STM JOURNALS

International Journal of
Evidence Based Nursing and Practices

Volume 2, Issue 1, 2024
January—June
DOI (Journal): 10.37591/IJEBNP

https://journals.stmjournals.com/ijebnp

Research IJEBNP

A Pre-experimental Evaluation of a Structured Educational Program on Awareness of Mosquito-borne Diseases in Senior Secondary School Students in Punjab

Ramandeep Kaur[1], Sarabjeet Kaur[1], Sarbject Kaur[1], Simran Kumari[1], Sunita Devi[1], Satish Chandra Bansal[2], Samarjit Kaur[1,*]

Abstract

Introduction: *Mosquitoes constitute the most important single family of insects from the standpoint of human health. They are found all over the world. The four important groups of mosquitoes in India that are related to disease transmission are the Anopheles, Culex, Aedes, and Mansonia.* ***Aims:*** *The aims of the study are to assess the effectiveness of structured teaching program on knowledge regarding mosquito-borne diseases among students of senior secondary schools of Punjab.* ***Methodology:*** *A quantitative study method and a quasi-experimental design were employed. Sixty 12th-grade students were chosen using a non-probability sampling method. The study was conducted at selected government schools of Punjab. In this study, A self-structure knowledge questionnaire was implemented for data collection procedure. Pilot study was done for its clarity and finalized on similar subject. A pretest was administered, followed by the implementation of a structured educational program on mosquito-borne diseases. Subsequently, a post-test was conducted with the selected population.* ***Results:*** *The analysis of mean, standard deviation, and standard error mean for pre-test and post-test knowledge scores illustrates an advancement from an initial mean score of 10.23 to a final score of 13.93 after the intervention, indicating a notable improvement of 18.50%, thus validating the effectiveness of the structured teaching program (STP). The findings indicate a significant disparity between pre-test and post-test knowledge scores among 12th-grade students regarding mosquito-borne diseases, affirming the efficacy of the STP.* ***Conclusion:*** *The current study indicates that the STP successfully enhanced knowledge about mosquito-borne diseases among students in the 12th grade.*

Keywords: Knowledge, mosquito-borne diseases, structured teaching program, non-probability sampling method, human health

***Author for Correspondence**
Samarjit Kaur
E-mail: simarjitkaur1977@gmail.com

[1]Student, Department of Obstetrical & Gynecological Nursing, State Institute of Nursing & Para Medical Sciences, Badal, India
[2]Professor, Department of Medical Surgical Nursing, State Institute of Nursing & Para Medical Sciences, Badal, India

Received date: March 10, 2024
Accepted date: May 01, 2024
Published date: May 15, 2024

Citation: Ramandeep Kaur, Sarabjeet Kaur, Sarbject Kaur, Simran Kumari, Sunita Devi, Satish Chandra Bansal, Samarjit Kaur. A Pre-experimental Evaluation of a Structured Educational Program on Awareness of Mosquito-borne Diseases in Senior Secondary School Students in Punjab. International Journal of Evidence Based Nursing and Practices. 2024; 2(1): 7–14p.

INTRODUCTION

As per the World Health Organization (WHO), "health" refers to a state of overall physical, mental, and social well-being, not just the absence of illness or weakness. Health is deemed the paramount aspect of the standard of living since any deterioration in health invariably signifies a decline in the standard of living [1].

Infectious diseases represent a significant health issue in India. These diseases can spread via water, air, food, and vectors such as insects, among which mosquito-borne illnesses are a notable example. Vectors for these diseases can be either mechanical or biological in nature [2].

Environment control, mainly source reduction, is potentially the ideal method for controlling mosquito breeding. It required public motivation through health education and usually legislation and law enforcement to encourage community participation. Along with environmental control, personal protective measures such as mosquito net, screening, repellent, anti-mosquito coils, and vaporizers are also equally important bites. For this, the government is also providing long lasting insecticides treated bed (LLITNs) for the community. Hence, the engagement of the community is essential in the prevention and control of mosquito-borne disease outbreaks. To create an appropriate and efficient health education plan, it is imperative to grasp the public's understanding of mosquito-borne illnesses [3–6].

