

Original Research Article

Assessment of socio-clinical profile of neonates admitted in sick neonatal care unit of tertiary care hospital: Odisha

Dhaneswari Jena¹, R. M. Tripathy^{1*}, Srabani Pradhan¹, Geetanjali Sethi²

¹Department of Community Medicine, M.K.C.G Medical College, Berhampur, Odisha, India

²Department of Paediatrics, M.K.C.G Medical College, Berhampur, Odisha, India

Received: 29 June 2017

Accepted: 26 July 2017

*Correspondence:

Dr. R. M. Tripathy,

E-mail: tripathyrm.yahoo.co.in

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Neonatal mortality rate of 29 and early neonatal mortality rate is 20 which contributes 53% of IMR. India targets to achieve single digit under 5 and neonatal death by 2030. Early identification and management of common morbidities among neonates is desirable for improving the survival. Therefore, this study was conducted with the aim of assessing socio-clinical profile of neonates admitted to SNCU and its impact on morbidities of newborn from different strata.

Methods: A cross sectional study was conducted in SNCU of MKCG medical college from January 2016 to December 2016. Convenient sampling was done. Data was collected using pre-designed semi structured questionnaire.

Results: Total 752 study subjects were taken. Most common cause of admission was sepsis (47.4%) followed by prematurity (27.8%), birth asphyxia (13.9%) and IUGR (7.5%). Majority of out born neonates were admitted for sepsis (87.9%) while in born neonates for birth asphyxia (81.9%). All the morbidities were significantly higher among early neonates, babies born to illiterate mother and those with inadequate antenatal check-up.

Conclusions: Majority of babies were out born, may be due to delay and lack of quality new born care in the referring facilities. Sepsis was most common preventable morbidity by simple intervention of clean delivery practices which should be promoted. Birth asphyxia can be reduced by adequate skill development training of the staffs and minimising the 3 delays maternal care.

Keywords: In born, Morbidity, Mortality, Neonates, Out born

INTRODUCTION

Neonatal period i.e. the first 28 days of life are the most vulnerable period for the new-born. According to WHO, in the year 2015 nearly 2.7 million children died globally in the neonatal period, contributing to 45% of the total under five deaths. Of these, almost 1 million neonatal deaths occurred in the first 24 hrs and close to 2 million died in the first week.¹ In India nearly 67% of infant deaths occur in the neonatal period. Half of the neonates die in the first week of life.² Neonatal mortality rate

(NMR) of India was reported as 29 and the early neonatal mortality as 20, which contributed 53% to the IMR.² Orissa has neonatal mortality rate of 36, which is higher than the national average of 29 and contributes around 74% to its IMR of 49.² Annual health survey 2012-13 revealed the IMR of Ganjam district to be 56 and NMR as 35.³

By the end of 12th five year plan, the aim is to reduce IMR to 25 at national level and to 33 in Odisha.⁴ Goal 3 of SDG targets to end preventable neonatal deaths and

under 5 death to single digit by 2030 in India.⁵ Since neonatal mortality contributes a major portion to infant and under 5 mortality (U5MR), there is an utmost need to bring down the neonatal deaths drastically to achieve these targets. SNCU, as a part of Facility based new-born care plays important role in the reduction of neonatal morbidity and mortality.⁶ It is crucial for treatment of sick neonates referred from same hospital as well as its catering health facilities.

At global level, the major causes of neonatal deaths are infections (36%), pre-maturity (28%), and birth asphyxia (23%).⁷ In India the major causes are pre-maturity (35%); neonatal infections (33%); intra-partum related complications/ birth asphyxia (20%); and congenital malformations (9%).⁸ Apart from fatalities, these morbidities have potential to develop lifelong disability among the survivors compromising their quality of life.

Inter and intra state variation of causes of neonatal mortality is observed across the country. Furthermore, difference is also seen among the neonates delivered in well-equipped health facility like medical colleges and those referred from peripheral health facility.⁹ Regional diversity and socio cultural determinants largely affect neonatal health. With this background, the present study was conducted with the aim of studying the socio-demographic profile of neonates admitted to SNCU and to explore the differences between the morbidity pattern of in born and out born neonates if any and their causes to recommend improvement measure.

