ORIGINAL RESEARCH ARTICLE
pISSN 0976 3325 | eISSN 2229 6816
Open Access Article
www.njcmindia.org

Knowledge on Japanese Encephalitis Among ASHA Workers in A Coastal District of Odisha

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Financial Support: None declared
Conflict of Interest: None declared

How to cite this article:
Sahoo B, Das SC, Konar A. Knowledge on Japanese Encephalitis Among ASHA Workers in A Coastal District of Odisha. Natl J Community Med 2019; 10(5): 299-303

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Date of Submission: 28-02-19
Date of Acceptance: 10-04-19
Date of Publication: 31-05-19

ABSTRACT

Introduction: Japanese encephalitis (JE) is one of the most common causes of Acute Encephalitis Syndrome in many states of India. Odisha is a major agricultural state of India. This present study was done to explore the knowledge of ASHA about JE and factors associated with their knowledge.

Methodology: This cross-sectional study included 400 ASHA workers from different villages of Ganjam districts.

Results: The mean knowledge scores of ASHA who has been in service for more than 5 years was found to be 60.88 ± 15.76. Participants obtained highest scores on the questions that addressed about breeding place, biting habits of vector and availability of vaccine in Odisha but had below average scores for questions that focused on treatment of Japanese Encephalitis.

Conclusion: ASHA knowledge score to certain variables were not desirable. However, receipt of recent training in vector borne diseases, number of years as an ASHA significantly affected knowledge scores in good direction. Further community-based studies are recommended on this topic in Odisha.

Key Words: Japanese Encephalitis, ASHA, Knowledge, Odisha

INTRODUCTION

Japanese encephalitis (JE) is a vector-borne viral disease that afflicts swine, equids, and humans. Transmission is seasonal and mainly related to the rainy season in South-East Asia Region Japanese encephalitis (JE) is one of the most common causes of Acute Encephalitis Syndrome in many states of India. The epidemiology of JE is complex and it is transmitted by culicine mosquitoes. Following an infectious mosquito bite, the initial viral replication occurs in local and regional lymph nodes.[1]A poor irrigation system and water logging favours a conducive environment for mosquito breeding, and presence of swine population in peri-domestic areas influences propagation of virus to human population.[2]

Odisha is a major agricultural state of India. Agriculture remains the mainstay of Odisha's economy and is done more in coastal districts like Ganjam as compared to other districts. A favourable spread of JE to these areas is expected due to agricultural development and intensive rice cultivation supported by newer irrigation schemes. Severe outbreak of Japanese Encephalitis (JE) and acute encephalitis syndrome was reported from 9th September to 2nd December 2016 in the Malkangiri district. It was the most severe outbreak that has occurred in Odisha ever since in the past. [3] In order to avoid any future catastrophic illness, it is important to strengthen knowledge of each staff working in the health system.

The most peripheral health outposts of the public health care delivery system are the sub centres, majority of the ASHAs are catering to a population of more than 1,000 in Orissa.[4] Community health volunteers operate from the sub centres and delivers case detection, management, and community outreach services across all villages in India.

Accredited social health activists (ASHAs) are posted under National Rural Health Mission at village level in each state.[5] Being the front-line service providers, the responsibility falls on them for reaching at an early diagnosis, giving prompt treatment of any case of fever and referring to the nearest health facility if required.[6] Due to paucity of research studies on ASHA workers related to knowledge regarding JE In Odisha, this present study was conducted to explore the knowledge of ASHA about JE, and the various factors associated with their knowledge.

MATERIALS & METHODOLOGY

After the completion of JE vaccination drive this Cross-sectional Community based study was carried out during December 2017 to April 2018. The data was collected using a pre-designed and pretested schedule from ASHAs. A separate sampling frame of each block was prepared with the help of sub centre list which was available from NHM office. The study subjects were selected from sub-centres by probability proportional to size sampling technique followed by random sampling from the selected Blocks. Since there was no previous literature available on this topic, based on the assumption that 50% of the study participants had high level of knowledge of JE. The sample size was determined by applying the formula $4pq/l^2$. Assuming 50% of ASHAs having good knowledge, with a type I error of 5% (α=0.05) and 95% level of confidence, the calculated sample size was 400. Ethical approval was obtained from the Institutional Ethics Review Board of Government medical college and hospital and necessary permission was taken from other concern higher authorities.

