

## Short Communication

# Strengthening home-based postnatal care of rural area of two districts of Haryana using mobile phone technology: A pilot study

Bharti Sharma<sup>1</sup>, Ankit Raina<sup>1</sup>, Vijay Kumar<sup>2</sup>, Premananda N. Mohanty<sup>2</sup>, Minakshi Sharma<sup>2</sup>, Amit Gupta<sup>2</sup>

<sup>1</sup>Department of Obstetrics & Gynecology, Postgraduate Institute of Medical Education and Research, Chandigarh, India, <sup>2</sup>Survival for Women and Children, Panchkula, Haryana, India

### Abstract

**Introduction:** Home-based postnatal care (HBPNC) plays an important role in improving the survival of mothers and newborns by complementing facility-based care. In India, HBPNC was initiated in 2011 under National Rural Health Mission, but the coverage and quality of postnatal care still remain a challenge. In the present study, we describe the methodology used in strengthening the existing HBPNC by utilizing mobile phone technology.

**Material & Methods:** The study was conducted in the rural population of two districts of Haryana in collaboration with the National Health Mission Haryana and Survival for Women and Children (SWACH) foundation. The Accredited Social Health Activists (ASHAs) in the study area were provided a mobile phone and training related to the use of mobile technology, their roles, responsibility, and the information to be shared through phone and its purpose.

**Results:** Along with providing home-based post-partum care, a total of 120,654 births (from May 2015 to August 2019) with detailed outcomes of pregnancy have been reported to SWACH. Population-based birth defect surveillance, stillbirth surveillance, and investigation of neonatal deaths are being done successfully using the same platform. Deaths are also being investigated by verbal autopsy. Age- and stage-specific participatory learning groups for action have been created on mobile phones for pregnant women, postnatal mothers to provide support, and interactive education to improve the maternal, newborn, and child health.

**Conclusion:** It is feasible to strengthen the existing HBPNC with mobile phone technology to improve maternal and child health further. Vital events can be captured on an ongoing basis through ASHA as a key informant.

**Keywords:** Home-based postnatal care, maternal mortality, neonatal mortality, stillbirth

**Address for correspondence:** Dr. Vijay Kumar, Survival for Women and Children Foundation, Sector 16, Panchkula, Haryana, India.  
E-mail: 1940kumarv@gmail.com

**Submitted:** 20-Oct-2020 **Accepted in Revised Form:** 08-Oct-2021 **Published:** 24-Dec-2021

### INTRODUCTION

Home-based postnatal care (HBPNC) is the provision of maternal and newborn care from 1 h after the delivery of placenta to 42 days following birth.<sup>[1]</sup> The postnatal period is the most critical phase for mother and newborn as it is the time of physiological transition for both.<sup>[2]</sup> Almost 50% of maternal mortality occurs in first 24 h of birth and 66%

in first 7 days of postnatal period.<sup>[3]</sup> As reported in 2013, 2.8 million babies died in the first month out of which 1 million died on the first day of their life.<sup>[4,5]</sup>

Increases in institutional deliveries and care of small and sick newborn have led to increased burden on the

Access this article online	
Quick Response Code: 	Website: <a href="http://www.ijcfm.org">www.ijcfm.org</a>
	DOI: 10.4103/IJCFM.IJCFM_121_20

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

**For reprints contact:** WKHLRPMedknow\_reprints@wolterskluwer.com

**How to cite this article:** Sharma B, Raina A, Kumar V, Mohanty PN, Sharma M, Gupta A. Strengthening home-based postnatal care of rural area of two districts of Haryana using mobile phone technology: A pilot study. *Indian J Community Fam Med* 2021;7:135-9.

institutions, leading to early discharge of mother and babies. Therefore, the rationale of HBPNC is to ensure evidence-based continuum of care after delivery and to provide care for home deliveries as well. HBPNC focuses on the provision of preventive and promotive maternal and newborn care services such as counselling for breastfeeding, immunization, family planning, and referral of complications. In the community, HBPNC can be provided by the professional health-care provider or community health worker or community worker with referral or health-care support.<sup>[6]</sup> In India, HBPNC is introduced under the National Rural Health Mission (NRHM) in 2011 and being provided by community-based volunteers known as Accredited Social Health Activists (ASHAs).<sup>[7]</sup>

Although substantial gains have been made in reducing maternal and child mortality, the decline in neonatal mortality and stillbirth is slower.<sup>[8]</sup> The adverse outcomes of pregnancy also include miscarriages, stillbirths, babies born too soon or born too small, and congenital anomalies and maternal near miss which far outnumbers the maternal deaths.<sup>[8]</sup> All these key indicators are underreported in the system even though considerable efforts are being made for improvement. Moreover, sturdy systems are needed to understand population-based events to take policy decisions based on evidence and best practices as the civil registration or vital statistics system is weaker in low-middle income countries.<sup>[9,10]</sup>

The present study was conducted with the objective to strengthen the existing HBPNC using mobile phone technology and use same platform to capture the population-based events (miscarriage, stillbirth, birth defects, maternal death, and near miss) from a defined geographical area to know the actual burden which is usually missed or underreported.

