



Impact of Integrated Management of Neonatal And Childhood Illnesses (IMNCI) Protocol To Improve Child Survival in Baran District of Rajasthan, India

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ABSTRACT

The infant mortality rate, which plays an important role in health planning, has shown a considerable decline from 129 per 1000 live births in 1971 to 110 in 1981 and from 80 in 1991 to 42 in 2012 (SRS, 2012)¹⁵. Healthy childhood is still a distant dream; we are far away from millennium development goals. WHO/UNICEF have developed a new approach for tackling the major diseases of early childhood called (IMCI) the Integrated Management of Childhood Illnesses (IMNCI, Operational Guidelines). In India IMCI is adapted as IMNCI where N stands for neonatal, is a systematic approach to deal with infant mortality. ASHA (Accredited Social Health Activist) is a health worker in every health centre and is a pivot of IMNCI in health sector at local levels, keeping this in view current study was initiated to assess the impact of IMNCI on child survival through ASHA. The present study was undertaken with the Objective: to study the Impact of Integrated Management of Neonatal and Childhood Illnesses (IMNCI) protocol to Improve child survival.

The present study is a longitudinal study of Baran district of Rajasthan, India, carried out by Home Science department, University of Rajasthan, Jaipur supported by UNICEF, Rajasthan field office. An interview schedule was used for collection of data regarding neonatal and child diseases in the selected area. ASHA, the health worker was assessed by block supervisor for her skills on IMNCI and recording and reporting of the program.

The major outcome of the study was that after intervention in form of strengthening and monitoring of IMNCI program there was a significant improvement in the services given by ASHA Sahyogini. At the first visit newborns visited thrice in the first week were 20 % of total births recorded and the third visit indicated 62 % neonates being visited thrice in the first week of birth. It was observed that the number of deaths in the age group of 0-2 months decreased from first visit to III visit. The regular monitoring and timely supervision in IMNCI training also reduced infants and children at risk as they were referred as soon as they fell ill and their illness managed thus bringing down both morbidity and mortality in under- five children. IMNCI is a promising program for better child survival provided it is regularly monitored along with supportive supervision.

KEYWORDS

Infant mortality rate, Integrated Management of Childhood Illnesses, ASHA, Neonatal mortality, Community health workers

Introduction

Every year about 9 million children in developing countries die before they reach their fifth birthday, many of them during the first year of life¹. It is estimated that in India 2.1 million children die before reaching 5 years of age. Approximately 28% of all deaths of newborns and 23% of all infant deaths in the world occur in India². Currently almost 2/3rd of infant mortality is comprised of neonates; most of them die within the first week of life.³ More than 70 % of the under- five child deaths are due to five diseases, namely pneumonia, diarrhea, malaria, measles and malnutrition, and often to a combination of these conditions. Ideally, interventions to reduce under-five morbidity and mortality should be capable of covering large populations and achieving high levels of implementation in

low-income countries¹. Many of these deaths could be prevented by greater access to and use of high quality healthcare in combination with improved newborn and infant care practices in families.⁴

There are two most important reasons for such high mortality that is seen in this age group- (a) Inability of the parents to identify danger signs and symptoms especially in young infant at an early stage and not seeking medical treatment and (b) Poor quality of health services in rural areas. Children presenting with any illness often suffer from more than one disease. For instance, a child presenting with diarrhea may also be malnourished and may not have received the immunization as per the National Immunization schedule.⁵

WHO/UNICEF have developed a new approach to tackling the major diseases of early childhood called (IMCI) the Integrated Management of Childhood Illnesses.⁶ In India Neonatal mortality has been identified as a major issue under NHM (National Health Mission), and IMCI (Integrated Management of Childhood Illnesses) was adapted as the IMNCI (Integrated Management of Neonatal and Childhood Illnesses), incorporating a special emphasis on the assessment and treatment of young infants aged 0–2 months⁷. The critical intervention strategy under IMNCI is home visits in the early postnatal period to ensure that preventative and curative care is provided in order to prevent infant deaths.⁸

The aim of IMNCI is to train, and provide preventative and home-based care through, India's network of frontline health workers and supervisors, such as the MO (Medical Officer), ANM (Auxiliary Nurse Midwife), LHV (Lady Health Visitor), and LS (Lady Supervisor) at the SC (Sub centre i.e. health centre at village level) and PHC (Primary health centre at block level) levels, and through ASHA (Accredited Social Health Activist), a woman from the village managing population of 1000 persons) and AWW (Anganwadi worker, a woman belonging to same village, managing anganwadi or an unit catering to pregnant, lactating, young children and adolescent girls) at the village and household levels. ASHA occupies a major position and perform as important element in health system networking.⁹

