

# Neonatal Morbidity and Care-seeking Behavior in Urban Lucknow

NEERAJ MOHAN SRIVASTAVA, SHALLY AWASTHI AND RITA MISHRA

*From the Department of Pediatrics, King George's Medical University (KGMU), Lucknow 226 003, India.*

*Correspondence to: Dr Shally Awasthi, Professor, Department of Pediatrics, KGMU, Lucknow 226 003, Uttar Pradesh, India. E-mail: sawasthi@sancharnet.in*

*Manuscript received: March 2, 2007; Initial review completed: July 13, 2007;*

*Revision accepted: November 1, 2007.*

## ABSTRACT

*We conducted this study to assess the neonatal morbidity and care-seeking behavior amongst slum and non-slum dwellers at Lucknow. One hundred and fifty neonates were recruited within 48 hours of birth from an urban Reproductive and Child Health center and followed up at 6 weeks±15 days at home. Twenty five (16.6%) were lost to follow-up. Among those followed up, 46.4% (58/125) developed one or more morbidity; 26% (15/58) of these did not receive qualified medical care. Neonatal morbidity was 56.8% (33/58) among slum dwellers and 37.3% (25/67) among non-slum dwellers (absolute difference=19.5%, 95% CI=3.3 to 34.7; P=0.04). Severe neonatal illnesses were also significantly higher among neonates from slums as compared to those from non-slum areas (OR=4.50, 95%CI=1.28 to 16.38, P=0.007). Male gender was associated with any care-seeking (OR=1.24, 95% CI=1.24 to 91.99; P=0.03) and was more likely to be seen by a qualified provider (OR=3.8, 95% CI=1.05 to 13.94; P=0.04). Since nearly half of the neonates had morbidity and more than a quarter of them did not receive qualified medical care, there is a need to introduce Community Integrated Management of Neonatal and Childhood Illnesses (IMNCI) program here, emphasizing on the importance of qualified medical care for ill neonates, including females.*

**Key words:** *Care-seeking, Neonates, Slums.*

## INTRODUCTION

Neonatal illnesses exhibit a rapid course of progression and can prove to be fatal if not identified and treated correctly in a timely manner. Inadequate care-seeking has been reported for neonates delivered at home(1). We hypothesized that, even in institutional deliveries, there could be disparities in care-seeking based on place of residence, gender and birth order of the neonate.

The objectives of our study were (a) to assess the difference, if any, in the distribution of neonatal morbidity and care-seeking among slum and non-slum dwellers and (b) to assess variables associated with care-seeking behavior.

## METHODS

This study was conducted in a 12-bedded Urban Reproductive and Child Health (RCH) center in Lucknow, with round-the-clock maternity/delivery services but no facility for cesarean section. However, there were referral links with transport facility to tertiary care centers in the city.

Neonates were recruited within 48 hours of delivery, after taking informed consent from the parents. Neonates who had clinically detectable life-threatening congenital malformations, any morbidity at birth or were likely to leave the city within one month were excluded. One follow up was done at home at 6 weeks±15 days after recruitment to ascertain neonatal morbidity and subsequent care-seeking behavior.

At the time of follow-up, symptoms of morbidity were recorded as narrated by mothers/caregivers. Thereafter, responses were coded by the study pediatrician and classified as per Integrated Management of Neonatal and Childhood Illnesses (IMNCI)(2).

A study from Gadchiroli(3) reported that 54.4% neonates presented with one or more morbidity in the neonatal period. Therefore, to assess 50% prevalence of any neonatal morbidity among slum and non-slum dwellers, with 95% confidence level and 15% precision, 43 neonates were required from each category.

Univariate association between categorical and continuous variables was assessed by Chi-Square test and Student's *t* test, respectively. A *P*-value of <0.05 was taken as statistically significant. For neonatal illnesses, proportions with 95% confidence intervals have been reported. Crude odds ratio (OR) with 95% confidence interval (CI) along with *P*-values are given for variables tested for association with care-seeking.

## RESULTS

One hundred and fifty neonates were recruited between November, 2005 to September, 2006, of which 49.3% were males and 51.7% were females. Sixty (40%) neonates had low birth weight ( $\leq 2.5$  Kg) and thirty three (22%) were premature (<37 weeks gestation)(4).