NEED FOR STUDY

Health is a basic human right and a global societal objective; it is crucial for enhancing quality of life as it meets a fundamental need. Optimal health results from the comprehensive functioning of an individual, enabling personal and social fulfillment. The environment around an individual plays a critical role in maintaining good health, hence the regular collection and disposal of garbage is essential [4].

In our own experience, we identified many people are suffering from mosquito-borne diseases in community, due to inappropriate and prevention. Many people suffer from mosquito-borne diseases. Hence, to remove the fear and anxiety as well as to improve the knowledge among the school's students, we planned to provide a structured teaching program (STP) and to assess the effectiveness of this program in increasing the knowledge about mosquito-borne diseases among school's students selected schools of Punjab [7–10].

Objectives

1. To assess the level of knowledge regarding the mosquito-borne diseases among students of senior secondary schools Punjab.
2. To implement the structure teaching program regarding mosquito-borne diseases on students.
3. To assess the post-intervention level of knowledge regarding mosquito-borne diseases among students.
4. To compare the pre- and post-intervention level of the knowledge regarding mosquito-borne diseases among students.
5. To find out the association between level of knowledge regarding mosquito-borne diseases with selected sociodemographic variables.

OPERATIONAL DEFINITIONS

Assess

It is the structured, systematic, and ongoing process of gathering data from chosen students concerning mosquito-borne diseases.

Effectiveness

It describes the degree to which the structured teaching program on mosquito-borne diseases enhanced student knowledge, as demonstrated by the differences observed between pretest and posttest knowledge scores following the program's implementation.

Structured Training Program

If refers to a systematically developed instruction designed to provide information regarding mosquito-borne diseases to school students of 12th class.

Knowledge

Knowledge refers to what is known regarding mosquito-borne diseases.

Students

The students of 12th class who are pursuing senior secondary education.

Mosquito-Borne Diseases

They refer to communicable diseases caused by protozoan infection and transmitted through infected mosquito bites.

METHODOLOGY

The current study employed a quantitative research approach. A pre-test was conducted using a questionnaire method, denoted as O1, followed by the delivery of a structured teaching program (STP) utilizing appropriate audio-visual aids, denoted as X. Subsequently, a post-test was administered using the same questionnaire, denoted as O2.

Independent Variable

In this research, the STP on mosquito-borne diseases serves as the independent variable.

Dependent Variable

In this research, the students' knowledge is considered the dependent variable.

Sociodemographic Variables

In this study, age, gender, class, economic status of family, type of house, type of drainage system in house, source of drinking water, any previous source of information about mosquito-borne diseases, are the sociodemographic variables.

The present study was conducted among the Government Senior Secondary Smart School Badal. The population of the study included students of 12th class of Government Senior Secondary Smart School Badal. The sample size for the present study is 60. Participants in this study were selected using a purposive non-probability sampling method.

Inclusion Criteria

- 12th standard school students of Government Senior Secondary Smart School, Badal.
- School students who are willing to participate.

Exclusion Criteria

- School students included in the pilot study.
- School students who are not willing to participate.

The reliability of the tool was tested by conducting the pilot study and implementing the tool and STP on 6 school students. The test-retest method, employing Karl Pearson's correlation coefficient formula, was utilized to establish consistency. The calculated correlation coefficient (r) was 0.9048.

ANALYSIS AND INTERPRETATION

Organization of the Findings of the Final Study

- *Section A:* Findings related to demographic variables.
- *Section B:* Findings related to assessment of the level of knowledge regarding the mosquito-borne diseases among students of senior secondary schools Punjab.
- *Section C:* Findings related to assessment of the post-intervention level of knowledge regarding mosquito-borne diseases among students.
- *Section D:* Findings related to comparison of the pre- and post-intervention level of the knowledge regarding mosquito-borne diseases among students.
- *Section E:* Results concerning the association between knowledge levels about mosquito-borne diseases and selected sociodemographic factors.

