

## Original Research Article

# Assessment of knowledge and practices of ASHA workers related to maternal-child health and their performance affecting factors: a mixed method study in Deganga block, North 24 parganas district, West Bengal, India

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### ABSTRACT

**Background:** ASHA acts as a 'bridge' between the rural people and health service outlets and plays a central role in achieving national health and population policy goal. ASHAs form the backbone of the NRHM. They need to provide preventive, promotive and curative health facilities in the rural community. Maternal and child health is an important public health issue which indicates level of socio-economic development in each and every country. ASHA workers are the main front-line workers in primary health care delivery system who are expected to work in this domain to bring out betterment in RCH indicators.

**Method:** It was a mixed method study. Quantitative portion was descriptive, cross-sectional and qualitative part was focus group discussion (FGD). The study had been conducted in one block (Deganga block) of North 24 parganas district of West Bengal which was previous to selected purposively for the study. All ASHAs of Deganga block and one beneficiary mother (mother who had a baby of less than 1 year) for each ASHA from her area of work had been included as study population. ASHA- Beneficiary dyad had been interviewed with a predesigned pretested questionnaire after taking informed consent.

**Result:** More than half of the study population (64.7% and 50.5 %) had overall good knowledge and practice score related to maternal-child health and family planning respectively, though they had poor knowledge in updated dosage schedule of iron folic acid tablets, proper attachment techniques for successful breast feeding, missed doses of OCP, ECP, IUCD and safe period. They performed less efficiently in areas like counselling about harmful effects of addiction during pregnancy, birth preparedness and complication readiness, colostrum feeding, weaning, ECP and MTP. Mainly inadequate remuneration and lack of job satisfaction were the factors hindering their performance.

**Conclusion:** Frequent refresher courses, regular monitoring and supportive supervisions by respective higher authority, administrative steps for combating their dissatisfaction are of utmost importance to improve their performance.

**Keywords:** Accredited Social Health Activist, Maternal-child health, Performance, West Bengal

### INTRODUCTION

The Accredited Social Health Activist (ASHA) is a voluntary worker, operating in the rural health system of India, has been introduced as the main task-force of

National Rural Health Mission (NRHM), launched on 12th April 2005 to serve the health needs especially of the vulnerable section of the society by providing effective, efficient and affordable health care.<sup>1</sup>

NRHM has provided one trained female community health activist in every village in the country with an appropriately named 'Accredited Social Health Activist' (ASHA). ASHA acts as a 'bridge' between the rural people and health service outlets and plays a central role, in achieving national health and population policy goals.<sup>1</sup>

Being the key person of NRHM, they are supposed to provide preventive, primitive and curative health facilities in the community. She is selected from the village itself and accountable to the respective community. She counsels women on birth preparedness, importance of institutional delivery, breast-feeding, immunization, contraception, and prevention of common infections, identifying persons with symptoms suggestive of malaria, leprosy, tuberculosis etc during home visits and also help them to take proper treatment. She works with the village health and sanitation committee of the gram panchayat to develop a comprehensive village health plan, provides primary medical care of minor ailments such as fever, diarrhoea, and first aid for minor injuries and distributes ORS, iron folic acid tablet, chloroquine, oral contraceptives pills, condoms etc.<sup>2</sup>

ASHA is the first contact person for any health problems of underserved sections of the population, especially women and children. ASHA mobilizes the community and facilitate them in accessing health and health related services available at the sub-centre or primary health centre.<sup>2</sup>

A 23-day basic training schedule has been introduced by the Ministry of Health and Family Welfare (MOHFW) to provide the basic knowledge and skills to ASHAs. Regular refresher trainings are organized at the district levels and training modules are available for this purpose.<sup>2</sup>

Performance based compensation or remuneration are allotted to ASHAs which she earns by taking escorting mothers to delivery points (Janani Suraksha Yojana), working for VHSC, nutritional and national programs.<sup>3,4</sup>

Maternal and child health is an important public health issue which indicates level of socio-economic development in each and every country. ASHA workers are the main front-line workers in primary health care delivery system who are expected to work in this domain to bring out betterment in RCH indicators. They are being trained in this regard since before inception of NRHM i.e. the year 2005. Therefore, it is expected that they would perform better in this regard with repeated training than the other domains of their work. Several studies had been conducted in India on evaluation of their works, but in context of West Bengal there are scarcity of such

researches specifically on maternal and child health domain.<sup>5-8</sup>

Therefore, the current study had been taken up to assess the knowledge and practices of ASHA workers related to maternal-child health and family planning and to find out their performance affecting factors in a rural block of West Bengal.

