Evaluation of an audiovisual based health education programme on dengue fever among mid-adolescent school boys during an outbreak in Kolkata

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ABSTRACT:-

Background: Kolkata has experienced several outbreaks of dengue fever in the past few decades but in the monsoon of 2012, city of Kolkata was reeling under its worst bout of dengue outbreak of recent times. Despite the scale of disease in Kolkata, documented evidence on KAP of the population is scarce, particularly among the most vulnerable mid adolescent boys.

Methods: Cross sectional interventional (Health Education) study was conducted among 132 mid-adolescent school boys during September to October, 2012. Multiple choices Questionnaire was used to assess baseline KAP regarding dengue fever and reassessment of knowledge was done 3weeks after imparting Health education via audio-visual aids.

Results: Majority of them had poor baseline knowledge (68.2%) while only 15.2% adopted the correct practices for dengue prevention. After imparting health education significant improvement was noted in the knowledge domain (mean-pre vs post=7.02 vs12.36; CI=4.85-5.91).

Conclusion: The audio-visual based health education program had a positive effect in improving knowledge regarding dengue among the adolescent boys but further exploration is needed to see its impact on their practices and contribution towards generating community awareness.

Key words: Dengue, KAP, Health Education

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Introduction:

Dengue is the most rapidly spreading mosquito-borne viral illness, which has become a major public health concern in India. The global incidence of dengue has increased dramatically in recent decades; about half of the world's population is now at risk (1). Data available from National Vector Borne Disease Control Programme (NVBDCP) shows, dengue fever in India is on the way of rapid rise viz 5534 cases,2561 cases, 15335 cases,28292 cases and18860 cases in 2007,2008,2009,2010 1n din2011 respectively. It is widely known that dengue is endemic in Kolkata (2). The city has experienced several dengue outbreaks in the past. But, in the monsoon of 2012, this city was reeling under its worst bout of recent dengue outbreaks which claimed 11 lives in the metropolis among 2268 dengue cases (3). Dengue affects people of all ages but in south-east Asia where dengue is hyper-endemic, dengue hemorrhagic fever which often is fatal usually affects children younger than 15 years (4). National surveillance systems, found a significant male excess among dengue victims and this pattern was consistent over a period of 6 to 10 years in three culturally and economically diverse countries and over geographically diverse subnational areas within two countries (5).

The epidemiology and ecology of Dengue Fever are strongly associated with human habits (6). Despite the scale of disease in Kolkata, there seems to have been very little organised effort to combat dengue and documented evidence on perception and practice regarding prevention of dengue is scarce, particularly among mid adolescent boys -the most vulnerable group for Dengue infection.

Objectives:

1) To study the current level of knowledge, attitude and practices regarding dengue fever among mid adolescent school boys.

2) To assess improvement of knowledge of the study population following health education.

Methods:

☐**Type of study**: A follow-up interventional (Health Education) study was conducted during September to October, 2012 after multistage stratification.

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Study area and population: As the study was intended to conduct on the mid adolescent boys (age-14-16yrs), so students of the class VIII and class IX were selected from boys schools around urban slum of Chetla with prior consent from the concerned authority.

Selection of Study Population:

The study was conducted in Chetla slum, the largest slum of Kolkata which is considered as an important dengue hit area. Among the 9 secondary boys school served by the School Health Department, 3 schools (Chetla Boys High School, Kailash Vidyamondir High School, and Harendra Nath High School) were selected randomly. One section of class VIII and IX each from these 3 schools was selected randomly and total sample size of 158 obtained. As 16 students were lost to follow up final analysis was conducted on 132 children.

Ethical clearance: Ethical clearance was obtained from Institutional Ethical Committee of All India Institute of Hygiene and Public Health, Kolkata.

Research Instrument and Measurement:

Multiple choice questionnaire was developed reviewing previous similar studies and different articles related to dengue fever to assess knowledge, attitude and practices regarding Dengue. The questionnaire was divided into 4 core categories and they are:

1. Part I (demography):

2. Part II (Knowledge regarding Dengue Fever): There were 16 questions with total score varied from 0-18 points and were classified into 3 levels- Good (13-18 scores); Average level (9-12 scores); Poor (0-8 scores).

