

## Original Article Risk Factors for Neonatal Mortality in Neonatal Intensive Care Unit in Benha Children Hospital

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### Abstract

Though promising progress has been made towards achieving the Millennium Development Goal [MDG] through substantial reduction in under-five mortality, the decline in neonatal mortality remains stagnant, mainly in the middle and low-income countries. The present study aimed to: assess the incidence of neonatal mortality in neonatal intensive care units in Benha Children Hospital. Assess risk factors for neonatal mortality in neonatal intensive care units in Benha Children Hospital. Methods: This study was a prospective cohort study, which was done on 349 neonates [who were admitted in the neonatal intensive care unit at BenhaChildren Hospital].Data were obtained from: neonatal records and also maternal interview using a predesigned questionnaire. neonatal mortality among the studied cases was 18.3%.There might have been a Factual critical connection the middle of the gestational agdistis toward conception What's more neonatal mortality; there might have been statistically noteworthy expand being used about mv "around kicked the bucket over made due situations. There might have been statistically noteworthy expand done crp Furthermore WBC "around passed on over made due situations. Neonatal mortality On neonatal seriousness will be essential state funded wellbeing issues in creating nations. Neonatal mortality might have been 18. 3%. Amount from claiming danger figures seemed on make fundamentally connected with neonatal mortality like, easier gestational age, low conception weight, easier maternal age, neonatal sepsis Furthermore utilization of mechanical ventilation.

**Keywords:** Risk factors, Neonatal Mortality, Neonatal Intensive Care Unit.

### 1. Introduction

Those 1st four weeks of an aggregation [neonatal period] carries a standout amongst the most elevated dangers of demise of any four week time in the human existence compass. Neonatal mortality will be a reflection of the viability about obstetric What's more neonatal benefits done whatever specific Group. It contributes to something like two thirds from claiming baby mortality overall Furthermore The greater part for these happen in the initial week for term [1]. Of the 130 million neonates destined consistently universally, 4 million bite the dust in the early Initially 4 weeks from claiming an aggregation [2]. Neonatal passing by and large outcomes from difficulties of preterm birth, conception asphyxia, trauma Throughout birth, infection, or different particularly point of view perinatal makes [3]. In spite of guaranteeing Advance need been made towards accomplishing the thousand years improvement objective [MDG] through considerable decrease over under-five mortality, the decrease On neonatal mortality stays stagnant, mostly in the center Also low-income nations [4]. It need been great accentuated that neonatal period may be a greatly delicate time about existence because of those vicinity of particular various therapeutic and wellbeing issues that happen principally clinched alongside babies conceived prematurely or low conception weight [5]. Previously, produced countries, the cardinal reason for horribleness Furthermore mortal sin in the early neonatal period will be intrinsic anomalies which are predominantly non-preventable. However, in the Creating countries, infection, jaundice What's more conception asphyxia are generally predominate [6]. The exhibit ponder meant to: evaluate the occurrence of neonatal mortality Previously, neonatal emergency

unit units for Benha Youngsters healing facility. Evaluate danger figures for neonatal mortality over neonatal emergency unit units over Benha kids doctor's facility.

### 2. Patients and methods

#### 2.1 Patients

This ponder might have been An prospective companion study, which might have been finished once 349 neonates [who were admitted in the neonatal seriousness during BenhaChildren Hospital] Furthermore might have been made 6 months starting with february 2019 should admirable 2019.

Consideration criteria:. Every last one of neonates who were admitted for neonatal seriousness of Benha kids doctor's facility. Know neonates were taken after up till their demise alternately release.

#### 2.2 Methods

Data were obtained from:

Maternal meeting utilizing An predesigned questionnaire. It might have been included:. Maternal age, maternal weight What's more tallness.

Level for education, occupation of the parents, conjugal status, urban/rural residence, address Furthermore association.

Restorative history [diabetes, hypertensive disease, hemorrhage, gento-urinary infection, preterm break of the film and postpartum complications].

Parity, wellbeing status of the other siblings and family history.

Survey about neonatal records:. At whatever labor complications, pallor, cyanosis, jaundice.

Infant forethought [neonatal resuscitation], crucial signs, neonatal parameters such as anthropometric measurements, breastfeeding, manifestation.

Neonatal sex, place, mode from claiming conveyance and gestational agdistis.

Neonatal difficulties [hyperthermia, hypothermia, hypoglycemia, Also anemia].

Vicinity about intrinsic anomalies.

