RESEARCH BRIEF

Performance of Accredited Social Health Activists to Provide Home-based Newborn Care: A Situational Analysis

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Objective: To assess Accredited social health activists' (ASHAs) ability to recognize illness in infants aged less than 2 months. **Methods:** Investigators observed 25 ASHAs conducting 47 visits. **Results:** ASHA-investigator agreement on the need to further assess infants was intermediate (kappa 0.48, *P*<0.001). Using IMNCI's color codes, ASHAs misclassified 80% of infants. ASHAs did not follow home-based newborn care formats and skipped critical signs. Overall ASHA-investigator agreement on diagnosis was poor (kappa=0.23, *P*=0.01). **Conclusion:** There is a need for improved training, tools, and supportive supervision.

Keywords: *Accredited social health activist, Home-based newborn care, Skills assessment.*

Despite rising rates of institutional delivery, most neonatal deaths in India occur at home. This also holds true in the state of Uttar Pradesh where 27% of neonatal deaths occur. The Government of India (GOI) released home-based newborn care (HBNC) guidelines in 2011 to increase access to newborn care through accredited social health activists (ASHAs) [1]. The guidelines expect ASHAs to make home visits to promote essential newborn care, identify illness, and refer infants if needed. ASHAs receive a performance payment for conducting the visits [2].

Government of Uttar Pradesh (GoUP) HBNC guidelines require ASHAs to use three formats to record information and assess and classify illness according to decision support algorithms: Format-1 is for the mother; format-2 for newborn examination and format-3 Integrated Management of Neonatal and Childhood Illness (IMNCI)-based color codes to diagnose and classify sick infants [3]. The *'Manthan'* Project, led by IntraHealth International and funded by the Bill & Melinda Gates Foundation, completed a situational analysis in Jhansi District to evaluate the performance of IMNCI-trained ASHAs to use HBNC guidelines to detect and assess illness severity in infants.

METHODS

This four-month study (November 2012-February 2013) was conducted in the service areas of two additional primary health centers (APHCs) in Babina block. Twenty-five IMNCI-trained ASHAs participated. The ASHAs received a 5-day refresher training that included orientation on GoUP HBNC guidelines, instruction on data recording formats, and an IMNCI skills review. Three trained postgraduate female investigators observed ASHAs during home visits. The GoUP and IntraHealth's Institutional Review Board approved the study. ASHAs provided written consent, and investigators obtained informed verbal consent from mothers of assessed newborns.

Investigators observed 47 home visits (roughly two per ASHA). Two visits were excluded from the analyses because they were incomplete, leaving 45 eligible visits. ASHAs visited newborns under two months (1-42 days). Investigators used a checklist to record their skills, and also completed their own assessments. *Stata* 10.0 was used to measure sensitivity and specificity for each sign and symptom for identifying illness. Kappa statistics calculated ASHA-investigator agreement. Categories for the agreement unweighted kappa statistics were: poor (< 0.40), intermediate (0.40 - 0.75), good (> 0.75 - 0.90), and excellent (> 0.90).

RESULTS

Overall, ASHAs did not complete comprehensive assessments using format-2. Temperature was assessed in 83% of observations, and correct steps followed in less than half. Weight was assessed in 87% of observations, and all correct steps followed in 30%. Although ASHAs inquired about breastfeeding in nearly three-fourths of visits, they assessed critical breastfeeding issues (e.g., difficulty feeding, decreased milk supply) in only one-

third of observations. ASHAs examined the cord in 71% of cases but were less likely to perform other physical examinations such as examining chest indrawing (42%) or skin cracks or redness (38%). Assessment for most danger signs was low; ASHAs examined infants for lethargy or unconsciousness in 33% of cases and assessed jaundice or abdominal distension in 24% and 18% of cases, respectively.

ASHA-investigator agreement on the need for further assessment of infants (format-3) was intermediate (kappa 0.48, *P*=<0.001). Investigators identified the need for further assessment in 14 cases whereas ASHAs identified nine (78% agreement). Signs with complete ASHA-investigator agreement included jaundice, chest in-drawing, and lethargy or unconsciousness (100% specificity). Disagreement occurred for skin pustules, cracked nipples or engorged breasts, and reduced breastfeeding. ASHAs recognized two breastfeeding difficulty cases compared with 11 identified by investigators. There was considerable disagreement for incessant crying or infrequent newborn urination (80% sensitivity).