## METHODS

An Observational mixed method study was done on one purposively chosen block (Deganga block) of North 24 parganas district of West Bengal, during the period between March 2019 to June 2019. The Quantitative portion of the study was descriptive and cross-sectional in design. All ASHAs of Deganga block, and one beneficiary mother (mother who had a baby of less than 1 year) for each ASHA from her area of work had been included as study population. ASHA workers who were absent on the day of the survey or had not given informed consent were excluded from the study. Non-willing beneficiary mothers were also excluded, and interview had been conducted with next randomly available mother. The practice of ASHA had been checked through interviews of the beneficiary mother who acted as a proxy indicator of ASHA's practice. The qualitative part was one focus group discussion (FGD) on topic related to barriers to provide services on maternal and child health. A nine membered group was selected purposively for this regard. Institutional ethical clearance had been obtained beforehand.

The study tool was a predesigned pretested semi-structured questionnaire which had two parts, one for assessment of knowledge of ASHA and the other one was for the interview of the beneficiary mother to assess practices of ASHA. The questionnaire was first prepared in English. Then it was translated into Bengali by a linguistic expert keeping semantic equivalence. To check the translation, it was re-translated into English by two independent researchers who were unaware of the first English version. Face validity of each item had been checked from previous researches in the presence of public health experts. They also decided the content validity of each domain. Reliability was checked by test-retest method ( $r=0.9$ ). Pretesting followed by pilot testing was conducted. Necessary corrections and modifications of the questionnaire were done accordingly. One to one interview had been conducted with the final corrected schedule.

Data thus collected had been entered in MS Excel and analysed subsequently in SPSS 20.0 version. Each item to assess knowledge and practice had been scored. The total attainable score for knowledge and practice was 16 and 44 respectively. Then for analytical purpose the scores had been categorized into good score ( $\geq$ median value) and poor score ( $<$ median value). Association between dependent and independent variable was checked through

inferential statistics. All analyses were two tailed with  $p \leq 0.05$  considered statistically significant.

## RESULTS

Majority (98.9%) of ASHA workers were in the age group of 40-50 years. Most of them (64.7% and 52.6 %) were Muslim and belonged to OBC caste respectively. All the ASHA workers completed at least secondary education or more of schooling. Most of the ASHA workers (76.3% and 43.7%) used to serve a population of 1000 to 1200 and were working for 6 to 8 hours per day (Table 1).

**Table 1: Distribution of study population according to Socio-demographic profile (n=190).**

Variables	Frequency	Percentage
Age (in completed years)		
30-40	2	1.1
40-50	188	98.9
Religion		
Hindu	67	35.3
Muslim	123	64.7
Caste		
General	16	8.4
SC/ST	74	38.9
OBC	100	52.6
Educational Qualification		
Secondary	116	61.1
Higher Secondary	36	18.9
B.A/B.SC/B.COM	38	20.0
Serving population		
<1000	43	22.6
1000-1200	145	76.3
>1200	2	1.1
Daily working hour per day		
4-6	66	34.7
6-8	83	43.7
>8	41	21.6

Regarding knowledge of the ASHA workers on maternal-child health, majority of ASHA workers (78.53%) correctly knew about early registration and almost all of them (99.47%) had knowledge about the tool of early diagnosis of pregnancy (Nischay Kit). Most of them (95.79%) knew correctly that pregnant mother should take one extra meal, but only (34.21%) knew the updated dosage schedule of iron folic acid tablet to treat anaemia in pregnancy. Regarding new-born care most of them (79.47%) knew correctly about what they should do with the baby immediately after delivery. Almost all of them (98.95%, 95.26% and 96.32%) had knowledge about exclusive breast feeding, schedule of routine postnatal visits and doses of iron folic acid syrup for baby as per recommendation under National Iron Plus Initiative respectively, but only 16.32% could correctly identify the points for proper attachment of a baby during breast

feeding. Majority of ASHA workers (86.32% and 80.53%) had correct knowledge regarding the immunization schedule of baby and hypothermia prevention respectively.

