

REVIEW

Symptom-specific care-seeking behavior for sick neonates among urban poor in Lucknow, Northern India

S Awasthi, NM Srivastava and S Pant

The Department of Pediatrics, Chhatrapati Shahuji Maharaj Medical University, Lucknow, UP, India

To assess symptom-specific care-seeking practices for newborns and behavioral factors associated with them to inform strategies to enhance newborn care seeking in urban Lucknow, Northern India. This was a prospective follow-up study of consecutive 326 neonates delivered at an urban reproductive and child health (RCH) center. Focused Group Discussions ($n = 5$) were also conducted in urban slums ($n = 3$) at the RCH center ($n = 1$) and at a district hospital ($n = 1$). Overall, 326 neonates were recruited within 48 h of birth and 289 (88.7%) were followed up at 6 weeks (± 15 days) at home. Parents of 51.2% (148/289) neonates reported at least one symptom of illness. Among these, 27.3% (79/289) neonates had at least one reported Integrated Management of Neonatal and Childhood Illnesses (IMNCI) danger sign, of which 15 (18.9%) did not receive any modern medical care, 5 (33.3%) of which were dead by early infancy. Care seeking from unqualified providers (spiritual/traditional) was 33.3% (3/9) for persistent diarrhea and 23.5% (4/17) for pneumonia. Qualitative data from Focused Group Discussions showed that when pictures of some danger signs were shown like sunken eyes, reduced skin turgor, chest in-drawing and bulged fontanel, care seeking for these as well as fast breathing were influenced by 'local beliefs', which considered them to be untreatable by modern medicines alone. Thus, care seeking from multiple providers and use of traditional/home remedies delayed appropriate and timely medical care seeking. Almost half of the neonates had an illness symptom of which half had an IMNCI danger sign, of which one fifth did not receive medical care. Therefore, there is an urgent need to introduce a locally modified community IMNCI program here, for promoting care seeking from qualified providers for sick neonates.

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Introduction

Almost 1.2 million neonates die in India each year, which accounts for one-quarter of all neonatal deaths in the world.¹ Regional and subregional estimates vary, but globally 36% neonates die of

infections² whereas in India this figure has been estimated¹ to be 52%. Public health relevance of neonatal mortality was highlighted by the Lancet Neonatal Survival Series published in 2005.³ However, in a recent review on the impact of packaged interventions on neonatal health, it has been found that there exist serious research gaps with reference to care-seeking behavior for obstetric and neonatal complications.⁴

To reduce the burden of deaths under the age of 5 years all over the world, the Integrated Management of Childhood Illnesses strategy was developed by World Health Organization and United Nations Children's Fund. Integrated Management of Neonatal and Childhood Illnesses (IMNCI) is the Indian version of Integrated Management of Childhood Illnesses strategy, which gives central thrust to the neonatal care component, as neonatal mortality now accounts for two-thirds of infant mortality in India.⁵ Integrated Management of Childhood Illnesses is a three-pronged strategy and its main components are (1) improving the case management skills of the health workers, (2) improving the health system supports to ensure quality care to the children presenting at such facilities or outreach sites and (3) improving household and community practices related to child health, nutrition and development.⁶

On the basis of evidence, World Health Organization and United Nations Children's Fund developed a list of '16 Key Family Practices' to define and streamline the third component of the Integrated Management of Childhood Illnesses strategy.⁷ This list of behavioral objectives or practices was divided into four major groups: (1) practices for physical growth and mental development, (2) practices for disease prevention, (3) practices for appropriate home care and (4) practices for seeking care. Although the list of 'Key Family Practices' defines 'what' has to be targeted for promotion, but the evidence as to 'how' it could be done effectively and feasibly, is still very limited.^{8,9} This paper focuses on the fourth group of the 'Key Family Practices', that is, the care-seeking behavior of the families in response to various neonatal illnesses.