## MATERIAL & METHODS

### Study area:

Survival for Women and Children (SWACH) Foundation experimented with the idea of m-health using mobile phone technology in Bilaspur Community Development Block in district Yamunanagar in Haryana in 2012 to promote the newborn and maternal health and care for Child Development. This experience was shared with the NRHM under the leadership of Mission Director NRHM in 2013, and a decision was made to develop a collaborative project to strengthen HBPNC to be implemented in the study area. The modus operandi, details of the plan, funds required, and issues relating to all concerned in NRH for two districts and providers were worked out. The tools to be used and the

guidelines to be distributed were developed and field tested. It was agreed that, since this is an innovative collaborative project involving multiple stakeholders in geographically dispersed population, it should be implemented in phases and expanded based on experience and capacity of all the stakeholders, i.e. the staff in community processes, child health division, IT wing of NRHM, the officers concerned in the district, ASHA block coordinators, ASHA facilitators, ASHAs, ANMs, and LHVs.

### Preparatory phase

ASHAs had been trained for a period of 5 days to provide HBPNC by NRHM as per state norms. Following the completion of training, there were periodic refresher trainings by the district authorities in collaboration with primary health center (PHC) staff and auxiliary nurse midwife (ANM). ASHAs were supported by ASHA facilitators and block coordinators at the community development block level as well as by the ANM at the village level in their day to day work.

### Implementation phase

Implementation was started in June 2013 in Khizrabad (Chhachhrauli) block of Yamuna Nagar district. After consolidation of work in this block, the project was extended to Bilaspur block and then it was progressively introduced in the other eight blocks of the two districts. The whole rural areas of two districts with an estimated 16.67 lakhs of rural population have been covered since June 2015 and sustained till date. The time of initiation of the strengthening of HBPNC project is summarized in Figure 1.

### Key steps and processes in implementation

A 1-day orientation of district level officers (maternal health and child health), senior medical officers, medical officers, lady health visitors, and ANMs to apprise them about the project and seek their support after approval by NRHM. Subsequent meetings were held to update progress on the project.

One-day PHC-wise orientation of ASHAs was done by staff from NRHM, district and SWACH. During the orientation meeting, name, address, and telephone number of each ASHA and all support staff at the block and district

Year	2013			2014		2015			
	June	Sept.		January	May	January	March	April	May
Kbd.									
Bilas.									
Sadh.									
Nahar.									
M Bad									
Radh.									
Mulla.									
CMPur									
S Pur									
Barara									

**Figure 1:** The timeline of the strengthening of the HBPNC project and area covered

staff and their e-mail contacts were collected to facilitate ongoing communication by phone and electronically. Roles and responsibilities were explained to all concerned parties. A simple format was given, and ASHAs were explained about the information to be reported by them and its purpose. All the ASHAs were given (1) MCP (Mother Child Protection) cards; (2) simple formats to guide reporting on the phone on pregnancy registration, pregnancy outcome, and status of the mother and the baby at 28 days and 42 days, respectively, See Annexure-A; (3) three one page illustrated flyers that were printed in four colors were distributed to be shared with families to empower them. One flyer was on birth preparedness (Annexure-B), one on care of the mother and the new born baby at home (Annexure-C), and one on special care of low birth weight baby (Annexure-D). One phone number was given, and this was printed on the flyers so that ASHAs and families are able to maintain their communication on the same phone and talk to the same person at SWACH. This has helped to ensure ongoing communication and maintain a sturdy data base. All ASHAs and project staff members have been provided CUG SIMs free by NRHM. Phone communication between ASHAs and SWACH staff was therefore not inhibited because of cost considerations.

**Reporting** All ASHAs reported each pregnancy and provide details of pregnancy on the phone. They report all outcomes in each pregnancy, i.e. abortion/miscarriage termination of pregnancy, stillbirth, and live births with details of each birth. They also report the outcome for the mother and the baby at 28 days and 42 days of age. These details are entered on a computer at SWACH. The information on each family is recorded daily on a web-based system to facilitate follow-up and analysis. This web-based system has been developed by the IT wing of NRHM Haryana. For each PHC, data are retrieved once every week to identify those ASHAs who have not reported any event and they are contacted by SWACH supervisor in order to ensure completeness of the reporting. The system alerts the staff about each mother infant dyad who has reached 28 days and 42 days. A track is kept of these and if information is incomplete then it is completed and updated. Information from the family is obtained independently to validate the information provided by ASHAs.