The knowledge scale consisted of 15 multiple choice questions and 15 true or false questions. It covered seven content areas seven content areas: Biting habits of vectors, breeding places of mosquitoes, control of mosquito, symptoms of JE, treatment with antibiotics, doses and schedule of JE, preventive methods. Cronbach's alpha analysis of this component of the questionnaire indicated a good level of internal consistency (Cronbach's alpha = 0.83). Knowledge of ASHA about Japanese encephalitis was assessed on basis of score obtained. Each of the 30 items obtained an equal point of 1 if answered correctly yielding a total score of 30 to represent knowledge score. A score = 0 corresponded to "don't know / incorrect knowledge. Therefore, overall, the maximum and minimum possible scores were 30 and 0 respectively. Weak score was considered to be a score < 3 (i.e. < 30%) and other score categorized as were average score 3-5 (i.e.30-50%) and good score 6-10 (i.e. 60 -100%). Subtotal scores for each of the seven content areas were determined by the number of items that made up the content area. ASHA workers were ensured that answers given by them will no way affect their job or appraisal system. Anonymity and confidentiality were ensured. After explaining the purpose, informed consent was obtained. The data collected were entered in the computer, using the Microsoft excel 2007. Analysis was done using IBM SPSS Statistics for windows, version 24 (IBM Corp, Armonk, NY, USA) software. Data obtained were analyzed statistically by mean, standard deviation, frequencies, and simple proportions for descriptive analysis. Tests of significance like chi-square test were used to assess the knowledge score of ASHAs. $P < 0.05$ was considered statistically significant. Descriptive statistics were used to describe the data.

Statistical Package for the Social Sciences (SPSS), version 19 (Chicago Il, USA) was also used.

RESULTS

The present study is based on the observation of 400 ASHA workers. Table 1 presents the socio-demographic characteristics of the participants. The age distribution pattern shows that the mean age of study population was found to be 36.3 ± 7 years. Only 19.5% of the ASHA workers are below age group 30 years.

Table 1: Socio-demographic characteristics of the study population (N=400)

Variable	Respondent (%)
Age (In years)	
<30	78 (19.5)
30-39	185 (46.3)
≥ 40	137 (34.3)
Residence	
Rural	320 (80)
Urban	80 (20)
Religion	
Hindu	341 (85.3)
Others	59 (14.8)
Caste	
SC/ST/OBC	246 (61.5)
Other	154 (38.5)
Education	
up to 8th standard	207 (51.8)
8th to 10th standard	89 (22.3)
≥ 10th standard	104 (26)
Income	
≥ 2000	295 (73.8)
≤ 2000	105 (26.3)
Socio economic status	
Upper-lower class (class IV)	272 (68)
Lower (class V)	128 (32)
Marital status	
Married	263 (65.8)
Unmarried/ Divorced/ Widow	137 (34.3)

Almost half of the participants i.e. 185 (46.3%) were in the age group of 30-39 years. Only 34.3% of ASHA were found to be above 40years. Majority of ASHA i.e. 80% comes from rural background. The caste composition reveals that the SC /ST/OBC (61.5%) together constitute more than half of the total sample, while rest (38.5%) are from general category.

These ASHA workers had the following level of education: Up to 8th standard 51.8%, 8th standard to 10th standard 22.3% and only 26% of subjects had studied beyond matriculation.

Majority of the subjects 272 (68%) belongs to upper lower class and 128 (32%) belongs to lower middle class according to modified Kuppuswamy scale. The marital status reveals that majority (65.8%) are married and 34.3% of subjects are either unmarried or separated.

With regards to years of service it is seen that almost 71.1% of ASHA have completed more than 10 years of service and 14.4% had completed 5-10years of service whereas only 17.3% have completed less than 5 years of service.

Table 2: Association in duration of training with Knowledge score among participants

Knowledge score	Duration (In yrs) since training		Total	p value
	≤ 5 yrs	≥ 5 yrs		
Good	282 (88.1)	62 (77.5)	344 (86)	<0.001*
Average	19 (5.9)	0 (0.0)	19 (4.7)	
Weak	19 (5.9)	18 (22.5)	37 (9.2)	
Total	320 (80)	80 (20)	400 (100)	

Figures in parenthesis indicate percentage.