This study was performed to (1) assess symptom-specific care-seeking behavior for sick neonates and (2) assess relative importance of 'behavioral factors' (including local illness beliefs,

Correspondence: Dr S Awasthi, Department of Pediatrics, Chhatrapati Shahuji Maharaj Medical University, Lucknow, UP, India.
E-mail: sawasthi@sancharnet.in

'labeling' of severity of various illnesses and their traditional explanations) in care-seeking behavior.

'Danger signs' are the signs presented in a neonate for cases of serious bacterial infection, severe jaundice, diarrhea with dehydration or severe persistent diarrhea.¹⁰

Methods

Study setting

Lucknow is the capital city of Uttar Pradesh, a state in Northern India and has a native population of 2.2 million.¹¹ Rural–urban migration has led to a steady growth in Lucknow's urban population and a corresponding growth in its slum population. According to a United Nations Centre for Human Settlements estimate, currently, more than 50% of Lucknow's urban population lives in slum settlements.¹¹ Urban Lucknow has a large health infrastructure and there exist many choices (from public to private) in terms of qualified medical care seeking. Institutional delivery rate (59.5%) and antenatal care coverage (54.96%) are much higher than the average in Uttar Pradesh.¹² Distances from nearest health facilities (public or private) are low and in many cases insignificant. Despite the above factors neonatal mortality in Lucknow remains high. The neonatal mortality rate in Lucknow is 51 per 1000 and is close to the average of 53.6 in Uttar Pradesh.¹³

Study methods

The study was structured in two components, a quantitative and a qualitative one.

Quantitative component

This component was conducted in a 12-bedded urban reproductive and child health (RCH) center in Lucknow, with round-the-clock maternity/delivery services after obtaining institutional ethical clearance and with the permission of relevant authorities.

Neonates were screened within 48 h of delivery on all working days, excluding Sundays and holidays, and those without any exclusion criteria were recruited after taking informed consent from the parents. Neonates who had clinically detectable life-threatening congenital malformations at birth, any morbidity at the time of recruitment or were likely to leave the city within 1 month were excluded. One follow-up visit was done at home at 6 weeks \pm 15 days after recruitment to ascertain neonatal morbidity and care-seeking behavior.

At the time of follow-up mothers/caregivers were asked if their baby faced any health problem in the neonatal period and if answered in affirmation, symptoms of morbidity were recorded as narrated by them. Mothers were asked how they identified the respective symptom/morbidity in their baby. A structured and pre-tested questionnaire was used to further elaborate the details of illness as told by the mother. For example, if any mother reported any 'respiratory problem' in her neonate, she was probed with the

following set of questions: Q1: (a) was your child taking rapid breaths; (b) was there any chest in-drawing; (c) any grunting or wheezing; (d) nasal flaring; (e) bouts of cough usually terminating in vomiting and Q2: (a) did your neonate refuse to feed; (b) did your neonate had thermal instability; (c) did your neonate turn sluggish, lethargic; (d) did he develop a weak cry; (e) did he have cold mottled skin; (f) were there frequent apnoeic episodes; (g) did your child breathe very fast. These questions were administered by a trained medical social worker and to avoid any translation problem these questions were asked in local terminology. For instance, for diarrhea we used the word '*dast*' meaning loose watery stools and for fast breathing '*pasli chalna*' and for chest in-drawing we used the word '*pasli dhasna*'. A response to any of these questions was filled only after it was ascertained that the mother actually observed any of such symptoms. Similarly, 85 morbidity sign/symptom-specific questions grouped in 14 categories were present in the questionnaire (to arrive at a definitive diagnosis).

IMNCI definitions were used for classifying patients as having diarrhea, persistent diarrhea, pneumonia, meningitis, ear discharge, fever, pustules, jaundice and sepsis.⁵ A comprehensive list of diseases and signs was prepared in local terminology to avoid any translation problem. Diagnosis and prescriptions by qualified providers, if available (in cases of qualified medical care-seeking) were also taken into account by the study pediatrician before deciding for various diagnoses. Thereafter responses were coded and classified according to IMNCI.

