

- from Poor populations 2000. *Demography India*; 29: 99-115.
50. Rao SR, Pandey A. Child mortality in Goa: A study of Socio-economic and Behavioural factors. International Institute of Population Science 1993-1994. Research Report Series No. 1. Bombay, India.
 51. Nanda S, Surender S. Female work status and its relationship with fertility and child loss in Orissa. *J Fam Welfare* 1997; 43: 34-37.
 52. Arifeen SE, Black RE, Caulfield LE, Antelman G, Baqui AH. Determinants of infant growth in the slums of Dhaka: size and maturity at birth, breastfeeding and morbidity. *Eur J Clin Nutr* 2001; 55: 167-178.
 53. Aneja B, Singh P, Tandon M. Etiological factors of Malnutrition among infants in two urban slums of Delhi. *Indian Pediatr* 2001; 38: 160-164.
 54. Zeitlin MF, Ahmad NU, Beisir AS, Zeitlin JA, Super CM, Guhin V. Developmental, behavioural and environmental risk for diarrhea among rural Bangladeshi children of less than two years. *J Diarrhea Dis Res* 1995; 13: 99-105.
 55. Gupta I, Mitra A. Knowledge of HIV/AIDS among migrants in Delhi slums. *J Health Popul Dev Ctries* 1999; 2: 26-32 .
 56. Rajaratnam J, Abel R, Duraisamy S, John KR. Morbidity pattern, Health care utilization and Per Capita health expenditure in a rural population of Tamil Nadu. *Natl Med J India* 1996; 9: 259-262.
 57. Curtis V, Cairncross S. Effect of washing hands with soap on diarrhoea risk in the community: a systematic review. *The Lancet Infectious Dis* 2003; 3: 275-281.

Urban Slum-Specific Issues in Neonatal Survival

Armida Fernandez
Jayshree Mondkar*
Sheila Mathai⁺

Urbanization is rapidly spreading throughout the developing world. An urban slum poses special health problems due to poverty, overcrowding, unhygienic surroundings and lack of an organized health infrastructure. The primary causes of neonatal

From the Department of Neonatology, LTMMC & LTMG Hospital, Sion, Mumbai, and INS Ashwini Hospital, Colaba, Mumbai⁺ and SNEHA.*

*Correspondence to: Dr. A. Fernandez, 53, Sea Sprints, Bandstand, Bandra, Mumbai 400 050, Maharashtra, India.
 E-mail: mcfhi@vsnl.net*

mortality are sepsis, perinatal asphyxia and prematurity. Home deliveries, late recognition of neonatal illness, delay in seeking medical help and inappropriate treatment contribute to neonatal mortality. Measures to reduce neonatal mortality in urban slums should focus on health education, improvement of antenatal practices, institutional deliveries, and ensuring quality perinatal care. Success of a comprehensive health strategy would require planned health infrastructure, strengthening and unification of existing health care program and facilities; forming a system of referral and developing a program with active participation of the community.

Key words: *New born infant, Urban slum.*

Improving newborn survival is a national priority in child health today. A staggering 26 million babies are born in our country every year. Of these 1.2 million die in the first 28 days of life accounting for 20% of the global burden of newborn deaths(1). If these deaths have to be reduced, one must begin by

improving health of mothers during pregnancy and upgrade services for delivery.

The pregnant mother and her neonate form the vulnerable sector of our society, more so in the rural areas and in the urban slums. In the past few decades a greater emphasis has been laid on rural health as 80% of our population lived in villages. Urbanization is rapidly spreading throughout the developing world resulting in changing proportion of urban to rural population. In 1988 for the first time the percentage of urban poor surpassed the rural poor(2). The urban poor are at the interface between under development and industrialization. Urban health in the slums presents serious public health concerns and challenges predominant among them is neonatal health and mortality. Although urban mortality statistics are comparatively better than the rural, there is a wide disparity between the urban rich and the urban poor and hence the existing urban statistics do not give a true representation of urban slums. Another major problem in urban slums is that unlike its rural counterpart there is no envisaged Primary Health Center with its planned network. In urban slum, multiple health authorities administer health services. Unfortunately, these services are not effectively organized, resulting in duplication of services in some areas and non-existence of health services in other areas.

