Correspondence

Pattern of neonatal and post neonatal deaths over a decade (1995-2004) at a Military Hospital in Saudi Arabia

To the editor

I read with interest the extensive study entitled Pattern of neonatal and post neonatal deaths over a decade (1995-2004) at a Military Hospital in Saudi Arabia, reported by Saidan et al.[1] I have some comments and queries, which require clarification from the authors. The number of babies admitted in the nursery and Neonatal Intensive Care Unit (NICU) during this period is not mentioned that would have given a better idea on the outcome of the babies. Morbidity of the surviving babies is not mentioned especially pre-term babies. Khan et al[2] observed that in infants <33 weeks gestational age who were serially assessed, of the 159 enrolled children, 65% survived, 16% died, and 19% were lost to follow up. Those who survived were followed up for neurodevelopment by physicians and developmental psychologists. At a mean age of 31 months, the developmental status of 85 children followed up for 12 months was normal in 32%, while 45% had mild, and 23% had serious neurodevelopment impairments. Studies from the various regions of Saudi Arabia have shown variable neonatal mortality in NICUs. Arafa and Alshehri[3] from Abha (southern region of Saudi Arabia) have reported high neonatal mortality rate (22.4%). Bassuni et al[4] from the same region reported 17.4% neonatal mortality. Nabi and Karim[5] from Khamis Mushayat from the same region, in a retrospective 7 years study of neonatal mortality reported rates of 17%, 27%, 24%, 12.5%, 11.5%, 9.9%, and 6.6% in the years 1405 up to 1411 (Hijra). From Medina El Munawara (western region of Saudi Arabia), Nabi and Karim[5] reported 6% neonatal mortality. The reasons for low neonatal mortality in their study were: 1. Majority of the pregnant women attended the antenatal clinic and the deliveries were conducted in the hospital. 2. Adequate number of beds available for the admission in the NICU. 3. Adequate number of trained staff (including doctors and nurses), equipment and drugs. 4. Strict aseptic precautions in collaboration with the infectious control team of the hospital. 5. Early use of expressed breast milk, breast feeding early maternal involvement for the care of the baby. 6. Three tiers medical care system, in this country, primary health centers, secondary, and tertiary care hospitals. 7. Rapid transport facilities for the transport of the sick patients. 8. Regular perinatal mortality and morbidity meeting between obstetrics and NICU staff to discuss mortality and morbidity in the hospital. 9. Support from continuous medical education programme. 10. Regular neonatology club meeting in the region.

The global burden of neonatal deaths is estimated to be 5 million, of which 3.2 million deaths occur during the first week of life. India accounts for 1.2 million or nearly 30% of global neonatal mortality. In India, 3 babies die every minute, and every fourth baby born has low birth weight (LBW). The problems faced by newborn infants vary significantly in different parts of the globe, even among developing nations there is much heterogeneity in the causes of neonatal morbidity and mortality. While planning and providing health care services to newborn infants, we have primarily looked at the information originating in specialized neonatal units rather than at the grass roots level.[6,7] The decision to limit the care in neonates with lethal malformation and those with extreme prematurity with severe complications in consultation with the parents is a step in right direction. This will serve as a guideline for the hospitals with crowded NICUs especially in ministry of health hospitals. The policy to provide resuscitation to the neonates born with birth weight above 500 g except baby with lethal congenital malformations is followed by many hospitals in Saudi Arabia.

In the discussion, it is mentioned that 18 babies died with birth weight less than 500 g, in the study did any baby survive less than 500 g, if so what was the outcome. Fifty-three percent of deaths were due to prematurity and its complications in the study, it is an established fact that prematurity is the main cause of neonatal deaths in view of their compromised immunological status and susceptible to infection.[8] A newborn infant weighing less than 2500 g at birth is termed LBW neonate. Low birth weight newborn results due to intrauterine growth restriction or prematurity. According to the United Nations Children's Fund, the incidence of LBW neonates is 30% in India.[9] Low birth weight neonates are further classified as very LBW (<1500 g) and extremely LBW (1000 g). Infection is the major problem and is one of the major cause of mortality and morbidity in premature babies especially in over crowded NICUs. Bassuni et al[4] report 13.6% deaths due to infection in their study. Nosocomial infection includes bacterial and fungal. The incidence of candida infection in very LBW infants (<1500 g) is reported to be 3-5%, however, in extreme LBW infants (<1000 g) is as high as 18-20% and the mortality rate of infected extreme LBW infants is as high as 18-20%.[10] Neonatal septicemia continues to be a major cause of mortality and morbidity among neonates around the world.[11]

