

Health Economics in Home Based Newborn Care

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Abstract: The current article deals with the stage of life in the first month of a baby. As it is critical & evident, the first stage of life is critical as the child is highly risky not only to morbidity but also to mortality. It is an incremental risk that decreases with the passage of time in the first month of life. This decrease can be achieved at a very low cost & that too at home without support of any skilled health provider. The article discusses these risks in the past at the global level & at the national level. It uses the mortality indicator to assess the risks of the newborn. Further, it establishes the concept of health economics through the low cost involved to deal with these risks at the household level. A direct relationship is established between the mortality indicator & the low cost involved. A newborn struggle in the first month of his or her life as is evident from mythology that Lord Krishna too had a turbulent neonatal stage. The struggle of newborns continues in India even today. The current Neonatal Mortality Rate in India is 20 per 1000 live births as per SRS & 24.9 as per NFHS 5. The high neonatal mortality in India stands as a testimony to this fact as reducing this indicator is a priority. The current article focuses on the initiatives of the role of health economics in public health system to address neonatal mortality. Basically, there are two approaches to reduce neonatal mortality. These are Home Based Neonatal Care (HBNC) practices and the Facility Based Neonatal Care (FBNC) practices. The article focuses exclusively on the first approach which is HBNC & sees the role of health economics in this approach. The article cites the history of health economics in India & the concept of need, supply & demand aspects of health services. Following that, the article sees the HBNC approach in health economics & the process to upscale the approach to reduce NMR & thereby IMR thus fulfilling the developmental objectives of the nation. We all know that IMR is a critical tool for societal development. After the historical aspect, the article examines the health economics aspect in current times & focuses on the successful interventions of HBNC that are cost effective in a community setting. The current efforts to upscale the models through the National Health Mission platform are another focus area of the article. The importance of the first thirty days of life & the basics that need to be done at each household level while applying the health economics concept is the sole objective of the article.

Keywords: SRS, NFHS, HBNC, Demand, Supply, Need, Health Economics.

INTRODUCTION

The very first section of the article deals with the historical concept of health economics in India. In India, the early studies were carried by Colonel J A

Sinton who provided records of the malaria survey of India in 1935-36 & studied on what malaria costs India nationally, socially & economically. Colonel Sinton makes out of his bill of charges in four heads. The first head was on 'the effect of malaria upon the natural

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increase of population'. The second was 'its effect on health & vitality of the people'. The third head was its 'effect upon the economic, agricultural & industrial development of the country'. The fourth & the last was on its 'effect upon the social, intellectual & political progress of the nation [1, 4]. At the global level, William Petty FRS (1623-1687) is known as the initiator of the concept of health economics. His work is noted by modern health economists for his approach to valuing human life based on a person's contribution to national production [2, 4]. The development of health economics as a discipline is usually credited to Nobel Laureate Ken Arrow whose seminal paper ushered in a more systematic approach to applying economics to the health sector as a whole- how it is financed, how services are & should be provided & by whom & the role of government [8].

When we see the application of health economics in Home Based Newborn Care (HBNC), studies have shown that scaling up access to HBNC in India could avert 57 cases of severe neonatal morbidity & six related deaths per 1000 Live Births (LB). It would also avert \$5024 in private Out-Of-Pocket Expenditure (OOPE) for treating neonatal morbidity & provide \$ 340 in money-metric value of insurance per 1000 Live Births (LB) [4]. The health & economic benefits are highly progressive, accruing at a greater

rate among people in lower wealth quintiles & those in the poorer states of Chhatisgarh, Uttarakhand, Bihar, Assam & Uttar Pradesh. In terms of cost per death averted, scaling up the intervention would be cost-saving of both government expenditures on the programme & averted private OOPE are considered. If only government expenditures are considered, the programme would be highly cost effective at \$382 per death averted [4]. Tuberculosis (TB) is another area where the concept of health economics has been applied extensively. A study on TB explored four categories of benefits of HBNC. These are morbidity reduction, mortality reduction, reduced OOPE, money metric value of insurance provided [10]. Talking of OOPE in 2016 country wide, it was found that 86% of the health care expenditure is Out Of Pocket [9]. The studies in Gadchiroli, Maharashtra, Central India & the state of Uttar Pradesh on HBNC have demonstrated that the HBNC package would reduce the risk of neonatal morbidity by 50.4% & neonatal mortality by 54% [5, 7, 12].

