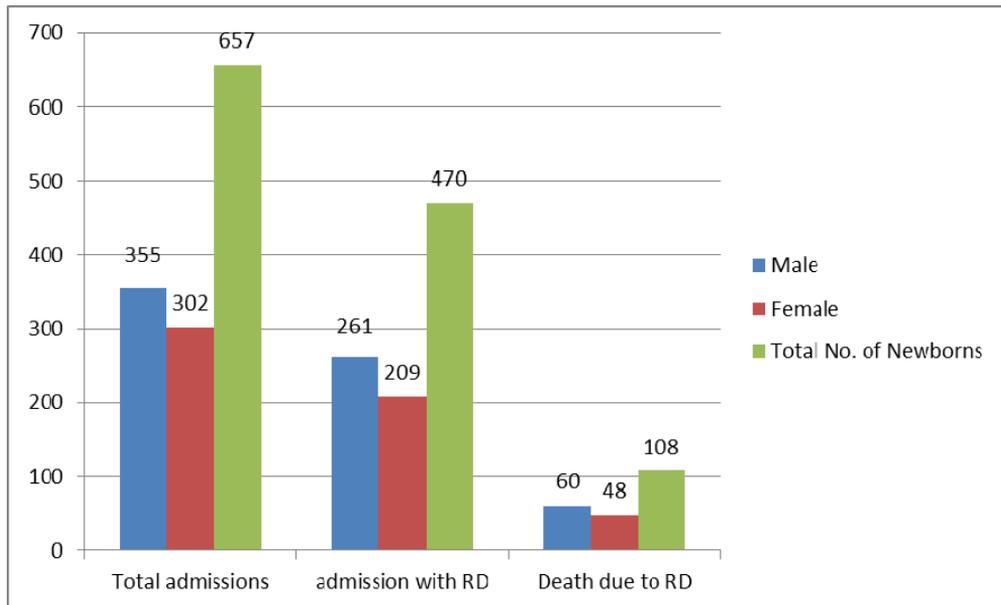
distress syndrome (RDS) (25%), Congenital Anomalies (20.37%) and Asphyxia (13.33%).

**Table (11): Duration of hospital stay and outcomes**

<b>Causes</b>	<b>Duration( days)</b>	<b>Outcomes</b>	
		<b>Discharge</b>	<b>Death</b>
1. Infection	20.3±1.16	97 (26.64%)	33 (30.55%)
2. RDS	31.9±1.35	123 (33.79%)	27 (25%)
3. Congenital Anomaly	14.35±1.25	42 (11.53%)	22 (20.37%)
4. TTN	4±1	60 (16.48%)	(0%) –
5. Asphyxia	13.37±1.6	25(6.81%)	15 (13.88%)
6. Others	14.25±1.6	12(3.29%)	8 (7.40%)
7. Meconium Aspiration Syndrome (MAS)	8.75±0.5	5(1.37%)	3(2.77%)
<b>Total</b>		364 (77.44%)	108 (22.97%)

Table 11 shows that the longest duration was that of cases with RDS ( $31.9 \pm 1.3$ ). TTN has the lowest duration of hospitalization ( $4 \pm 1$ ). Concerning the outcomes, 364 (77.44%) were discharged and TTN

cases were all discharged. 108 (22.9%) were died as shown in fig 1. The most common cause of death was infection (30.55%) followed by RDS (25%) and congenital anomalies (20.37%).



**Figure (1): Showing Total number of admissions, admissions of RD and Death due to RD in male and female**

## DISCUSSION

The importance of respiratory distress in the neonates can be realized from the fact that the neonates with respiratory distress are 2-4 times more likely to die from those without respiratory distress (9) (10).

This study aimed at find the incidence, the causes and outcomes of respiratory distress in neonates who were admitted to

neonatal intensive care unit (NICU) of Ahmed Maher teaching hospital during the period of the study from January 2016 to December 2017, in this study the incidence of neonatal respiratory distress was (71.53%) that slightly less than what reported by qaril et.al. (11) Who mentioned that it was (78.5%) and higher than that reported by sivkumaran et.al. (12) Which was (30.4%) and kresimir et.al. (13) Was (9.8%). in this

study the percentage is high as all neonates with respiratory distress were involved in the study without exclusion unless if data involved not complete so large samples than their studies.

In this study there was no significant difference in the incidence of NRD between male and female in contrary to what was reported by Sivakumaran et al. (12 ) and Kersimir et al. (13) that the incidence of NRD were statistically significant higher in male babies.

In this study, the incidence of neonatal respiratory distress (NRD) was statistically high in term than preterm ,this is similar to what was reported by Haque et al. (14) that the respiratory distress is more in term neonates and different from what was reported by Saeed et al.(15) that the whole incidence of NRD was (4.2%) and (19.7%) in preterm and (2.3%) in term.