A core initiative of India's National Health Mission (NHM) is to provide improved access to health care at the community level through female village-level health workers known as Accredited Social Health Activists (ASHAs). Selected from the village itself and accountable to it, the ASHAs serve as a liaison between the community and the public health system.¹⁰

Community health workers (Anganwadi workers) made post-natal home visits on days 1, 3, and 7 to promote early and exclusive breast feeding, delaying bathing, keeping the baby warm, cord care, and care seeking for illness. They assessed newborns for signs of illness at each visit and treated or referred them¹¹. They additionally visited low birth weight infants on days 14, 21, and 28 after birth. Community health workers (accredited social health activists), nurses, and physicians treated sick newborns and older children according to IMNCI guidelines. Community health workers (accredited social health activists) ran women's group meetings in every village every three months to raise awareness about newborn care practices.¹²

The key roles of ASHA include 1. Identifying and registering new pregnancies, births and deaths, 2. Mobilizing, counseling, and supporting the community to demand and seek entitled health services 3. Identifying, managing, or referring diseased cases, 4. Supporting health service delivery - through home visits, first-aid, immunization sessions and camps and, 5. Maintaining data and participating in community level health planning.¹³

Major barriers to IMNCI implementation arising from broader health system issues were documented in many countries. These barriers included: the difficulties of conducting regular supervisory visits that included systematic observation and feedback on case management; inadequate referral facilities; high staff turnover; low utilization of the public sector for a variety of reasons (accessibility, user fees, poor perceived quality, etc.); and inconsistencies between IMNCI guidelines and existing policies and regulations.¹⁴

ASHA is pivot of IMNCI in health sector at local levels and her supervision is of prime importance, keeping this in view current study was initiated to assess the impact of IMNCI on child survival through ASHAs supervision.

Methodology

Data collection: The present study was a longitudinal study of Baran district of Rajasthan in India. Intensive IMNCI Training

for 8 days was given to the team of Block Supervisors. The Block Supervisors were extensively trained for three days on a supervisory training of IMNCI protocol.

At the village level there are two facility one the sub centre headed by ANM who takes care of ante natal check-ups of pregnant women, assists in delivery if the woman is not able to reach nearby Primary health centre which is situated over 5000 population called a sector (which is a cluster of villages). At the village level or over 1000 population there are two workers one is AWW who is responsible for growth monitoring and providing supplementary nutrition and other is ASHA Sahyogini appointed by NHM, she is responsible for door to door visit of 10 households with pregnant women and new born babies and sick children below the age of 5 years daily. The ASHAs in the selected district were also trained in IMNCI.

The profile of the district as per centres is as follows: total number of AWCs (Anganwadi Centres) - 1134 in Baran district, ASHAs trained in IMNCI-830, ASHAs selected for study - 618. The period of data collection was over one year and since many ASHAs got trained after the sample selection they were not included in the study.

An interview schedule designed for collection of data. The interview schedule was providing an account of ASHA's work performance like number of children visited by her within 24 hours of birth and subsequent two visits in 7 days to overrule any form of infection to mother and child. To help in initiation of breast feeding within an hour in case she is accompanying mother to hospital, to identify and refer sick child as per the protocol of IMNCI guidelines. Suggest home based care to child that does not require medical attention.

All the supervisors supervised IMNCI trained ASHA (also called ASHA Sahyoginis) in their respective blocks. At first visit to ASHAs the Block Supervisors assessed the knowledge and skill of ASHAs on carrying out the IMNCI protocol. Components for grading ASHA were (1) IMNCI skill assessment of ASHA- The grading of ASHAs was based on Assessment of skills regarding- identification, classification of sick children and its treatment as per IMNCI training module; they were also evaluated on the basis of referrals made for very sick children. (2) IMNCI record and report assessment of ASHA -This part included proper and correct filling up of forms, completing and maintaining their records, regular visits to babies born and regularity in reporting to concerned authorities. (3) Community knowledge of ASHA- ASHAs ability of interacting, understanding the Community reflects community knowledge. (4) The supply of logistics for e.g. - ORS and medicines like antipyretics etc.