Qualitative component

Five Focus Group Discussions were conducted on the participants that were not included as the part of the quantitative study. Three of these were conducted in urban slums, whereas one was conducted at the RCH center and one at a district hospital. Our Focus Group Discussion participants were mothers/caregivers who had cared for a neonate in the past 1 year. Slums where the mothers of the quantitative study dwelled were purposively selected for the study. These slums were 'Janta Nagri', 'Barolia' and 'Takiya Falas Bagh'.

To ensure the recognition of IMNCI danger signs, mothers were shown real-life photographs/sketches of newborns presenting with IMNCI danger signs, such as sunken eyes, reduced skin turgor, chest in-drawing and bulged fontanel. They were also asked about their perceptions (local beliefs) regarding underlying causes for various neonatal illnesses and signs presented therein.

Symptom-specific case scenarios were also discussed with them and they were asked about the care-seeking behavior they usually follow in such cases and about factors that affected such care-seeking behaviors. The comprehensive list of diseases and signs which was prepared in local terminology used in the quantitative part of the study was also used here and updated if any new local terminology was found.

Results

Quantitative component

Three hundred and twenty-six neonates were recruited between November 2005 and July 2007, of which 49.7% were males and 50.3% were females. Ninety-three (28.5%) neonates had low birth weight (<2.5 kg). Thirty-seven (11.3%) cases were lost to follow-up, primarily because of incomplete addresses or because of migration of the families.

Most (76.4%) fathers in this study group worked on daily wages or were self-employed in activities such as fruit vending/handicraft/auto repairing/tea stalls and so on. Most (92.3%) of the mothers were unemployed and were engaged in household activities (Table 1). Almost half ((50.9%) 166/326) of this study population had arrived at the health facility from six major slum areas of old Lucknow, viz. Janta Nagri, Takia Falas Bagh, Mohanpurwa, Barolia, Daulatganj and Bansmandi. These slums were within a 0 to 3 km range from the participating hospital.

Symptoms of any illness were found in 51.2% neonates (148/289), whereas only 27.3% (79/289) had at least one IMNCI danger sign. Danger signs found in 79 neonates have been shown in Table 2. Among the remaining 69 sick neonates, 32 (46.4%) had runny nose, 19 (27.5%) had loose motions, three (4.3%) failed to gain weight, six (8.6%) had rashes, four (5.8%) had eye discharge and five (7.2%) had other minor problems.

We found that the presence of some of the IMNCI danger signs such as fever alone, >10 pustules, ear discharge and umbilical sepsis were not associated with care seeking from traditional/spiritual providers. However, 17.7% (14/79) neonates with at least one IMNCI danger sign were taken to a traditional or spiritual provider. Signs reported by mothers for cases in which traditional/spiritual care was sought either alone or in combination with medical care were sunken eyes/fontanel, reduced skin turgor, fast breathing, chest in-drawing, bulging fontanel, jaundice (eyes/palms/soles yellow) and signs of probable sepsis (change in skin color, lethargy).

There were seven deaths, four in the neonatal period and three at ages of 4 to 6 weeks in this study group. Five of these deaths occurred among slum dwellers and could be attributed to potentially treatable causes (persistent diarrhea = 1, pneumonia = 2, probable meningitis = 1 and neonatal sepsis = 1). All of these mothers reported presence of one or more IMNCI danger signs in their babies before death. 'Exclusive' unqualified care (traditional/spiritual) was sought in four out of the seven deaths whereas one neonate with probable sepsis died at home. One neonate died of probable aspiration at home. Initial treatment by home remedies delayed health care seeking for a neonate who died of probable necrotizing enterocolitis at a private hospital.