Neonatal Mortality

Primary Causes

The neonatal mortality is stagnant at 46/1000 live births for the last five years(1). The principal causes of neonatal mortality are sepsis, perinatal asphyxia and prematurity(3-4). Irrespective of the primary cause of death over two third of deaths occur in low birth weight infants weighing less than 2500 grams(1). These facts have important

implications for interventions planned to decrease mortality.

Similar patterns for mortality are reflected in the urban slums. Kapoor, *et al.*(5) in their study in the urban slums of Lucknow reported sepsis as a cause of death in 12.3% of cases. Asphyxia and prematurity accounted for 42% and 14% of the deaths respectively(5). In another study carried out by Bhandari, *et al.*(6) sepsis contributed to 45% of neonatal mortality, asphyxia to 25% and prematurity 20% of the mortality. Despite national efforts of antenatal immunization of mothers with tetanus toxoids, Awasthi, *et al.*(7) reported tetanus as the cause of neonatal deaths in 36.4% cases.

Maternal Health and Related Issues

Maternal factors contributing to poor neonatal outcome include early age at conception. In a Delhi based study(8) the age at marriage was 13.8 years and the consummation of marriage was at 16 years. The neonatal mortality in this study was 58.1. Short inter-pregnancy intervals are also associated with poor perinatal outcomes. The percentage of women receiving two or more injections of tetanus toxoid is 54 % among the low SLI (standard of living index) population (rural-urban average) whereas the national average stands at 66.8%(9).

Fewer births in urban slum (50%) were attended by a trained professional than were births in rural areas (65%)(9). Gulati, *et al.*(10) reported that 96% of deliveries were conducted at home in urban slums of Ludhiana.

Nutrition of the mother before pregnancy can influence the weight of the neonate. Macro and micro deficiencies, infections, addictions in urban slums predispose mothers to adverse pregnancy outcomes and low-birth weight. In a multi-centric study on urban slums, 68% of

the expectant women had a pre-gravid weight of 45 kg or less. Nearly 51.7 % of the women had moderate anemia. Of these mothers 41.4% delivered low birth weight babies(8).

Underlying socio-economic causes of mortality in urban slums are the poor living conditions, illiteracy, ignorance and poverty resulting in women not paying attention to pregnancy and health. A large number of women in slums work outside the home(8). This results in inadequate rest during pregnancy and early return to work undermining exclusive breastfeeding practices and increase neglect of the newborn.

Health Care Delivery

The health structure in slums vary from city to city and often depends on the stability i.e. the number of years the slum has been in existence. Well-established slums may have ICDS services in place. A few large cities like Mumbai, Calcutta, Chennai under the Indian Population Project have looked at health infrastructure establishment in urban slums. News slums, may have just private clinics and hospitals situated either in the slum or in the vicinity. Availability and accessibility as a rule is not a major problem in urban slums. Transport is comparatively easier in urban areas. Affordability could be an issue, since medical services are more expensive in a city. Despite the fact that free maternity services are available provided by the government or the municipal corporation the first preference for medical advice is the private practitioners(6).

Studies on a few urban slums have indicated that despite availability of public hospitals, up to 90% of deliveries in certain slums take place at home and antenatal care is minimal(11). Late recognition of neonatal illnesses and delay in seeking medical help were responsible for increased neonatal mortality. Private practitioners in the locality

were the first preference. Only 19% of neonates were taken directly to the hospital. Care takers reported full compliance with prescribed oral therapy, 50% did not comply with advice for hospitalization reasons include lack of perception that the child was gravely ill, other siblings at home, economic reasons and unpleasant past experience(6).

Other problems

Urban slums have a heterogeneous population that migrate from different parts of the state and country. The sense of collective responsibility is low and voluntary efforts are less common. A multiplicity of agencies are involved including government and voluntary agencies which makes coordination difficult. Presence of a large number of unqualified but affordable health practitioners on one hand and poor image of the public sector result in delay and inappropriate care for the sick newborn.