3. Part III (Attitudes regarding Dengue Fever): Attitude was assessed by using Likert's scale. There were 7 statements which included both positive and negative statements. The total score varied from 0 to 7. The scores were classified into 3 level response- Good/Positive Attitude (6-7scores); Average/Neutral Attitude (4-5 scores) and poor/Negative Attitude (0-3 scores).

4. Part IV (Practices regarding Dengue Fever):

Six items have been included in this part total score varied from 0-10 points which was

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categorized in 3 levels- Good (8-10 scores); Average (5-7scores); Poor (0- 4 scores).

The questionnaire was translated in Bengali retaining the original meaning (semantic equivalence) with help of experts and to ensure reliability, the questionnaire was pre-tested on 20 individuals before starting the actual data collection and the internal consistency was analyzed by using Chronbach's Alpha Coefficient overall value was 0.61.

☐ KAP regarding Dengue was assessed using the questionnaire. Health education was imparted to the students selected for the study via audio-visual media which included a short sound film on identification of Aedes aegypti and its breeding places, clinical features of dengue infection and other relevant information regarding dengue. Knowledge domain of the same questionnaire was used for reassessment of knowledge 3weeks after the health education programme.

☐ Statistical analysis were done using SPSS v 20.0 (Paired t test was used to compare pre and post interventional knowledge means)

☐ Operational Definitions:

Knowledge: The knowledge that the respondents have regarding the cause, transmission, clinical manifestation and prevention of dengue fever.

Attitude: The feeling and belief of the respondents with regard to dengue fever and its prevention.

Practice: The actions intended to do in order to prevent dengue fever.

Results:

☐Mean age of the study population was 14.3 years with SD of 0.877 (range 13-17yrs) and majority of them were Hindus (97%).

☐100% of the respondents heard about dengue fever, 4.5% respondents suffered from dengue sometime and 7.6% respondents gave positive family history within last 2 yrs.

☐Major source of knowledge regarding dengue was found to be acquired from TV/Radio (68.2%) followed by newspaper/magazines (45.4%), teachers (34.7%), family members (31.7%) and friends.

☐Majority (68.2%) of the respondents found to have poor baseline knowledge regarding dengue fever (Table-1).

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53% respondents had correct knowledge about the mosquito vector transmitting dengue, 42.4% correctly knew about the biting habit of Aedes Aegypti whereas only 10.6% of respondents had correct knowledge regarding breeding habit of Aedes mosquito. Again, only

30% of respondents had good knowledge regarding clinical features of dengue fever and around 40% of respondents knew about avoidance of aspirin for controlling fever in dengue (Table-2).

Table-1: Perception of Dengue Fever among Mid adolescents (Before and After Health Education) measured by attained score (n=132):

Perception	tained score Before HE	Good Score Number (%) Before	After	Average Score Number (%) Before	After	Poor Score Number (%) Before	After
Knowledge Maximum: 18 Minimum: 0	Mean: 7.02 SD: 2.46 Range: 2-14	4 (3)	64 (48.5)	38 (28.8)	54 (40.9)	90 (68.2)	14 (10.6)
Attitude Maximum: 7 Minimum: 0	Mean: 4.53 SD: 1.52 Range: 1-7	36 (27.3)	-	44 (33.3)	-	52 (39.4)	-
Practice Maximum: 10 Minimum: 0	Mean: 6.12 SD: 1.5 Range: 0-10	20 (15.1)	-	76 (57.6)	-	36 (27.3)	-

Knowledge level: Good (13-18 scores); Average (9-12 scores); Poor (0-8 scores).

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Attitude level: Good (6-7scores); Average (4-5 scores); Poor (0-3 scores).

Practice level: Good (8- 10 scores); Average (5 - 7scores); Poor (0- 4 scores).