Regarding knowledge of ASHA workers on family planning, 56.84% correctly knew about what a woman should do if she missed consecutive two doses of OCP and only 2 (1.05%) of them knew that MALA-N can be used as emergency contraceptive (ECP). But most of ASHA workers (70% and 73.68%) had correct knowledge of the ideal time for IUCD insertion and safe period respectively (Table 2).

**Table 2: Distribution of study population according to their knowledge in maternal-child health and family planning (n=190).**

Knowledge items	Correct response Frequency (n)	Percent (%)
Early registration	149	78.53
Pregnancy test kit	189	99.47
Extra meal	182	95.79
IFA tablet dosage schedule	65	34.21
Immediate newborn care	151	79.47
Exclusive breastfeeding	188	98.95
Breastfeeding attachment	31	16.32
Immunization schedule	164	86.32
Hypothermia prevention	153	80.53
Scheduled PNC visit	181	95.26
Iron folic-acid syrup dosage	183	96.32
Missed OCP	108	56.84
ECP	2	1.05
Ideal time for IUCD insertion	133	70.0
Safe period	140	73.68

Regarding practice related to antenatal care, most of the beneficiary mothers (96.84 %, 98.95% and 97.37%) reported that ASHA workers visited more than 4 times during her pregnancy, advised to take 2-hour rest during daytime and informed about danger signs during pregnancy respectively. All ASHA workers counselled the antenatal mothers to eat one extra meal, more green leafy vegetables during pregnancy and regular consumption of iron folic acid tablets. Almost all of them 98.95% each (i.e. 95.95% each) advised about hand washing before having meal, not to do heavy physical work during pregnancy, family planning and birth registration. All the ASHA workers advised the mothers for TT immunisation and informed about baby's immunization schedule. None of them had counselled about effect of mother's addiction on baby's health. Most of them (78.42 %, 77.37 % and 60.53 %) helped the mother to identify the delivery place, informed about transport during delivery and escorted the mother to the delivery place respectively (Table 3).

**Table 3: Distribution of study population according to practice related to antenatal care (n=190).**

Topics of counselling/practice	Frequency (n)	Percentage (%)
ANC visit		
≥4	184	96.84
<4	6	3.16
Day time 2 hour rest		
Yes	188	98.95
Extra meal		
Yes	190	100.0
Iron tablet		
Yes	190	100.0
Green leafy vegetables		
Yes	190	100.0
Hand washing		
Yes	188	98.95
Tt vaccine		
Yes	190	100.0
Immunisation of the baby		
Yes	190	100.0
Addiction		
Yes	0	0.0
Heavy physical work		
Yes	188	98.95
Excessive workload		
Yes	188	98.95
Danger signs		
Yes	185	97.37
Family planning		
Yes	188	98.95
Birth registration		
Yes	188	98.95
Delivery place identification		
Yes	149	78.42
Transport		
Yes	147	77.37
Escorted to delivery place		
Yes	115	60.53

Regarding postnatal care related practices, all beneficiary mothers who were interviewed reported that ASHA workers came to visit her during post-natal period. Almost all the ASHA workers (98.95% each) counselled the postnatal mothers about diet, personal hygiene, birth registration, scheduled immunization of baby, exclusive breast feeding; while more than 95% of ASHA workers counselled them about baby’s positioning and attachment for successful breast feeding.

Most of ASHA workers (61.58%) counselled the postnatal mothers about colostrum feeding, but none of them told about weaning. Majority of them (90%, 86.84%, 82.63%, 72.63%, 73.68%, 84.21%, 66.84%) informed the mothers about hypothermia prevention,

signs, symptoms, prevention, management of diarrhoea, signs, symptoms of ARI and its management, availability of JSY monitory support, JSSK transport support and counselled or administered iron folic acid syrup to children as per the guideline of NIPI respectively.