Outcomes for those who received any medical care (n = 64)

Among 64 of 79 (81.1%) neonates that had any IMNCI danger sign, who received any qualified medical care, 53 (82.8%)

Table 1 Background characteristics of families from quantitative study

Variables	Number (N = 326)	Percentage
<i>Father's occupation</i>		
(a) Daily wages/self-employed	249	76.4
(b) Monthly wages	60	18.4
(c) Unemployed	17	5.2
<i>Mother's occupation</i>		
(a) Unemployed	301	92.3
(b) Daily wages/self-employed	18	5.5
(c) Monthly wages	7	2.2
<i>Fathers education</i>		
(a) Illiterate	131	40.2
(b) Literate/primary	105	32.2
(c) Secondary/above	90	27.6
<i>Mother's education</i>		
(a) Illiterate	109	33.4
(b) Literate/primary	118	36.2
(c) Secondary/above	99	30.4
<i>Residence (slum)</i>	166	50.9
<i>Religion</i>		
(a) Muslims	205	62.8
(b) Hindus	121	37.2
<i>Age mother (in years)</i>		
≤20	57	17.4
21–35	245	75.2
35+	24	7.4
<i>Family income (1 US \$ = 45 INR)</i>		
<2000	155	47.5
2000–3000	116	35.6
>3000	55	16.9
<i>Neonate</i>		
Males	162	49.7
Low birth weight (<2.5 kg)	93	28.5
<i>Birth order</i>		
= 1	78	23.9
2–3	174	53.4
≥4	74	22.7

said their baby was cured, seven (10.9%) said that their baby was not well and three (4.7%) said their baby was recovering. Five (50%) of these 10 babies that were not cured continued with traditional therapy (*n* = 3) and home remedies (*n* = 2). One baby, thereafter, expired at a private hospital because of necrotizing enterocolitis.

Table 2 Neonatal care seeking for IMNCI disease symptoms in urban Lucknow (quantitative component)

Illness symptoms	Number of neonates with these symptoms (n, %) (N = 79)	Actions taken by the family (includes multiple care seeking)				
		No action (n, %) (N = 2)	Home remedies (n, %) (N = 16)	Chemist (n, %) (N = 2)	Traditional or spiritual healer (n, %) (N = 14)	Qualified medical provider (n, %) (N = 64)
1. Diarrhea with dehydration	9 (11.4)				3 (33.3)	8 (88.8)
2. Pneumonia	17 (21.5)		4 (23.5)		4 (23.5)	15 (78.9)
3. Fever	6 (7.6)		2 (33.3)			4 (66.7)
4. More than 10 pustules/ulcers	12 (15.2)		5 (41.7)	1 (8.3)		11 (91.6)
5. Umbilical sepsis	9 (11.4)		2 (22.2)	1 (11.1)		6 (66.7)
6. Meningitis (bulged fontanel)	2 (2.5)				1 (50)	1 (50)
7. Ear discharge	2 (2.5)		1 (50)			1 (50)
8. Jaundice	7 (8.9)		1 (14.3)		2 (28.6)	6 (85.7)
9. Severe jaundice	3 (3.8)				1 (33.3)	3 (100)
10. Probable septicemia	12 (15.2)	2 (16.6)	1 (8.3)		3 (25)	9 (75)
Total	79 (100)	2 (2.5)	16 (20.3)	2 (2.5)	14 (17.7)	64 (81.1)

Outcome for those who did not receive any medical care (n = 15)

Of the 15 of 79 (18.9%) neonates with at least one IMNCI danger sign, who did not receive any medical care, five (33.3%) babies died, two in neonatal period (one each from probable meningitis and septicemia) and three in early infancy (one from persistent diarrhea and two from pneumonia). The neonate with probable meningitis was taken to a traditional healer whereas no care was sought for the neonate who died of probable sepsis. The infant who died of persistent diarrhea in the sixth week of life was taken to a traditional healer, whereas two infants who died of pneumonia in the fifth week of life were taken to spiritual healers. In all infant deaths, symptoms of illnesses were manifested in the neonatal period.