In this study, the incidence of neonates with respiratory distress who delivered by cesarean section was statistically significant more than that who were delivered by vaginal delivery. this was similar to what reported by swaraken (10) where the incidence of NRD was more in cases who were delivered by cesarean section than those were delivered by vaginal route

also similar to what reported by lawn et.al.(16) that the risk of NRD in near -term and term babies has been found to be up to 3.9 fold higher when the birth occurred by cesarean section. This is different from what reported by kresimir et.al. (13) Where the proportion of neonates with respiratory distress born by cesarean section and vaginally were equal.

The most common causes of respiratory distress in neonates in the present study were respiratory distress syndrome (RDS), infection, congenital anomalies, transient tachypnea of the newborn (TTN) and asphyxia. This is nearest similar to what reported by Sauparna et al. (17) that pneumonia, RDS, MAS, TTN , congenital heart diseases(CHD), diaphragmatic hernia(DH ) and pulmonary hemorrhage are the most common causes of respiratory distress. In Sabzehei et al. (18) Study RDS, pneumonia, TTN, meconium aspiration syndrome (MAS), CHD, lobar emphysema and asphyxia were found to be the most common causes of neonatal respiratory distress. Kresimir et al. (13) reported that respiratory distress mostly caused by sepsis ,asphyxia and congenital anomalies which were the third cause of neonatal respiratory distress this is in

concordance of the result of my study where congenital anomalies of different systems : gastrointestinal tract ,congenital heart diseases ,respiratory and genitourinary systems were present in considerable number. Said (9) reported that pneumonia was the most common cause of respiratory distress in referred neonates (65%). Gupita et al. (19) mentioned that various factors are responsible for neonatal respiratory distress as pneumonia, sepsis, pneumothorax, persistent pulmonary hypertension and congenital malformation. In this study the incidence of RDS was statistically significant high in male than female , this is similar to what was reported by Qaril et al (11) in his study about RDS that 57.1% of newborn were male gender and 42.9% were female. In this study, infection was high in male while asphyxia higher in female. In this study RDS was statistically significant in preterm than term, similar to what said by Sabout et al. (20) that RDS was frequent in preterm with incidence of 65.6%. In this study infection, TTN and congenital anomalies were statistically significant high in term than preterm.

In the present study maternal illness and complications during late pregnancy and labor consider

risk factors for NRD which reflected on neonatal health and can be prevented by good antenatal care .In this study Concerning the maternal illness, (38.28%) of mothers of neonates with respiratory distress had diseases which highly connected with their neonates' morbidity , Where 90 of the mothers had diabetes mellitus which statistically significant correlated with causes of NRD p value< 0.001 accounted more for cases with CA, RDS and Asphyxia. This is similar to what reported by Lawan et al. (16).

That, infant born to diabetic mother had high risk of morbidity and the neonatal mortality rate is five times over that of non-diabetic mothers. In this study (12.76%) of mothers had hypertension which was connected with cases with asphyxia, infection and Others (pulmonary hypertension) but not significant. Joseph (21) reported that maternal hypertension highly connected with respiratory distress especially in preterm older than 32 weeks gestation. In this study(6.38%) of mothers had other chronic diseases e.g. renal ,collagen and cardiac diseases that is highly connected with cases with RDS and Asphyxia but not statistically significant. concerning

complications during late pregnancy and labor (27.43%) of mothers of neonate presenting with respiratory distress, had complications where (14.89%) had history of premature rupture of membrane (14.89%) which statistically significant correlated with causes of NRD and connected with cases with infection, RDS and Asphyxia. History of obstructed labor was in (8.5%) which is connected with cases with Asphyxia and Infection but not significant, history of antepartum hemorrhage in (3.19%) which is connected with cases with RDS, Infection and TTN but not statistically significant. History of precipitated labor in (0.85%) which accounted more for cases with Asphyxia but not significant. Joseph (21) reported that respiratory distress can be caused by complications during the delivery. In contrary, Kresimir et al. (13) reported that complications during late pregnancy or labor have been the rarest cause of respiratory distress among the study groups.

In the present study, tachypnea(97.87%) ,nasal flaring(89.36%) ,subcostal and intercostal retractions(89.36%) ,grunting(63.82%) and cyanosis (42.55%) are the most common causes of NRD this is similar to what reported by Parkash et

al.(22)that the most common symptoms of NRD were tachypnea ,retractions and nasal flaring by 100% frequency ,than grunting and cyanosis by (60.9%) and (40.%) frequency ,consequently. in contrary ,sabzehol et al.(18) reported that (75.3%) had tachypnea ,(61.3%) had grunting (45.2%) had cyanosis and (16.1 %) suffered from nasal flaring.

