

“Children as change agents of knowledge and practice of parents in prevention of Mosquito-borne diseases: A pilot study”

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Introduction

Mosquitoes even though small in size are the deadliest insects causing millions of deaths every year. Mosquitoes are able to spread variety of diseases, among which common are Malaria, Dengue, Chikungunya etc.¹ More than 3000 different species of mosquitoes are identified in tropical and subtropical regions of the world, but only a few are known to act as vectors of diseases to the human beings.² *Aedes Egypti* is responsible for many of the mosquito-borne diseases and this species exist in the areas where more than 50% of world's population lives. Despite the intensive efforts to prevent and control in the past decades, Malaria remains a significant public health concern in India. Malaria and Dengue fever continue to be a serious health problem in many of the countries. In recent years a number of countries report their first outbreak of mosquito-Borne Diseases (MBD). The morbidity and mortality rates and epidemic outbreaks of MBD indicate that the problem is really serious in India and needs attention from ground level itself. ³Transmission of MBD depends on factors such as climate, sleeping habits of susceptible people, prevalence and density of mosquitoes, practices of people, etc.⁴ A few years back almost 50% of world's population was at risk with 91 countries and areas having ongoing Malaria transmission.⁵ South East Asia reported with 6.7 million cases of Malaria in 2019. Most of the Indian states and Union territories are endemic for Malaria and Dengue and have witnessed multiple outbreaks of these diseases.⁶ Even though the number of Dengue cases reduced in India, the disease is spreading to newer geographic area and claims many lives.⁷

Protection from the vector is one of the best strategies to prevent the mosquito-borne illnesses. Involvement of households is of great importance because the problem of MBD revolves mainly around man and his environment. National Vector Borne Disease Control Programme (NVBDCP) of India suggests that the community people should involve in reduction and elimination of breeding sites in and around their houses. Important factors determining the participation of the community in any programme are knowledge of the causes of disease and how to prevent it. Having an idea of how much the public know about MBD, their attitudes towards the disease prevention and their practices play a major role in planning and developing any appropriate suitable health education strategy.⁸

Health education can be given through various methods to modify the health behaviour of the people. Child-to-Child is an approach to health promotion and community development led by children which is based on the belief that children are effective health messengers. It engages children in activities that interest, challenge and empowers and enables to play an active and responsible role in the health and development of themselves, other children, their families and communities. Children can become the agents for social and environmental change by child-to-child approach.⁹ Children have acted as agents of change in a variety of other health-related interventions thereby by improving their own health and their parents' too.¹⁰⁻¹² Children can be involved in prevention of MBD by improving the knowledge and changing the practices of their parents through sharing the information they received from teachers or health personnel. Studies have proven that children can be the effective health messengers and change agents of their peers, families and the society.¹²⁻¹⁴ Researchers have shown that children will understand and learn easily if they are taught about any topic concerned to them and significant improvement in their knowledge was very evident after the educational intervention.¹⁵⁻¹⁶ This pilot study was conducted to evaluate the effectiveness of school children as change agents of knowledge and practice of the parents regarding MBD and the aim of the study was achieved.

MATERIALS AND METHODS:

Ethical clearance was obtained from Institution ethics committee and permission was taken from Block Education Office before the study. Two schools from the Dakshina Kannada district of Southern India were selected as control and intervention group. After obtaining the permission from school authorities, 20 students from each school were selected randomly from class 6 and 7. The purpose of the study was explained to children and assent was obtained and consent was taken from the parents.

A validated and pretested questionnaire is used to collect the data which consisted of 3 parts namely demographic proforma, knowledge questionnaire and practice checklist. Pre-test data was collected from parents and children. Structured interview schedule was used to collect the data from parents. Practice was assessed using self-reported and observational checklist. After pre-test intervention group children were trained by the investigator on MBD for 4 days using PowerPoint presentation and video show. The children were asked to share the learnt information on MBD with their parents with the help of the information booklet. A post test was conducted on 7th and 30th day of child to parent interaction. Data is analysed using the SPSS-23 software.

RESULTS

The demographic data shows that children belonged to the age group of 11 to 12 years and 60% of them were males. About 65% of children had some previous information on MBD which was received from their teachers. Among the parents 72% of them were in the age group of 31 to 40 years and 87.5% were mothers, among whom majority were housewives.

Table 1 shows the pre-test and post-test knowledge scores of the children regarding MBD. Difference between the pre and post-test mean score 31.75 was statistically significant ($t=26.69$, $p=0.001$) which indicates health teaching given by the investigator was effective in improving the knowledge level.

Table 2 shows the knowledge scores of parents. The mean pre-test knowledge score of the intervention group was (27.35 ± 6.92) which is significantly lower than the mean post-test scores on 7th day (49.75 ± 2.22), and 30th day (49.5 ± 2.35). The F value (97.71) was significant at 0.05 level of significance, $p<0.001$. The partial Eta squared value 0.92 indicates the difference between the pre and post-tests is not by chance. There was no much difference found between the pre and post-test knowledge scores of the control group.

Figure 1 shows that 65% of the parents had average knowledge in the pre-test but after the intervention 95% had excellent knowledge regarding MBD. But 75% of control group parents had average level of knowledge both during pre-test and post-test.

Table 3 reveals that there was an improvement in the percentage of people using personal protective measures to prevent mosquito bites among the intervention group after the child to parent teaching but no difference was found among the control group participants.