Section A: Sociodemographic Variables of Sample

Concerning age, 60.0% (36) of 12th grade students fall within the 16- to 17-year age range, 38.3% (23) are aged 17 to 18 years, and 1.7% (1) belong to the 18- to 19-year age bracket. No respondents from 12th grade exceeded 19 years of age (Table 1).

Table 1. Frequency and percentage distribution of students according to selected variables (N = 60).

Sample Characteristics	Frequency	Percentage
Age		
16–17 years	36	60.0%
17–18 years	23	38.3%
18–19 years	1	1.7%
>19 years	0	0.0%
Gender		
Male	23	38.3%
Female	37	61.7%
Class		
12 (Section-A)	29	48.3%
12 (Section- B)	31	51.7%
Economic Status (Income)		
<10,000	35	58.3%
20,000–30,000	11	18.3%
40,000–50,000	6	10.0%
>50,000	8	13.3%
Type of house		
Kutcha	6	10.0%
Pucca	26	43.3%
Mixed	28	46.7%
Type of drainage		
Open	37	61.7%
Close	23	38.3%
Source of drinking water		
Tap water	48	80.0%
Borewell water	5	8.3%
Well water	7	11.7%
Any previous source of information		
Health worker	5	8.3%
Family	3	5.0%
Social media	3	5.0%
All of the above	49	81.7%

According to gender, 38.3% (23) of 12th standard schools students are male students, and 61.7% (37) of 12th standard schools students are female students. According to class, 48.3% (29) of 12th standard schools students are in section A and 51.7% (31) of 12th section B.

According to the economic status of family, 58.3% (35) of 12th standard school students are below Rs 10,000 income group, 18.3% (11) of 12th standard schools students are in Rs 20,000 to 30,000 income group, and 10.0% (6) of 12th standard schools students are in Rs 40,000 to 50,000 income group. A total of 8 (13.3%) of 12th standard schools students are in above Rs 50,000 income group.

According to type of house, 10.0% (6) of 12th standard school students live in *kutcha* houses, 43.3% (26) of 12th standard school students live *pucca* house, and 46.7% (28) of 12th standard school students live in mixed (semi-*kutcha* or semi-*pucca*) house.

According to type of drainage, 61.7% (37) of 12th standard school students are in open drainage, 38.3% (23) of 12th standard school students are in closed drainage.

According to source of drinking water, 80.0% (48) of 12th standard school students use tap water, 8.3% (5) of 12th standard school students use borewell water, 11.7% (7) of 12th standard school use well water.

According to any previous source of information, 8.3% (5) of 12th standard school students got their information through health workers, 5.0% (3) of 12th standard schools students got through family, 5.0% (3) 12th standard schools students got through social media, and 81.7% (9) got through all the sources.

Section B: Findings Related to Assess the Level of Knowledge Regarding the Mosquito-Borne Diseases among Students of Senior Secondary Schools in Punjab

Table 2 and Figure 1 depict the frequency and percentage of students according to pre-test knowledge score. Majority of students (53.3%) had average knowledge, 38.3% had good knowledge, 5% had excellent knowledge, and 3.3% had below average knowledge.

Thus, it can be inferred that most students fall within the average knowledge range based on their pre-test knowledge scores.

Table 2. Level of knowledge regarding mosquito-borne diseases among students of senior secondary schools in Punjab (N = 60).

Score Level	Frequency	Percentage
Below average knowledge (0–5)	2	3.3%
Average knowledge (6–10)	32	53.3%
Good knowledge (11–15)	23	38.3%
Excellent knowledge (16–20)	3	5%

