



EFFECTS OF HEALTH EDUCATION ON VECTOR BORNE DISEASES AMONG POLICE PERSONNEL IN A SUB-DIVISION OF DARJEELING DISTRICT, WEST BENGAL

Community Medicine

Dr. Eashin Gazi	Assistant Professor, Department of Community Medicine, North Bengal Medical College, Darjeeling, West Bengal.
Dr. Tushar Kanti Saha	Associate Professor, Department of Community Medicine, North Bengal Medical College, Darjeeling, West Bengal.
Dr. Arup Jyoti Rout	Assistant Professor, Department of Community Medicine, North Bengal Medical College, Darjeeling, West Bengal.
Dr. Kallol Bhandari*	Post Graduate Trainee, Department of Community Medicine, North Bengal Medical College, Darjeeling, West Bengal. *Corresponding Author

ABSTRACT

Introduction: Police personnel due to their nature of occupation are especially vulnerable to vector borne diseases (VBDs). Awareness regarding VBDs is crucial to reduce the disease burden among them. Health education being an effective mode of intervention could be used to create awareness.

Objectives: The study was conducted to assess the awareness regarding VBDs before and after an intervention of health education and to identify the factors influencing the awareness of VBDs among the study participants.

Methods: Descriptive interventional study was conducted using a self-administered questionnaire among 71 Police personnel at Siliguri sub-divisions in Darjeeling districts, West Bengal, from April to May 2019. Items assessing knowledge were scored one (correct response) and zero (incorrect / non-response). The minimum & maximum possible score was 0 and 48 respectively. Satisfactory knowledge was assessed by Median Split method on total score.

Results: The median (Inter quartile range) score increased significantly from 24 (20,27) before intervention to 38 (36,40) after intervention (p value <0.001). Pre-intervention knowledge score of ≥ 24 (≥ 50 th percentile) was obtained by 56.3% participants. Post-intervention, 100% participants scored ≥ 24 (≥ 50 th percentile). Regarding influencer, educational status and monthly income were found to be the influencing factors for the knowledge level before intervention and these were statistically significant (p value <0.05).

Conclusion: The study establishes the importance of health education as an effective tool to improve the awareness and educational status, monthly income of the study participants were influencing factors associated with awareness on VBDs among them.

KEYWORDS

Health education, Vector borne disease, Police personnel

INTRODUCTION:

Vector-borne diseases (VBDs) significantly contribute to the global burden of the diseases, because of epidemics that disrupt health security and cause wider socioeconomic impacts all over the world. The World Health Organization (WHO) estimates that one-sixth of the illness and disability suffered worldwide is due to vector-borne diseases. It is found that more than half of the world's population are currently at risk for development of VBDs. Every year, more than one billion people are infected, and more than one million people die from vector-borne diseases [1,2]. WHO brought VBDs into focus during the World Health day of 2014 [3]. Vector-borne diseases account for over 17% of all infectious diseases [4]. Vector-borne diseases which are transmitted mainly by bites of vectors such as mosquitoes, ticks and sandflies are highlighted as a global public health priority. Among all disease-transmitting insects, the mosquito is the greatest menace, spreading malaria, dengue, yellow fever, lymphatic Filariasis and Japanese encephalitis etc. Up to 700 million people are infected and more than a million die each year from mosquito-borne illness [5]. Among the VBDs; Malaria, Dengue, Lymphatic Filariasis, Kala-azar, Japanese Encephalitis and Chikungunya are highly prevalent in India. Recently they have emerged as a major public health problem in India. Specifically, dengue fever, Japanese encephalitis and malaria now are happened as an epidemic form almost on an annual basis causing considerable morbidity and mortality [6].

Climate acts as one of many interacting determinants of vector-borne disease. The impact of climate change on vector distribution and VBDs incidence is of very significant. Thus, vectors are the important link in transmission of VBDs so, protection from vectors serves as one of the best strategies for prevention in population. Police personnel are especially vulnerable to VBDs due to their nature of occupation. They have to perform their duties both day and night time and also at different unhealthy environments, which make them more prone to bites by the mosquitoes and other vectors. Awareness regarding VBDs is crucial to reduce the disease burden among them. There was no such study conducted in this region and under this situation the present

study was conducted with the following objectives: (1) To assess the effects of health education on awareness regarding VBDs among the study participants before and after the health education and (2) to identify the factors influencing their existing knowledge on VBDs before intervention.

MATERIALS & METHODS:

A descriptive interventional study with cross-sectional design was conducted at Office of the Sub-Divisional Police Officer (SDPO), Siliguri Sub-division of Darjeeling districts, West Bengal, from April 2019 to May 2019. Permission for conducting the study was taken from Office of the SDPO, Siliguri Sub-division. Consent of all participants was obtained before conducting the study.

Once in a fortnight visit for consecutive two months was conducted at the same place, mentioned above. Police personnel, who were not on duty at the time of health education session, were included in this study. No police personnel were allowed to attend repeatedly in the next day session of health education. Complete enumeration method was used and the final study population were 71.

