



ORIGINAL ARTICLE

Evaluating Birth Preparedness and Pregnancy Complications Readiness Knowledge and Skills of Accredited Social Health Activists in India

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ABSTRACT

Background: The National Rural Health Mission (NRHM) in India relies on Accredited Social Health Activists (ASHAs) to act as a link between pregnant women and health facilities. All ASHAs are required to have a birth preparedness plan and be aware of danger signs of complications to initiate appropriate and timely referral to obstetric care.

Objectives: To examine the extent to which Accredited Social Health Activists (ASHAs) are equipped with necessary knowledge and skills and the adequacy of support they get from supervisors to carry out their assigned tasks in a rural district in Karnataka, (South) India.

Methods: A cross-sectional descriptive study was carried out among 225 ASHAs between June – July 2011. Quantitative and qualitative data were collected using pre-tested semi-structured interview schedule. The data were analyzed using SPSS version 17. Chi-square test was used to determine associations between categorical variables.

Results: The response rate was 207(92%). In terms of knowledge of all key danger signs (Complication Readiness), 2(1%), 10(4.8%), and 15(7.2%) ASHAs were aware of key danger signs for labor and child birth, postpartum period and pregnancy period, respectively. Knowledge of key danger signs was associated with repeated, recent and practical training ($p < 0.05$). A majority (71%) scored 4-7 of the maximum score out of 8 for knowledge regarding Birth Preparedness.

Conclusions and Public Health Implications: ASHAs in rural Karnataka, India, are poorly equipped to identify obstetric complications and to help expectant mothers prepare a birth preparedness plan. There is critical need for the implementation of appropriate training and follow-up supervision of ASHAs within a supportive, functioning and responsive health care system.

Key Words: Birth preparedness and complication Readiness • National Rural Health Mission
• Accredited Social Health Activists

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Introduction

As a country, India has made some progress towards achieving the Millennium Development Goals (MDGs), especially in the rural areas. However, with the MDG deadline just two years away, much remains to be done. The shortage of skilled health workers in remote rural areas of the country remains a key challenge to achieving the goals related to maternal and child health as laid out in MDGs 4 and 5. Although Community Health Workers (CHWs)^[1] do not replace the need for health workers with greater training, they certainly play an important role in increasing access to and utilization of health care services. Around the world, CHWs have been found to play a crucial role in promoting behavior change by addressing socio-cultural factors such as traditional beliefs, dependence on local healers and delays in care-seeking that contribute to maternal and child deaths.

Accredited Social Health Activists (ASHAs), a national variant of CHWs are a key part of the rural health system in India. Over half a million ASHAs have been employed by India's National Rural Health Mission (NRHM). The Janani Suraksha Yojana^[2] (JSY) which aims to reduce maternal and neonatal mortality by promoting institutional deliveries relies on ASHAs to raise awareness and promote health care accessibility and utilization, especially among relatively poor and marginalized groups. ASHAs play important roles such as counseling women on issues such as birth preparedness and importance of safe delivery, arranging escort services to accompany pregnant women, mobilizing funds, arranging transport and blood donor, all of which would ensure better outcomes of pregnancy and child birth.^[2] "Birth Preparedness and Complication Readiness" (BPCR) is a strategy which promotes timely use of skilled maternal and neonatal care especially during child birth, based on theory that preparing for child birth and being ready for any complication reduces delays in obtaining this care.^[3]

Despite the reliance on the role of ASHAs in preparing pregnant mothers for child birth in India, few assessments have been conducted on the maternal, neonatal and child health (MNCH)-related knowledge, competencies and performance of ASHAs. To provide baseline information and generate areas for further research, we conducted an assessment of the MNCH-related knowledge of ASHAs in rural district of Karnataka state, India.

Methods

Study area

The state of Karnataka has a population of 62 million.^[4] Though it remains one among the developed southern states, its social and health indicators are only just above the national average, and it trails behind its more advanced southern neighbors, Kerala and Tamil Nadu. The Karnataka Human Development Report ranks Koppal, the site of our study, at the bottom of all districts. The experiences of pregnant women in Koppal present a more complex reality.^[5] The situation is grim in terms of addressing the three delays: in recognizing complications and seeking care, in reaching appropriate health facilities and delays in receiving appropriate care after admission to a health facility.^[6]

Study design

A cross sectional descriptive study was conducted using both quantitative and qualitative methods. The inclusion criterion was ASHAs who have been working for at least 6 months, who were willing to participate in the study and provide written informed consent.

