

INCIDENCE OF NICU ADMISSIONS OF NEONATES BORN TO TEENAGE MOTHERS IN EAST GODAVARI DISTRICTP. Padmasri Devi¹, Ch. Ganapathi Swamy², M. Kiran Deedi³**HOW TO CITE THIS ARTICLE:**

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ABSTRACT: AIM: Although the effect of adolescent pregnancy on perinatal mortality and morbidity is known, data on the neonatal hospitalization rate in these deliveries have not been reported. We aimed to assess the possible effects of adolescent pregnancies on the hospital outcomes of the newborns. **METHODS:** 238 adolescent mothers under 19 years of age and their singleton newborns were enrolled in this study. **RESULTS:** Mother age was statistically significantly associated with NICU admissions of neonates (P=0.000). LBW of neonates were statistically significant association with teenage pregnancy (P=0.000). **CONCLUSION:** In this study it has been observed that teenage pregnancy was one of the major cause of low birth weight and also admission of neonates in NICU. In this study total 238 study subjects, out of them 115 neonates were born with LBW along with various complications due to the teenage pregnancy. In this study neonatal complication were decreased as the mother's age increases. **KEYWORDS:** Teenage pregnancy, Birth weight, NICU admissions.

INTRODUCTION: 10 to 19 years of age is considered as adolescent according to WHO.¹ Every girl aged between 15 to 19 years giving birth to 16 million and this was about 11% of all births worldwide.² one in every four girls in the world becoming other before the age of 19 years. In Netherland it was found that it has very low rate of teenage pregnancy (14/1000) and in other side higher rate of teenage pregnancy is found in sub-Saharan Africa (143/1000).³ The age between menarche to the chronological age at conception is referred as reproductive age.

Early motherhood can effect development of infant, there is occurrence of development disabilities and behavioral issues are increased in children born to adolescent mother. The risk of maternal mortality is higher in adolescent girls especially under age 15 compare to older women.⁴ Teenage pregnancies has been associated with adverse pregnancy out comes specifically low birth weight, prematurity dam for gestational age infants, high rates of neonatal and infant mortality.^{5,6}

MATERIAL AND METHODS: This study was conducted in department of gynecology and obstetrics GSL Medical College and General hospital. The Universal sampling method was employed and every antenatal woman with age 15-19 years were registered in the department gynecology and obstetrics, GSL Medical College, Rajahmundry of June 2013 to July 2014 were included as the study subjects.

INCLUSION AND EXCLUSION CRITERIA: All ANC subjects with in age of 15-19 year within 32 weeks of their gestational age were included as the study subjects, 238 pregnant women registered, at the time of registration, after the delivery of each individual weight of the baby was noted with standard weighing machine. Statistical analysis was performed by using SPSS trail version 16.0 and p value <0.05 was considered as statistically significant.

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RESULTS: Table 1 shows the association of mother age to the cause of admission of neonates into NICU. 5 neonates are born to mothers with age of 15, out of 5, one is admitted due to hypoxic ischemic encephalopathy and one is due to neonatal jaundice and one is due to prematurity and 2 is admitted by the reason of low birth weight. 21 neonates are born to mothers with age of 16, one is admitted due to meconium aspiration syndrome and three is due to neonatal jaundice and one is due to prematurity and 16 are admitted by the reason of low birth weight and one is normal. 26 neonates are admitted in NICU, who are born to mothers with age of 17, one is admitted because of birth asphyxia and four is due to neonatal jaundice and 17 are admitted by the reason of low birth weight and one is normal and 3 are normal. 75 neonates are admitted in NICU who born to mothers with age of 18, one is admitted due to birth asphyxia and eight is due to neonatal jaundice and one is due to sepsis and 21 are admitted by the reason of low birth weight and fourty four is normal.

Totally there are 111 neonates in the group whose mothers age is 19, one is admitted due to hypoxic ischemic encephalopathy and eight is due to neonatal jaundice and two are due to prematurity and 38 is admitted by the reason of low birth and 62 are normal. Out of 238 neonates 110 (46.2%) are normal and 94 (39.5%) are admitted due to low birth weight, 24 (10%) are admitted due to neonatal jaundice, 4 (1.7%) due to prematurity, 2 (8%) due to birth asphyxia, 2 (8%) due to hypoxic ischemic encephalopathy, 2 (8%) is due to meconium aspiration syndrome and sepsis. highest admission due to LBW. Mother age was statistically significantly associated with NICU admissions of neonates ($P=0.000$).