Of the remaining 10 neonates, five neonates who received self-medication (5/15) from the caregivers (for two cases each of fever (2/2) and umbilical sepsis (2/3) and one case of probable septicemia) were cured. One neonate with probable non-severe jaundice was cured through home remedies and was taken to a spiritual healer. Intermittent relief was observed in three neonates who were exclusively treated with home remedies (one each of ear discharge (1/1), umbilical sepsis (1/3) and of multiple pustules (1/1)). One baby with probable septicemia, who was not given any care, was critically ill when followed up.

Qualitative component

In all, 43 women took part in five Focused Group Discussions of which 36 (83.7%) were mothers and seven (16.3%) were caregivers. Twenty-eight (65.1%) mothers/caregivers were from slums. Twenty-eight (65.1%) participants were either literate or were educated up to primary or secondary level. Thirty-eight (88.4%) were

homemakers and five (11.6%) were self-employed or assisted their husbands at work. Twenty-five (58.1%) participants were Muslims and 18 (41.9%) were Hindus. Participants were in the age range of 22 to 53 years (median 27) and range of parity was 1 to 7 (median 3).

Three clear patterns of care seeking could be observed from this qualitative data (Table 3). There were symptoms for which mothers went directly for modern medical care (for example, blood in stools, lethargy, inability to feed) while there were other symptoms for which home remedies were tried first and medical care was sought later (for example, symptoms of pneumonia, skin troubles), if the home remedies did not work. In addition, there were some symptoms, which were invariably associated with care seeking from traditional or spiritual healers (for example, jaundice, reduced skin turgor, bulged fontanel, chest in-drawing) either alone or in combination with medical care. 'Sunken eyes' and 'reduced skin turgor' were the signs used by mothers to diagnose '*sukba rog*' (wasting), which required herbal treatment along with some spiritual action (prayers and amulets).

There were instances where the baby was considered to be severely ill, but mothers did not consider it necessary to seek qualified medical care, as they felt competent enough to self-diagnose the disease. Although qualified providers were consulted in most cases of severe illness, this was done after a considerable delay. The following two case studies, which were a part of the quantitative data, would exemplify these scenarios.

Case study 1

The baby passed loose watery stools for 5 to 6 days since the first week of life and subsequently became lean and thin. There was a visible depression in the middle of the head. We thought that the baby might have been suffering from '*sukba rog*'. Hence, we

Table 3 Maternal perceptions regarding IMNCI danger signs and care seeking for neonates in urban Lucknow (qualitative study)