Measures Directed at Improving Neonatal Survival in Urban Slums

Maternal Health Related Issues

Neonatal survival depends on maternal well being during pregnancy. Early registration, regular monitoring of pregnancy, identification and referral of high risk pregnancies and safe delivery practices by trained personal are essential keys to improving outcome. Today there is sufficient evidence to show that improvement in birth weight is a function of the pre pregnancy maternal weight rather than any short term measures to improve nutrition during pregnancy(12,13). Chronic undernutrition also influences birth weight through it's effect on maternal stature independent of body weight(14). Hence focus on child and adolescent nutrition and health would be a stepping stone to long term far reaching consequences of improved birth weights – a

crucial need, given that two thirds of neonatal deaths currently occur in low birth weight infants.

Female literacy coupled with woman empowerment on right to health, have been demonstrated to show resounding success in lowering NMR to 10/1000 in states like Kerala(1).

Issues of Utilization of Health Care Services

1. Home based care versus hospital care

Over two thirds of deaths take place in the first week of life as a result of perinatal asphyxia and sepsis. These problems can be best tackled by technically skilled personnel in hospitals. This is an important issue in the context of urban slums. In remote rural areas where medical care is difficult and hospital care inaccessible, training of traditional birth attendants and auxiliary nurse midwives is necessary to make delivery safe and ensure home based care of the neonate. In urban slums accessibility is not a major issue. Traditional practices, lack of awareness of the need for antenatal care, fear of hospitals, attitude and behaviour of the staff, and the cost of hospitalization are deterrents to accessing hospital care. Some public hospitals impose fines on mothers with more than two deliveries and there is some coercion for family planning. These are issues that need to be tackled if hospital deliveries have to be promoted. In the long run if one has to reduce early neonatal deaths, promoting institutional deliveries must be accorded priority. If promotion of safe delivery at home in urban slums is given emphasis the quantum shift from home to hospital deliveries will be further postponed.

Improving Health Care Systems

Data on existing morbidity and mortality in neonates in the slums is lacking. Indicators

in maternal and neonatal health are needed to plan necessary interventions. It is equally important to study factors that influence health seeking behaviour for mothers and babies. In order to plan programs and policies, there is need to collect data on maternal and neonatal health. The SRS (Sample Registration Survey) data does not include urban slums.

Improving the Quality of Perinatal Care

Quality of perinatal care available in the public sector leaves much to be desired. Improvements in knowledge and technical skills of the staff are necessary. Emphasis must also be laid on improving behavior and attitude of the health personnel at all levels. Hospitals must be made "Mother and Child Friendly". This would require training both in technical and communication skills. Services for mothers and babies should be free.

Setting up a Referral System

In order to facilitate maximum and effective utilization of health services in urban areas, it is necessary to set up a definite system of referral. There is also a need to create linkages between domiciliary, health centre and hospital level. Protocols for admissions to primary, secondary and tertiary levels must be laid down. This will ensure adequate utilization of primary and secondary level hospitals and prevent overcrowding in tertiary hospitals.

Motivating Health Workers

Urban slums have a variety of health workers that could be voluntary or paid. Health workers from existing government and municipal corporation from NGOs and CBOs should be involved in neonatal health. Additional training and responsibilities of the health worker could include early detection and referral for illness and infection. Since the CHV in the existing health sector is already

Key Messages

- Despite the fact that free maternity services are provided by the government first preference for medical advice is the private practitioner. Qualitative research on health seeking processes is necessary to bring about a behavior change. Institutions must be made Mother-Child Friendly to encourage mothers to seek care in hospitals.
- The success of a comprehensive urban health strategy would need inclusion of all key players, provision of health infrastructure, forming an effective system of referral and developing programs with active, democratic participation of the community.

burdened with a number of responsibilities, an additional worker that only attends to the newborn at birth and follows up the newborn with frequent visits has been suggested. This has shown reduction in neonatal mortality in the rural community(11).

Community Medical Practitioners

Studies have shown that a majority of slum dwellers will visit a general practitioner for advice(6). The practitioner could be of different systems of medicine and include non-qualified practitioners. These care providers are excluded from training under national programs. Training of all practitioners with respect to diagnosis, early management and referral of newborns should be considered.