In this study the chest x-ray findings 140 neonates(29.78%) had ground glass opacities and air bronchogram followed by lung infiltrates in (26.59%) ,hyperinflation in(18.08%) and (25.53%) were clear lung. Said(9) reported that alveolar infiltrates in( 41.5%) , consolidation in( 15.4%) opacities with reticulogranular pattern in( 6.2%) and clear in (20%).Kommawar et al. (23) found that (27.5%) had hyperinflation followed by pulmonary opacities in (25.75%) white out lung fields with air bronchogram in( 22.50%) and normal chest x- rays in( 23.25%) neonates .The variation in the results between studies due to variability in cases but chest x ray still important tool of diagnosis.

In the present study comparison between inborn and outborn neonates was done, the number of admission of inborn

was more than that of outborn. The incidence of males, were more in inborn than outborn. The cases delivered CS was more in inborn than outborn, while vaginal delivery at home was high in outborn. Concerning Maternal complications in form of PROM, obstructed labor were higher in outborn. Concerning the causes of NRD, the incidence of RDS and TTN were more in inborn and the incidence of infection and asphyxia were more in outborn. In the study of Kommawar et al. (23) in both inborn and outborn the most common cause of NRD was TTN followed by RDS. In the study of Rakholia et al. (24) in both inborn and outborn the most common cause of NRD was RDS and the second cause in inborn was asphyxia and in outborn was sepsis. In this study, concerning the outcomes no significant difference in number of discharge or mortality rate between inborn or outborn.

In the present study concerning the duration of hospital stay and outcomes, Neonates with diagnosis of RDS had the longest duration of hospitalization (31.90 + 1.3) days and this is due to that RDS is mainly in preterm babies who stay more in hospital due to immaturity of their organs and systems. Agree with this, what

was reported by Wang et al. (25) that early preterm had a longer hospital time due to immature organ development. Neonates diagnosed as having TTN had the lowest duration of hospitalization and that the usual course of TTN and this in agree with what was reported by Pramanik et al(1) that definitive diagnosis of TTN is usually made on retrospection once the symptoms resolve within 1-5 days after minimal therapeutic intervention.

In the present study, concerning the outcomes of neonatal respiratory distress, out of 470 cases admitted with NRD, 364(77.44%) were discharged and 108 (22.97%) were died as in Fig (1) .TTN was of good prognosis as no death between the cases and this similar to what reported by Wadi et al (26) .that case fatality rate for TTN was least (0%) and all are discharged. The mortality rate was (22.97%), which is lower than what reported by Said (9) who stated that the overall mortality was (32%), and different from what reported by sabzehei et al. (18) which was (14.3%) and kammawar et al. (22) was (21.5%) and sivakumaram (12) was (9.01%).

In this study, the most common causes of death were infection, respiratory distress syndrome

(RDS), congenital anomalies and asphyxia. This almost similar to what reported by Tochie et al. (27) who found that sepsis and RDS are the most common causes of hospital admission and stated that (24.5%) of neonates with respiratory distress died due to neonatal infection, prematurity and RDS, and what reported by sabzahe et al. (18) RDS, pneumonia and CHD are the most common causes of infant mortality. Sivakumaran (12) reported that the most common causes were perinatal asphyxia, MAS, CHD and Kamala et al. (22) reported that the most common cause of death was RDS.

### **CONCLUSION**

Neonatal respiratory distress stays the major reason for increased morbidity and mortality among newborn, so early recognition of signs and symptoms of NRD, differentiate of its causes and early start of proper treatment to prevent its complications and improve the prognosis of these babies. in the present study the incidence of respiratory distress was 71.53 % with more cases occur in full terms who were delivered by cesarean section .History of maternal illness and uneven obstetric history had an important role in neonatal morbidity especially maternal DM

and PROM.tachypnea was the most common symptom .ground glass opacities and air bronchogram most common x-ray findings In this study, the most common causes of neonatal respiratory distress were respiratory distress syndrome (RDS)followed by infection .there difference between inborn and outborn cases. RDS cases had the longest duration of hospitalization. TTN had the least.The mortality rate was 22.93%; the most common causes of death were infection, RDS, congenital anomalies and asphyxia.

Limitations of the study: No follow up of the cases for longer duration.

### **Recommendations**

- Neonatal respiratory distress requires a rationally diagnostic and therapeutic approach to optimize outcome and minimizes morbidity
- Decreasing the incidence through preventive measure is ideal Careful considerations about elective delivery without labor at less than 39 weeks of gestation.
- Noninvasive ventilation, usually use of Nasal Continuous positive airway pressure (NCPAP) early in delivery room for preterm with RDS is of good results and improve clinical outcomes.

