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A pre-experimental study to assess the effectiveness of structured teaching program on knowledge regarding dengue fever, and its prevention among slum population at selected area of District Mohali, Punjab

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Abstract
Background: Dengue is an acute viral infection with potential fatal complications. Dengue fever was first referred as "water poison" associated with flying insects in a Chinese medical encyclopaedia in 992 from the Jin Dynasty (265-420 AD).The term dengue fever came into general use only after 1828.The WHO 2009 classification divides dengue fever into two groups: uncomplicated and severe.
Aim of Study: The Aim of the study is to assess the effectiveness of structured teaching program regarding Dengue Fever among slum population at selected area of Distt. Mohali, Punjab.
Material and Method: A quantitative research design with one group pre-test and post-test was chosen for the study. 60 samples were selected by using probability sampling technique. Self-structured questionnaire and structured teaching programme were used for data collection and analysis was done by using descriptive, inferential and statistical method.
Result: We found that during pretest out of 60 people 68.7% had inadequate knowledge 38.3% had moderate knowledge and 0% had adequate knowledge but after giving standard teaching and taking posttest out of 60 people 0% had inadequate knowledge 30% had moderate knowledge and 70% had adequate knowledge.
Conclusion: The findings of the study showed that post-test knowledge score was greater than pre- test knowledge score regarding Dengue Fever among adolescents. Hence, structured teaching program was effective.

Keywords: Dengue prevention, structured teaching programme, slum population knowledge

Introduction
The word dengue is derived from African word "denga" meaning "fever with haemorrhage" dengue is an acute arboviral disease caused by an arbovirus belonging to flavivirus and is primarily caused by Aedes mosquito. Dengue is a viral infection caused by the dengue virus (DENV), transmitted to humans through the bite of infected mosquitoes. It is most common in tropical and subtropical regions, particularly in poor urban, suburban and rural areas. Dengue fever is also known as breakbone fever is a mosquito born tropical disease caused by the mosquito bite [1].

The alternative name for dengue, "breakbone fever", due to severty of muscles spasm and joint pain dandy fever, or seven day fever because of the usual duration of symptoms. The virus may also be transmitted through the *Aedes albopictus* (*Stegomyia albopicta*) mosquito in rare cases. It is caused by the female *Aedes aegypti* mosquito bite, which transmit the dengue virus to human. Dengue is a viral infection transmitted to humans through the bites of infected mosquitoes, primarily through *Aedes aegypti* mosquitoes [2].

Dengue is classified as (i) Undifferentiated Fever, (ii) Dengue Fever (DF), and (iii) Dengue Hemorrhagic Fever (DHF). Dengue begins abruptly after a typical incubation period of 5–7 days [3].

It is a dark mosquito with white bracelet like markings on its legs and white spots on its body. The mosquito is not the main cause of the disease, but only a vector that carries the virus from one person to another. The mosquitoes then start transmitting the disease for the rest of its life. Early morning and before sunset are two peak hours for mosquito bites. Each time a female mosquito needs food, it bites several people [4]. Symptoms typically begin after being bitten by an infective mosquito. These may include a high fever, headache, vomiting, muscle and joint pains, and a characteristic skin itching and skin rash. Recovery generally takes two to seven days. In a small proportion of cases, the disease develops into a more severe dengue hemorrhagic fever, resulting in bleeding, low levels of blood platelets and blood plasma leakage, or into dengue shock syndrome, where dangerously low blood pressure occurs.