Discussion:

The school children had average knowledge regarding MBD and they never felt the need to know about the Dengue and Malaria as they did not understand the severity of these illnesses. These findings are matching with the findings of study conducted by Ramaiah and Singarave.¹⁷⁻¹⁸ The children will learn better when they are explained the importance of learning the specific aspect. The current study results found that video-based education on MBD for children has increased their knowledge significantly. This result is consistent with the researches done by Sandeep KR, Johnson S.¹⁹⁻²⁰ Parents had some knowledge regarding the MBD which was not adequate and similar results were found in studies conducted by Musoke and Sharma.²¹⁻²²

Children tend to share the information with their parents what they have learnt in school. This study has shown that children were the effective health messengers in improving the knowledge of parents. Children also influenced the parents to change their practices especially related to use of personal protective measures against the mosquito bite. This shows that children are effective change agents in the community especially in the area of prevention of communicable diseases. These findings are consistent with the studies conducted in the past to assess the effectiveness of children as change agents.^{23-27.}

Conclusion

Educating the children on the health-related problems like mosquito borne diseases of specific geographic area can be very useful as these children act as change agents for the knowledge and practices of the family members. Child to parent approach can significantly bring changes in the health-related behaviours of parents. The potential of children to act as health messenger to the community can be used to prevent mosquito borne diseases like Malaria and Dengue.

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Conflict of Interest: The authors declare that there is no conflict of interest regarding the publication of this paper.

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Table 1: Knowledge scores of children regarding MBD

n=20

	Mean±SD	Paired differences					
		Mean difference	SD	't' value	p	95% Confidence Interval of the Difference	
						Lower	Upper
Pretest	19.6±5.46	31.75	5.32	26.690	0.001**	-34.23985	-29.26015
Post- test	51.35±2.81						

**=Highly significant, Maximum score=60

Table 2: Effectiveness of child to adult training on knowledge regarding MBD

N=20+20

Group		Mean	SD	F	p	Eta squared
Intervention	Pretest	27.35	6.92	97.71	0.001**	0.92
	Post 1 (7 th day)	49.75	2.22			
	Post 2 (30 th day)	49.5	2.35			
Control	Pretest	28.25	6.26	10.75	0.06	0.54
	Post 1	29.75	5.68			
	Post 2	30.3	5.45			

**=Highly significant

Table 3: Practice of Personal protective measures

N=20+20

Sl. No	Practice statements	Pretest		Post test 1		Post test 2	
		Intervention	Control	Intervention	Control	Intervention	Control
		f(%)	f(%)	f(%)	f(%)	f(%)	f(%)
1.	Wearing full sleeves clothes	10(50)	8(40)	17(85)	9(45)	18(90)	11(55)

2.	Using mosquito coil /mat/ spray/ liquidVapourizer	8(40)	12(50)	17(85)	13(65)	18(90)	14(70)
3.	Applying mosquito repellent	4(20)	2(10)	8(40)	4(20)	8(40)	4(20)
4.	Windows and ventilators have mosquito protection screen	5(25)	4(20)	5(20)	4(20)	8(40)	4(20)
5.	Closing the doors and windows before the sunset and opening the doors only after the sunrise	12(90)	10(50)	20(100)	12(60)	20(100)	12(60)
6.	Use of mosquito net	3(15)	3(15)	6(30)	3(15)	6(30)	3(15)

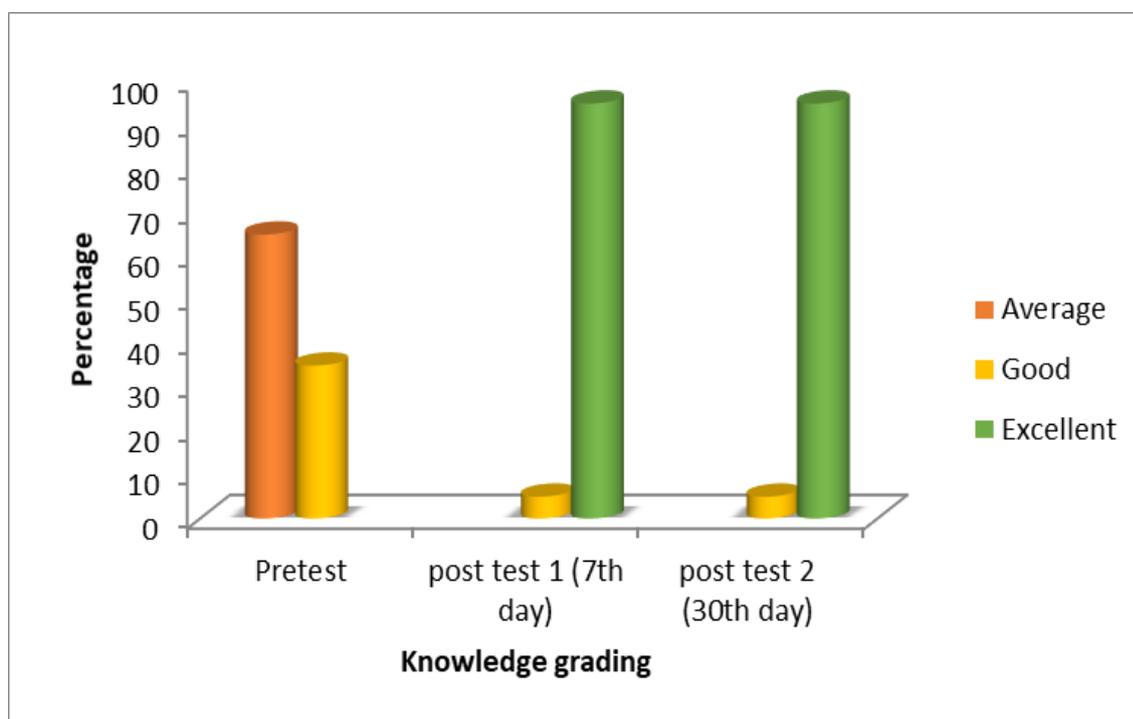


Figure 1: Knowledge grading of the intervention group participants regarding MBD