After the first assessment the ASHAs knowledge on IMNCI protocol was re-strengthened individually as well as with ASHAs at collective meeting of each Block. The gaps in recording and reporting formats were also addressed for proper assessment of the outcome of the program. The follow up visit was done after a period of three months to re-assess her on above mentioned components.

The ASHA were required to visit sick child and classify child's condition and identify treatment. As per IMNCI module the different treatments are assigned three colors i.e. red (based on danger signs, requiring immediate referral), yellow (can be managed at home with prescribed preventive medicines) and green (healthy) for better understanding. Red color in the protocol denotes that the child's condition is severe and needs to be referred immediately, after providing pre referral treatment. Yellow color shows that the child could be treated at first level health facility through specific treatment and managed at home. Green color represents the home based treatment. ASHA was visited thrice by block supervisor at an interval of three months to help her revise IMNCI protocol. The block supervisors regularly supervised and assisted ASHA in improving their skills at Sector level meeting held every month to help her improving her skills to identify and treat sick child as per the protocol.

The information as per her report and record was compiled to look into the intricacy of ASHA's IMNCI training on child survival. Demonstration of correct IMNCI practices was made to ASHAs as per IMNCI guidelines. IMNCI chart and booklet were used to illustrate correct technique of identifying signs and its treatment.

Results

In the present study Baran District from state of Rajasthan was selected. Baran has been on the country map due to its tribal population Saharia. Saharia tribe is not only backward in terms of development being uneducated, but they are also vulnerable to illness, malnutrition and deaths due to their primitive lifestyle.

For the study all seven blocks were selected, the total number of AWCs (Anganwadi centres) in Baran was 1134 where 830 ASHAs were IMNCI trained. Out of these 618 ASHAs were supervised at baseline, in the second visit 532 ASHAs were supervised and complete three visits could be made only to 419 ASHAs by supervisors. The selection of ASHAs at the initial level was based on training of IMNCI received which at the beginning of study was only 830. Subsequently more ASHAs were trained but not included in the study. The study was a part of a pilot project and therefore time bound. Several ASHAs were trained at a later date and hence only first and second visit could be made. The data collection was done over a period of two years and hence all the stages of data collection i.e., visit I, II, III were going on simultaneously in the 7 blocks of Baran district.

The data was gathered regarding total visits by ASHAs to new born within one week of birth and subsequent visits to all children in age group of 0-2 months. Sick children in the age group were also visited by ASHAs to rule out children at risk on the basis of IMNCI protocol.

The data presented in Table no. 1 is of children that were reported to be borne by ASHAs during the period of investigation. As ASHAs is responsible for birth and death audit of her area/ village. It is evident from Table -1 that at the time of first visit by the block supervisor, 618 ASHAs reported 2181 live births in their centres collectively. Out of 2181 births recorded only 33 % new born were visited by the ASHAs in 24 hours of their birth. Second visit reported that 56 % of the new born were visited within 24 hours and on third visit the percentage increased to around 67 %. The increase is double of the initial visits.

The number of babies who were visited thrice in first seven days was only 21% at the baseline or first visit by Supervisors. Thereafter there was an increase to 43.5 % in the second visit and further to nearly 62% after third visit. The first seven days of child birth are crucial as maximum neonates die in this period. Home visits by ASHAs in this period can be a life saver as she can identify danger signs and refer the child to nearest facility. Also some home based care counseling like keeping the baby warm, exclusively breast feeding the child and kangaroo care in case of underweight child, can also be a life saver for the neonate.

The ASHAs were required to visit sick children classified into two groups, i.e., 0-2 months and 2 months to 5 years. At the time of baseline survey it was found that 618 ASHAs visited 1421 sick neonates, meaning each ASHA visiting only 2 sick neonates, at second visit 532 ASHAs visited 1539 sick neonates i.e., around 4 neonates per ASHA at an average and at third visit 419 ASHAs visited 1943 sick neonates i.e., almost 5 sick neonates by each ASHA in the age group of 0-2 months. It is evident from the above findings that the number of visits to sick neonates doubled from first visit to third visit (by the Supervisors) considering the less number of ASHAs at the third visit.