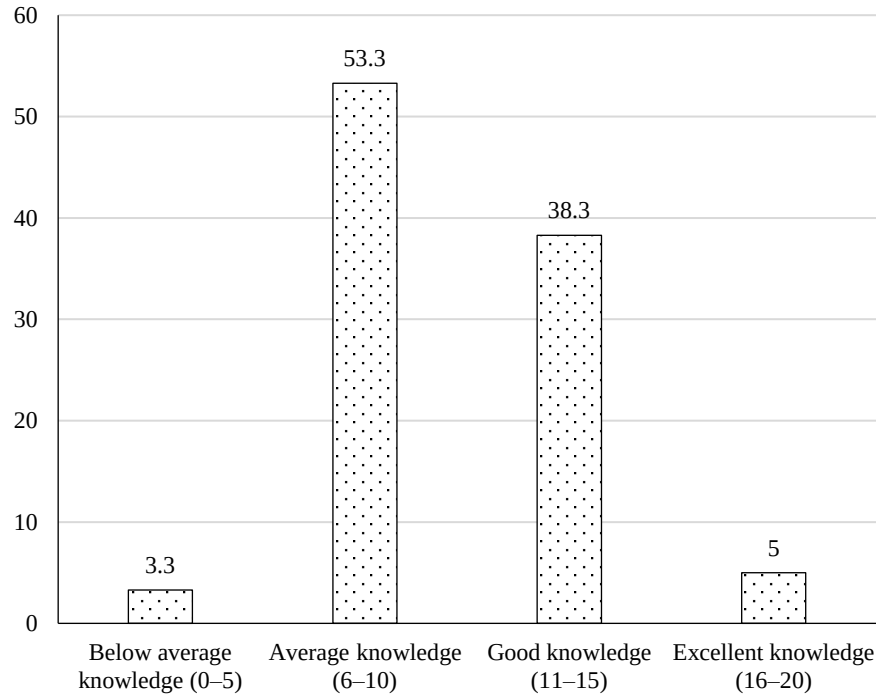

Figure 1. Criterion measures (pre-test).

Section C: Findings Related to Assess the Post-intervention Level of Knowledge Regarding Mosquito-Borne Diseases among Students

Table 3 and Figure 2 depict the frequency and percentage of students according to post-test knowledge score. Majority of students (70%) had good knowledge, 23.3% had excellent knowledge, 6.7% had average knowledge, and 0% had below average knowledge. Hence, it can be concluded that majority of students possessed good knowledge range in the post-test phase.

Section D: Findings Related to Compare the Pre- and Post-Intervention Level of the Knowledge Regarding Mosquito-Borne Diseases among Students

Table 4 and Figure 3 depict the comparison of means, standard deviation, and standard mean of pre-test and post-test knowledge scores. The show that pre-test means score is 51.17% whereas in post-test means score is 69.67% revealing difference of 18.50%, thus showing the effectiveness of STP.

Section E: Findings Related to Relationship Between Level of Knowledge Regarding Mosquito-Borne Diseases and Selected Sociodemographic Variables

Table 5 lists the chi-square value, *P* value, degrees of freedom, and critical values, and indicates a significant association between pretest knowledge scores and selected demographic variables (gender, type of house). The chi-square calculations exceeded the critical values at a significance level of 0.05.

Table 3. Post-intervention level of knowledge regarding mosquito-borne diseases among students (N = 40).

Score Level	Frequency	Percentage
Below average knowledge (0–5)	0	0%
Average knowledge (6–10)	4	6.7%
Good knowledge (11–15)	42	70%
Excellent knowledge (16–20)	14	23.3%

Table 4. Pre- and post-intervention level of the knowledge regarding mosquito borne diseases among students.

Score Level	Mean%	Mean Difference	Paired *T* Test
Pre-test knowledge	51.17	3.700	12.532 *Sig
Post-test knowledge	69.67		