METHODS

This was a cross-sectional study conducted in Sick neonatal care unit (SNCU) of M.K.C.G medical college, Berhampur, Odisha, India, after IEC clearance. The study

duration was 12 months extending from January 2016 to December 2016. Neonates who were delivered in the medical college were defined as in born while those babies delivered in outside health facilities and referred to the medical college were defined as out born. The study population included neonates admitted in the SNCU whose parents gave consent, morbidities as diagnosed provisionally at the time of admission was taken into consideration.

Uncooperative parents and cases where definite diagnosis has not been made were excluded from the study. Convenient sampling was done. Biweekly data was collected using a pre-designed and pre-tested questionnaire from parents. Information regarding diagnosis was recorded from the indoor bed head tickets. Total 752 cases were collected over the study period and analysis of data was done at the department of community medicine, MKCG medical college using appropriate software. Chi-squared test was used to determine difference in proportions. All tests were done at a significance level of 0.05.

RESULTS

Total 752 neonates admitted in the SNCU of M.K.C.G Medical College from January to December 2016 and fulfilling the inclusion criteria, were taken into the study. Out of the 752 neonates, 538 (71.5%) were out born and rest 214 (28.5%) were in born. Majority of the neonates admitted were early neonates (82.3%), around 40.5% were preterm babies and around 71% were males.

Table 1 shows the demographic profile of neonates admitted. The mean age of out born neonates was 5.42± 2.48 days and they were significantly older than in born neonates 3.96 ± 3.03 days (p= 0.011, t-test).

Table 1: Demographic profile of the neonates.

	Out born	In born	Total
Age at admission	5.42±2.58 days	3.96±3.03 days	4.69±2.91
0-7 days	419 (67.7%)	200 (32.3%)	619
7- 28 days	119 (89.4%)	14 (10.6%)	133
Gender			
Male	338 (63.9%)	191 (36.1%)	529
Female	200 (89.6%)	23 (10.4%)	223
Gestational age			
Pre-term	215 (70.4%)	90 (29.6%)	305
Term	323 (72.3%)	124 (27.7%)	447
Birth weight			
< 2500gms	310 (65.1%)	166 (34.9%)	476
≥ 2500gms	228 (82.6%)	48 (17.4%)	276

Out of the 538 out born neonates 64.3% were delivered in CHC, followed by PHC (13.7%), 11.3% were delivered

at private institutions and surprisingly 58 deliveries i.e. 10.7% occurred at home. Most common morbidities

among all the neonates admitted was sepsis (47.4%) followed by prematurity or pre-term babies (27.8%). Birth asphyxia was seen among 13.9% of the admitted neonates followed by intra uterine growth retardation (IUGR) (7.5%). Rest 3.4% had morbidities like jaundice,

cleft lip, cleft palate and congenital heart disease. It was found that significantly higher proportion of sepsis, prematurity and IUGR cases were seen in out born babies and it is unfortunate that birth asphyxia was significantly higher among in born babies (Table 2).

Table 2: Morbidity profile of the neonates.

Morbidities	Out born	In born	Total	
Sepsis	314 (87.9%)	43 (12.1%)	357	X ² = 88.398, p < 0.001
Preterm/prematurity	161 (77.1%)	48 (22.9%)	209	X ² = 3.921, P= 0.04
Birth asphyxia	19 (18.1%)	86 (81.9%)	105	X ² = 168.2, P< 0.001
IUGR	33 (58.9%)	23 (41.1%)	56	X ² = 4.083, P=0.04
Others	11 (44%)	14 (56%)	25	X ² = 8.287, P= 0.004

Table 3: Association between maternal socio-demographic factors and morbidities.

	Sepsis (n= 357)	Birth asphyxia (n=105)	IUGR (n=58)	Preterm (n=209)	Others (n= 25)	
Age of mother	22.28±2.23	24.19±2.13	23.66±3.08	22.96±2.48	25.8±2.16	F= 4.050* P=0.004
No. of pregnancies	2.23±1.11	2.47±1.32	3±1	2.84±1.15	2.4±1.14	F= 1.515* P = 0.204
Place of residence						
Rural	247 (67.8%)	57 (54.3%)	32 (55.2%)	110 (52.6%)	10 (40%)	X ² = 23.467 P< 0.001
Urban	110 (32.2%)	48 (45.7%)	26 (44.8%)	99 (47.4%)	15 (60%)	
Education						
Illiterate	214 (60%)	48 (45.7%)	29 (50%)	109 (52.1%)	0	X ² = 192.38 P < 0.001
Primary	129 (36.1%)	43 (40.9%)	24 (41.3%)	57 (27.3%)	10 (40%)	
Secondary	14 (3.9%)	14 (13.3%)	5 (8.7%)	14 (6.7%)	15 (60%)	
Higher	0	0	0	29 (13.9%)	0	
No. of ANC's						
< 4	267 (74.8%)	62 (59%)	58 (100%)	157 (75.1%)	20 (80%)	X ² = 210.563
≥ 4	90 (25.2%)	43 (41%)	0	52 (24.9%)	5 (10%)	P < 0.001