Community Participation

Mother and family are among the key players in reduction of neonatal mortality and improvement in neonatal health status. There is need to understand and document the processes underlying infant deaths-recognition of illness by the parents, care seeking practices and quality of care received when it is sought. If we understand how families behave and why they do so then we could focus our interventions to improve them. Inability to recognize serious illness has been cited as a main cause for late medical advice.

The strength of any program lies in community mobilization and participation. Since the community in the slums is a heterogeneous group community participation is more of a challenge. Formation of self-help groups and use of the existing platform of Mahila Mandals should be used for health education including neonatal care in health and sickness.

Adolescent groups and men should be included in planning, training and motivation. Getting the community to take responsibility for the health of mother and newborn should be the goal.

Integration of Services

In order to effectively manage and treat the large number of neonates it is necessary to integrate all existing health services – public, private and NGOs. Each one's role must be identified and work divided to avoid duplication. Emphasis must be on education, training and community participation.

In conclusion the success of a comprehensive urban health strategy would require fundamental changes of attitude and approach in city health systems and government agencies. Experiences, problems, ideas and approaches should be exchanged between cities to promote innovation, collaboration and technical cooperation. It

would need inclusion of all key players, provision of health infrastructure, forming an effective system of referral and developing programs with active, democratic participation of the community.

REFERENCES

1. Government of India, Ministry of Health and Family Welfare, Child Health Division, New Delhi, 2000.
2. National Institute for Urban Affairs (NIUA). India's urban sector profile, New Delhi, India, Research study series number 61, 1998.
3. Faculty Investigators of the National Neonatal Perinatal Database: Neonatal Morbidity and Mortality: Report of National Neonatal Perinatal Data Base, 2000.
4. Thora S, Awadhiya S, Chansoriya M, Kaul K K. Perinatal and infant mortality in urban slums under ICDS scheme. *Indian Pediatr* 1986; 23: 595-598.
5. Kapoor RK, Srivastava AK, Misra PK, Sharma B, Thakur S, Srivastava KL, *et al.* Perinatal mortality in urban slums in Lucknow. *Indian Pediatr* 1996; 33: 19-23.
6. Bhandari N, Bahl R, Taneja S, Martines J, Polian MK. Pathways to infant mortality in urban slums of Delhi, India: Implications for improving the quality of community and hospital-based programs. *J Health Popul Nutr* 2002; 20: 148-155.
7. Awasthi S, Pande VK. Cause-specific mortality in under fives in the urban slums of Lucknow, North India. *J Trop Pediatr* 1998; 44: 358-361.
8. Bhargava SK, Singh KK, Saxena BN, ICMR Task Force: National collaborative study on identification of high risk families, mothers and outcome of their off-springs with particular reference to the problem of maternal nutrition, low birth weight, perinatal and infant morbidity and mortality in rural and urban slum communities, Summary, Conclusions and Recommendations. *Indian Pediatr* 1991; 28: 1473-1480.
9. International Institute for Population Studies, National Family Health Survey, (MCH and Family Planning) Mumbai, 1992-93.
10. Gulati JK, Jaswal S. Maternal and child health care in slums of Ludhiana city. *Indian J Mat Child Health* 1998; 9: 48-51.
11. Bang AT, Bang RA, Baitule S, Deshmukh M, Reddy MT. Burden of morbidities and the unmet need for health care in rural neonates – A prospective observational study in Gadchiroli. *Indian Pediatr* 2001; 38: 952-965.
12. Edwards LE, Alton IR, Barada MI, Hakanson EY. Pregnancy in the underweight woman. Course, outcome and growth patterns of the infant. *Am J Obstet Gynecol* 1979; 135: 279-302.
13. Naeye RL, Blanc W, Paul C. Effects of maternal nutrition on the human fetus. *Pediatrics* 1973; 52: 494-503.
14. Cawley RH, McKeownt T, Record RG. Parental stature and birth weight. *Ann Hum Genet* 1954; 6: 448-456.