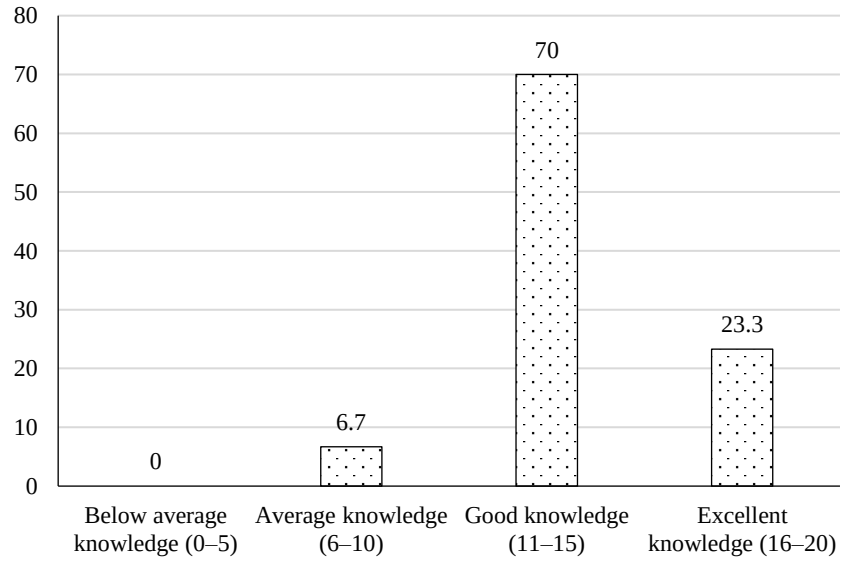

Figure 2. Criterion measures (post-test).

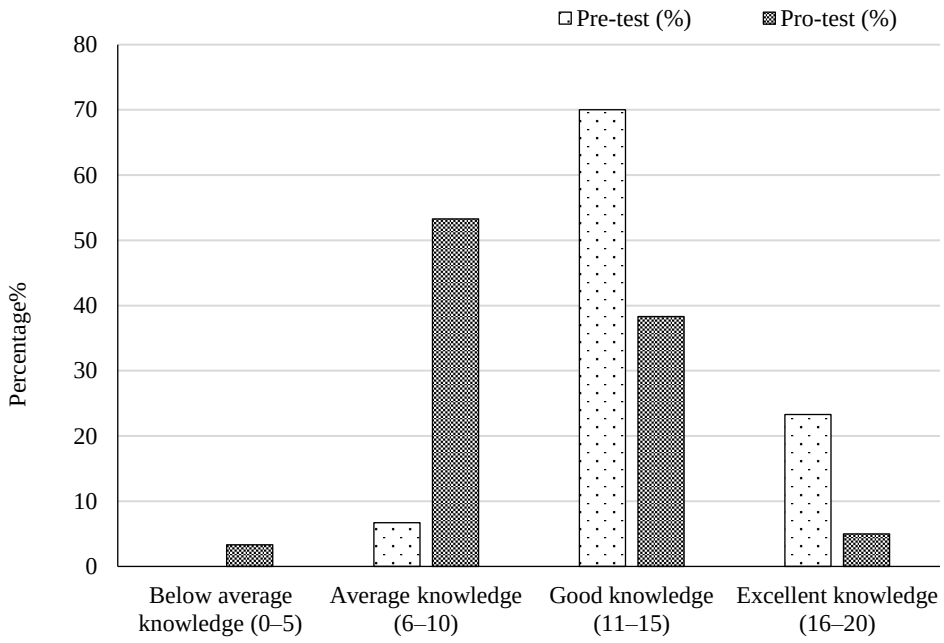

Figure 3. Criterion measures (pre-test and pro-test).

Table 5. Association of pre-test knowledge scores with selected sociodemographic variables.

Variables	Options	Excellent Knowledge	Good Knowledge	Average Knowledge	Below Average Knowledge	Chi-Square Test	*P* Value	*df*	Table Value	Result
Gender	Male	3	8	10	2	8.845	0.031	3	7.815	Significant
	Female	0	15	22	0					
Type of house	*Kutcha*	0	1	4	1	15.541	0.016	6	12.592	Significant
	Pucca	3	14	8	1					
	Mixed	0	8	20	0					

Table 6. Association of post-test knowledge scores with selected sociodemographic variables.

Variables	Options	Excellent Knowledge	Good Knowledge	Average Knowledge	Below Average Knowledge	Chi-Square Test	*P* Value	*df*	Table Value	Result
Type of house	*Kutcha*	1	4	1	0	11.25	0.024	4	9.48	Significant
	Pucca	10	13	3	0					
	Mixed	3	25	0	0					

This section presents the findings regarding the relationship between scores and specific demographic factors. The chi-square test was used to evaluate the relationship between score levels and selected demographic factors.