Table 3: Mean knowledge scores of ASHA's as per the core areas given below (N=400)

Core areas	Mean ± SD
Biting habits of vectors	55.5 ± 22.2
Breeding places of Mosquitoes	53.8 ± 25.2
Control of Mosquitoes	58.1± 28.2
Symptoms of JE	50.4 ±27.3
Treatment with Antibiotics	55.8 ± 19.0
Doses and schedule of JE vaccine	52.6 ± 28.0
Prevention methods	58.1 ± 28.2

The core areas are the given scores by calculating the percentage of the total score. Higher scores indicate better knowledge related to particular core areas. The total mean score was 54.9% (SD = 11.5) (min = 43.8; max = 66.9)

Table 4: Association of education and Knowledge about Japanese Encephalitis (JE)

Knowledge	up to 8th class (%)	8th to 10th class (%)	≥10th class (%)	p-value
Symptoms of JE				
Fever Only	50 (24.2)	15 (16.9)	0 (0.0)	<0.01*
Fever with Headache	61 (29.5)	36 (40.4)	15 (14.4)	
Fever, Headache, Vomiting & Joint pain	81 (39.1)	19 (21.3)	89 (85.6)	
Don't Know	15 (7.2)	19 (21.3)	0 (0.0)	
Vaccine doses				
Correct answer	37 (17.9)	20 (22.5)	54 (51.9)	<0.01*
Wrong answer	136 (65.7)	31 (34.8)	50 (48.1)	
Can't say	34 (16.4)	38 (42.7)	0 (0.0)	
Causative factors				
Mosquito/heron	189 (54.9)	70 (20.3)	85 (24.7)	<0.01*
Eating pig's meat	0 (0.0)	0 (0.0)	19 (100)	
Do not know	18 (48.6)	19 (51.4)	0 (0)	

Table 2 depicts relation between training duration and knowledge score among ASHA. Almost 88.1% of ASHA who had been trained since less than 5years shows a good knowledge scores and similar proportion of subjects got low and average scores. Out of those ASHA who were trained more than 5years only 22.5% got weak score and more than half of ASHA i.e. 77.5% got good scores in their knowledge assessment.

Around 22.1% of ASHA reported to be trained on vector borne disease since more than 5 years. A significant proportion of ASHA trained recently shows a "good score" compared to those trained more than 5years back. (Chi-square value 13.35, p=0.001)

The mean knowledge scores of the ASHA's according to the six core areas that were assessed are presented in Table 3. The ASHA obtained highest scores on the questions that addressed on Prevention and control methods. Similarly, almost same mean knowledge scores were achieved related to biting habits, breeding places, treatment and dosage and schedule of JE vaccines. The Mean scores on symptoms of JE is found to be 50.44 ± 27.38

Table 4 shows statistical association between knowledge and level of education. Majority of ASHA i.e. 40.4% who have completed 8th to 10th grade of education answered fever with headache as common symptom of JE. Whereas only 21.3% of ASHA answered fever, headache, vomiting, and joint pain as major symptoms of JE. ASHAs who have completed more than 10th grade of education, almost half i.e. 51.9% had answered correctly regarding vaccine doses. Majority of ASHAs (86%) answered correctly about the causative factors of JE.

Participants who ever reported of reception of training on vector borne disease less than 5years significantly scored higher than those who reported receipt of training more than 5years back (65.73 ± 17.36 v 51.51 ± 14.71; p = 0.001). Almost 54.9% of ASHAs who had completed at least 8th grade of education answered mosquito/heron to be causative factors. Almost 111 (27.7%) subjects gave correct answer for questions related to JE vaccination whereas almost half of the participants (54.2%) answered incorrectly regarding vaccine dosage and schedule.

DISCUSSION

In this present survey almost 86% of ASHA shows good knowledge related to JE. This finding is similar to study done by Ahmad et al. in Darrang, India which shows a similar proportion of subjects having knowledge about JE in the community.[9] The mean knowledge score on the six individual components was obtained among ASHAs. In this study majority of ASHAs belonged to upper lower socio-economic class (69.2%), which can be corroborated with that of Darshan K et al. (94.6% in upper lower-class category). On the other hand, Parthasarathi R et al observed that 67% of respondent in lower class category as per the socio-economic scale.[7, 8]

Factors associated with their knowledge were also investigated. From the six core areas assessed in this study, the participants scored better in the questions related to breeding places, prevention, and control and vaccines availability (shown in Table 3) but the score was below average on the questions that addressed treatment of JE. Important knowledge gaps were also noted regarding symptoms of Japanese Encephalitis. The less desirable knowledge levels of the participants regarding symptoms and treatment could be due to the inadequacies in vector borne disease training. Furthermore, only 22.1% of them reported of ever attending a training course in vector borne disease more than 5 years back. Similar to our findings, poor knowledge about JE was found in people of Darrang. [9]