## RESULTS

A total of 1650 ASHAs were enrolled, trained, and provided feature phone by NRHM. Approximately 40% of ASHAs owned an android phone and around 5%–10% of ASHAs dropped their job or replaced annually. Key variables have been used, and the system enables quick analysis

of up-to-date information and generate graphics on the following (1) number of pregnancies registered trimester wise, (2) outcome-abortion/miscarriage, stillbirth, neonatal death, and maternal death, (3) place of birth, (4) type of delivery, (5) early initiation of breast feeding, (6) presence of visible birth defect, (7) birth weight, (8) gestational age, (9) possession of phone number by the family, and (10) status of breast feeding at 28 days of age. These indicators are reviewed by the team on a weekly basis and then a monthly report is prepared and shared with all the stakeholders. The ASHA facilitators and ASHAs who do not have e-mail are provided a feedback by their supervisors at the PHC during the monthly meetings. This report includes action points that need to be considered by each stakeholder. From May 2015 to August 2019, total 120,654 births have been reported out of which 2031 were stillborn with still birth rate of 16.8/1000 births. The neonatal mortality rate was 19.5/1000 live births. Under population-based birth defect surveillance, 1060 cases of one or more birth defects have been reported and verified. The most common birth defects were musculoskeletal followed by defects of central nervous system. Birth weights were recorded in 98% of cases. The rate of low birth weight (below 2500 g) was 15%. Institutional deliveries took place in 98% of cases, and early initiation of breastfeeding occurred in 70%.

Using the same platform SWACH foundation has also started participatory learning for action (PLA) group under various categories – pregnancy support group, postpartum group (42 days), 1–3 months, 3–6 months, 6–12 months, and 12–24 months of age for continuum of care. At present, there are around 2200 active participants in these PLA groups who are exchanging information daily. These groups are being moderated by health-care providers at SWACH who are also providing targeted education and support to pregnant as well as postnatal women to improve care seeking, compliance, and family-centered care.

## DISCUSSION

In this study, mobile phone technology is being used to strengthen the HBPNC at community level using frontline workers (ASHAs) to capture the real-time data of vital statistics for the action. This system has helped in identifying the target population for follow-up which further facilitated communication with ASHAs and targeted families. It has been feasible to capture vital statistics irrespective of place of birth or death after getting the coverage of all the community blocks. Each death, i.e. stillbirth, neonatal death, and maternal death was investigated by verbal autopsy, and other associated

factors were also captured. Before this, the information on adverse outcomes had been obtained from ASHAs on monthly basis, but with the help of mobile technology, they are providing live information which is helping to find out the current gaps and constraints at home or at system level both in the private as well as in the public sector. Population-based house hold surveys are a useful method to capture the complete data on vital statistics, especially in countries with poor coverage of civil registration system. With this innovative method, it is feasible to capture the adverse outcome such as stillbirths, birth defects, neonatal death, and maternal deaths of a defined geographical area completely.<sup>[11,12]</sup> The main achievements of this effort are:

- A population-based count of vital events relating to pregnancy and its outcome through a system of data collection, data entry, and analysis on a day-to-day basis has been established and sustained
- Complete information that includes abortion, stillbirths, live births, birth defects neonatal, and maternal deaths is available, and live system has been developed, in which the information can be used for initiating action at the earliest on a day-to-day basis
- Regular phone calls to ASHAs and contact with family are helping to improve accountability of ASHAs and bring improvement in quality of information and its completeness
- PLA groups are engaging and empowering the families to strengthen family-centered care and enhance the timely utilization of the health system for preventing and curative care
- Timely guidance to the family for early referral and appropriate treatment seeking to reduce preventable deaths is now done although there is considerable effort required to move the process of changing family behavior forward
- Reduction in irrational use of drugs and reducing out-of-pocket expenses of the family by solving the common concerns of the mother and the new-born by resolution of problems by phone through PLA groups. This will also reduce the use of unwarranted medication for minor concerns and problems.

