



## Original Article

### **Adult Japanese Encephalitis Mass Vaccination Campaign: An Experience from a Rural Area of West Bengal**

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#### **Abstract**

**Background and Objectives:** The study was carried out during adult Japanese Encephalitis (JE) vaccination in the service area of Rural Health Unit & Training Centre (RHU&TC), Singur, Hooghly district, West Bengal. The objectives of the study were to evaluate the immunization session(s), assess the knowledge of the vaccinees regarding JE and identifying the pockets of unvaccinated adults (with reasons for non/missed immunization) for mobilization and mop-up efforts.

**Methods:** 28 booths were selected randomly to evaluate the immunization session and exit survey was conducted using systematic random sampling to assess the knowledge. A cross sectional observational study (Rapid Convenience Assessment) was conducted in 27 cluster in the catchment area of the above booths to identify the pockets of unvaccinated adults and reasons for non/missed immunization.

**Results:** About 89% booths had prominently visible banner, immunization card and hub cutter, 96.4% booths had disposable bag. Two third (66.7%) vaccinees had not

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heard about JE and only 33.2% knew that the vaccine was used for prevention of JE. The primary source of information was ASHA (36.5%), AWWs/Sahayika (25.9%), and ANM (13.2%). The two commonest reasons for missed vaccination were fear of injection/side effects (25.2%) and absence from home due to professional work (23.8%). Adult JE Mass Vaccination in Rural West Bengal.

**Conclusion:** A major portion missed the vaccination due to absence from home for professional work. The majority vaccinees had poor knowledge about JE and the IEC activities had not been used properly. The proper IEC activity especially mass media with vaccination session on Sunday may enhance the immunization.

**Key words:** Adult, JE Mass Vaccination, Rural area, West Bengal.

**Introduction:** Japanese Encephalitis (JE), a vector-borne zoonotic viral disease, is caused by a group B arbovirus and transmitted by *Culex tritaeniorhynchus* mosquitoes. Approximately 20-30% of JE cases die while 30-50% develops neuropsychiatric sequelae.<sup>1</sup> It is primarily a disease of children and most adults in endemic countries have natural immunity after childhood infection. In some areas of northern India, Nepal and Sri Lanka, all age groups are affected.<sup>2</sup>

Epidemic of JE were described in Japan from the 1870s onwards.<sup>3</sup> The disease was first recognised in India at Vellore in 1955.<sup>4</sup> Since then, epidemics of JE in different states have been recorded.<sup>5</sup> The first major outbreak of JE occurred in 1973 in Bankura and Burdwan districts of West Bengal with about 700 cases and 300 deaths.<sup>6</sup> A major outbreak of JE was reported from eastern UP during 2005 resulting in recording of more than 6000 cases and 1500 deaths. This led to a major decision of introduction of vaccine in high endemic areas. JE vaccination campaigns were started in 2006 for the age group of 1-15 yrs with a single dose of live attenuated SA 14-14-2 vaccine.<sup>3</sup>

Regarding impact of JE vaccine on adult, references are not readily available. However, a study conducted in Nepal found significantly greater impact of JE vaccine in reducing incidence of JE in districts that targeted vaccination to the entire population aged  $\geq 1$  year compared with districts that only vaccinated children aged 1-15 years.<sup>7</sup> Adult JE vaccination was first started in India in Sibsagar district of Assam in 2011. Thereafter, mass vaccination campaign was carried out in seven

high risk districts of the state in 2014 for 15-70 years age group with a single dose of live attenuated SA 14-14-2 vaccine.<sup>8</sup>

Government of West Bengal also carried out a mass adult vaccination campaign (15-65yrs) in the endemic blocks/municipalities of ten endemic districts from 14<sup>th</sup> to 31<sup>st</sup> December, 2015. As part of this campaign, vaccination was conducted in the service area of Rural Health Unit & Training Centre (RHU&TC), Singur block, Hooghly district, West Bengal, which is the field practice area of All India Institute of Hygiene and Public Health (AIIPH&PH), Kolkata. During this campaign, this study was conducted with the objectives of evaluating the immunization sessions regarding logistics, IEC materials, safe injection, cold chain and waste disposal; assessing the knowledge of the vaccinees regarding JE and identifying the pockets of unvaccinated adults (with reasons for non/missed immunization) for mobilization and mop-up efforts.