Introductory analysis [respiratory, cardiac, hematological, infectious, surgical, metabolic, neurological and miscellaneous], and final diagnosis[ the same as primary diagnosis].

Any investigation done during incubation like:

Complete blood picture. CBC was done for all samples using sysmex KX-21N [Sysmex Corporation, New York, USA] for red blood cell [RBC] count, hemoglobin level, hematocrit value, WBC count [total and differential], and platelet count.

C- reactive protein. Quantitative measurement of the level of C-reactive protein [CRP]. Estimation was carried out using the test kit [Cromatest] at 0h of clinical presentation. The AVITEX- CRP latex particles are coated with antibodies to human CRP. When the latex suspension is mixed with serum containing elevated CRP levels on a slide, clear agglutination was seen within 2 minutes. Specimen collection and storage: Fresh sample of venous blood was allowed to clot form and retract centrifuge clotted blood sample and collect serum, store at 2-8oC AVITEX-CRP had a detection limit of 6 mg/L of CRP in the patient's serum

### Ethical considerations

Informed consents was obtained from all neonates' guardians included in this study which was approved by the local ethical committee of Benha University.

### Statistical analysis

The collected data were tabulated and analyzed using SPSS version 16 software [SpssInc, Chicago, ILL Company]. Categorical data were presented as

number and percentages. Chi square test [ X<sup>2</sup>], or Fisher's exact test [FET] were used to analyze categorical variables. Quantitative data were tested for normality using KolomogrovSmirnov test assuming normality at P>0.05. Quantitative data were expressed as mean ± standard deviation, median and range. Student "t" test was used to analyze normally distributed variables among 2 independent groups, or Man Whitney U test for nonparametric ones. The accepted level of significance in this work was stated at 0.05 [P <0.05 was considered significant]. P value >0.05 is non significant[N-S].

### 3. Result

This Table shows that the Mean of the admission age day was [4.51 ± 6.309], the percentage of the male was [59.3 %], female was [40.7 %], CS was [68.5 %], NVD was [31.5 %] Table (1).

This Table shows that the percentage of the died cases were [18.3 %] Table (2).

There was no statistically significant difference between Survived and Died cases regarding Sex and Mode of delivery. There was statistically significant decrease in admission age day among Died than Survived cases Table (3).

There was statistically significant decrease in GA and BW among Died than Survived Table (4).

There was statistically significant difference between Survived and Died cases regarding use of MVTable (5).

There was no statistically significant difference between Survived and Died cases regarding residence, consanguinity and FH. There was statistically significant decrease in age of mother and parity among Died than Survived cases Table (6).

There was statistically significant decrease in HB and PLT among Died than Survived. There was statistically significant increase in WBC among Died than Survived Table (7).

There was statistically significant increase in CRP among Died than Survived Table (8).

**Table (1)** Demographic data of the studied cases.

		Range	Mean±SD
<b>Admission age [day]</b>		1 - 30	4.51 ± 6.309
<b>Sex</b>	male	No. 207	% 59.3
	female	142	40.7
<b>Mode of delivery</b>	CS	239	68.5
	NVD	110	31.5

**Table (2)** Outcome among the studied cases.

		No.	%
<b>outcome</b>	Survived	285	81.7
	Died	64	18.3

**Table (3)** Comparison between Survived and Died cases regarding Demographic data.

			Survived	Died	X <sup>2</sup>	P. value
<b>Admission age [day]</b>	Mean±SD		4.91 ± 6.743	2.75 ± 3.329	t. test 2.488	.013
	<b>Sex</b>	male	No. 171 60.0%	36 56.3%	.305	.581
female		No. 114 40.0%	28 43.8%			
<b>mode of delivery</b>	CS	No. 198 69.5%	41 64.1%	.709	.400	
	NVD	No. 87 30.5%	23 35.9%			

**Table (4)** Comparison between Survived and Died cases regarding GA and BW.

			Survived	Died	X <sup>2</sup>	P. value
<b>[GA]wks</b>	Mean±SD		35.98 ± 2.88	33.75 ± 3.74	t. test 5.260	.000
<b>[BW]kg</b>	Mean±SD		2.57 ± 0.71	1.97 ± 0.87	t. test 5.889	.000
<b>GA categories</b>	<30	No.	12	11	32.57	.000
		%	4.2%	17.2%		
	30-34	No.	40	16		
		%	14.0%	25.0%		
34-37	No.	34	15			
	%	11.9%	23.4%			
<b>BW categories</b>	>37	No.	199	22	24.56	.000
		%	69.8%	34.4%		
	<1	No.	4	8		
		%	1.4%	12.5%		
1-2.5	No.	127	35			
	%	44.6%	54.7%			
>2.5	No.	154	21			
	%	54.0%	32.8%			