Table-2: Correct Responses to different Items on knowledge, Attitude and Practice regarding dengue fever (n = 132):

Knowledge Items	Correct Response Frequency (%)
1. Dengue Fever is a viral disease.	62(47)
2. The principal mosquito vector for dengue fever is Aedes aegypti.	70(53)
3. Epidemic of dengue usually occurs in the starting of rainy season.	20(15.2)
4. Mosquitoes transmitting dengue infection usually bites during day time.	56(42.4)
5. The mosquito that transmits dengue infection lays its eggs in dirty sewage water.	14(10.6%)
6. Clear stagnant water from old tires, trash cans, and flower vases can be breeding places for mosquitoes.	98(74.2%)

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7. Dengue infections are transmitted to humans through bites of infective male mosquitoes.	68(51.5%)
8. There is no specific treatment for dengue infection.	34(25.8%)
9. Aspirin is used to treat fever in dengue infection.	34(25.8%)
10. Red blood cells are mainly affected in dengue infection, which can endanger life.	16(12.1%)
11. Stagnation of water for at least 3 weeks is required to complete life-cycle of dengue transmitting mosquito.	32(24.2%)
12. Person who once got dengue infection cannot get dengue infection again.	72(54.5%)
13. Dengue infected person remains a potential source of infection for rest of the life.	72(54.5%)
14. Mosquitoes transmitting dengue infection also transmits Chikunguniya.	46(34.8%)
15. Dengue is a vaccine preventable disease.	32(24.2%)
16. Knowledge regarding symptoms and signs of dengue fever	Good-40 (30.3%) Fair-28 (18.2%)

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	Below average-44 (33.3%) Poor-24 (18.2%)
Attitude Items	**Frequency (%)**
1. Practically, Dengue Fever is a disease that cannot be prevented.	Agree-44(33.3%) Disagree-78(59.1%) Don't Know-10(7.6%)
2. Most effective method of controlling or preventing Dengue infection is to eliminate the breeding place of the vector mosquitoes.	Agree-112(84.8%) Disagree-10(7.6%) Don't Know-10(7.6%)
3. Everybody has a risk of being infected with dengue	Agree-96(72.7%) Disagree-32(24.2%) Don't Know-4(3%)
4. It is possible to recover completely from dengue infection.	Agree-74(56.1%) Disagree-38(28.8%) Don't Know-20(15.2%)
5. Strong and healthy person will not get dengue infection.	Agree-30(22.7%) Disagree-96(72.7%) Don't Know-6(4.5%)
6. Elimination of larval breeding sources is a waste of time and very complicated.	Agree-52(39.4%) Disagree-38(28.8%) Don't Know-42(31.8%)
7. You are one of the important persons in preventing Dengue fever.	Agree-108(81.8%) Disagree-8(6.1%)

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Practice Items	Frequency (%)
	Don't Know-16(12.1%)
1. Examining discarded item that can hold water around the house.	Yes-88 (66.7%) No-44 (33.3%)
2. Checking and cleaning roof gutters in the rainy season.	Yes-104 (78.8%) No-28 (21.2%)
3. Covering water jars after using immediately.	Yes-108 (81.4%) No-24 (18.2%)
4. Using mosquito net and/or mosquito coils/mosquito repellent vapour in your house	Yes-132(100%) No- 0 (0%)
5.Mosquito Preventive measure used at home	Net only- 40 (30.3%) Repellent-50 (37.9%) Both- 42 (31.8%)
6. Time when the respondents use any measure to prevent themselves from mosquito bite at home.	Night only-72 (54.5%) Day and Night-60 (45.5%)
7.Using any lotion/cream over body surface to prevent mosquito bite	Yes-14 (10.6%) No-118 (89.4%)
8. Smogging done to prevent mosquito by municipal workers in the locality of the residents	3-4 times/Week: 18 (13.6%) 2 times/Week: 16 (12.1%) Once/Week: 42 (31.8%)

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	Once biweekly: 22 (16.6%)
	<Above: 20 (15.2%)
	Never done: 14 (10.6%)

Only 27.3% of respondents in the study had positive attitude regarding dengue (Table -1). One third of respondents felt dengue was not preventable, 72.7% of respondents considered elimination of mosquito breeding places as the most effective method of controlling dengue fever and 22.7% of respondents in the study had the misconception that dengue does not infect strong and healthy person.