Progress was also observed in assessment of child's sickness, classification of disease and treatment for disease and so did in the referrals of sick child. Initially sick infants falling in red

classification were 0.9 % and at third visit it increased to 1.33 %. Children in yellow classification became fewer and infants in green classification increased. This was due to the fact that the ASHAs became more proficient in assessing illness. Referrals of sick child also increased in second visit and declined in third visit. Number of deaths reported also declined from 1.1 % to 0.3 % in the study period.

Table No. 1
Improvement in Skills of ASHAs as Indicated by Home Visits and Classification of Sick Infants (0-2 months) of Baran District

	VISIT-1	VISIT-2	VISIT-3
Number of ASHAs	618	532	419
No. of babies born (Reported)	2181	1836	1458
No. of babies visited in 24 hrs	714 (32.7)	1026 (55.9)	973 (66.7)
No. of babies visited thrice in 7 days	457 (20.9)	799 (43.5)	897 (61.5)
No. of babies visited (0-2m)	1421	1539	1943
No. of babies (0-2m) in Red classification	13 (0.91)	16 (1.10)	26 (1.33)
No. of babies (0-2m) in Yellow classification	608 (42.7)	686 (44.57)	794 (40.86)
No. of babies (0-2m) in Green classification	800 (56.29)	837 (54.38)	1123 (57.8)
No. of babies (0-2m) Referred	3 (0.2)	14 (0.97)	5 (0.25)
No. of babies (0-2m) Died	16 (1.1)	15 (0.9)	6 (0.30)

Figures in parentheses are percentages.

Table No. 2
Improvement in Skills of ASHAs as Indicated by Home Visits and Classification of Sick Children (2 months – 5 years) of Baran District

	VISIT-1	VISIT-2	VISIT-3
Number of ASHAs	618	532	419
No. of babies visited (2m-5y)	2228	2661	1747
No. of babies (2m-5y) in Red classification	22 (0.9)	24 (0.90)	9 (0.51)
No. of babies (2m-5y) in Yellow classification	498 (22.35)	494 (18.56)	425 (24.32)
No. of babies (2m-5y) in Green classification	1713 (76.88)	2143 (80.53)	1313 (75.15)
No. of babies (2m-5y) Referred	1 (0.04)	1 (0.03)	5 (0.28)
No. of babies (2m-5y) Died	10 (0.44)	3 (0.11)	0 (0)

Figures in parentheses are percentages.

From Table no. 2 it is evident that for children in the age group of 2 month- 5 years also marked improvement in skills and visits of ASHAs were observed from first visit to third visit. The number of sick children visited by ASHAs at the baseline was around slightly less than 4 children per ASHA on an average. After second visit around 5 sick children were visited by ASHA on an average and the number of children being visited by ASHAs during sickness was four on an average.

Babies falling in Red Classification as identified were ASHA were 0.9 % both at baseline and second visit while the percentage declined after third visit to 0.51 %. There was no change in either yellow or green classification and children referred from first to third visit but there was a decline in reporting of deaths in the young children which may be due to the fact that the sickness in young children were timely addressed.

Discussions

The IMNCI strategy has emerged as a promising approach to address issues related to child survival. IMNCI is a key evidence based strategy for reducing neonatal and infant mortality. If

timely addressed, mortality and morbidity in newborns can be prevented.

A study was conducted on integrated management of childhood illness among countries adopting and implementing IMCI with an objective to reduce child mortality and morbidity in developing countries by combining improved management of common childhood illnesses with proper nutrition and immunization. The results revealed that the introduction of the IMCI strategies helped to develop and update national policies in the management of sick children. The implementation of IMCI brings together a broader range of programs and national medical expertise relating to child health, which served as a catalyst for the identification of substantial weaknesses in public health systems.¹⁶

Another study was conducted on Improving quality and efficiency of facility-based child health care through Integrated Management of Childhood Illness among N = 200 auxiliary nurse with an **objective** to assess the effect of Integrated Management of Childhood Illness (IMCI) relative to routine care on the quality and efficiency of providing care for sick children in first-level health facilities. The results showed that IMCI training improved the quality and efficiency of child health care relative to routine child health care.¹⁷

The causes of neonatal and childhood health problems may be summarized as: - (1) Parents fail to recognize warning signs and provide home based care. (2) Sick children not being taken to health facilities. (3) Mothers don't have sufficient knowledge of the protective value of breast feeding. (4) Not providing special care to undernourished newborns. (5) Lack of information on home based care. (6) Lack of counseling of caretakers and others significant in family and community to adopt good practices. (7) Poverty the root cause, due to which mothers have to work in fields under NREGA scheme or various other Government schemes, pertaining to which newborn are left neglected at home under the supervision of other caretakers who have least knowledge about importance of exclusive breast feeding or complementary feeding. The IMNCI program has found suitable and effective but the problem lies in actual implementation of its guidelines.