IMNCI danger signs	Perceived cause	Leads to	Range of actions (sequential care-seeking behavior)
1 (a) Loose watery stools	Mother's intake of sour foods; exposure to cold; indigestion	Dehydration ' <i>Pani ki Kami</i> '	Oral fluids/ORS salt+sugar solution → medical care
(b) Sunken eyes	Persistent diarrhoea; inadequate assimilation;	Leads to ' <i>Subha Rog</i> ';	(Traditional/spiritual provider/medical
(c) Reduced skin turgor	may be ' <i>Upri</i> ' or ' <i>Nazar</i> '	child becomes thin; leads to death	care) combination
(d) Lethargy	Persistent diarrhea/any other disease; ' <i>Kamjor bo jata hai</i> ' (child becomes weak)	-----	Medical care
(e) Blood in stools	' <i>Pechishb</i> '; (cause unknown) may be 'infection in intestines'	Could lead to death	Medical care
2 (a) Fever	Exposure to cold air (mother/child); could also be owing to any other disease	-----	Cold water strips on forehead give ' <i>Bukbar</i> ' (fever) syrup (PCM) → medical care
(b) Hypothermia	Improper blood flow in body; mostly in cold season (also neonate should be dried carefully after bath)	-----	Keep the baby warm notice for 1–2 days → medical care
(c) Nasal flaring	Congestion as a result of cough/cold; not able to breathe properly	Chest in-drawing ' <i>Pasli chalti hain</i> '	Home remedies
(d) Grunting	'Congestion'; respiratory difficulty		(Home remedies/medical care) combination
(e) Rapid breathing	Persistent respiratory difficulty or may be ' <i>Upri</i> '	Depends; 'may also lead to death'	(Home remedies/spiritual healer/medical care) combination
(f) Chest in-drawing	Persistent respiratory difficulty or may be ' <i>Upri</i> '		
3 (a) Umbilical sepsis (redness/inflammation/pus)	Problem in shedding of cord; inadequate hygiene	-----	Home remedies → 'chemist' powder (Neomycin) → medical care
(b) More than 10 skin pustules/skin ulcers	Unhygienic practices	Severe skin trouble accompanied by fever	Home remedies → 'Johnsons' baby powder/crushed tab Septran' → medical care
4. Jaundice (skin color yellow palms and soles yellow)	Liver problem; may also be ' <i>Upri</i> '	May lead to death if underlying cause not removed	Home remedies → (spiritual healer+ medical care) combination
5. Pus draining from the ear	If water goes into ear; if mother feeds the child in lied down position	Can lead to persistent ear problem or deafness	Home remedies → medical care
6. Bulged fontanel	Worms in brain/brain fever ' <i>dimaag mein bukhaar</i> '/water in brain/' <i>Upri</i> '	Leads to death (high fatality)	Traditional healer → (spiritual healer/Medical care) combination
7. Inability to feed	Weakness because of diseased condition; ' <i>Nazar</i> '	' <i>Kamjori</i> '; (weakness/lethargy) very severe problem	Medical care (delayed)
8. Neonatal convulsions	Occurs rarely in neonates. May be because of any internal problem	-----	Very rare symptom (in neonates) → if occurs → medical care

(-----) indicates that no clear responses could be elicited from the Focused Group Discussions; signs indicated in bold are IMNCI danger signs.

went to a local (traditional) healer. He pasted a mixture of herbs, the principal component of which was '*rumi mastagi*' (*Pistacia lentiscus*), at the center of the head. There was some relief but the baby is still not well (respondent: mother).

Although mothers knew that these were the signs following severe persistent diarrhea, they attributed the severity of symptoms to some '*upri*' (supernatural) cause or to causes, which could not be treated primarily through modern medicines. Similarly, it was also reported that unqualified care was sought frequently for babies with 'fast breathing' and 'chest in-drawing'.

Case study 2

The baby had fever and congestion followed by chest in-drawing on the 20th day of life. We tried home remedy, that is, massage with paste of mustard oil, garlic and fenugreek seeds (which were considered to be intrinsically hot), but the child did not recover. Hence, we went to an '*ojha*' (spiritual healer) in the community who performed a ritualistic procedure of *Jhada Phunk* on the baby. Both the therapies could not provide sufficient relief to the baby; hence, we went to a homeopathic doctor near our residence. He provided us with necessary medicines. Now, the baby is recovering (respondent: mother).

Mothers also reported that they generally prefer homeopathic medicines, particularly for neonates, because they were easy to administer, were of milder nature and were also pleasurable to the neonate. Home remedies were used for runny nose, blocked nose and skin troubles and were considered to be effective.

It was also found that for severe illness episodes an unqualified provider could be consulted alone or in combination with a qualified medical practitioner. For example 'jaundice' (*Kaanwar*) was a condition for which qualified and unqualified care were simultaneously sought. Some manifestations of sepsis (skin color red, pale, blue or mottled) were considered to be '*upri*' and required consultation from a spiritual person.

Discussion

Among 289 neonates recruited from an urban RCH center and followed up for 6 weeks, 27.3% (79/289) reported at least one or more IMNCI danger sign, of which 18.9% (15/79) did not receive any medical care and five (33.3%) of them were dead by early infancy. Similar findings have been reported from another study performed in rural Lucknow, where the authors reported care seeking through untrained providers and use of traditional medicines for potentially fatal bacterial infections in neonates.¹⁴

In addition, 23.8% (69/289) neonates had other symptoms of illness, not included in IMNCI danger sign list, for which care seeking was observed. These symptoms were frequent loose stools, runny or blocked nose, redness of eyes with discharge and abdominal distention.