While most of ASHA workers (98.95% each and 72.63%) informed the postnatal mothers about family planning, availability oral contraceptive pills (OCP), condoms and spacing methods like IUCD/PPIUCD; only 8.95% of them provided information about emergency contraceptive pills (ECP). None of them informed the mothers about safe abortion or medical termination of pregnancy. Majority (80.53%, 95.79% and 98.95%) of the beneficiaries reported that ASHA workers provided them contraceptives, medicines and informed them about VHND meeting (Table 4).

Regarding total knowledge score in maternal-child health and family planning, most of ASHA workers (66.31%) scored good with the mean score of 11.274(1.854). More than half of the study population (55.3 %, 54.7 % and 50.5%) secured good ANC related, PNC related and total practice score, with the mean of 14.063(-1.367), 20.458(2.565) and 34.521(3.545) respectively. There was no statistically significant relationship between knowledge and practice (Chi-square=0.914, df=1, p=0.339) (Table 5).

Focus group discussion (FGD) revealed that all the ASHA workers were not satisfied with their job as quantum of their work was disproportionate to their remuneration or incentives. All of them told “authors have to do too much of work as compared to our remuneration or incentives”. Another ASHA worker expressed their dissatisfaction of not getting benefits even after working hard throughout the antenatal period if the mother delivered in private hospital.

Majority of the ASHA workers told that they had to do various works of their superiors (ANM) in addition to their own work. This unnecessary workload was overburdening them, and they had to compromise with the quality of work. One of them told “If authors have to fill the MCP cards or other registers (job of ANM), then when will authors do the field work? But authors have to listen to the orders of the ANM workers because they will sign and forward the documents for our incentives.”

According to them the supervision from higher tier was minimum and mainly it was administrative type rather than a supportive one.

Regarding challenges faced by the ASHA workers, societal challenges were one of a key issue. They told that religious thoughts and misconceptions related to contraception were particularly hindering contraceptive use.

**Table 4: Distribution of study population according to practice related to postnatal care (n=190).**

Topics of counselling/practice	Frequency (n)	Percentage (%)
Scheduled PNC visit		
Yes	190	100.0
Mother's diet		
Yes	188	98.95
Mother's hygiene		
Yes	188	98.95
Immunization of baby		
Yes	188	98.95
Birth registration		
Yes	188	98.95
Exclusive breast feeding		
Yes	188	98.95
Baby positioning for breast feeding		
Yes	182	95.79
Breast feeding attachment		
Yes	181	95.26
Colostrum feeding		
Yes	117	61.58
Weaning		
Yes	0	0.0
Hypothermia prevention		
Yes	171	90.0
Awareness on diarrhoea		
Yes	165	86.84
Diarrhoea management		
Yes	165	86.84
Awareness on ARI		
Yes	157	82.63
Ari management		
Yes	138	72.63
JSY		
Yes	140	73.68
JSSK		
Yes	160	84.21
Iron syrup administration under NIPI		
Yes	127	66.84
Family planning		
Yes	188	98.95
PPIUCD/IUCD		
Yes	138	72.63
Condom		
Yes	188	98.95
OCP		
Yes	188	98.95
ECP		
Yes	17	8.95
MTP		
Yes	0	0.0
Provided contraceptives		
Yes	153	80.53
Provided other medicine		
Yes	182	95.79
VHND meeting		
Yes	188	98.95

**Table 5: Relationship of knowledge and practice score of the study population (n=190).**

Knowledge	Practice		Test of significance
	Good* n (%)	Poor n (%)	
Good*	59(48.0)	64(52.0)	Chi-square=0.914,df=1,p=0.339
Poor	37(55.2)	30(44.8)	

\*(≥Median)

Though since last five years this scenario was changing as people were accepting the information given by ASHA workers and thereby using contraceptives like condom, OCP, IUCD; yet regarding permanent methods community acceptance was not so satisfactory. One of the ASHA workers told that “It will take time to change their thoughts and conceptions regarding sterilisation methods.”