- Use of antenatal corticosteroids given between 24-34 weeks' gestation decreases the risk of RDS.
- Follow proper trends in perinatal management strategies concerning maternal health, medications, infectious diseases and radiation exposure.
- Proper follow-up of high risk neonates while following strict infection control policy to prevent neonatal infections

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دراسة حول معدل حدوث، الاسباب و النتائج الناتجة عن  
اصابة الاطفال حديثى الولادة بصعوبة التنفس

## أمل محمود على

دكتوراه، قسم الاطفال بمستشفى احمد ماهر التعليمي، وحدة الاطفال حديثي الولادة

**الهدف من البحث:** دراسة معدل حدوث و الاسباب و النتائج لحدوث صعوبة التنفس عند الاطفال حديثي الولادة الذي تم ادخالهم الى وحدة العناية المركزة الخاصة بالاطفال حديثي الولادة بمستشفى احمد ماهر التعليمي.

**الطريقة و الأدوات:** تم عمل هذه الدراسة المسبقة على 470 طفل من حديثي الولادة من 657 طفل الاحياء الذين تم ادخالهم الى وحدة العناية المركزة للاطفال حديثي الولادة على مدى عامين من يناير 2016 الى ديسمبر 2017، و قد تم اخذ البيانات الخاصة بالاطفال و امهاتهم من الملفات الطبية الخاصة بهم في وحدة حديثي الولادة و كانت تشمل التاريخ العائلي و تاريخ الام و بالنسبة للطفل تشمل السن و الجنس و التحاليل و الفحوصات و الاشعات التي تمت له.

**النتائج :** تمت دراسة مسبقة على 470 طفل من حديثي الولادة من 657 طفل الاحياء الذين تم ادخالهم الى وحدة العناية المركزة للاطفال حديثي الولادة بمستشفى احمد ماهر التعليمي على مدى عامين من يناير 2016 الى ديسمبر 2017 .

و كان معدل حدوث صعوبة او ضيق التنفس في الاطفال حديثي الولادة 71.53% و معدل الاطفال الذكور 55.55% و الاناث 44.44% و كامل النمو 57.2% و ناقص النمو 67.8%. و كان نسبة الذين ولدوا قيصرية 67.8% و المولودين طبيعى 32.1%. و قد كانت نسبة المرض عالية في كاملى النمو و المولودين قيصرى، و كانت امراض امهات الاطفال حديثي الولادة الذين كانوا يعانون من ضيق التنفس. 19.14% من الامهات يعانين من مرض السكر، 12.76% يعانين من ارتفاع الضغط. 6.83% يعانين من امراض مزمنة اخرى . و كانت نسبة المضاعفات التي حدثت للامهات اثناء الولادة 14.89% عندها تاريخ بالتمزق المبكر للغشاء المحيط بالطفل، 8.5% عانين من الولادة المتعسرة. و قد كان لحدوث امراض عند الامهات و كذلك مضاعفات اثناء الولادة اثر كبير و تعتبر من عوامل الخطورة لحدوث ضيق التنفس عند اطفالهم و بالذات مرض السكر و التمزق المبكر للغشاء المحيط بالطفل. و كان من اهم اسباب حدوث مرض ضيق

التنفس هي متلازمة صعوبة التنفس و كانت نسبتها 31.9%، يليها العدوى و نسبتها 27.62% ثم التشوهات الخلقية بنسبة 13.19% ثم التسرع التنفسي العابر 12.7%. و كانت سرعة التنفس (اكثر من 60 نفس/دقيقة) من اهم علامات المرض و كان وجود عتامة بالرئة فى اشعة الصدر هو الاكثر شيوعا فى هذه الدراسة. و كان هناك فروق ذات اهمية بين الذين تم ولادتهم داخل المستشفى و من ولدوا خارجها. و كان اكثر الحالات اقامة بالمستفى هم حالات متلازمة ضيق التنفس (31 يوم) و اقلهم التسرع التنفسي العابر (4 ايام). و تم خروج 77.44% من الحالات و توفى 22.97% من الحالات و كام اهم اسباب الوفاة : العدوى 30.55% يليها متلازمة ضيق التنفس 25%.

**الاستنتاج:** تعتبر صعوبة (ضيق) التنفس عند الاطفال من اهم اسباب المرض و الوفاة فى الاطفال حديثى الولادة. فى هذه الدراسة نسبة حدوث المرض 71.53% و هى اكثر فى الاطفال كاملى النمو و المولودين قيصرية و وجد ان مرض الام و المضاعفات التى تحدث اثناء الولادة من عوامل الخطورة و بالذات مرض السكر و التمزق المبكر للغشاء المحيط بالطفل. من اهم اسباب حدوث المرض متلازمة ضيق التنفس و تليها العدوى. و هناك فروق بين الاطفال الذين ولدوا فى المستشفى و المولودين خارجها. و من اهم اسباب الوفاة هى العدوى ثم متلازمة ضيق التنفس. هذه الدراسة تؤكد اهمية الاهتمام بصحة الامهات قبل و اثناء الحمل.