*= Anova test used.

Table 4: Association between infant demographic factors and morbidities.

	Sepsis (n= 357)	Birth asphyxia (n=105)	IUGR (n=58)	Preterm (n=209)	Others (n=25)	
Age on admission						
Early neonate (<7 days)	243 (68%)	95 (90.4%)	58 (100%)	209 (100%)	16 (56%)	X ² =117.9
Late neonate(≥7days)	114 (32%)	10 (9.6%)	0	0	9 (36%)	P<0.001
Birth weight#						
Low birth weight (<2500gms)	323 (90.5%)	38 (36.2%)	-	-	20 (80%)	X ² =141.6
Normal birth weight (≥2500gms)	34 (9.5%)	67 (63.8%)	-	-	5 (20%)	p <0.001
Gestational age ##						
Preterm	160 (44.8%)	40 (38%)	29 (50%)	-	13 (52%)	X ² = 3.038
Term	197 (55.2%)	65 (62%)	29 (50%)	-	12 (48%)	P=0.38

= IUGR and preterm babies not taken in calculation as by definition they are low birth weight, ## = Preterm babies excluded from calculation as by definition all of them are preterm or pre-mature.

Table 3 shows the association between maternal socio-demographic factors and morbidities seen in the neonates. It was found that all the morbidities were significantly

higher among illiterate mothers as compared to literate. Birth asphyxia was found to be significantly higher in older age mothers.

Table 4 depicts the association between various morbidities and demographic factors of the neonates admitted. Significantly higher proportion of early neonates observed to have all types of morbidities. It was also found that significantly higher proportions of neonates of normal body weight are suffering from birth asphyxia.

DISCUSSION

Majority of the study subjects were males this may be due to male babies receiving more attention from their care givers than their female counterparts. Similar findings were seen in study conducted by Shah et al.¹⁰ It was observed that around 72% of neonates admitted were out born which is comparable to the study of conducted by Rakholia et al were it was 67%.⁹ Sepsis accounted for 48% of admission in SNCU. Other studies recorded lower rates of sepsis as 41.3%, 32.7%.^{10,11} The variation in occurrence of sepsis depends upon the health practices being followed in the community and competency of health professionals handling new-born during delivery and post-delivery neonatal care. Prematurity was the second most common cause (27.8%) of admission. It was also second most common cause of admission in Shah's study with prevalence of 23.8%.¹⁰ However, study done by Sardar S et al recorded a lower percentage of 25.6%.¹²

Birth asphyxia was the third most common cause of admission, similar to that of Shah et al.¹⁰ Sepsis was more common in out born neonates but birth asphyxia was more common among in born neonates. Same results were seen in another study.¹² Majority of the neonates diagnosed with sepsis, prematurity, IUGR and birth asphyxia were early neonates. This may be since the first 7 days of life are the most vulnerable period from survival point of view. Sepsis was more common in low birth weight infant and birth asphyxia was more common in infants weighing 2500gm or more. This finding was different from that of Sardar S et al were all types of morbidities were more common in low birth weight infant.¹²

Cases of sepsis, birth asphyxia, prematurity and IUGR were seen more commonly in neonates born to illiterate mothers than literate mothers, indicating the importance of female literacy for child health. Also, all the morbidities were significantly higher in babies whose mother had inadequate ante natal check-ups, highlighting the role of ANC check-up and counselling in preventing various neonatal complications.

CONCLUSION

Early neonatal period is the most vulnerable period of life. As it is the transitional phase of life great care needed during delivery as well as in the antenatal period to save the early infants.