## DISCUSSION

The present study revealed that majority of the ASHA workers belonged to the age group of 40-50 years, while previous studies by Choudary M et al, and Garg PK et al. reported that the study population in their study were rather young.<sup>5,9</sup> This inconsistency in findings was due to the fact that there were no new recruitments. Those who had been recruited earlier were expected to be aged and much more experienced now. The study found that majority of them were OBC (52.6) which was more or less a consistent finding with Choudary M et al. While in this study only 20% of ASHA workers were found to be graduated, another study by Das A et al. reported that 33.9% of their study population had completed graduation.<sup>5,10</sup> Most of them served a population of 1000-1200 (76.3%) which was consistent with that of Kohli C et al.<sup>11</sup>

Regarding knowledge, the current study reported that the ASHA workers had good knowledge in early registration, diet during pregnancy, hygiene, immediate new-born care, exclusive breast feeding, immunisation schedule. The figures were either equal or higher than the previous studies.<sup>7,8,11-13</sup> As there was no new recruitment, with time and repeated training in between they were becoming more experienced and that might be the cause of their better knowledge. But this study found that only 34.21% had correct knowledge of updated IFA tablet dosage which was rather lower than that found by Choudary M et al. Though they had poor knowledge about ECP, majority (56.84% and 70%) knew correctly about OCP and ideal time of IUCD insertion which showed a trend of improvement in their knowledge than found by Das A et al.<sup>5,10</sup>

Regarding practices, most of the beneficiary mothers (73.68 % and 84.21 %) were informed by ASHA workers about availability of JSY monetary support and JSSK transport support during institution deliveries. Mandal T et al. also found that ASHA workers acted as key person in implementing the JSY services.<sup>14</sup> More than 96% of beneficiary mothers were visited by the ASHA workers during antenatal or postnatal period which was a consistent finding with that of Nagaraj S et al.<sup>6</sup> Over 80%

of ASHA workers in this study had distributed contraceptives, medicines which was a similar finding with Pala S et al.<sup>6,15</sup>

ASHA workers under this study were found to be dissatisfied with their remuneration and incentives which was also reported by multiple previous studies.<sup>9,10,15,16</sup>

Though in current study one beneficiary mother per ASHA had been interviewed to assess the practices of the respective ASHA, there might be biases like recall bias, gaps in counselling and real practice of the beneficiaries. Due to time and manpower constraints, the current study questionnaire could not include all the aspects of maternal-child health and family planning, though the major aspects in the particular domain had been included. In this study one block had been chosen purposively for feasibility of work, no proper sampling technique had been applied. Therefore, current study finding might not reflect the knowledge and practices of all the ASHA workers of this state.

## CONCLUSION

The current study depicted that more than half of the study population (64.7% and 50.5%) had overall good knowledge and practice score related to maternal-child health and family planning respectively, yet there were scopes of improvement in knowledge areas like updated dosage schedule of iron folic acid tablets, proper attachment techniques for successful breast feeding, knowledge regarding OCP, ECP, IUCD and safe period. Regarding practices of ASHAs, the issues like importance of counselling about harmful effects of addiction during pregnancy, birth preparedness and complication readiness, colostrum feeding, weaning, ECP, MTP should be stressed to improve. The study also demonstrated that there was no relationship between knowledge and practices of ASHAs depicting the fact that either there was gap in reaching the beneficiaries or the beneficiaries were not motivated enough by the counselling done by the ASHA workers. Qualitative part revealed that there was utmost dissatisfaction regarding low incentive compared to quantum of work amongst all the ASHAs.

Regular refresher courses should be undertaken to improve and update the knowledge of ASHAs regarding maternal-child health and family planning. Supportive supervisions to overcome the social barriers, necessary administrative steps to improve their job satisfaction

should be undertaken to achieve best possible and quality outputs from them.