Our study showed no variation in knowledge score on basis of socio-economic status of the participants. This is in contrast to a study done in Nepal which demonstrates that knowledge is influenced by the socio-economic status among the community members.[10]

However, significantly high scores were found in ASHAs who had been recently trained (less than 5years) on vector borne disease compared to those whose duration since training completed is more than 5 years. (p<0.001) (Table2). This shows importance of frequent training among ASHA and Health care staff. Study done by Saxena S et al. strongly recommends frequent training programme for the ASHA to strengthen their knowledge.[11] Interestingly a finding from a research study in Odisha reveals that there is no periodic training as pointed out by majority of ASHAs.[4]

Majority of ASHA in our study believes that mosquitoes are commonest causative factors of JE. This finding corroborates with a community-based study done in Nepal which also showed that majority of community members having good knowledge about JE believes mosquitoes as causative factors of disease.[10] Similar findings are also demonstrated by another community-based study in Assam showing community knowledge regarding mosquito as a major causative factor. [9] Knowledge about breeding site of mosquito was poor among the community members of rural Uttar Pradesh. [12] In another study done from rural West Bengal shows participants with good educational status having sound knowledge about mosquito borne diseases and preventive measures for controlling mosquitoes.[13]

Interestingly even after conducting this survey Post vaccination drive, very few subjects had sound knowledge regarding vaccination. These findings are not consistent with study done by Ahmad et al. which showed that majority of health workers had good knowledge about JE vaccination.[9] Similar findings related to poor awareness in regard to JE vaccine was also found in a study conducted in a high endemic district of North India.[14] This findings are consistent with a study conducted among nursing students in Mumbai which showed poor awareness about the JE vaccine.[15] Another study conducted in Gorakhpur division of Uttar Pradesh also showed misconception regarding JE vaccination among the health care workers.[16]

Another important finding of this study was that ASHAs who had completed their service for more than 5 years achieved higher scores in knowledge than those who are in service lesser than 5years. And this difference was found to be significant (see Table 5). Furthermore, those who said they had awareness on the guidelines also tended to score higher than those who reported lack of awareness (see Table 4). The results are in line with another study which has reported that experienced health care workers showed a better knowledge score compared to their juniors. [13] In our study participants shows a high mean score regarding breeding place of mosquitoes. This finding is consistent with findings by Ahmad et al. [9] Similar results were also observed in an another study which shows that knowledge of experienced health care workers is more than less experience workers related to JE.[17] Study done by Rusatgi R. et al and few other studies has also shown the importance of trained health care workers in order to combat diseases.[18-20]

Strengths and limitations

The strength of this study is that not much research has been done in Coastal district of Odisha on this topic. This study tackled a definitive gap i.e. the unavailability of literature relating to the knowledge on JE in Odisha. It provided evidence regarding the inadequacy of knowledge among ASHA workers. Additionally, this study would help the policymakers to plan different strategies to improve the knowledge of ASHAs towards JE. However, this study also has some limitations like any other study. Establishing causality is difficult in this study due to cross sectional nature. Since this study is done on ASHA workers generalisability of the findings of this study is limited.

CONCLUSION

Good knowledge related to communicable disease is very important since ASHA provides health related information to the community. On that note, the role of knowledge as a powerful tool to mend the existing gaps in the society receives pivotal prominence. Receipt of previous training and number of years as an ASHA significantly enhanced the knowledge scores. Since training is one of the important components for proper functioning of ASHAs. Training for ASHA workers must be strengthened and should be conducted in frequent interval. This enhances the capability to judge and, take immediate and appropriate decisions whenever a suspected case of JE comes to their disposal in an endemic area. Further studies can be undertaken to address the challenges in improving the knowledge, attitude, and practise related to JE in endemic areas. Findings of such studies can be incorporated in public health interventions to help attain control and eliminate Japanese Encephalitis.