Sudden expansion of institutional delivery service under NRHM in non-and semi-equipped peripheral institutions has led to compromised quality of newborn service, parallel service provision for neonates in these institutes should be provided. All delivery points should be well equipped. All health care personnel involved in newborn care should undergo skill development training on simple immediate newborn care and resuscitation.

Prevalence of sepsis both among inborn and out born is a matter of grave concern. General sanitation and hygiene should be maintained to prevent infections delivery point should maintain proper aseptic procedure. Emphasis to be given in 6 clean practices.

Proper antenatal care and identification of at risk mother for referral to FRU is needed in addition to eradication of practice of home delivery to prevent birth asphyxia and prematurity. Further to prevent sepsis, counselling for exclusive breast feeding should be promoted and carried out making all delivery points baby friendly. Special emphasis should be given to early referral by identifying danger signs and increasing the number of routine post-natal visits for newborn care. Adequate number of neonatal intensive care facilities should be opened to minimize delay in transport of the sick infants. Care giver should be trained, supervised and recognized for this important component of MCH service.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. WHO | Neonatal mortality (Internet). WHO. World Health Organization; 2015 (cited 2017 Mar 28). Available at http://www.who.int/gho/child_health/mortality/neonatal_text/en/.
2. Office of the Registrar General and Census Commissioner. Estimates of Mortality Indicators (SRS 2011-13) (Internet). 2014. Available at http://www.censusindia.gov.in/vital_statistics/SRS_Reports_2013.html.
3. Division VS, Office of the Registrar General and Census Commissioner I, Delhi N. Annual health survey 2012-13 fact sheet. 2012;1-172. Available at http://www.censusindia.gov.in/vital_statistics/AHS_Bulletins/AHS_Factsheets_2012_13.html.
4. Health Division PC. Report of the Steering Committee on Health for the 12th Five-Year Plan (Internet). 2012 (cited 2017 Mar 28). Available at http://planningcommission.nic.in/aboutus/committee/strgrp12/str_health0203.pdf.
5. United Nations R and IS for D countries. India and Sustainable Development Goals: The Way Forward (Internet). (cited 2017 Mar 28). Available at http://ris.org.in/pdf/SDGs_Report_Chapter_3.pdf.

6. MoHFW GOI. Facility Based New-born Care: Operational Guidelines for Planning and Implementation (Internet). 2011:7-8. Available at [http://www.nihfw.org/pdf/Facility Based Newborn Care \(FBNC\) Operational Guide Guidelines for Planning and Implementation.pdf](http://www.nihfw.org/pdf/Facility%20Based%20Newborn%20Care%20(FBNC)%20Operational%20Guide%20Guidelines%20for%20Planning%20and%20Implementation.pdf).
7. WHO | Newborn death and illness (Internet). WHO. World Health Organization; 2011 (cited 2017 Mar 28). Available at http://www.who.int/pmnch/media/press_materials/fs/fs_newborndeath_illness/en/.
8. Liu HLL, Johnson J, Perin M, Li M, Black RE, London M, et al. Global, regional, and national causes of child mortality: an updated systematic analysis for 2010 with time trends since 2000. *Lancet.* 2012;379(379):2151-61.
9. Anand K, Kant S, Kumar G, Kapoor SK, Rakholia R, Bano M, et al. Neonatal morbidity and mortality of sick new-borns admitted in a teaching hospital of Uttarakhand. *Chris Med J Heal Res.* 2014;1(4):247-53.
10. Shah GS, Yadav S, Thapa A, Shah L. Clinical profile and outcome of neonates admitted to neonatal intensive care unit (NICU) at a tertiary care centre in Eastern Nepal. *J Nepal Paediatr Soc.* 2013;33(3):177-81.
11. Jan AZ, Ahmad S, Zahid SB. Clinical audit of admission pattern and its outcome in a neonatal ICU. *Gomal J Med Sci.* 2013;11(1):31-6.
12. Sulthana SS, Manjuleswari N, Venkatesetty A, Sridevi A. Study of the morbidity pattern in the special new born care unit (SNCU) at a tertiary care teaching hospital in Kurnool District, Andhra Pradesh, India. *J Evol Med Dent Sci.* 2015;4(52):8999-9005.

Cite this article as: Jena D, Tripathy RM, Pradhan S, Sethi G. Assessment of socio-clinical profile of neonates admitted in sick neonatal care unit of tertiary care hospital: Odisha. *Int J Res Med Sci* 2017;5:4077-4081.