Regarding practices to prevent dengue fever, only 15.2% respondents practiced correct preventive measures. Practices were mainly directed towards personal protective measures.

Fig-1: Comparison of knowledge score : pre-intervention vs post-intervention

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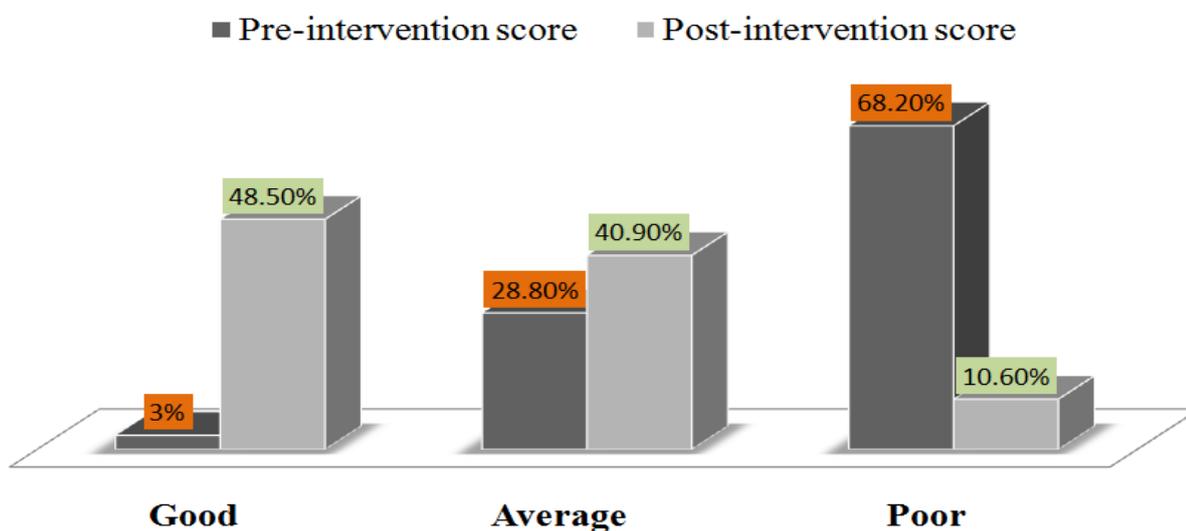
Table-3: Paired t test: Comparison of pre and post intervention knowledge score:

	Paired Differences					t	df	P-value
	Mean	SD	SE Mean	95% CI of the Difference				
				Lower	Upper			
Post- intervention knowledge score Vs pre-intervention knowledge score	5.34	2.034	0.250	4.85	5.91	21.360	65	0.00

*Post HE Knowledge: Mean: 12.36; SD: 2.8; Range: 7 – 18.**

☐ After imparting health education via Audiovisual Aids, knowledge were reassessed after a wash out period of 3 weeks and statistically significant (P value: 0.00) improvement was noted for mean knowledge score-pre vs post=7.02 vs12.36.

Discussion:

The study was conducted on 132 mid-adolescent school boys in a slum of Kolkata during an outbreak of dengue fever. Since homogeneity was observed among the participants the demographic characteristics investigated in this study were not significantly associated with level of knowledge, attitude or practice.

Present study reveals that all respondents under the study had heard about Dengue, the

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television and print media being the main source of information. Similarly high percentages of dengue awareness was reported from Malaysia (98.5%) (7), India (90%) (8) and Pakistan (9). Some studies established that mass media is a powerful tool in generating better awareness in dengue prevention and control (10, 11)

The mean baseline knowledge score was found to be 7.02(SD 2.46) from a maximum attainable score of 18 points which shows that the respondents in this study had a poor level of knowledge (68.2%) in spite of the fact that 100% of the respondents had received information regarding dengue fever. It might be that the educational information is insufficient or inappropriate to address their actual needs as far as knowledge, attitude and practice regarding dengue is concerned.

More than half of the respondents had correct knowledge of the mosquito vector responsible for dengue transmission (Table-2). Another area in which most of the respondents answered correctly is the question about common symptoms of dengue fever –fever (80.3%), bodyache (71.2%) (Not shown).