Table 2 shows the association of birth weight of neonates to the NICU admission of neonates. Out of 238, 115 are under low birth weight category and 123 are under normal birth weight category. In LBW category, 2 is admitted due to birth asphyxia and 10 is due to neonatal jaundice and one is due to sepsis, one is due to hypoxic ischemic encephalopathy, and 94 are admitted by the reason of low birth weight and 1 is normal. Out of 123 low birth weight neonates, 14 were admitted in NICU due to neonatal jaundice and rest of them were purely normal. LBW of neonates were statistically highly significant association with teenage pregnancy ($P=0.000$).

DISCUSSION: Neonatal period is the most vulnerable period of life due to different diseases, which in most cases are preventable. It is clear from NFHS-3 that neonatal mortality (39/1000 live births) is very high in India, which accounting for 25% of the all neonatal mortality in the world. So, it is essential keep an eye over neonatal services to make it to move on the track to reduce neonatal morbidities and mortalities, thus can reduce the infant mortality, for which the neonatal mortality is the great contributor (75% of total infant mortalities).⁷ Birth asphyxia is defined by the WHO "The failure to initiate and sustain breathing at birth."⁸ The National Neonatology Forum of India has defined birth asphyxia as "gasping and ineffective breathing or lack of breathing at one minute after birth".⁹ Among different countries, a prevalence of birth asphyxia varies dramatically depending on corresponding geographic localization and socio-economical level of development.¹⁰

In this study it was observed that birth asphyxia is 8% which is almost similar to the study done by Jan AZ et al, The incidence of BA in was 9.1%, and very low when compared to the other studies done is, 16.52% in KTH.¹¹ In another study it is noted that BA is about 12%.¹² In this present study the incidence of birth asphyxia is very low when compared to the other parts of the world. In this study low birth weight cause is about 39.5% in another study conducted by Gauri Shankar *et al.* reported that the proportion rate of premature admission was 23.2%.¹³

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50.6% of babies had low-birth weight. In total admitted cases one every third baby was a preterm baby (34.5%). It indicates that neonatal low birth weight and preterm deliveries are the important contributors for NICU admission.¹⁴ Similar findings are noted in other studies where the incidence of low birth weight ranges from 41.2% to 53%.¹⁵ Meconium aspiration syndrome is about 4%, it is similar to the results of the study done by Raghvendra Narayan. pre mature is about 1.7% and it is very low when compare by the other studies such as a study done by Jan Az et al is about 10.5%.

This is comparatively low in comparison to other studies in which the incidence was 26.9% from Peshawar, 16.5% from services hospital Lahore, International study done also shows a higher incidence of prematurity reporting, 48.2% from Bangladesh¹⁶ and 23.5% from South Africa.¹⁷ In other study it is noted the prematurity is 13% for admission into NICU. In this study it is observed that neonatal jaundice was about 10.1% is very low when compare to The occurrence of neonatal jaundice of 35.0% of NICU admissions observed in this study goes to confirm NNJ as among leading causes of neonatal morbidity as noted even in previous reports in Nigeria and other parts of the world, ranging between 10 to 35% of neonatal admissions.¹⁸ Other study done by Veena Prasad et al show that incidence is 19.8% which is double the result compared to this study.^[19]

Hypoxic-ischemic encephalopathy (HIE) is a syndrome of disturbed neurological function in the earliest days of life characterized by clinical and laboratory evidence of acute or sub-acute brain injury.^[20] The most frequent cause of HIE in the neonatal period is perinatal asphyxia. All pathological conditions that lead to prenatal, perinatal, or postnatal hypoxia and tissue hypoperfusion are etiologic factors of HIE.^[21] A study done by the Manikant Kumar et al.²³ show that the percentage of hypoxic ischaemic encephalopathy (HIE) (18.2%), which was very low compared to this study it was about only 8%. Neonatal sepsis caused by Gram-negative bacteria is more frequent in developing countries²². In this study it observed that sepsis is about 4%.