Sample size and sampling technique

Based on a prior study at Madhya Pradesh, India^[7] assuming that 46% of the ASHAs have 60-70% knowledge level related to BPCR and to get 95% confidence interval $\pm 6\%$ the sample size was calculated to be 204 using Statcalc (EPI info 3.5.1) and adjusting for non-response rate of 10% it was calculated to be 225. Multistage random sampling was employed. There are a total of 888 ASHAs working at 39 Primary Health Centers (PHC) in the four sub districts of Koppal. Two of the four sub districts were randomly selected, by the lottery method. These two sub districts together have a total of 18 PHCs. All the 18 PHCs were included in the study. The calculated sample size of 225 was proportionally allocated according to the population of ASHAs in the respective PHCs.

Data Collection

Data collection was carried out over a six -week period between June and July 2011. The interview schedule was translated and back translated; English

to Kannada to English to improve validity and reliability. The instrument was piloted in 5% of the estimated sample size in a similar setting in a different district. The interviews were evaluated and relevant modifications were carried out.

The semi-structured interview schedule was predominately adapted from the “Monitoring Birth Preparedness and Complication Readiness tools and indicators for maternal and newborn health” developed by the Johns Hopkins Program for International Education in Gynecology and Obstetrics (JHPIEGO).^[3] The schedule was modified according to the training curriculum of the ASHAs and the operational guidelines on maternal and newborn health of the NRHM, in consultation with an expert in the field of Reproductive Health Research. The BPCR outlines key knowledge areas for ASHAs to include all danger signs during pregnancy, delivery, post-partum period and making a birth preparedness plan with the pregnant woman.

To avoid data contamination ASHAs working under the same PHC and Sub-center were interviewed within a span of two days so as to avoid discussions among those interviewed and those yet to be interviewed regarding the type of questions asked. Spontaneous and unprompted responses were expected of ASHAs. Spontaneous knowledge here refers to the ASHAs naming a sign or response without being asked about that sign by name. Care was taken not to inadvertently change the meaning or interpretation of the danger sign or other responses when translated to English from the local terminology. All respondents were asked to give an account of the experiences they have had while working as ASHAs. A total of 37 ASHAs narrated their experiences.

Ethical considerations

Ethical clearance was obtained from the Institute Ethics Committee (IEC) of Sree Chitra Tirunal Institute for Medical Sciences and Technology. A letter of support was obtained from NRHM, Karnataka. Written informed consent was obtained from individuals eligible according to the inclusion criteria and who were willing to participate in the study. Interviews were conducted in locations that ensured privacy and participant convenience and with minimal interruptions. No information about the ASHAs' scores on knowledge was shared with their supervisor or colleagues. Data were securely

handled by the principal investigator using a password on the computer. After all the data had been entered in the computer, the hard copy of the questionnaires was stored in a locker and locked for safe keeping.

Data analysis

All questionnaires were coded before administration. Completed questionnaires were sorted out, collated and cleaned. The collected data were analyzed using SPSS for windows version 17. Cross validation and consistency checks were done. The results were presented in tables showing proportions of the distribution of the characteristics. Cross tabulations were used to compare the characteristics of chi square and p-value. The qualitative data were organized and analyzed with the help of ATLAS. ti software (version 6.2).

Results

Socio-demographic and work related characteristics

The overall response rate for the study was 92% (207). The median age of the ASHAs interviewed was 30 years. Almost all the ASHAs (97%) were currently married, and 18.8% had children below 5 years of age. Sixteen (7.2%) ASHAs had had four or fewer years of schooling. A majority (78.7%) of the ASHAs had been employed for between 25- 36 months. Nearly two-thirds of the ASHAs (65.7%) had received one round of training, 33.3% had received 3-4 rounds of training and an insignificant proportion (1%) had received two rounds of training. The majority (83.1%) had not received any form of practical training, and the content of practical training, for those who had received some, was home based newborn care, with little or no emphasis on issues during pregnancy and child birth.

Birth preparedness and complication readiness: knowledge and practice

Birth Preparedness

We assessed whether ASHAs were aware of the key components of birth preparedness and rated them using a score. Only 3 (1.4%) of the respondents scored an excellent score 8 – demonstrating knowledge as per their training curriculum, while

the vast majority (71%) had a good score between 4 and 7. The table below describes the components and the resulting scores.