Data were collected with the help of a structured, self-administered, pre-tested questionnaire which included questions related to perceptions of people on vectors their breeding places, the diseases spread by them, control measures, personal protection measures used by them. Before starting the Health education session, the study participants were asked to fill up the questionnaire to assess their existing knowledge. Then, a session of Health education was done based on the guideline of National Vector Borne Disease Control Programme [7]. After end of the Health education session, the same questionnaire was filled up by the study participants to know the level of improvement in knowledge on VBDs.

Items assessing knowledge were scored one (correct response) and zero (incorrect / non-response). The minimum & maximum possible score was 0 and 48 respectively. Score ≥ 24 (50th percentile) was

categorized as satisfactory knowledge. Satisfactory knowledge was assessed by Median Split method on score obtained and statistical analysis was done by using Chi-square test.

STATISTICAL ANALYSIS:

Data entered into a Microsoft Excel datasheet, double-checked and analyzed by SPSS 22 software package. Frequencies, proportions, measures of central tendency and measures of dispersion (IQRs and SDs) were used for descriptive analysis. Chi-square test was applied for identification of influencing factors related to it.

RESULTS:

Total study participants were 71 in this study. The mean age of the participants was 37.38 years (SD ± 7.74 years).

Table 1: Distribution of the study participants according to their socio-demographic profile (n=71)

Socio-demographic characteristics	Frequency	Percentage (%)
Age (in completed years)		
≤40	50	70.4
>40	21	29.6
Gender		
Male	37	52.1
Female	34	47.9
Religion		
Hindu	52	73.2
Others	19	26.8
Educational status		
Higher secondary completed	44	62
Graduate	27	38
Monthly income (Rs.)		
≤50000	43	60.6
>50000	28	39.4
Total	71	100

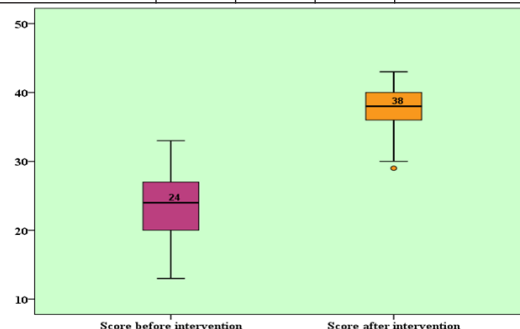
Table 2: Distribution of the study participants according to their response to the individual questions (n=71)

Questions	Responses (Before intervention)		Responses (After intervention)	
	Correct Frequency (%)	Incorrect Frequency (%)	Correct Frequency (%)	Incorrect Frequency (%)
1. Which mosquito transmits Malaria?	47 (66.2%)	24 (33.8%)	65 (91.55)	6 (8.5%)
2. Which Mosquito transmits Dengue?	36 (50.7%)	35 (49.3%)	69 (97.2%)	2 (2.8%)
3. When is usually mosquito responsible for Dengue active to bite?	47(66.2%)	24(33.8%)	66 (93%)	5 (7%)
4. When is usually mosquito responsible for Malaria active to bite?	27(38%)	44(62%)	60 (84.5)	11(15.5%)
5. What are the symptoms of Malaria?	Full marks 8 (11.3%)		Full marks 52 (73.2%)	
6. What are the preventive measures to get rid of mosquito born disease?	4 (5.6%)		42 (59.2%)	

Table 3: Association of socio-demographic characteristics of the study participants with their knowledge before health education (n=71)

Socio-demographic characters	Score <24	Score ≥24	Total	Test of significance
Education				
HS Completed	24	20	44	Chi-square 5.572 p= 0.018*
Graduate	7	20	27	
Monthly income				
≤50000	23	20	43	Chi-square 4.280 p= 0.039*
>50000	8	20	28	

Age in years	23	27	50	Chi-square 0.376
≤40	23	27	50	p= 0.365
>40	8	13	21	
Residence				
Urban	22	24	46	Chi-square 0.921
Rural	9	16	25	
Total	31	40	71	



Y-axis – Knowledge score

Diagram 1: Box and Whisker plot showing the median knowledge score (IQR) of the study participants before and after the intervention (n=71)

Table 1 shown that, about 70% of the study participants were of age ≤40 years, more than half (52.1%) were male, most of them (73.2%) were Hindu by religion. 62% of the study participants have completed higher secondary level and rest were graduate. Most of the study participants (60.6%) have monthly income of Rs. ≤50,000. Table 2. Shown that, percentages of correct responses to all the questions (mentioned in this table) increased after health education (intervention). Out of 12 questions (specific to VBDs) from the questionnaire, 6 questions were selected to show in this table. Questions with multiple probable responses (Q5, Q6 in this table) were scored as full marks if all the probable responses were correct. Diagram 1: Box and Whisker plot showing that the median knowledge score (inter quartile range) increased remarkably from 24(20, 27) before intervention to 38(36, 40) after intervention. The median knowledge score (inter quartile range) increased significantly from 24(20,27) before intervention to 38(36,40) after intervention (p value <0.01). Pre-intervention knowledge score of ≥24 (≥ 50th percentile) was obtained by 56.3% participants. Post-intervention, 100% participants scored ≥24 (≥ 50th percentile).