I will like to know how many babies died due to infection. Al-Alaiyan[12] reports that the birth of premature infant of extremely LBW, around the margin of viability poses difficult management decisions for health professionals and parents because of mortality and morbidity, also human and economic cost are too high. Most of them develop long-term disabilities. The World Health Organization places 22 weeks of gestational age or 500 g birth weight as the lower limit at least for the purpose of perinatal statics. Much has changed in neonatal intensive care for the last 2 decades. Exogenous surfactants are administered frequently for respiratory distress; high frequency oscillation and inhaled nitric oxide are available in advance centers. Antenatal corticosteroids have become standard therapy for women in whom pre-term delivery is threatened. All these changes have contributed positively to the survival of extremely premature babies.[12] The concept of Kangaroo mother care or the skin-to-skin care is an economical, acceptable, and practical way for maintaining temperature of the LBW neonates. It has the added advantage of providing adequate nutrition through frequent breast feeds. The kangaroo mother care improves growth and reduces morbidities in LBW infants. It is simple, acceptable to mothers and can be continued at home.[13] Low birth weight is the most significant factor contributing to neonatal mortality and morbidity. These neonates are at higher risk of asphyxia, sepsis, hypothermia, and feeding problems, and so forth. Common illnesses tend to be more severe and last longer in this group. Apart from immediate problems, LBW neonates are prone to long term disorders such as infections, malnutrition, and neurodevelopment disabilities. Babies who are small or disproportionate at birth also have an increased risk of developing coronary heart disease, non-insulin dependent diabetes mellitus, stroke, and hypertension during adult life. It is postulated that these diseases are programmed by inadequate supply of nutrients to the developing fetus, thus measures to increase the birth weight of babies constitute a priority area in developing nations.

Low birth weight neonates are a special group, which require attention and care. Since the etiology is multifactor, efforts at a multiprong, approach alone could help achieve targets. Simple measures to prevent morbidity and mortality as essential care of LBW must be exercised with emphasis on skilled attendance at birth, prompt resuscitation, adequate nutrition through breast feeding, prevention of hypothermia, and successful referral of sick neonates.[7] Extremely pre-term survivors have substantial need for community support regardless of their impairment level. Efforts to improve comprehensive delivery of family-centered community-based services are urgently needed.[14] Thirty-six percent of the babies died due to congenital malformations in the study. From the eastern region of Saudi Arabia in one study, 12.4% babies were malformed.[15] From the southern region of Saudi Arabia in one study, 30.8% babies died due to congenital malformation.[8] Rates of some congenital malformations in India is one of the highest in the world, and many studies to prevent the malformations are underway. Apart from consanguineous marriage, infections during pregnancy, folic acid deficiency, and history of drugs during pregnancy has been hypothesized as one of the causal factors. Drug intake during pregnancy includes oral contraceptive pills, progesterone analogues to confirm pregnancy, medications for medical ailments, and gender selection drugs to bear male offspring. Effects of gender hormones on the fetus have been documented, however, the studies are based mainly on the exposure of the fetus to female gender hormones during the initial period of development.[16] The prevalence of major congenital anomalies in the Saudi population appears to be similar to international figures. Early antenatal diagnosis of congenital anomalies is crucial for early counseling, intervention, and possible fetal therapy.[17] Although advances in neonatal technology have improved the survival prospects of premature infants significantly, they have come at a high financial cost.[18]

In conclusion, the authors are right that there is need to publish such studies from the various regions in this country and to establish a data base all over the country to monitor the improvement in health care.

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Reply from the Author

We would like to thank Dr. Nabi for his interest and for his comments on our report.[1] Dr. Nabi raised 2 points: the rate of survival and the rates of some of the clinical outcomes (morbidities) in babies admitted to our nursery over the study period. Both of these important points were not addressed because they were not the subject of the article. Dr. Nabi, in a previous correspondence.[5] reported on a neonatal mortality rate that ranged from 6.7- 27% over 7 years from the Khamis Mushayt area in the southern region of Saudi Arabia (unpublished data). These figures were collected retrospectively, and we do not know the method that was used to collect this data.

For that reason, we thought they were irrelevant. For the same reason, we are not sure on the 6% neonatal mortality rate from al-Medina al-Munwara as Dr Nabi did not quote a published reference.

In our NICU at the Riyadh Military Hospital, we did have survivors who were less than 500 g at birth during the study period. The details of our survival rate in babies less than 1500 g and some of their clinical outcomes over the same 10 years' period will be the subject of a future report. Lethal malformations accounted for 36% of the deaths in our study. The 12.4% mortality due to congenital malformation reported by Owa and Abusrair[15] and cited by Dr Nabi, included 6 (25%) stillborn babies with congenital malformations and 18 (75%) malformed babies who died within the first week of life (early neonatal death). In another study, from the same hospital, Srair et al[19] reported that 26.7% of deaths were due to congenital malformations, some of which were not necessarily lethal. As the authors pointed out in their study, some babies with malformations did die before they were transported to other centers for further treatment. This indicates that their cohort of babies with congenital malformations was different from ours, and thus is incomparable. Dr. Nabi raised several other issues in his correspondence, but we feel they are not related to the whole subject of our paper and will not be discussed.

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