Table 1. Distribution of Knowledge on Birth Preparedness Information for the ASHAs, Primary Survey, 2011

| Birth Preparedness Information to be provided by the ASHAs (N=207) | Frequency Yes | Percentage (%) |
|--|---------------|----------------|
| Identify health facility | 174 | (84.1) |
| Identify skilled provider | 43 | (20.8) |
| Identify mode of transport | 157 | (75.8) |
| Save money for delivery | 173 | (83.6) |
| Save money for transportation | 86 | (41.5) |
| Identify blood donor | 7 | (3.4) |
| Identify the person who will escort to skilled care | 10 | (4.8) |
| Prepare clean items for birth | 171 | (82.6) |

| Birth Preparedness Information Score | N | (%) |
|--------------------------------------|-----|--------|
| Excellent - Score 8 | 3 | (1.4) |
| Good - Score 4-7 | 147 | (71.0) |
| Poor - Score 0-3 | 57 | (27.6) |

Notably, ASHAs' key activity related to birth preparedness was supporting institutional deliveries (99%), which included helping with cash assistance (98%) and identifying a functional health center before delivery. However, only 1% identified an institution for referral and less than 1% had identified a blood donor. Birth preparedness service provision was seen to be significantly associated with the knowledge score of Birth preparedness plan. Work characteristics such as experience, training, practical training, recent training had a significant association with birth preparedness service provision (P value <.05).

Complication Readiness

Based on the ASHA training curriculum, we selected common and easy to recognize indicators of a severe problem during pregnancy as given in the table below.

We assessed knowledge regarding other signs that should also result in referrals, such as severe abdominal pain at any time during pregnancy, loss

of consciousness, severe weakness, accelerated/reduced fetal movement, water breaks to these other danger signs such as breathlessness, swelling of feet, severe headaches, and excessive weight gain without labor.

Table 2. Key danger signs during Pregnancy, Labor and child birth and Post-partum periods

| Pregnancy | Labor and child birth | Post-partum |
|-------------------------|------------------------------|---------------------------------|
| Severe vaginal bleeding | Severe vaginal bleeding | Severe vaginal bleeding |
| Swollen hands/face | Prolonged labor (> 12 hours) | Foul-smelling vaginal discharge |
| Blurred vision | Convulsions | High fever |
| | Retained placenta | |

Source: JHPIEGO/Material and Neonatal Health Program, knowledge of key danger Signs, Indicators 1.1 to 1.3.

Overall, ASHAs' knowledge of danger signs was very poor – a substantial minority had no knowledge of any danger signs. However, a majority (>80%) of ASHAs knew that post-partum hemorrhage is a life threatening danger sign. Of those who knew all key danger signs, 2(1%), 10(4.8%) and 15(7.2%) were aware of key danger signs for labor and child birth, postpartum period and pregnancy period, respectively. A composite knowledge score of the key danger signs was computed by summing up the responses obtained in all the three periods for each respondent. The maximum score would be 10 and the minimum zero. None of the respondents scored above 8. The majority 114(55.1%) scored very poor (0-3), 78(37.7%) scored 4-5 and 15(7.2%), 7.2% score 6-7.

We examined the association of the score for knowledge of key danger signs with socio-demographic and work-related characteristics of ASHAs. Various dimensions of training emerged as the single most important factor associated with knowledge of key danger signs (Table.4).

Family, Community and Health Systems Influences
Responses to the open-ended questions identified a number of family, and community and health systems factors that influence ASHAs' performance in narratives of 37 ASHAs. Tensions in the family due to lack of regular payment were a major

Table 3. Distribution of Knowledge of danger signs during Pregnancy, Labor and child birth and Post-partum periods for the ASHAs, Primary Survey, 2011

| Knowledge levels N(207) | Pregnancy N (%) | Labor and child birth N (%) | Post-partum N (%) |
|-------------------------------|--------------------|--------------------------------|----------------------|
| All Key danger signs + Others | 15 (7) | 0 | 9 (4) |
| Not all key danger signs | 152 (74) | 186 (90) | 188 (91) |
| None of the key danger signs | 40 (19) | 19 (9) | 9 (4) |

| Fatality Perception N(207) | Pregnancy N (%) | Labor and child birth N (%) | Post-partum N (%) |
|-------------------------------|--------------------|--------------------------------|----------------------|
| All Key danger signs + Others | 13 (6) | 0 | 6 (3) |
| Not all key danger signs | 142 (69) | 177 (86) | 169 (81) |
| None of the key danger signs | 52 (25) | 30 (15) | 31 (15) |

Table 4. Work-related characteristics of ASHAs and their knowledge of key danger signs of pregnancy, labor and childbirth and postpartum period

| Work-related characteristics | Scores for knowledge of key danger signs | |
|--------------------------------------|--|-----------|
| | <=3 | >=4 |
| Experience | P=0.24 | |
| <=24 months | 8 (61.5) | 5 (38.5) |
| 25-36months | 85(52.1) | 78(47.9) |
| >36 months | 21 (67.7) | 10 (32.3) |
| Training | P=0.00* | |
| <=2 rounds | 90 (65.2) | 48 (38.5) |
| >=3 rounds | 24(34.7)) | 45(65.3) |
| Practical Training | P=0.03* | |
| Yes | 13(37.1) | 22(62.9) |
| No | 101(58.7) | 71 (41.3) |
| Training in the last 3 months | P=0.00* | |
| Yes | 24(35.8) | 43(64.2) |
| No | 90(64.9) | 50(35.1) |
| | 8 (61.5) | 5 (38.5) |
| | 85(52.1) | 78(47.9) |
| | 21 (67.7) | 10 (32.3) |