**Table (5)** Comparison between Survived and Died cases regarding use of MV.

			Survived	Died	X <sup>2</sup>	P. value
<b>Use of MV</b>	yes	No.	146	53	21.27	.000
		%	51.2%	82.8%		
	no	No.	139	11		
		%	48.8%	17.2%		

**Table (6)** Comparison between Survived and Died cases regarding maternal characteristics.

			Survived	Died	X <sup>2</sup>	P. value
<b>Age Of Motheryears</b>	Mean±SD		26.96 ± 4.64	25.58 ± 4.69	t. test 2.146	.033
<b>Parity</b>	Mean±Sd		1.79 ± 1.04	1.41 ± 0.90	2.725	.007
<b>Residence</b>	Urban	No.	157	33	.262	.609
		%	55.1%	51.6%		
	Rural	No.	128	31		
		%	44.9%	48.4%		
<b>Consanguinity</b>	Yes	No.	58	18	1.85	.173
		%	20.4%	28.1%		
	No	No.	227	46		
		%	79.6%	71.9%		

Table (6) Continue

Fh	Yes	No.	37	4	2.285	.131
			%	13.0%	6.3%	
	No	No.	248	60		
		%	87.0%	93.8%		

Table (7) Comparison between Survived and Died cases regarding complete blood count.

		Survived	Died	t. test	P. value
HB[g /dl]	Mean $\pm$ SD	10.31 $\pm$ 1.68	6.95 $\pm$ 2.06	13.76	0.000
WBC[x10 <sup>3</sup> /mm <sup>3</sup> ]	Mean $\pm$ SD	11110.88 $\pm$ 927.57	15046.88 $\pm$ 1673.76	-2.584-	0.010
PLT [x10 <sup>3</sup> /mm <sup>3</sup> ]	Mean $\pm$ SD	133449.12 $\pm$ 7376.29	57531.25 $\pm$ 5867.10	7.702	0.000

Table (8) Comparison between Survived and Died cases regarding CRP.

		Survived	Died	t. test	P. value
[CRP] mg/L	Mean $\pm$ SD	25.76 $\pm$ 19.18	59.89 $\pm$ 16.84	-5.426-	0.000

#### 4. Discussion

In this study, crazy of the downright 349 neonates, male might have been [59. 3 %], female might have been [40. 7%].

This might have been in understanding for [7] who examined those clinical profile from claiming admitted neonates. They recorded that those dominant part for situations were guys 97[57. 65%] versus 73[42. 35%] females.

This might have been inverse with an alternate egyptian study [8] which accounted for that male proportion were [42. 7%] short of what female's proportion [57. 3%].

Mode of conveyance need A large number results looking into neonates relying upon its type, for our consider the biggest number from claiming neonates were conveyed Toward cesarean area "C. S" [68. 5%].

These comes about were against an additional pakistan cross-sectional investigation carried out by [9] around 565 neonates; the dominant part from claiming them were destined Eventually Tom's perusing NVD [94. 9%]. This investigation demonstrated that, neonatal mortality "around the mulled over cases might have been 18. 3%.

This consented with [10] who directed their consider will distinguish the clinical profile, example for illnesses and basic reason for mortal sin Furthermore horribleness in neonates admitted should nicu. An review investigation might have been directed at level iii neonatal nicu of a tertiary -care showing doctor's facility from January, 2012 with December, 2012. He found that those mortal sin might have been 20. 2%.

P.Shrestha [11]who meant should recognizing those signs to admission, complications, co-morbid states Also result from claiming the individuals neonates As far as survival. He found that there were 17 survivors [33. 3%] What's more 34 non-survivors [66. 7%].

S.I.A.AbdelHady [12]who meant with measure the frequency rate of neonatal mortality Around instances admitted of the neonatal emergency unit

units [NICU] for Benha school Hospital, Furthermore should determine the danger figures about this wellbeing issue. They exhibited that 30. 6% of the examined neonates passed on.

As opposed to M.Abdalatif Rajab [13] who examine "Neonatal mortality Previously, SCBU In Gharian educating support Hospital" those Generally speaking demise rate might have been [4. 75%] "around those admitted neonates.

In this study, there might have been statistically huge diminishing Previously, confirmation agdistis[day] "around kicked the bucket over made due cases.