Mean age of the father was 31.1 years (SD:5.7) while that of the mother was 25.6 years (SD:4.5). Mean income in slum and non-slum families was

Rs 2149 (SD:985) and Rs 2394 (SD:1234) respectively (1 US\$=48 Indian rupees). Higher proportion of fathers of neonates from slums had no formal education when compared to those from non-slum areas (61.3% (46/75) vs 41.3% (31/75); *P*=0.01). Likewise, proportion of mothers having no formal education was higher among slum dwellers as compared to those from non-slum areas (52% (39/75) vs 33.3% (25/75); *P*=0.02).

We found that during antenatal check-ups, 46% (69/150) mothers received counseling on pregnancy care and 20.66% (31/150) on breastfeeding practices. However, post-natal counseling on neonatal danger signs was received by only 0.6% (1/150) of the mothers while only 2% (3/150) were counseled on other aspects of neonatal care.

Twenty five (16.6%) cases were lost to follow-up, of which more than two-thirds were from slums, primarily due to incomplete addresses or due to

**TABLE I** NEONATAL MORBIDITY DISTRIBUTION AMONG SLUM AND NON-SLUM DWELLERS

Neonatal illnesses	Diseased neonates <i>n</i> (%) (95% CI)	
	Slum (33/58)	Non-slum (25/67)
<i>Diarrhea</i>		
without dehydration	3(9.0)(2.36,22.77)	3(12.0)(3.14,29.28)
with dehydration *	3(9.0)(2.36,22.77)	2(8.0)(1.36,23.99)
<i>Respiratory:</i>		
Cough/fever/cold	5(15.1)(5.77,30.43)	8(32.0)(16.10,51.86)
ARI *	3(9.0)(2.36,22.77)	2(8.0)(1.36,23.99)
<i>Skin problems:</i>		
Rashes	1(3.0)(0.15, 14.05)	3(12.0)(3.14,29.28)
More than 10 pustules/Ulcers*	3(9.0)(2.36,22.77)	0
Navel discharge/Umbilical sepsis*	4(12.1)(3.97,26.69)	2(8.0)(1.36, 23.99)
Bulged fontanelle*	1(3.0)(0.15, 14.05)	0
Eye infection	1(3.0)(0.15, 14.05)	1(4.0)(0.20, 18.18)
Ear discharge	0	1(4.0)(0.20,18.18)
Jaundice	1(3.0)(0.15, 14.05)	1(4.0)(0.20, 18.18)
Severe jaundice*	2(6.0)(1.03, 18.61)	1(4.0)(0.20,18.18)
Neonatal sepsis*	5(15.1)(5.77,30.43)	0
Others	1(3.0)(0.15,14.05)	1(4.0)(0.20,18.18)

\* Possibly severe disease conditions.

**TABLE II** ASSOCIATION OF BASELINE CHARACTERISTICS WITH CARE SEEKING

Variable	Qualified health care <i>n</i> (%)	Unqualified health care <i>n</i> (%)	Crude odds ratio, (95% CI), <i>P</i> -value
Residence: slum	22(66.7)	11(33.3)	0.38, (0.10, 1.38), 0.13
Uneducated father	24(80.0)	6(20.0)	1.89, (0.57, 6.26), 0.29
First in birth order	7(53.8)	6(46.2)	0.29, (0.07, 1.08), 0.06
Male gender	25(86.2)	04(13.8)	3.81, (1.05, 13.94), 0.04
Father salaried employee	35(76.1)	11(23.9)	1.59, (0.40, 6.31), 0.51
Low birth weight	16(72.7)	6(27.3)	0.89, (0.26, 2.96), 0.84
Preterm	11(84.6)	2(15.4)	2.23, (0.43, 11.50), 0.33
Antenatal care (ANC)<3 visits	8(66.7)	4(33.3)	0.67, (0.20, 2.22), 0.52

migration of the families. Over all, 46.4% (58/125) of the neonates developed one or more morbidity, which was similar among males and females. In cases of multiple morbidities only primary disease condition has been reported. There were no deaths in the neonatal period.