About HBNC

In this section, the historical perspective of HBNC programs is discussed in the beginning thereby progressing to the current status in India. Box number 1 shows the time line of Newborn care including HBNC in India at a glance [11, 14, 20].

Box number 1

1980- National Neonatology Forum (NNF) launched
1992- Essential Newborn Care (ENC) launched through Child Survival & Safe Motherhood (CSSM) program.
1994- In 26 districts of India, Newborn Care Program (NCP) launched through CSSM
2000- National Newborn Week (NNW) initiated & to be celebrated from 15th to 21st November each year.
2011- Home Based Newborn Care (HBNC) guidelines launched.
2013- Integrated Action Plan for Prevention & control of Pneumonia & Diarrhoea (IAPPD) launched.
2013- RMNCH+A launched in the month of February.
2014- India Newborn Action Plan launched.
2015- Focus on Neonatal Mortality Rate as the first step to reduce Infant Mortality Rate through the launch of goal #3 of Sustainable Development Goals (SDG).

The current article is in the area of HBNC and HBNC is a part of Child Health. Hence, imperatively tracing the history of the child survival programs in India was essential. Needless to say, initially the entire child survival intervention was based on the roll out of immunization programs in the country. Almost after a decade of introducing the immunization program at the national level, the child survival interventions became more focused. The following paragraph elucidates the details [15]. In 1994, a district newborn care program was introduced as part of CSSM in 26 districts. There are three levels of care in the HBNC guidelines of GOI. These are care during pregnancy, care at birth, care of normal newborn and care of sick newborn. In 2014, the India Newborn Action Plan was launched by GOI that included both HBNC & FBNC components [14, 20]. This section includes the background of newborn care at global, national and the state level. The state level

efforts regarding newborn care picked up from the inception of NRHM in 2005. That means almost after 45 years of sustained efforts at country level, the state level picked up. The National Neonatology Forum was formed in 1980 and formulated the first set of recommendations on neonatal care in 1980. Therefore, in 1992 the program launched was Child Survival and Safe Motherhood program and this had the Essential Newborn Care component included as an integral part. This was followed by Reproductive and Child Health program in two phases from 1997 to 2005. Since 2000, with the advocacy of the National Neonatology Forum the national newborn week was celebrated from 15th to 21st November each year. The NRHM was launched in 2005 and the HBNC strategy was launched in 2011. The RMNCH+A strategy were in place in 2013 and currently we have the India Newborn Action Plan since 2014. The INAP details the HBNC approach and the

IAPPD launched in 2013 on the lines of GAPPD helped develop the treatment guideline & Standard Operating

Procedures (SOPs) of neonatal killers like pneumonia, diarrhoea, infections etc [14-16, 20-28]

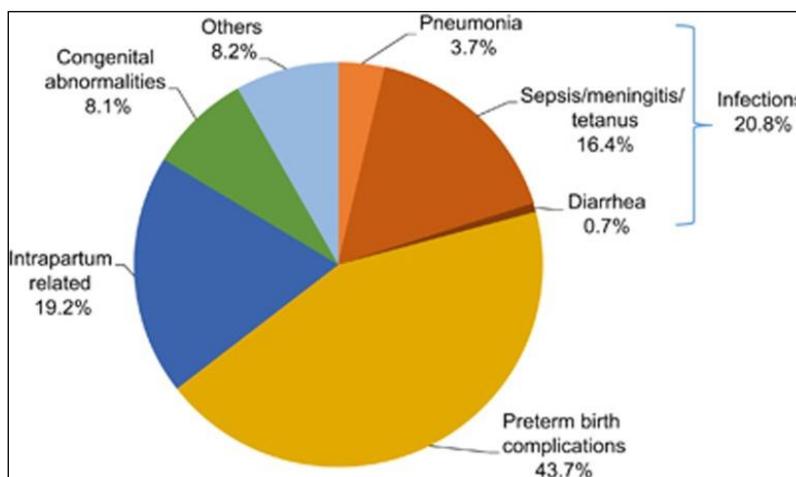


Figure 1: Causes of Neonatal Deaths in India [13, 20, 27, 35, 36, 37]