**Material and Methods:** This adult JE vaccination campaign was conducted from 14<sup>th</sup> to 31<sup>st</sup> December, 2015 (total 14 days) in the service area of Rural Health Unit & Training Centre (RHU&TC), Singur, Hooghly having an estimated total population of 1.06 lac (2013) and beneficiary of 63485. Immunization was conducted in Subcentres, Anganwadi Centres (AWCs), Schools and local Clubs. (total 210 booths with an estimated average about 300 beneficiary per booth) by 15 teams over 14 working days (=14 booths/team total). An Adverse Effect following Immunization (AEFI) team comprising Medical Officer and Public Health Nurse, Supdt. (PHNS) was there to tackle any adverse events after vaccination.

The postgraduate public health students, post graduate trainees (PGTs) were trained to conduct the study. Evaluation of immunization sessions were planned to be conducted in 30 booths [i.e. 2 randomly selected booths out of 14 booths/team] with a predesigned structured checklist for adequacy of logistic, IEC materials, safe injection practice, cold chain and waste collection method. However, due to operational problem, 2 booths could not be evaluated resulting in final evaluation of **28** booths.

To assess the knowledge of the vaccinees regarding JE (causes, symptoms, prevention and treatment) and their source of information of the campaign, *Exit Interview* was conducted among vaccinees on those 28 booths using a pre-designed structured schedule after verbal informed consent. Assuming an average attendance of 200/booth ( $\approx 65\%$  turnout), it was decided to interview 50 vaccinees per booth (total 1400) using systematic random sampling after a random start. Initially, every fourth vaccinee was interviewed but since attendance was less than expected (average about 150/booth), every third vaccinee was interviewed later on. During this process, some vaccinees volunteered resulting in the final sample size to be **1495**.

A cross sectional observational study (Rapid Convenience Assessment; RCA) was conducted by house to house visit during this period with the help of a pre-designed structured questionnaire<sup>9</sup> to collect information about vaccination status and reason for non-vaccination if any, after verbal informed consent. For this, the same catchment areas [= clusters  $\approx$  village/para(part of village) with an approximate population of 1000] of those 28 booths were planned to be studied. However, due to logistic problem, one cluster could not be studied resulting in inclusion of **27** clusters in the study. Starting in a central location of a cluster, PGTs randomly chose a direction for the first household and followed for the next closest household. If a household had more than one target adult (15-65 yrs), then only one was selected randomly from each household until a minimum 20 households with target adults have been completed resulting in final sample of **540** adults of 15-65 yrs age. Vaccination status was confirmed by checking the ink finger marking at the time of vaccination.

**Results and Discussion:** It was observed that 89.3% booths had prominently visible poster/banner from entrance whereas 7.1% had no poster/banner. The community was mobilized to the booth by Accredited Social Health Activists (ASHAs)/Anganwadi Workers (AWWs)/Auxiliary Nurse Midwives (ANMs) in 89.3% booths. All vaccines and diluents were kept within the zipper bag of the vaccine carrier. About 57% ice packs were frozen and 35.7% ice packs were partially melted. The vaccines and diluents were adequate in all immunization sessions. All the vaccines had usable Vaccine Vial Monitoring (VVM) stage. The availability of other logistics was as

Immunization card (89.3%), Hub cutter (89.3%), and Disposable bag (96.4%). About 7% vaccinator touched any part of needle during injecting vaccine. There was no reporting of any AEFI cases. *Due to non availability of ready references, these figures could not be compared.*

The poverty of overall knowledge about JE is evident from Exit survey results, depicted in **Table 1**. It showed that 66.7% vaccinees had not heard about “Japanese encephalitis” and only 33.2% knew that the vaccine was for prevention of JE. The symptoms known to them were fever, headache, paralysis and fit. Only 23.8% knew that mosquito was the vector and 21.5% responded that vaccine can prevent JE.