Neonatal morbidity was found to be 56.8% (33/58) and 37.3% (25/67) amongst slum and non-slum dwellers respectively (absolute difference=19.5%, 95% CI=3.32 to 34.68;  $P=0.04$ ). We also found that severe neonatal illnesses were higher among slum dwellers as compared to non-slum dwellers (OR= 4.50, 95%CI=1.28 to 16.38,  $P=0.007$ ). (**Table I**).

Among neonates who presented with any morbidity, 26 % (15/58, 11 among slums, 4 among non-slums) did not receive qualified medical care. These fifteen neonates were either taken to quacks (6/15) or remained at home (9/15, 8 females, 1 male). We found that male gender was associated with any care-seeking (OR=10.66, 95% CI=1.24 to 91.99;  $P=0.03$ ) (**Table II**).

Five neonates from slums were taken to quacks, out of which four had very severe disease symptoms. Two of these neonates subsequently died within 4-6 weeks of life, one due to probable meningitis and the other due to neonatal sepsis.

## DISCUSSION

We found that 46.4% (58/125) neonates required medical care at least once in the neonatal period,

which was similar to other studies done at Gadchiroli(3) and Bangladesh(5). We also found that 26% (15/58) of the sick neonates did not receive qualified medical care which was again similar to a multi-centric study done in urban settings in India(6).

We recruited institutionally delivered neonates and followed them under pragmatic conditions. We also attempted to assess and classify neonatal morbidity on the basis of maternal reporting only, which could be subject to recall bias as well as misclassification. Since recruitments were done in an urban RCH center catering to mothers of low socio-economic status our findings cannot be generalized for all institutional deliveries.

Inadequate post-natal counseling to mothers on neonatal care including neonatal danger signs was observed by us. This has also been documented earlier in Lucknow(7) and is likely to contribute to high neonatal mortality rate as observed in the state of Uttar Pradesh(1). Positive impact of a participatory intervention on uptake of antenatal and delivery services, infant morbidity and care-seeking behavior has been reported from Nepal(8) and this could also be considered in our set-up.

We conclude that there is an urgent need to train immediate neonatal caregivers, like mothers under IMNCI program. This would ensure prompt recognition of neonatal danger signs and consequently appropriate medical care-seeking.

**WHAT THIS STUDY ADDS?**

- Neonatal morbidity was significantly higher amongst slum dwellers as compared to non-slum dwellers.

*Contributors:* NMS collected the data and prepared the manuscript. SA guided the design, analysis and the manuscript writing process. RM analyzed the data. All authors helped in writing the manuscript.

*Funding:* None.

*Competing Interests:* None stated.

**REFERENCES**

1. Awasthi S, Verma T, Agarwal M. Danger signs of neonatal illnesses: Perceptions of caregivers and health workers in North India. *Bull World Health Organ* 2006; 84: 1-8.
2. World Health Organization. Student's Handbook IMNCI integrated management of neonatal and childhood illnesses. Geneva: WHO; 2003. WHO document WHO/FCH/CAH. p. 13-18.
3. Bang AT, Bang RA, Reddy HM. Home-based neonatal care: summary and applications of the field trial in rural Gadchiroli, India (1993-2003). *J Perinatol* 2005; 25: S108-S122.
4. Stoll BJ, Kleigman RM. The High Risk Infant. In: Behrman RE, Kliegman RM, Jenson HB, editors. *Nelson Textbook of Pediatrics*. New Delhi: Elsevier; 2004. p. 550.
5. Ahmed S, Sobhan F, Islam A, Khuda BE. Neonatal morbidity and care seeking behavior in rural Bangladesh. *J Trop Pediatr* 2001; 47: 98-105.
6. Neonatal Health Research Initiative (NHRI) of IndiaCLEN. Available from: URL: [www.indiaclen.org/ANNEX%20D.pdf](http://www.indiaclen.org/ANNEX%20D.pdf). Accessed December 26, 2006.
7. Agarwal M, Idris MZ, Ahmed N. Quality of child health services at primary care level (Rural Vs Urban) in Lucknow district. *Indian J Comm Med* 2004; 29: 192-195.
8. Manandhar SD, Osrin D, Shreshtha BP, Mesko N, Morrison J, Tumbahangphe KM, *et al.* Effect of a participatory intervention with women's groups on birth outcomes in Nepal: cluster-randomized controlled trial. *Lancet* 2004; 364: 970-979.