

Suggested health services research action to achieve reduction of neonatal mortality in India

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ABSTRACT

Despite several national programs to reduce infant mortality, India had repeatedly failed to achieve its set targets for infant mortality. There are approximately one million neonatal deaths in India each year which accounts for nearly two-thirds of the infant deaths in India. India's current trajectories of neonatal and infant mortality rates make it unlikely that it will achieve its targets for infant mortality rate for 2015 set under the Millennium Development Goals. Since two-thirds of infant deaths in India are neonatal deaths, implementation of effective neonatal care strategies would be essential to reduce infant mortality considerably. The history of child health services in India suggests an inattention to qualitative parameters, hindering a reversal of its failures. We discuss a format of *mixed-methods participatory research*, integrated with routine district level household surveys (DLHS), as a model of health services research which would better delineate the problems encountered in delivering effective newborn care at the primary care level.

Keywords: Health Services Research; Infant Mortality; Neonatal Mortality; Mixed-Methods Research; Qualitative

1. INTRODUCTION

India is signatory to the United Nations' declaration of the Millennium Development Goals (MDGs); accordingly, it is expected to decrease childhood mortality by two-third by year 2015 from its level in 1990 (MDG4). For India, the target for infant mortality rate (IMR) is 27 per thousand births [1]. In past, India has repeatedly failed to achieve health targets that it had set for itself.

For example, in 2002, a revised national policy set the target for reduction in IMR to less than 30 by 2010 [2], whereas the most recent estimate of India's IMR is above 50 [3].

Approximately two-thirds of the infant deaths in India are neonatal deaths (deaths between 0 - 28 days of life), resulting in nearly one million deaths annually [4]. 70% of India's population still resides in rural and semi-urban areas which is serviced by the primary healthcare network [5]. Thus large strides in reduction of IMR would be dependant upon improving neonatal survival in those areas. As 75% of the neonatal deaths occur within first week of life, a strategic focus on dealing with the factors leading to the three main causes of early neonatal deaths, *i.e.*, prematurity, birth asphyxia and neonatal sepsis will be paramount [6].

India has a well-developed basic health infrastructure at the primary care level (**Table 1**). In rural and semi-urban areas, this now consists of 146,036 sub-centers, 23,458 primary health centers and 4276 first-referral units [7]. More so, in last two decades, it has launched several large public programs targeted to the reduction of neonatal and infant mortality, namely Child Survival and Safe Motherhood (CSSM) Program in 1992 [8], Reproductive and Child Health (RCH) program in 1997 [9], followed by its second phase in 2005. More recently, it has launched a program of conditional cash transfers, Janani Suraksha Yojana(JSY), to encourage in-facility deliveries [10]. However, the decline in the neonatal mortality rate (NMR) and IMR continue to be less than satisfactory. Approximately 47% of all births occur in any sort of health facilities [11]. If these trends continue, India will not able to achieve its MDG target for infant mortality [12].

2. REASONS FOR PROGRAMMATIC FAILURES

India lacks behind several other developing countries

Table 1. Primary Health Care structure in India and the MCH and newborn care services planned for each level.

Primary care level	Population served	Healthcare Personnel for newborn care	MCH services provided
Village	500 - 1500	Trained Birth attendant (TBA)	Assistance in home delivery under hygienic conditions, prompt recognition of danger signs and early referral
Sub-center (SC) (one per 5 - 6 villages)	3000 - 5000	Multi-purpose health worker(MPHW), (female MPHWP also known as Auxiliary nurse midwife)	Antenatal check up, tetanus toxoid immunization, and iron and folic acid supplementation of prospective mothers, referral of <i>at risk</i> mothers.
Primary Health Centre (PHC) (one per 4 - 5 SCs)	20,000 - 30,000	General physician, nurse midwife	Essential newborn care including institutional deliveries, referral services.
First Referral Unit (FRU)* (one per 4 - 5 PHCs)	80,000 - 120,000	General physician, Availability of obstetrician/anaesthetist	Essential newborn care, oxygen hood, Radiant warmer, facilities for caesarean section, X-ray and basic laboratory facilities.

*Also known as Community Health Center (CHC).

(e.g., Brazil, China, Bangladesh, Thailand and Indonesia) in its rate of reduction of neonatal and infant mortality [5], despite launch of various targeted programs as outlined above [7]. Reasons for these failures are likely to be multi-factorial. Whilst, health personnel and infrastructure shortfalls, suboptimal quantity and quality of services available at primary level, financing and governance issues are well recognized [12]; lack of effective community participation in planning and delivery of its services has not received as much attention.

To date, the government's approach to planning of health services at the primary level is rooted in a 'top-down' mentality and reflects a pattern of trial and error. Changes to MCH programs were made repeatedly, often based on ideas generated by small group of prominent individuals, without strong empirical research to support them. Alternatively, the ideas were imported from elsewhere and implemented without appreciating the contextual differences between the settings. For example, the JSY scheme to increase births in health facilities was initiated without availability of good quality obstetrics and neonatal services at the grass-root level, squandering precious national resources that could have been used to develop those urgently needed services.

Although, planning of services at the primary care level based on a process of *community needs assessment* (CNA) was included in the 2nd phase of the RCH program, this process is focussed on generating routine requirements of existing services for the year at each level (e.g. reproductive care needs of eligible couples) rather than making structural changes. Households surveys conducted by primary care employees are limited in scope and are rarely carried out in true spirit [13].