Two transmission cycles maintain the dengue virus
Mosquito Cary the virus from non-human primate to non human primate, the mosquito carry virus from human to human, where one human being is already infectious with virus and another is healthy. Dengue virus gains entry into the host organism through the skin following an infected mosquito bite. Humoral, cellular, and innate host immune responses are implicated in the progression of the illness and the more severe clinical signs occur following the rapid clearance of the virus from the host organism. Hence, the most severe clinical presentation during the infection course does not correlate with a high viral load [5].
Defervescence characterizes the critical phase with a temperature of approximately 37.5 C to 38 C or less on days three through seven. It is associated with increased capillary permeability. This phase usually lasts one to two days. The onset of the critical phase is heralded by a rapid decline in platelet count, rise in hematocrit (the patient may have leukopenia up to 24 hours before platelet count drops), and the presence of warning signs. It can progress to shock, organ dysfunction, disseminated intravascular coagulation, or hemorrhage.
The recovery phase entails the gradual reabsorption of extravascular fluid in two to three days. The patient will display bradycardia at this time [5].
Dengue can affect any person but appears to be more serious in immuno compromised people. Principal risk for infection with dengue is the bite of an infected mosquito. This is more probable in areas where the disease is endemic, especially where there is high population density, poor sanitation, and standing water where mosquitoes can breed. Chronic diseases – such as asthma, sickle cell anemia, and diabetes mellitus – increase the risk of developing a severe form of the disease. Other risk factors for severe disease include female sex, and high body mass index. The dengue fever can become more serious and can named as dengue hemorrhagic fever and dengue shock syndrome. Dengue hemorrhagic fever is more severe in which hemorrhages occur in the body it is a life threatening condition which cause internal bleeding and organ damage. Blood pressure can drop to dangerous levels, causing shock [6].
The incidence of dengue has grown dramatically around the world in recent decades, with cases reported to WHO increased from 5,05,430 cases in 2000 to 5.2 million in 2019. A vast majority of cases are asymptomatic or mild and self-managed, and hence the actual numbers of dengue cases are under reported. Many cases are also misdiagnosed as other febrile illnesses. After a slight decline of cases between the year 2020-2022 due to the COVID-19 pandemic and lower reporting rate, in 2023 [7].
Two transmission cycles maintain the dengue virus:- mosquito Cary the virus from non-human primate to non human primate, the mosquito carry virus from human to human, where one human being is already infectious with virus and another is healthy. Dengue begins abruptly after a typical incubation period of 5–7 days, and the course follows 3 phases: febrile, critical, and convalescent or recovery phase [8].
There are not specific antiviral drugs for dengue fever, things to do to recover from dengue fever fast are: Maintain adequate hydration, Keep symptoms under control, Avoid bleeding by taking Rest in bed, reduce risk of falls and injuries to avoid risk of unnecessary bleeding. Treatment depend on symptoms and could be treated completely if found in earlier time period. National dengue day is celebrated on May 16 every year to protect the people from this vector born disease [9].

Need of Study
The purpose of this study is to provide knowledge to slum area population about dengue fever and its preventive measures by giving standard teaching about the disease and how one can prevent it by maintaining personal and environmental hygiene and by certain home remedies.
As dengue is a vector born disease and it spreads on alarming rates globally people of slum areas are not aware about the methods by which one can help oneself to prevent from this mosquito borne disease so we are taking certain measures to provide knowledge about this dangerous disease and its prevention.
Dengue has emerged as a global threat, while scientist still known little about, how the virus infects cells and causes the disease. Most people with dengue recover without any ongoing problems. The mortality is 1-5% without treatment and less than 1% with adequate treatment, however severe disease carries a mortality of 26%. It has a disease burden up to 16000 disability adjusted life years per million populations which is similar to other childhood and tropical diseases such as Tuberculosis. The incidence of dengue has increased by 30 folds from 1960-2010. This increase believed to be due to urbanization, population growth, increased international travellers and global warming and is mostly emerging in slum population.
The slum population is not aware how to manage the waste property and there houses are surrounded by standing water which is the breeding house for mosquitoes. Urban slums are the hot spots for dengue. Rapid urbanization and deficient water management in recent years have led to an increase in mosquito breeding sites and thus, increased the risk of dengue in urban areas.
It is necessary to teach them how to get rid of mosquitoes and the deadly disease which are not well aware about the preventive measure so we found it necessary to educate them about its prevention.
Educating individuals about the signs, symptoms, transmission, and prevention of dengue fever, will empower people of slum area to take proactive measures and protect them from life threatening conditions caused by dengue like shock and severe dengue.

Problem Statement

A pre-experimental study to assess the effectiveness of structured teaching program on knowledge regarding dengue fever, and its prevention among slum population at selected area of District Mohali, Punjab.

Aim of the Study

The Aim of the study is to assess the effectiveness of structured teaching program regarding Dengue Fever among slum population at selected area of Distt. Mohali, Punjab.