* P value < 0.05 Significant

deterrent to their provision of services. Lack of awareness about blood donation, poverty and traditional beliefs operated at the community level and hindered community utilization of services. Irrational and multiple referrals, poor hospital conditions, lack of blood bank facility, delays in treatment during an obstetric emergency, and

informal payments operated at health systems level. ASHAs also underscored shortages of doctors and nurses and the subsequent overloading of existing staff as affecting the morale and motivation of all health care workers.

The following are a few examples of the experiences, which ASHAs shared with the researcher.

“There is no facility to for us to stay overnight with the pregnant woman in the hospital. We are shooed off by the nurses and the doctors. We take a bed sheet and sleep on the corridors and wait till the woman delivers.”

“It is very difficult for me to arrange blood if required. The zilla hospital does not have blood. The doctors ask me to arrange blood from Hospet which is very far, (it costs) Rupees 35/- by bus. They also ask me to sign a paper saying if by the time blood comes the lady dies it is my responsibility. I feel very confused and scared during these times.”

“Doctors need to cooperate and understand a poor woman’s condition; instead they ask for bribes, so the patients don’t like coming to the hospital. The nurses too want half of the money we get or else they do not cooperate with us in helping the pregnant woman.”

Discussion

According to the study findings the knowledge level regarding key danger signs in all the three stages very extremely poor, i.e. pregnancy (7.2%), labor and child birth (1%) and post-partum period (4.8%). This survey suggests a condition that is worse than the study conducted in the Rewa district of Madhya Pradesh in 2009 among pregnant woman which suggested that the knowledge level regarding the danger signs was around 18.6%.^[7] This study highlights several weaknesses in the current effort to promote safe motherhood in rural Karnataka and reveals challenges that may potentially be evident in other rural, resource constrained settings across India. ASHAs’ potential to promote MNCH is limited by number of barriers including inadequate hands-on training, supervision and back-up support, and poor infrastructure. However, these barriers also suggest opportunities for further strengthening efforts to address MNCH in Karnataka – including greater emphasis on hands-on training, supportive supervision, and increased community engagement especially with regards to complication readiness.

Out of 207 ASHAs surveyed none of them had score above 7 out of 10 for knowledge scores regarding key danger signs. This clearly indicates that more rounds of training would definitely affect their knowledge competencies.

Though 65.7% of the ASHAs helped to raise funds for delivery of the pregnant women they

attended to their births, a quarter of the ASHAs were not aware of the presence or lack thereof of blood donors or blood provision.

This study provides baseline data for further research. This study presents what could be considered as a worst case scenario; meaning it was conducted in a district which is placed at the bottom of human development index in Karnataka. The findings may be identical to what is prevalent in other areas with identical human development index across India. The study has been conducted in the right context and time; six years since the launch of JSY, providing valuable data on some of the outcomes of the JSY. In addition, the qualitative component illuminated information presented from the quantitative survey.

It must be acknowledged that this study may present some inherent bias in the responses as the respondents were approached through the health system. The presence of a research assistant during the time of interview to help the principal investigator in translating to the local dialect might also have brought in bias in the responses.

Conclusion and Public Health Implications

Our findings suggest the need for key actions at the District and Facility levels to improve ASHAs’ performance. These include provision of hands-on training on how to identify danger signs and symptoms of complications during pregnancy, childbirth and post-partum and the appropriate referral pathways; supportive supervision with attention to contextual issues that affect MNCH. e.g., a checklist that help supervisors identify areas that need to be stressed during periodic review meetings and trainings; community engagement by using posters, street theatre and other community outreach methods to improve community awareness and understanding of MNCH. Additional strategies to improve MNCH outcomes also include offering resources to women with high risk pregnancies living in remote communities. E.g., support their stay close to a referral hospital 10-15 days prior to the expected delivery date will also make a difference.

In conclusion, ASHAs are envisioned as change agents at the forefront of efforts to reduce maternal, neonatal and child mortality in India. Further

improvements in training, supervision and support for ASHAs are needed in order to maximize on the potential they represent. The need of the hour is the implementation of appropriate training and supervision of ASHAs within a supportive, functioning and responsive health care system.

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