***Table* I** shows infants' distribution in IMNCI illness categories, comparing ASHA versus investigator classifications. Overall agreement was poor (kappa=0.23, *P*=0.01). ASHAs misclassified 4 out of 5 infants belonging in red as yellow or green (80%), and placed 7 out of 8 infants into green though they belonged in yellow (88%). ASHAs classified 40 cases as green (versus 32 by investigators), indicating some underdiagnosis of illnesses.

DISCUSSION

None of the 25 trained ASHAs comprehensively covered all questions and signs, and they often skipped assessment items. ASHAs were more likely to ask about breastfeeding, newborn warmth, and crying but less likely to examine or assess for danger signs. ASHAs had difficulty sequentially asking questions and examining newborns while simultaneously recording information. This left critical assessment gaps and increased underdiagnosis of comorbidities, as reflected in the intermediate ASHA-investigator agreement on the need for further infant assessment.

The poor agreement between ASHA and investigator assessments of illness severity (kappa=0.23, *P*=0.01) has serious implications for efforts to reduce neonatal mortality, given that delays in referring sick newborns can prove fatal. Similarly, misclassification into green of infants who belong in yellow could result in withheld treatment and rapid progression of illness. Some ambiguity in format-2 instructions and duplication in format-2 and format-3 items may have created confusion about the assessment process. This suggests the need for revising the formats to eliminate repetition and make them user-friendly.

The GOI's HBNC strategy draws on work by Bang [4], who demonstrated a 62% reduction in neonatal mortality through multiple home visits by community health workers (CHWs). Use of HBNC formats and provision of HBNC by trained ASHAs in Uttar Pradesh is particularly timely given the GoUP's major investment in rolling out HBNC across the state. This situational analysis reinforces the findings of numerous studies [5-8] indicating that refresher trainings and supportive supervision are essential for CHWs' long-term retention of illness assessment skills. The HBNC strategy's success in reducing neonatal mortality ultimately depends on ASHAs making timely home visits and properly identifying, treating, and referring sick infants. Improving ASHAs' ability to correctly assess and classify illness requires strengthening their skills, improving the clarity and usability of HBNC formats as decision support tools, and ensuring ongoing supportive supervision.

TABLE I ASHA-INVESTIGATOR AGREEMENT IN INTEGRATED MANAGEMENT OF NEWBORN AND CHILDHOOD ILLNESSES (IMNCI) CATEGORIZATION OF INFANTS

Assessment by ASHA (n=45)	*Assessment by investigator*			
	Red	*Yellow*	*Green*	*Total*
Red	1	0	0	1
Yellow	2	1	1	4
Green	2	7	31	40
Total	5	8	32	45

Kappa 0.2373; P=0.01; Agreement 73.3%.

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WHAT THIS STUDY ADDS?

- ASHAs did not comprehensively assess infants and sometimes failed to conduct further assessment, or underdiagnosed illness severity.

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REFERENCES

1. National Rural Health Mission, Ministry of Health and Family Welfare, Government of India. Home Based Newborn Care: Operational Guidelines. Nirman Bhavan, New Delhi; 2011.
2. Department of Health and Family Welfare, Government of Uttar Pradesh. Government Order for Roll-out of Home Based Newborn Care. Lucknow; 2012.
3. Shewade HD, Aggarwal AK, Bharti B. Integrated management of neonatal and childhood illness (IMNCI): skill assessment of health and integrated child development scheme (ICDS) workers to classify sick under-five children. Indian J Pediatr. 2013;80:448-54.
4. Bang AT, Bang RA, Baitule SB, Reddy MH, Deshmukh MD. Effect of home-based neonatal care and management of sepsis on neonatal mortality: field trial in rural India. Lancet. 1999;354:1955-61.
5. Stalin P, Krishnan A, Rai SK, Agarwal RK. ASHAs' involvement in newborn care: a feasibility study. Indian Pediatr. 2011;48:897-9.
6. Bandyopadhyay S, Kumar R, Singhi S, Aggarwal AK. Are primary health workers skilled enough to assess the severity of illness among young infants? Indian Pediatr. 2003;40:713–8.
7. Venkatachalam J, Kumar D, Gupta M, Aggarwal AK. Knowledge and skills of primary health care workers trained on integrated management of neonatal and childhood illness: follow-up assessment 3 years after the training. Indian J Public Health. 2011;55:298–302.
8. Biswas AB, Mukhopadhyay DK, Mandal NK, Panja TK, Sinha N, Mitra K. Skill of frontline workers implementing integrated management of neonatal and childhood illness: experience from a district of West Bengal, India. J Trop Pediatr. 2011;57:352–6.