We also found that local illness beliefs, care seeking from multiple providers and use of traditional/home remedies, prevented or delayed qualified medical care seeking in our setting and were similar to other studies performed in rural Ghana.^{15,16}

Through quantitative and qualitative methods, we have found widely prevalent use of home remedies for fever, umbilical sepsis and multiple pustules, which was similar to another study from Bangladesh.¹⁷ In Bangladesh, the researchers also reported care seeking from multiple providers (including quacks, *maulvis* and *kobirajs*) for most of the neonatal complications. Care seeking through multiple providers in this study could have been because of uncertainty in illness causation (local beliefs), expectation of rapid results (use of home remedies) and perceived lack of effectiveness (change in providers). Mothers responded that they used home remedies as first resort in most of the cases because of the perceived effectiveness of home remedies in majority of neonatal illnesses. However, lack of funds could also have been an important factor underlying these choices.

In this study, it was observed that five out of seven deaths occurred among slum dwellers because of possibly treatable causes. Another study that we performed in the same setting revealed that neonatal morbidity was significantly high in urban slums and care seeking was low as compared with non-slum dwellers with similar incomes.¹⁸

This study was performed in an urban RCH center among mothers in low socioeconomic groups and therefore cannot be generalized for all institutional deliveries. Moreover, the majority of the mothers from this study group had sought antenatal care at least once at the RCH center; hence, our findings cannot be generalized for mothers who never seek care for themselves or their newborns. The burden of neonatal morbidity and mortality could be even higher among such groups and this could possibly contribute to high neonatal mortality rate reported from Lucknow.¹³

In this study, we found that mothers more often reported (illness narratives and Focus Groups) 'sunken fontanel' as a sign of persistent diarrhea instead of 'sunken eyes'. We found that signs of persistent diarrhea (sunken eyes/fontanel and reduced skin turgor) and 'marasmus' (child consistently growing thin and weak) were considered to represent the same condition termed as '*sukha rog*'. In addition, '*san-san dibba*' was described as an illness manifested with bulging fontanel (probably meningitis). '*Sukha rog*' and '*san-san dibba*' are two traditional illnesses that affect an infant and these two conditions were considered to be associated with high fatality among neonates and young infants. In another study performed in an urban slum in New Delhi,¹⁹ '*sukha*' (literally 'dried up') has been described as 'wasting' and has been explained as a consequence of persistent diarrhea, inadequate feeding or '*nazar*' (evil eye).

We have also found that chest in-drawing, some manifestations of sepsis and jaundice were associated with causes that could not be cured only through modern treatment as perceived by the mothers and family members of the neonates. Therefore, it can be deduced that labeling²⁰ of an illness was guided by local beliefs and this was very crucial in the process of care seeking.

In the IMNCI approach, health workers are trained to teach about recognition of danger signs of neonatal illnesses to caregivers and counsel them to seek appropriate medical care. This approach requires that caregivers recognize and correctly interpret 'danger signs' of illness in their neonates, and seek timely and appropriate medical care. But, this study's findings indicate that although mothers recognized danger signs of severe illnesses in their neonates, they did not seek qualified medical care in many instances because of some local beliefs, which prevented them from doing so. Hence, there is a need to counsel mothers/caregivers regarding 'labeling', that is, the interpretation of signs and their meaning with respect to seeking care by a trained provider and to improve 'resorting to care', that is, how rapidly to seek care, alternative types and appropriateness of different providers. IMNCI training could be locally modified and include skills in counseling to overcome the barriers to prompt care seeking from qualified medical professionals for sick newborns.

We conclude that there is an urgent need to introduce a community IMNCI program to improve qualified medical care seeking for sick newborns in urban Lucknow.

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