Let us analyze the three major causes of neonatal deaths in India. The major cause of deaths among neonants is preterm birth complications followed by infections. The next major cause is

intrapartum related. Among other causes, there is equal weight given to congenital anomalies & the others category.

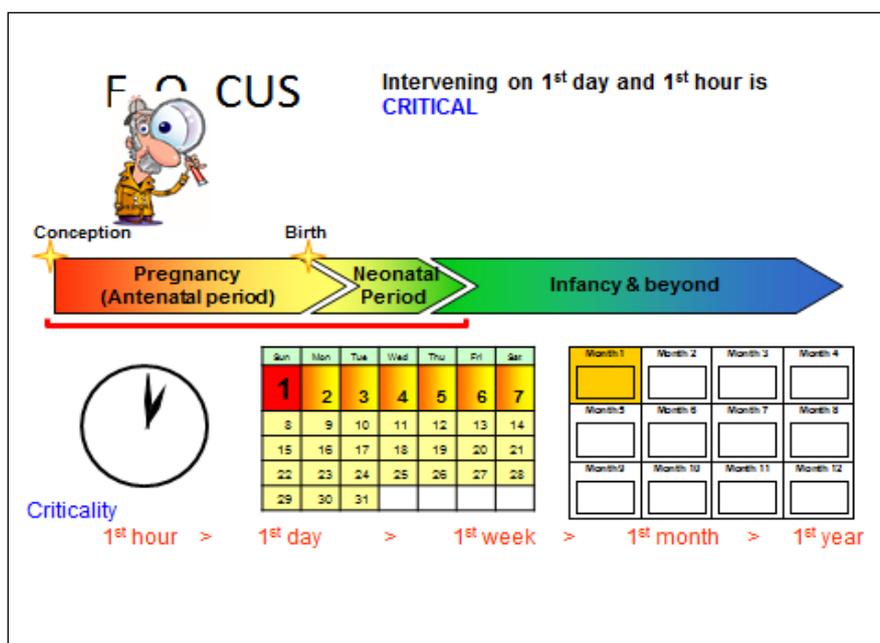


Figure 2: Critical times of the infancy stage [13, 20, 27, 35, 36, 37]

The above figure reiterates the timing of home visits by ASHAs in newborn care. It emphasizes that the first year of life is critical out of which the first month is critical out of which the first week is critical out of which the first day is critical out of which the first hour is critical. Regarding the timing of deaths, it is inferred that in India, three-fourths of total neonatal deaths occur in the first week of life. The first 24 hour account for more than one third or 36.9% of the deaths that occur during the entire neonatal period in India (Shankar *et al.*, 2016). Further, in another article, M J Shankar informs us that in the developing countries, the

first week accounts for 77.7% of all neonatal deaths where as 11.1% die in week 2 & 11.2% die in week 3 to 4. Similarly, the proportion of deaths in the first week of life is 44.4% on day 0, 10.1% on day 1, 8.3% on day 2, 5.8% on day 3, 3.6% on day 4, 2.7% each on day 5 & 6 in developing countries [13, 20, 27, 35, 36, 37]. Similarly in India, on 0 day, 36.9% die, 7.4% die on day 1, 10.1% die on day 2, 6.6% die on day 3, 5.1% die on day 4, 3.4% die on day 5 & 3.6% die on day 6. Regarding weeks, 72.9% die in 1st week, 13.5% die in each of the weeks from 2nd to 4th [13]. HBNC guidelines include care of the mother during pregnancy as well.