3. WHAT MORE CAN BE DONE TO ACHIEVE DESIRED REDUCTION IN NMR IN INDIA?

Wide differences in the IMR across the various states of India (in 2008, the IMR ranged from 12 to 70) suggest

that large gains may be possible with relatively few additional resources, by systematically identifying knowledge gaps and barriers faced by general population in accessing services at primary healthcare level and devising local solutions to those unique barriers.

The International Institute of Population Sciences (IIPS) at Mumbai has been regularly conducting on a large scale *district level household surveys* (DLHS) in each district of the country, to collect representative information, to generate estimates of maternal and child health indicators and more recently on infrastructure and services provided at each level of primary care (in its most recent survey, 720,320 households were surveyed across 601 districts of India) [11]. However, the data generated to date via DLHS surveys are predominantly quantitative, and does not provide answers to questions such as why so little progress might be happening in those districts, nor suggest what programmatic changes would result in desired improvements.

We suggest a format of mixed-methods participatory research with active involvement of the communities to better understand the local healthcare needs and their barriers to utilization of health services at primary level. The mixed-methods research combines quantitative and qualitative research methods in its design and is increasingly utilized in the setting of primary health care [14, 15]. Information gathered via this combined approach helps to portray a holistic picture of a healthcare program, including its bottlenecks, which is further used for making critical programmatic changes.

There are several examples of success of such methodology in reducing neonatal or infant mortality in resource-poor settings in recent years. A cluster randomised controlled trial(RCT) conducted in rural Nepal showed that active involvement of the community in identifying local perinatal problems and formulating intervention strategies tailored to its needs, as compared to standard package of perinatal services, reduced neonatal mortality by 30% [16]. Similarly, the two other RCTs recently completed in the resource-poor setting in

rural India [17,18], with variable levels of community involvement in identification and planning of interventions showed 32% to 54% reduction in NMR. However, such packages of interventions may not replicate desired benefits in other settings when scaled up to the entire country, due to contextual differences among the settings [19].

4. HOW COULD THE PROPOSED MIXED-METHODS PARTICIPATORY RESEARCH BE DESIGNED AT THE NATIONAL LEVEL?

The current data collection approach at the national level could itself be adapted into the methodology for the purposed mixed-method research. Alongside the quantitative data that are routinely collected through the district level surveys (DLHS), additional qualitative questions could be posed as an add-on questionnaire, seeking responses from households on their health seeking behaviours, barriers for using health services and their perceived solutions. Salient themes that should be explored are shown in **Table 2**, along with proposed collection methods. When questions would be framed as open-ended queries, an enhanced response is likely.

We also suggest that an additional data set of qualita-

Table 2. Proposed themes for add-on questionnaire to current DLHS data reporting forms.

Questions should explore:

Care-seeking behaviours during the most recent episode of neonatal or infant illness? (*Semi-structured questionnaire with Open-ended questions where applicable*)

- How was illness identified?
- Duration between suspicion of illness and arrival at health facility, reasons(s) for delay
- Satisfaction with the treatment received at the primary healthcare facility
- Reason(s) for not seeking care at a health facility (if, applicable)

Were referral made to another health facility? If so, further explore the following:

- Cause(s) for referral
- Duration between referral advice made and arrival at suggested health facility, Costs involved in following referral advice
- Satisfaction with the treatment received at the referral facility
- Reason(s) for not acting upon referral advice (if, applicable)

Barriers to utilization of health services (*Semi-structured questionnaire as above, and also via focus group discussions*)

- Reason(s) if regular antenatal care was not obtained during the most recent pregnancy
 - Reason(s) if a trained birth attendant was not used during the most recent birth
 - Reason(s) if the most recent birth was not obtained in a health facility
 - Reason(s) that would prevent you from attending the nearest SC, PHC and FRU if you baby gets sick?
 - What are the likely solutions to the above barriers from your perspective?
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tive information be obtained via holding focus group discussions in local communities at regular intervals. To enable frank discussion by those normally not vocal, we strongly suggest focus groups be both socially and gender homogenous. Information obtained through these separate sources, would better delineate the existing barriers to local populations in seeking healthcare and utilizing existing healthcare facilities. In addition, such discussions are likely to identify solutions that would be more acceptable among the communities, rooted in their active participation in arriving at those decisions.

5. DISCUSSION

Based on the current trends of decline in the neonatal and infant mortality in India, it is unlikely to meet its MDG target for IMR set for 2015. There are known cost-effective interventions targeting acute obstetrical and neonatal care in developing countries that could reduce NMR by over 50% [20]. However, understanding of the contextual differences are important for success of those packages of interventions when applied to another resource poor setting [19].

We have proposed a format of mixed-methods research, conducted concurrently with national level surveys, which will generate additional qualitative data on the community needs which would serve the useful function of providing clients' perspective on bottlenecks in the delivery of health services. There are several potential advantages of undertaking this research action at the national level. First, the inferences drawn from the data collected would have greater validity due to appropriate sampling techniques used in its collection, and its collection by an independent agency (DLHS staff) rather than local healthcare employees who may have vested interest in maintaining status quo. Second, quantitative data from each community (or district) could be easily collated with its qualitative data on an ongoing basis to understand its unique barriers and its felt needs. Lastly, the availability of these results would help program managers make timely and more effective programmatic changes at local level, as the changes made in the delivery of health services will be based on direct inputs from those communities.

In summary, the organization and delivery of MCH services at primary care level in India have been grossly inadequate in meeting its population's needs, resulting in India's repeated failures in achieving its set targets for infant and neonatal mortality. We have suggested a framework of mixed-methods research at the national level, strongly grounded in active participation from local communities, as a model for ongoing health services research which would better delineate the prob-

lems encountered in delivering effective newborn care at the primary level and generate unique solutions tailored to the needs of the each community.

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