According to birth weight category, in this study, low birth weight (81.7%) is the main reason for the admission into NICU. Study done by Manikant et al they stated that the commonest causes of death were LBW (59.2%), prematurity (46.9%), neonatal sepsis (34.4%), HIE (31.3%) and respiratory distress syndrome (25%). In contrast, in an ICMR study, prematurity (16.8%), birth asphyxia (22.3%) and infections which included septicaemia, pneumonia, meningitis and other infections (32.8%) were found to be the predominant causes of death.²³

In a study at JIPMER, systemic infections were found to cause 52.3% of the deaths, followed by birth asphyxia and injuries (29.23%).²⁴ But, the present study reiterates the point that the high proportion of the deaths which were attributed to LBW and prematurity may be due to poor antenatal care, poor nutritional status of the pregnant women, especially in the rural areas, the poor health infrastructure, and delayed referral from peripheral hospitals. In a study from a sub-district level hospital from India, Kumar et al reported a similar mortality rate.²⁵ Our study also showed that preterm babies with a birth weight which was less than 1500g were strongly associated with high mortality. Yasmin et al from Bangladesh also reported that VLBW and lower gestational age (<32 weeks) carried a high mortality risk.²⁶

CONCLUSION: In this study, it has been observed that teenage pregnancy was one of the major cause of low birth weight and admission of neonates in NICU. This study has some limitations. As it was a hospital based study and as most of the patients had a low socio-economic status, the results of this study may not reflect the true burden which is prevalent in the community as a whole.

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In this study total 238 study subjects, out of them 115 neonates were born with LBW along with various complications due to the teenage pregnancy. In this study, conclude that neonatal complication was decreased as the mother age increases.

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Mothers age		NICU									P value
		BA	HIE	LBW	MAS	NJ	NORM	PM	SEPSIS	Total	
15	Count	0	1	2	0	1	0	1	0	5	0.000
	% within AGE	.0%	20.0%	40.0%	.0%	20.0%	.0%	20.0%	.0%	100.0%	
	% within NIU	.0%	50.0%	2.1%	.0%	4.2%	.0%	25.0%	.0%	2.1%	
16	Count	0	0	16	1	3	1	0	0	21	
	within AGE	.0%	.0%	76.2%	4.8%	14.3%	4.8%	.0%	.0%	100.0%	
	% within NIU	.0%	.0%	17.0%	100.0%	12.5%	.9%	.0%	.0%	8.8%	
17	Count	1	0	17	0	4	3	1	0	26	
	% within AGE	3.8%	.0%	65.4%	.0%	15.4%	11.5%	3.8%	.0%	100.0%	
	% within NICU	50.0%	.0%	18.1%	.0%	16.7%	2.7%	25.0%	.0%	10.9%	

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18	Count	1	0	21	0	8	44	0	1	75
	% within AGE	1.3%	.0%	28.0%	.0%	10.7%	58.7%	.0%	1.3%	100.0%
	% within NICU	50.0%	.0%	22.3%	.0%	33.3%	40.0%	.0%	100.0%	31.5%
19	Count	0	1	38	0	8	62	2	0	111
	% within AGE	.0%	.9%	34.2%	.0%	7.2%	55.9%	1.8%	.0%	100.0%
	% within NICU	.0%	50.0%	40.4%	.0%	33.3%	56.4%	50.0%	.0%	46.6%
	Count	2	2	94	1	24	110	4	1	238
	% within AGE	.8%	.8%	39.5%	.4%	10.1%	46.2%	1.7%	.4%	100.0%
	% within NICU	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

MOTHER AGE & NICU ADMISSIONS OF NEONATES

		NICU ADMISSIONS									P value
		BA	HIE	LBW	MAS	NJ	NORM	PM	SEPSIS	Total	
Low birth weight	Count	2	2	94	1	10	1	4	1	115	0.000
	% within bcat	1.7%	1.7%	81.7%	.9%	8.7%	.9%	3.5%	.9%	100.0%	
	% within NICU	100.0%	100.0%	100.0%	100.0%	41.7%	.9%	100.0%	100.0%	48.3%	
Normal birth weight	Count	0	0	0	0	14	109	0	0	123	
	% within bcat	.0%	.0%	.0%	.0%	11.4%	88.6%	.0%	.0%	100.0%	
	% within NICU	.0%	.0%	.0%	.0%	58.3%	99.1%	.0%	.0%	51.7%	
Total	Count	2	2	94	1	24	110	4	1	238	
	% within bcat	.8%	.8%	39.5%	.4%	10.1%	46.2%	1.7%	.4%	100.0%	
	% within NICU	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	

BIRTH WEIGHT CATEGORY AND NICU ADMISSIONS

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