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## REFERENCES

1. Government of India. Guidelines: Accredited Social Health Activist (ASHA). Available at: [www.nrhmharyana.gov.in/.../Guidelines/ASHAGuidelines/ASHAGuidelines/Conceptand](http://www.nrhmharyana.gov.in/.../Guidelines/ASHAGuidelines/ASHAGuidelines/Conceptand). Accessed 8 May 2019.
2. Ministry of Health and Family Welfare, Government of India. Guidelines on Accredited Social Health Activists (ASHA), 2015. Available at: [www.mohfw.nic.in/NRHM/RCH/guidelines/ASHA\\_guidelines](http://www.mohfw.nic.in/NRHM/RCH/guidelines/ASHA_guidelines). Accessed 8 May 2019.
3. Government of India. National Rural Health Mission (2005-2012): Mission documents and monograph 1-6. Ministry of Health and Family Welfare, Nirman Bhawan, New Delhi, 2005. Available at: <http://www.mohfw.nic.in/nrhm.html>. Accessed 8 May 2019.
4. Ministry of Health and Family Welfare, Government of India. Update on the ASHA programme; 2011. Available at: [nhsrindia.org/.../Update/20on/20ASHA/20Programme/20/20July/202011.pdf](http://nhsrindia.org/.../Update/20on/20ASHA/20Programme/20/20July/202011.pdf). Accessed 8 May 2019.
5. Choudary M, Varia K, Kothari N, Ghandhi S, Makwana NR, Parmar D. Evaluation of knowledge of asha workers regarding various health services under NRHM in Saurashtra region of Gujarat. National Journal of Community Medicine. 2015;6(2):193-7.
6. Nagaraj S, Achappa S, Bettapa P, Prakash B. Performance Evaluation of Accredited Social Health Activist under National Rural Health Mission in Mysore District: A Cross-Sectional Study. Nat J Community Med. 2017;8(6):324-8.
7. Meena R, Raj D, Saini L, Tomar A, Khanna M, Gaur K. Knowledge Status of Accredited Social Health Activist (ASHA) of Jaipur City. Intern Multispecialty J Health (IMJH). 2016;2(12):18-25.
8. Saxena S, Singh AK, Maheshwari S, Gupta SB. Appraisal of knowledge of ASHA regarding child health services provided under NHM in Bhojipura block, District Bareilly. Intern J Community Medicine and Public Health. 2017;4(10):3705-11.
9. Garg PK, Bhardwaj A, Singh A, Ahluwalia SK. An evaluation of ASHA worker's awareness and practice of their responsibilities in rural Haryana. Nat J Community Med. 2013;4(1):76-80.
10. Das A, Dasgupta A. An Exploratory Analysis of Knowledge and Practice, Job-Related Difficulties and Dissatisfaction of ASHAs in Rural India. Int J Cur Res Rev. 2015;7(10):14-8.
11. Kohli C, Kishore J, Sharma S, Nayak H. Knowledge and practice of Accredited Social Health Activists for maternal healthcare delivery in Delhi. J Family Medicine and Primary Care. 2015;4(3):359-63.
12. Waskel B, Dixit S, Singodia R, Pal DK, Toppo M, Tiwari SC, Saroshe S. Evaluation of ASHA Program in selected block of Raisen District of Madhya Pradesh under The National Rural Health Mission. J Evolution of Medical and Dental Sci. 2014;3(03):689-94.
13. Shashank KJ, Angadi MM. A study to evaluate the knowledge of ASHA workers on antenatal and postnatal care in Bijapur district. Int J Research in Medical Sciences. 2015 September;3(9):2299-302.
14. Mandal T, Datta P, Valiveti SK, Vinjam BN, Bandarupalli T, Rachamadugu RN. A cross sectional study of the knowledge, attitude and practice of ASHA workers in implementation of Janani Suraksha Yojana. Int J Res Med Sci. 2017;5(2):551-3.
15. Pala S, Kumar D, Jeyashree K, Singh A. Preliminary evaluation of the ASHA scheme in Naraingarh block, Haryana. Natl Med J India. 2012;24(5):315-6.
16. Patchala A, Nallapu SSR, Sai TSR. Evaluation of MCH Activities of ASHA in a PHC in Guntur District. Indian J Maternal and Child Health. 2013;15(4):1-8.

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