The respondents were found to have poor knowledge about biting habit of dengue mosquito (42.2% answered correctly), time needed for dengue mosquito to grow in stagnant water (24.2% answered correctly) and treatment of dengue fever. The highest average percentage scored by the respondents was the question on whether empty stagnant water from old tyres, trash cans, and flower vases can be a breeding place for mosquitoes. The responses indicated that 74.2% were aware about these breeding places The highest average percentage scored by the respondents was the question on whether empty stagnant water from old tyres, trash cans, and flower vases can be a breeding place for mosquitoes. The responses indicated that 74.2% were aware about these breeding places. Around 83% respondents had the misconception that mosquito which transmits dengue infection lays its eggs in dirty sewage water.

No significant association of knowledge was found with attitude or practice. This finding is supported by a hospital based study at Delhi done

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by Matta et al (13). On the contrary, a study done at Kuala Kansagar concludes a significant positive association with knowledge of dengue and attitude towards Aedes control (11). It is also a matter of motivation and perceived benefits. If people do not see the benefit of a given behavior they do not practice it, regardless of understanding (12).

The mean score for attitude about dengue fever prevention was found to be 4.53 (SD 1.52), maximum attainable score being 7 points. Around 39% of the respondents who participated in this study had negative attitude..

This study revealed few incorrect attitudes towards dengue prevention among the respondents such as prevention of dengue is impossible in reality (33.3%); strong and healthy person does not suffer from dengue (22.7%): elimination of larval breeding sources is a waste of time and very complicated (39.4%).

The mean score for dengue fever prevention practices was 6.12 (SD1.5)from a highest possible score of 9.Only 15% respondents adopted satisfactory dengue preventive measures and 57.6% practices preventive measures to a fair level.

Majority of the respondents (54.5%) used mosquito net and/or mosquito coils/mosquito repellent vapour during night time only. This showed that almost half of them did not use protective measures during the biting time of dengue mosquitoes. Though every respondent used some sort of preventive measures, those were directed towards personal level not to reduce the mosquito breeding places.

In this study, overall the respondents had very poor knowledge regarding dengue but practice was proportionately better and no statistically significant association found between them which contradicts some study findings which shows that knowledge is significantly associated with practice (14, 15). It might be that people adopt preventive measures against mosquitoes (mainly personal protection measures) when they experience mosquito nuisance not due to threat of dengue to the community. Recent dengue outbreak in Kolkata might also be responsible for it.

No significant association of practice was found with attitude. This approved with the study

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of Hairi et al (11) where they had conducted a study on KAP on dengue among selected rural communities in the Kuala Kangsar district and found out that there was no significant association seen between attitude and preventive practice on dengue. It is also consistent with the study done by Limros (2006) who conducted a study on Preventive Behaviors against Dengue Infection among Family Health Leaders in Kongkrailat District, Sukhothai Province found out that attitude showed no correlation with breeding place prevention (16).

There might be so many other factors hindering as behavior does not depend only on attitude and knowledge. Such as motivation, perceived benefits, social factors, taboos, etc are some of the factors that can hinder practice (12).

After imparting health education via audiovisual Aids, significant improvement noted in the knowledge domain (mean-pre vs post= 7.02 vs12.36; CI=4.85-5.91; P Value= 0.000)

The audio-visual based health education program had a positive effect in improving knowledge regarding dengue among the adolescent boys. Role of IEC for dengue

prevention has been highlighted elsewhere (11), also the effectiveness of audio-visual media as a tool for IEC (17).It is well known fact that knowledge is significantly associated with practice Further exploration is needed to see its impact on their practice and contribution towards generating community awareness.

Conclusion: .It is highly recommended that high quality health education is given to school children regarding the prevention of dengue for reducing the incidence of this deadly disease. The adolescents are fast learners and so they will imbibe the correct and appropriate perception and practice which they will readily percolate to their peer group, their elders, their neighbours and when they grow up to their family and progeny. Thus health education to children especially the adolescents always has a long term effect since the correct message will be transmitted for generations to come.

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