Strategy for improving child Survival

In order to accelerate the improvements in child survival there is a need to focus on the following issues: (1) Five common causes of childhood deaths. (2) Focus on the first month of life of the child. IMNCI strategy is a systematic and important approach to deal with child mortality. ASHA has emerged as a connecting link between health centre and community. In the present study IMNCI strategy has shown positive outcome in reducing infant mortality rate. IMCI is an effective low cost strategy for improving child health and is highly appropriate to developing countries.¹⁸ IMNCI is a hope which promises better child survival status and for effective implementation requires regular monitoring. Here ASHA acts a connecting link between health system and community. As voluntary community health workers (CHWs), ASHAs are expected to act as health activists within their communities and are responsible for providing information, creating awareness about key public health services, and mobilizing the community to access reproductive and maternal and child health services.¹⁰

For coverage of key child survival, interventions are required to ensure competency in identifying specific signs and to encourage comprehensive assessments of children by IMNCI practitioners. According to a study on child health by Ingle and Malhotra¹⁹ in districts where IMNCI is implemented, out of reported birth only 63% newborns were visited on the first day by AWWs and 61% newborns had 3 visits during first 10 days of life. Because of some social customs like first delivery at mother's place and restrictions on mother and child after delivery which made meeting any outsider including health worker difficult, postnatal visits of newborns were difficult for AWWs. Because of institutional deliveries and cultural norms it may not be possible to visit the newborns on day one. Thus,

even though, 79% of the newborns were visited by AWWs and 72% had 3 visits, visit in first few days was missed by most of the AWWs. As most of the neonatal deaths are early neonatal deaths this miss may be very crucial.²⁰

Bhandari *et al.* evaluation of IMNCI programme with increased focus on newborn and infant care, showed a reduction in infant mortality. The subgroup of babies born at home, neonatal mortality was also reduced.¹²

Singh and Kumar found that supportive supervision has the greatest effect in improving ASHAs' capacity, and hence their performance under IMNCI in the following areas: record keeping, motivation, and knowledge and skills, such as the use of IMNCI reference materials and techniques in home visit assessments. However, while external supportive supervisors were effective in providing IMNCI materials, registers, and case sheets, less evidence of improving access to medicine¹⁴.

The strategies like IMNCI require close management of health workers. The trained IMNCI workers are bound to report to higher officials, but to report they should be thorough with its skills based training. When there is clarity in worker's mind then only they can perform their duty and reciprocate it further.

Further research is required to investigate the factors leading to poor health worker performance, which is frequently ascribed just to a lack of knowledge and skills. Health workers often find it difficult to transfer new skills to the work place, and to maintain these skills, especially as IMCI consultations take longer. Implementing and sustaining IMCI follow up after training has been shown to be difficult in several previous evaluations of IMCI. However, supervision has been shown to improve performance and may also improve motivation and job satisfaction. The training of health workers in IMCI is necessary to improve the quality, but not enough to ensure a continuously acceptable quality level without the establishment of a mechanism for monitoring and strengthening of technical skills such as formative supervision.¹⁴

Poor monitoring and evaluation and low level of implementation at health facilities by trained staff, minimal IMNCI-focused supervision was conducted partly previously, Consequently, IMNCI case management observations were never carried out, and the challenges faced by health workers were never addressed at facility level. Subsequently, after supervision of ASHA, this can be postulated that betterment in ASHA's understanding of IMNCI practices proved effective in refinement of her performance resulted in more visits, more referrals, more sick child visited by her ultimately resulting in improvement of child survival.

Abbreviations used : IMNCI- Integrated management of neonatal and childhood illnesses, IMCI -Integrated Management of Childhood Illnesses, ASHA- Accredited social health activists, NRHM- national rural health mission, NREGA- National rural employment guarantee act. MO-Medical officer, ANM-Auxiliary Nurse Midwife, LHV-Lady health visitor, and LS – lady supervisor, SC- Sub centre and PHC –Primary healthcare centre

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