The IEC (Information, Education and Communication) provided for this campaign was not satisfactory through mass media. The primary source of information for the majority of the respondents was ASHA (36.5%), AWWs/Sahayika (25.9%), ANM (13.2%) and friends/relatives (18%). Very few reported PRI (Panchayati Raj Institution) member (2.7%), poster/banner (2.7%) and miking (0.4%) as source of information. They received no information from television, radio and newspaper. Das BR et al<sup>8</sup> in Jorhat, Assam in 2014 observed that majority of the respondents learnt (80%) about the campaign through ASHA/Link worker followed by poster/banner. In a study by Goel et al<sup>10</sup> also observed in Chandigarh that for 53% of mothers, ANM/Health workers were major source of information for routine immunization. Similar findings were observed by Singh et al<sup>11</sup> where 43.9% of the respondents had learnt about pulse polio immunization from the health workers. On the other hand, the role of school teacher or students & beating of drum as a method of communication for the adult vaccination campaign could not be established.

**Table 1**

**Distribution of the vaccinees according to their knowledge on JE (N=1495).**

<u>Variables</u>		<u>Number (%)</u>
1. Heard about JE		498 (33.3)
2. Symptoms of JE (multiple responses)	Fever	393 (26.3)
	Headache	55 (3.5)
	Paralysis	37 (2.5)
	Fit (convulsion)	10 (0.7)
	Others	10 (0.7)
3. Vector of JE	Mosquito	356 (23.8)
	Pig	27 (1.8)
	Others	115 (7.7)
4. Prevention of JE (multiple responses)	Vaccine	322 (21.5)
	Mosquito control	94 (6.3)
	Pig farm control	26 (1.7)
	Others	115 (7.7)
5. Source of information reg. this vaccination (multiple responses)	ASHA	546 (36.5)
	AWW/Helper	388 (25.9)
	Friends/relatives	269 (18.0)
	ANM	198 (13.2)
	PRI	41 (2.7)
	Poster/Banner	41 (2.7)
	Mike	06 (0.4)
	Others	20 (1.3)
6. Benefit(s) of this injection/vaccine	Prevent JE	496 (33.2)
	Others/Not known	999 (66.8)

The RCA was conducted amongst 540 target age group. Out of them, **60.4%** were vaccinated and 39.6% unvaccinated. This is relatively higher than the whole block vaccination coverage of **46.5%**. *Inadequate sampling* may be the reason for such variation. The two most common primary reasons cited by respondents for missed vaccination were fear of injection and side effects (25.2%) and absence from home due to professional work/duty (23.8%). **[Table 2]** The other important causes were ignorance about the campaign (12.6%), Illness (8.4%) and considered vaccine unimportant (7%). Non specific reasons (others) also comprise good numbers (20.1%). In their study by Das BR et al<sup>8</sup> in Jorhat, Assam in 2014, it was observed that 57.62% adults were vaccinated and the major causes of missed vaccination were chronic illness (27%) and vaccination was not important (15%).

**Table 2**

**Primary Reason for non/missed immunization found in RCA (N=214)**

<u>Reasons</u>	<u>Number (%)</u>
Fear of Injection/side effects	54 (25.2)
Absent from home (work)	51 (23.8)
Ignorance about the program	27 (12.6)
Illness	18 (8.4)
Consider vaccine unnecessary	15 (7.0)
No vaccine/vaccinator at booth	04 (1.9)
Distant booth	02 (1.0)
Others	43 (20.1)

**Conclusion:** The results of this study shows that a major portion of population missed the vaccination; an important reason being absence due to work. The ASHA and AWWs played a critical role in sensitizing the public for the campaign but majority had poor knowledge regarding JE including the reason for this vaccination. The mass media had not been used properly/at all in IEC activity. The proper IEC activity esp. mass media with vaccination session on Sunday may enhance the immunization coverage including proper counselling for the fear of injection/side effects.

**Limitation of the Study:** Sampling for RCA was inadequate with poor representation of high risk pockets like brick-kilns, difficult to reach area, religious group opposing vaccination etc. resulting in relatively higher coverage compared to whole block.

**Acknowledgement:** The authors acknowledge the Director, AIIH&PH Kolkata who advised to conduct the study. The authors are grateful to all the public health post graduate students who worked hard in collecting the data.

**Conflict of interest:** Nil.



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