During the last trimester of pregnancy, the ASHAs should visit the houses of pregnant women to counsel the mother & family members regarding the triad of newborn care i.e. warmth, food & security. Drying & wrapping the child immediately after birth, not bathing the child for 7 days after birth & giving Kangaroo Mother Care (KMC) will maintain warmth of the child. Giving only colostrums with- out any pre & post lacteals & exclusively breastfeeding the child will address food. Keeping the cord clean & always attending the baby will address security needs of the newborn [20].

CONCLUSION

HBNC strategy does not need intervention of any health service provider. The only point is that once the child is born, the neonatal stage starts. The first two days are under the Janani Shishu Surakhya Karyakram (JSSK) in the case of institutional delivery & and the rest 26 days are at home. In the case of home delivery, the entire 28 days are at home [14-16, 18-20, 23, 29, 30]. Here, the home visits of the Front Line Workers (FLW) like Accredited Social Health Activist (ASHA) & Angan Wadi Worker (AWW) to the homes of the newborns are critical. The indicators like Early Initiation of Breast Feeding (EIBF), Exclusive Breast Feeding (EBF), Kangaroo Mother Care (KMC) should be promoted and facilitated by FLWs. The only exceptions are those newborn with birth weight less than 1800 grams as they should be kept for care at the institution & not at home [14-16, 18-20, 23, 29, 30]. Having done all these activities at home, the health economists will definitely infer the cost effectiveness of HBNC intervention which will be low in comparison to the other interventions at neonatal stage. For these, the outreach platforms like Village Health Nutrition & Sanitation Days (VHSND) have to be active & perform to the optimum level [16-20, 24, 29, 30-35].

Declaration of the lead author

Prof. Shankar Das was the Ph.D. guide of the lead author at Tata Institute of Social Sciences, Mumbai during 2011-18. Prof. D.P. Singh was the teacher of the lead author at Tata Institute of Social Sciences, Mumbai during 1995-97. The lead author also certifies that he has expressed his personal opinion based upon his public health experiences.

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Conflict of interest

Nil

REFERENCES

1. Sinton, J. A. (n.d). what malaria costs India, nationally, socially & economically, records of the malaria survey of India, vol5, pp223-264, 413-418, vol6, no.1, pp91-169.
2. Fein, R. (1980). Social & economic studies shaping American Health Policy. Milbank Mem. Q. Bull. (health & society) 58, 349-385.
3. Mills, A. (2014). Reflections on the development of health economics in LMIC, Proc.R.Soc.B281:20140451
4. Nandi, A. (2016). Health policy & planning, 31(i5), pg 634-644.
5. Bang Abhay, T., Bang Rani, A., Reddy Hanimi, M. (2005). Home-Based Neonatal Care: Summary and Applications of the field Trial in Rural Gadchiroli, India (1993 to 2003). *Journal of Perinatology*, 25, S108-S122.
6. Singh, M., & Saini, S. (n.d). Conceptual Review of Preventive & Social Medicine, second edition 2019-2020, CBS publishers & distributors Pvt Ltd, ISBN-978-93-88725-84-2.
7. Bang, A. T., Bang, R. A., Baitule, S. B., Reddy, M. H., & Deshmukh, M. D. (1999). Effect of home-based neonatal care and management of sepsis on neonatal mortality: field trial in rural India. *The lancet*, 354(9194), 1955-1961.
8. Arrow, K. J. (1963). Uncertainty & the welfare economics of medical care. *Am. Econ. Rev*, *UII*, 5, 941-973.
9. The WB group IBRD. IDA. out-of-pocket-health expenditure (% of private expenditure on health), 2016.
10. Verguet, S. (2014). universal public finance of TB treatment in India: an extended Cost Benefit Analysis. Health Economics.
11. Shankar, D. (2017). Health Care System in India. In Christian Aspalter, Kenny T. Pribadi, Robin Gauld (Eds.). Health Care Systems in Developing Countries in Asia, Routledge, Taylor and Francis Group. New York.
12. Kumar, V., Mohanty, S., Kumar, A., Misra, R. P., Santosham, M., Awasthi, S., ... & Darmstadt, G. L. (2008). Effect of community-based behaviour change management on neonatal mortality in Shivgarh, Uttar Pradesh, India: a cluster-randomised controlled trial. *The Lancet*, 372(9644), 1151-1162.
13. Sankar, M. J., Neogi, S. B., Sharma, J., Chauhan, M., Srivastava, R., Prabhakar, P. K., ... & Paul, V. K. (2016). State of newborn health in India. *Journal of perinatology*, 36(3), S3-S8.
14. GOI. (2011). MOHFW, HBNC guidelines.
15. GOI. (2007). MCH guidelines, NHM.
16. UN. (2015). SDG, Goal #3, September.
17. UNFPA. (2005). NRHM, VHND guidelines.
18. Baqui, A. H., Williams, E. K., Darmstadt, G. L., Kumar, V., Kiran, T. U., Panwar, D., ... & Black, R. E. (2007). Newborn care in rural Uttar Pradesh. *The Indian Journal of Pediatrics*, 74, 241-247.