Table 6 presents the chi-square value, p value, degrees of freedom, table value, and the result of the association between post-test knowledge and selected demographic variables. The chi-square value indicates a significant association between the score level and the demographic variable (type of house). The chi-square values obtained were higher than the critical values at a significance level of 0.05.

CONCLUSION

In conclusion, the pre-experimental evaluation of the structured educational program on mosquito-borne diseases among senior secondary school students in Punjab demonstrated a notable increase in

awareness. The findings indicate that such educational interventions can effectively enhance knowledge and potentially influence behaviors related to mosquito-borne disease prevention. This underscores the importance of implementing targeted educational programs within school curricula to equip students with the necessary information and skills to protect themselves and their communities from health risks associated with mosquito-borne infections. The study also highlights the role of educational settings in promoting public health awareness among younger populations, paving the way for further research to refine and expand such programs to broader demographics.

REFERENCES

1. World Health Organization. Health and Well-being. [Online]. Available at https://www.who.int/data/gho/data/major-themes/health-and-well-being
2. Patil MB. A pre-experimental study to assess the effectiveness of planned teaching about knowledge regarding dengue fever and its prevention among high school students in selected rural area. Int J Sci Res. 2022; 11 (12): 567–569. doi: 10.21275/SR221208112256.
3. Centers for Disease Control and Prevention. Malaria Worldwide: Reduction. [Online]. Available at https://www.cdc.gov/malaria/malaria_worldwide/reduction/itn.html
4. Mahalakshmi B, Sivasubramanian N, Vaghela P, Navinbhai PD, Vasanthbhai PH, Ramalakshmi G, Rajeshbhai GP, Shaijo KJ. Awareness on mosquito borne diseases among urban & rural population in northern Gujarat. Bioinformation. 2022; 18 (7): 640–644. doi: 10.6026/97320630018640.
5. Lees RS, Knols B, Bellini R, Benedict MQ, Bheecarry A, Bossin HC, Chadee DD, Charlwood J, Dabiré RK, Djogbenou L, Egyir-Yawson A, Gato R, Gouagna LC, Hassan MM, Khan SA, Koekemoer LL, Lemperiere G, Manoukis NC, Mozuraitis R, Pitts RJ, Simard F, Gilles JR. Review: Improving our knowledge of male mosquito biology in relation to genetic control programmes. Acta Trop. 2014; 132 Suppl: S2–S11. doi: 10.1016/j.actatropica.2013.11.005.
6. Stephens C, Masamu ET, Kiama MG, Keto AJ, Kinenekejo M, Ichimori K, Lines J. Knowledge of mosquitos in relation to public and domestic control activities in the cities of Dar es Salaam and Tanga. Bull World Health Organ. 1995; 73 (1): 97–104.
7. Dormont L, Mulatier M, Carrasco D, Cohuet A. Mosquito attractants. J Chem Ecol. 2021; 47 (4–5): 351-393. doi: 10.1007/s10886-021-01261-2.
8. Lee H, Halverson S, Ezinwa N. Mosquito-borne diseases. Prim Care. 2018; 45 (3): 393–407. doi: 10.1016/j.pop.2018.05.001. PMID: 30115330.
9. Guarner J, Hale GL. Four human diseases with significant public health impact caused by mosquito-borne flaviviruses: West Nile, Zika, dengue and yellow fever. Semin Diagn Pathol. 2019; 36 (3): 170–176. doi: 10.1053/j.semdp.2019.04.009.
10. Knope KE, Muller M, Kurucz N, Doggett SL, Feldman R, Johansen CA, Hobby M, Bennett S, Lynch S, Sly A, Currie BJ; and the National Arbovirus and Malaria Advisory Committee. Arboviral diseases and malaria in Australia, 2013-14: annual report of the National Arbovirus and Malaria Advisory Committee. Commun Dis Intell Q Rep. 2016; 40 (3): E400–E436.