This consented for [12] who found that, those mean quality from claiming confirmation period Around non survivors might have been bring down over that of survivors [4. 92 times & 5. 06 times respectively].

In this study, there might have been no statistically huge contrasts the middle of made due Furthermore passed on neonates On connection to sex.

This concurred for [14] who found, sex didn't need a statistically huge companionship for the result.

This disagreed for [15] An investigation done Previously, south who found that, mortality might have been higher Previously, guys as contrasted with females.

This contemplate indicated that, there might have been no statistically huge Contrast between made due What's more kicked the bucket instances viewing mode for conveyance.

These outcomes would in understanding of the outcomes from claiming [14] who accounted mode about conveyance didn't have a statistically critical Acquaintanceship with the result.

In inconsistency for of a review done Toward [16]who found those rate for c's. Encountered with urban decay because of deindustrialization, engineering imagined, government lodgin might have been [57. 7%] "around dead neonates, likewise in [8] study the place [54. 5%] from claiming dead neonates were conceived Toward c. What's more, the lion's

share of Corps parts don't stay in their starting work areas once their comm.

This examine indicated that, Likewise views on Gestational period for connection to the neonatal result about instances may be demonstrated to be statistically huge Likewise those mean quality for ga might have been statistically huge more level "around passed on over made due instances.

This consented for [17]who discovered that, mortal sin might have been seen over 29. 8% about preterm babies as contrasted with 7. 3% about haul newborns.

There might have been a measurable huge connection the middle of the gestational period at conception What's more neonatal mortality; these outcomes need aid likewise to understanding with [18] who news person a essentially diminished mortality for expanding gestational agdistis toward conception.

This study demonstrated that, Likewise respects with conception weight clinched alongside connection to those neonatal Conclusion about cases may be demonstrated with make statistically huge. Mean quality from claiming conception weight might have been statistically noteworthy easier Around kicked the bucket over made due situations.

This suitably with [19] who found that, mean quality from claiming body weight might have been statistically critical easier Around passed on over made due situations.

The result might have been influenced by the gestational period and conception weight of the neonate. Effect from claiming low conception weight What's more prematurity once survival from claiming neonates may be known What's more news person Toward [20] and [21] also.

Premature conception [before 37 weeks about pregnancy] may be the A large portion as a relatable point reason for neonatal passing. [22]. This consider demonstrated that, prematurity What's more low conception weight were higher "around kicked the bucket instances.

This suitably with [23] who uncovered that, prematurity will be a basic etiology about death, as exact low conception weight babies.

This investigation demonstrated that, there might have been statistically huge decline to agdistis about mothball "around passed on over made due cases.

This suitably with [1] who meant on consider those danger figures and occurrence from claiming neonatal mortality over neonatal emergency unit units clinched alongside Tanta city. Multi-centric prospective associate consider that might have been behavior clinched alongside neonatal emergency unit Units clinched alongside Tanta city. They discovered that, mean agdistis for moms of the dead neonates were easier over imply period for moms about made due neonates for a statistically noteworthy Contrast [P=0. 006].

This consider indicated that, there might have been statistically critical build being used from

claiming mv Around passed on over made due situations.

This suitably for [24]pinpointed those compelling reason for mechanical ventilation might have been predictors about neonatal passings.

This consider indicated that, there might have been no statistically huge distinction between made due Furthermore passed on situations viewing home.

This concurred for [5] who discovered that, no Acquaintanceship might have been watched between country home and expanded hazard from claiming neonatal mortality.

This study indicated that, there might have been statistically critical build over crp and WBC "around kicked the bucket over made due instances.

This concurred for [1] who found that, as respects CRP, in connection to the neonatal Conclusion of cases, it might have been demonstrated to be statistically huge Concerning illustration those [P quality < 0. 001]. The mean "around made due neonates might have been 18. 74 contrasted with mean about dead 67. 21. Concerning illustration views WBC,in connection to those neonatal Conclusion for cases, it might have been demonstrated on be statistically noteworthy Concerning illustration the [P quality = 0. 004]. Those imply "around made due neonates might have been 9941. 86 contrasted with imply for dead 17939. 39.

## 5. Conclusion

Neonatal mortality for neonatal seriousness may be essential open wellbeing issues in creating nations. Neonatal mortality might have been 18. 3%. Number about danger figures showed up to be altogether connected with neonatal mortality like, more level gestational age, low conception weight, more level maternal age, neonatal sepsis and utilization of mechanical ventilation.

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