REFERENCES

1. Park K. Park's Text book of Preventive & Social medicine. 24th ed. Jabalpur: Banarsidas Bhanot Publishers; 2017.p. 302.
2. Pantawane PB, Dhanze H, Verma M R, Singh G, Kapdi A, Chauhan J, Bhilegaonkar K N. Seasonal occurrence of Japanese encephalitis vectors in Bareilly district, Uttar Pradesh, India. J Vector Borne Disease 2017; 54: 270-6.
3. Sahu SS, Dash Smrutidhara, Thankachy Sonia, Muthukumaravel Subramaniam, Sankari Thirumal, Kashinathan Gunasekaran, Jambulingam Purushothaman. Entomological investigation of Japanese encephalitis outbreak in Malkangiri district of Odisha state, India. Mem Inst Oswaldo Cruz, Rio de Janeiro 2018; 113:e170499.
4. A rapid appraisal of functioning of ASHA under NRHM in Cuttack, Odisha - A survey by National Institute of Health and Family Welfare. Available from http://www.nihfw.org/pdf/RAHI-I%20Reports/Cuttack/cuttack.pdf [Last accessed on 2018 Dec 5]
5. Farah N.Fathima et al. Assessment of Accredited Social Health Activist- A National Community Health Volunteer Scheme in Karnataka State, India; J Health Population and Nutrition. 2015 Mar; 33 (1):137-145.
6. Swain S. Swain P, Nair KS, Dhar N, Gupta S, Nandan D. A rapid appraisal of functioning of ASHA under NRHM in Odisha: Health and Population: Perspectives Iss. 2008; 31 (2):73-9.
7. Darshan K, Mahyavanshi I, Patel MG, Girija K, Shyamal KP, Sunita SN. A cross sectional study of the knowledge, attitude, and practice of ASHA workers regarding child health (under five years of age) in surendranagar district. Healthline 2011;2 (2):50-53.
8. Parthasarathi. R, Dasgupta A, Ram Prabhakar V, Biswas R, Naiya S, A.Geethanjali. Knowledge regarding reproductive and child health: An intervention study among ASHA's in a block of West Bengal. Global Journal of Medicine and Public Health. 2014;3 (2):1-8.
9. Ahmad A, Khan MU, Malik S, Jamshed SQ, Gogoi LJ, Kalita M, Sikdar AP. Community Knowledge and attitude towards Japanese encephalitis In Darrang, India: A cross-sectional study. 2017; 10 (2): 377-383.
10. Tanka K, Prasad DI, Kabita P, Dutt JD. Knowledge and epidemiological risk factors of Japanese encephalitis in community members of Rupandehi District, Nepal. Glob J Med Res. 2014;13 (2):19-21.
11. Saxena S, Singh K Atul, Maheswari Sonam and Gupta SB. Appraisal of knowledge of ASHA regarding child health services provided under NHM in Bhojipura block, District Bareilly. International Journal of Community Medicine and Public Health.2017; 4 (10): 3705-3711.
12. Yadav S, Ahmad S. An assessment of community participation in control and prevention of Japanese encephalitis in rural Uttar Pradesh. International Journal of Medical sciences and Public Health.2017; 6 (11):1614-19.
13. Pal P, Banerjee S, Mallick A, Maity P, Dutta S, Sengupta B. An Epidemiological study on Knowledge and Practise Regarding Japanese Encephalitis in a Rural Area with Recent JE/AES outbreak. J Community Med Health Care.2016; 1 (1):1-5.
14. Chaturvedi S, Sharma N, Kakkar M. Perceptions, practices and health seeking behaviour constrain JE/AES interventions in high endemic district of North India.BMC public Health.2017;645:1-12.
15. Hadayae SR, Shastri S, Lavangare RS. A cross sectional study to assess the awareness and practices related to adult immunization among nursing students in a metropolitan city. J of Education Health Promotion. 2018; 7:1-6.
16. Murhekar MV, Oak C, Ranjan P, Kanagasabai K,Shinde S et al. Coverage and missed opportunity for Japanese encephalitis vaccine, Gorakhpur division, Uttar Pradesh, India, 2015: Implication for Japanese encephalitis control. 2017; 145 (1):63-69.
17. Ahmad A, Khan MU, Gogoi LJ, Kalita M, Sikdar AP, Pandey S, et al. Japanese encephalitis in Assam, India: need to increase healthcare Workers' understanding to improve health care. PLoS ONE 2015; 10 (8):e0135767.
18. Rustagi R, Basu S, Garg S. Japanese encephalitis: Strategies for prevention and control in India. 2019;10 (1) :12-17
19. Amicizia D, Zangrillo F, Lai PL, Iovine M, Panatto. Overview of Japanese Encephalitis disease and its prevention.Focus on IC51 vaccine.J Preventive Medicine Hygiene.2018; 59 (1):99-107.
20. Suchitra JB, Lakshmi DN. Impact of education on knowledge, attitudes and practices among various categories of health care workers on nosocomial infections. Indian J Med Microbiol. 2007; 25 (3):181–187.