Table 3 shows that educational status and monthly income were found to be the influencing factors for the knowledge level before intervention and these were statistically significant(p value <0.05).

DISCUSSION:

A cross sectional intervention study was conducted among police persons those have to perform duties in different areas in day and night, so they are more prone to bite of different vectors. Prone to development of vector borne diseases are so easy among them. There is considerable evidence that changes in the phenology and distribution of a wide range of arthropod species have occurred in response to climate change worldwide.

Change in social and economic conditions is often an important influence on VBDs incidence patterns. Appropriate knowledge on VBDs their mode of spread, most common symptoms, and preventive measures is very much pertinent. This study was conducted among 71 police personal in Siliguri subdivision. The mean age of the participants was 37.38 years (SD ± 7.74 years). Among them 37(52.1%) were Male, 52(73.2%) were Hinduism by religion. In this study from table no.2, we found that, for Q1, the percentage of correct answer increase from 66.2% to 91.5% after intervention, similarly for Q2, the percentage of correct answer increase from 50.7% to 97.2% after intervention, for Q3, the percentage of correct answer increase from 66.2% to 93% after intervention and for Q4, the percentage of correct answer increase from 38% to 84.5% after intervention. It was also found that Q6 in table no. 2, provided the effective measures of prevention of mosquito borne diseases and full marks obtained by 59.2% of the study participants after health education. The main strategy is integrated vector management which involves source

reduction & environmental management, personal protection, chemical and biological control [7]. In this study educational status and monthly income were found to be the influencing factors for the knowledge level before intervention. Enhance the knowledge on entomological studies are common tools in the assessment of health hazards before and during deployment for most Western armies [8,9]. Regarding malaria transmission, such studies provide information on the risk level according to the location of troops and on the insecticide susceptibility of vectors in the field.

CONCLUSIONS & RECOMMENDATIONS:

Descriptive interventional study was conducted among the Police personnel, the median knowledge score increased significantly from preexisting knowledge to post interventional knowledge. Educational status and monthly income were found to be influencing factors for their existing knowledge level before intervention. The study established the importance of health education as an effective tool to improve the awareness. Health-care access and administrative commitment should be increased. Participation in educational intervention program led to improved knowledge of vector ecology and disease epidemiology and prevention.

LIMITATION:

This study was not able to cover whole police personals of the District due to time and resource constraints.

ACKNOWLEDGEMENT:

The researchers are grateful to HOD Community Medicine for his kind supports and also thankful to SDPO Siliguri for the permission to conduct the study. Thanks to all supportive persons and all the participants for the help they rendered to carrying out the study.

Funding issues: Nil

Conflict of interest: Nil

REFERENCES:

1. World Health Organization. The global burden of disease: 2004 update. World Health Organization; 2008.
2. Lozano R, Naghavi M, Foreman K, Lim S, Shibuya K, Aboyans V et al. Global and regional mortality from 235 causes of death for 20 age groups in 1990 and 2010: a systematic analysis for the Global Burden of Disease Study 2010. *The lancet*. 2012 Dec 15; 380(9859):2095-128.
3. World Health Organization. A global brief on vector-borne diseases. Geneva: World Health Organization; 2014. 54p.
4. World Health Organization. Vector-borne diseases [Internet]. 2016 Feb [last accessed on 2019 March 20] Available from: <http://www.who.int/mediacentre/factsheets/fs387/en/>
5. Caraballo H, King K. Emergency department management of mosquito-borne illness: malaria, dengue, and West Nile virus. *Emergency medicine practice*. 2014 May 1; 16(5):1-23.
6. Sreedevi A, Burru RV, Rao GV, Yalamanchili P, Subhaprada C, Kumari V et al. Study on awareness about vector borne diseases and education about preventive measures in rural field practice areas of Kurnool medical college, Kurnool. *Int J Med Sci Public Health*. 2016 Sep 1; 5(9):1803-7.
7. Anvikar AR, Shah N, Dhariwal AC, Sonal GS, Pradhan MM, Ghosh SK, Valecha N. Epidemiology of Plasmodium vivax malaria in India. *The American journal of tropical medicine and hygiene*. 2016 Dec 28;95(6 Suppl):108-20.
8. Michel R, Ollivier L, Meynard JB, Guette C, Migliani R, Boutin JP. Outbreak of malaria among policemen in French Guiana. *Military medicine*. 2007 Sep 1; 172(9):977-81.
9. Sharp TW, Wallace MR, Hayes CG, Sanchez JL, De Fraités RF, Arthur RR et al. Dengue fever in US Troops during operation restore hope, Somalia, 1992-1993. *The American journal of tropical medicine and hygiene*. 1995 Jul 1;53(1):89-94.