There is an ongoing dialog with the state NRHM (NHM) and district authorities to audit the deaths and stillbirths so that decisions can be made to improve (1) the family and community interventions to strengthen the demand side, (2) upgrade the care during referral, and (3) strengthen the quality of care at the point of delivery (PHC, CHC, district hospital, and tertiary facilities). A monthly audit and review process are being evolved to provide policy guidance so that the problem of high still birth rate, neonatal mortality rate, and maternal mortality rate can

be addressed nationally. Messages have been developed to guide the families during different phases of pregnancy for birth preparedness as well as to be able to render essential home-based post-natal care. The system has the capacity to transmit age/stage specific action-oriented messages for use by application of digital technology. The evolution of this system can take the effort one step further in the strengthening process.

Population-based birth defect surveillance data have highlighted the public health problem of neural tube defects. This has helped the state government to take policy decision on fortification of wheat flour with folic acid. State-wide expansion is under consideration.

There were many constraints such as low response, incomplete or delayed information, or fear of being reprimanded, non-possession of smart phone, but over the time, we were able to sustain the participation of almost 95% of ASHAs and could improve the quality of data further.

## CONCLUSION

Strengthening HBPNC by community health workers with the help of mobile phone technology is an example of innovative health workforce approach where along with providing postnatal care, data on vital events such as live births, stillbirths, birth defects, maternal deaths, and near miss in a defined geographical area have been captured completely. This robust data base would help in planning intervention and tracks its impact to strengthen the maternal and child health.

## Acknowledgment

We would like to acknowledge Managing director NRHM Haryana for supporting and making this pilot study successful. We also thank DD child health, DD maternal health, ASHA coordinators, facilitators, and ASHAs of Ambala and Yamuna Nagar for participation and cooperation.

## Financial support and sponsorship

Nil.

## Conflicts of interest

There are no conflicts of interest.

## REFERENCES

1. World Health Organization. WHO Technical Consultation on Postpartum and Postnatal Care. Geneva, Switzerland: WHO Document Production Services; 2010.
2. MacArthur C, Winter HR, Bick DE, Knowles H, Lilford R, Henderson C, *et al.* Effects of redesigned community postnatal care on

- womens' health 4 months after birth: A cluster randomised controlled trial. *Lancet* 2002;359:378-85.
- Nour NM. An introduction to global women's health. *Rev Obstet Gynecol* 2008;1:33-7.
- Wardlaw T, You D, Hug L, Amouzou A, Newby H. UNICEF Report: enormous progress in child survival but greater focus on newborns urgently needed. *Reproductive health* 2014;11:1-4.
- Lawn JE, Blencowe H, Oza S, You D, Lee AC, Waiswa P, *et al.* Every newborn: Progress, priorities, and potential beyond survival. *Lancet* 2014;384:189-205.
- Koblinsky MA. Community-based postpartum care: An urgent unmet need 2005:12-13.
- Ministry of Health and Family Welfare. Home-Based Newborn Care Operational Guidelines. New Delhi, India: Ministry of Health and Family Welfare; 2011.
- World Health Organisation. Evaluating the Quality of Care for Severe Pregnancy Complications. The WHO Near-Miss Approach for Maternal Health. Geneva: World Health Organisation; 2011.
- World Health Organization. United Nations Children's Fund. Every Newborn: An Action Plan to End Preventable Deaths. Geneva: World Health Organization; 2014.
- United Nations. Transforming Our World: The 2030 Agenda for Sustainable Development. New York: UN Publishing; 2015.
- United Nations Children's Fund. Statistics and Monitoring: Multiple Indicator Cluster Surveys. Available from: [https://www.unicef.org/statistics/index\\_24302.html](https://www.unicef.org/statistics/index_24302.html). [Last accessed on 2021 Sep 12].
- International ICF. Demographic and Health Survey. Demographic and Health Surveys. Available from: <http://www.dhsprogram.com/>. [Last accessed on 2021 Sep 12].

The poster is for World AIDS Day 2021. It features a large red ribbon graphic that forms the letter 'O' in the word 'WORLD'. The word 'WORLD' is written in large, grey, sans-serif capital letters. Below it, the words 'AIDS DAY' are written in large, bold, red, sans-serif capital letters, followed by '1 DECEMBER' in smaller, grey, sans-serif capital letters. The background is a light grey world map. In the top left corner, there is the logo of the Ministry of Health & Family Welfare, Government of India, with the motto 'सन्तोषो जयते' below it. In the top right corner, there are logos for NACO (National AIDS Control Organisation, India's Voice against AIDS) and the 75th Azadi Ka Amrit Mahotsav. At the bottom, there are social media icons and handles for mohfw.gov.in, @MoHFWIndia, @MoHFW\_INDIA, @mohfwindia, mohfwindia, @mohfw\_india, and @mohfw\_india.