19. Spector, J. M., Agrawal, P., Kodkany, B., Lipsitz, S., Lashoher, A., Dziekan, G., ... & Gawande, A. (2012). Improving quality of care for maternal and newborn health: prospective pilot study of the WHO safe childbirth checklist program. *PloS one*, 7(5), e35151.
20. GOI. (2014). MOHFW, India Newborn Action Plan.
21. GOI. (2013). MOHFW, RMNCH+A frame work launch, Feruary.
22. GOI. (2013). MOHFW, IAPPD guidelines.
23. GOI. (2000). National Neonatology Forum, Neonatology guidelines.
24. GOI. (2005). RCH phase I, NRHM, 1997-2005, National Neonatology Forum.
25. GOI. (2015). National Neonatology Forum of India.
26. GOI. (1992). MOHFW, Child Survival Interventions, CSSM.
27. UNIGME. (2019). Child & Maternal Mortality Division.
28. GOI. (2019). MOHFW, IIPS, NFHS 5 Fact sheets, 2019-2021.
29. WHO. (2022). Breastfeeding Guidelines, Geneva.
30. GOI. (2005). NHSRC, Training Modules for ASHAs, NRHM.
31. Pathak, P. K., Singh, J. V., Agarwal, M., Singh, V. K., & Tripathi, S. K. (2021). Study to assess the home-based newborn care (HBNC) visit in rural area of Lucknow: A cross-sectional study. *Journal of Family Medicine and Primary Care*, 10(4), 1673.
32. Rasaily, R. (2020). Effect of home based newborn care on neonatal & infant mortality: a cluster randomized trial in India. *BMJ global health*, 5.
33. Dutta, A. K. (2009). Home Based Newborn care, how effective & feasible? *Indian Paediatrics*, V46.
34. Chaudhury, K. (2019). deman, awareness & implementation gap of HBNC in rural area of Meerut, UP, *IOSR-JDMS*, v18,i6, ser.8, pp43-49.
35. Sankar, M. J., Natarajan, C. K., Das, R. R., Agarwal, R., Chandrasekaran, A., & Paul, V. K. (2016). When do newborns die? A systematic review of timing of overall and cause-specific neonatal deaths in developing countries. *Journal of perinatology*, 36(1), S1-S11.
36. Baqui, A. H., Darmstadt, G. L., Williams, E. K., Kumar, V., Kiran, T. U., Panwar, D., ... & Santosham, M. (2006). Rates, timing and causes of neonatal deaths in rural India: implications for neonatal health programmes. *Bulletin of the World Health Organization*, 84, 706-713.
37. Tripathy, T. (2022). FBNC & Homoeopathy, *IJAR*, Print ISSN-2249-555X.
38. GOI. (2020). RGI, SRS, statistical report.