Objectives of the Study

1. To develop tool to assess the Pre-Test knowledge regarding Dengue Fever and its prevention among slum population in selected areas of Distt. Mohali, Punjab.
2. To plan and implement structured teaching program on Dengue Fever & its prevention among slum Population at selected areas of Distt. Mohali, Punjab.
3. To compare the Pre-Test and Post-Test knowledge regarding the Dengue Fever & its prevention among slum population in selected areas of Distt. Mohali Punjab.
4. To determine the association of Pre-Test knowledge score regarding Dengue Fever & its prevention with selected demographic variables.
5. To disseminate the findings.

Operational Definitions

1. **Assess:** It refers to process of evaluating the effectiveness structured teaching program on knowledge regarding dengue fever among slum population at selected area of Distt. Mohali, Punjab.
2. **Effectiveness:** It refers to the knowledge gain as determined by in significant difference pre-test and post-test knowledge scores.
3. **Structured Teaching program:** It refers to systematically prepared teaching program for slum area population about the definition, causes, sign and symptoms, management, and its prevention.
4. **Knowledge:** It refers to provide knowledge and create awareness among people in slum area to decrease the prevalence rate of Dengue Fever.
5. **Dengue:** Dengue fever is transmitted by the bite of an Aedes mosquito infected with a dengue virus. The mosquito becomes infected when it bites a person with dengue in their blood.

Hypothesis

The Hypothesis is tested at 0.05 level of significance.

H_1: There is significant difference in the level of knowledge regarding prevention of dengue fever among slum population before & after the Structure teaching program.

H_2: There is significant association between pre-test & post level knowledge on prevention of dengue fever with demographic variable.

Delimitation

- The study is limited to slum population of selected slums.
- The study is bound to only one research setting with limited slum population.
- Those who are willing to participate.
- To any those who are present at the time of data collection.

Methodology

Research Approach

Research approach is a plan and procedure that consists of the steps of broad assumptions, detailed methods of data collection, analysis and interpretation. Quantitative approach will be used to assess the pre-experimental study to assess the effectiveness of structured teaching program regarding dengue fever among slum population at selected area of District. Mohali, Punjab.

Research Design

A research design is a functional or blueprint that includes the methods and procedures collecting and analysing the needed information in research study. The design for research was Pre-Experimental design. (One group pre-test post-test design). O_1, X and O_2.

O_1: Pre-test assessment on knowledge regarding Dengue Fever.

X: Structured Teaching Programme on knowledge regarding Dengue Fever.

O_2: Post-test assessment of knowledge regarding Dengue Fever.

Research Setting

The study was conducted among slum population in selected area of District Mohali, Punjab.

Population

Target Population: In the present study the population consist of 60 people in slum population at selected area of District. Mohali, Punjab.

Sample Size: A sample is part subset of population selected to participate in research study. The total sample size of the study was 60 residing in a slum area of District. Mohali, Punjab and fulfils the inclusion criteria.

Sampling Technique: The simple random sampling technique was used to collect the data. Verbal consent was taken from the subjects and they were informed regarding the study and its purpose.

Sampling Criteria

Inclusion criteria

- People of selected slum area of District. Mohali, Punjab was included.
- Male, female and transgender people was included.
- People who was willing to participate in study.
- People who was present at the time of data collection.

Exclusion criteria

- People who was not present at the time of data collection.

Variables

Independent variable: In this study, independent variable is structured teaching program.

Dependent variables: In this study, dependent variable is knowledge.

Selection and Development of Tool

The tool will be formulated according to the needs of the family.

Section A: Socio- Demographic Performa.

Section B: Self- structured questionnaire to assess the knowledge regarding prevention of dengue fever.
Section C: Structured Teaching Program.

Part 1: Socio-Demographic Variables
This sheet deals with the demographic variables of slum area population age 18-58 years such as age, gender, type of family, Occupation, Dietary Habitat, Environmental Hygiene and any previous knowledge about the topic.

Part 2: Questionnaire
This part consists of the total 34 questions in different areas such as risk factor, symptoms, major warning sign, diagnosis, complication and prevention for dengue fever. This instrument was used to identify the knowledge regarding dengue fever among slum population of selected areas of age 18-58 years.

Part 3: Structured Teaching Program
This part consists of structured teaching program on dengue fever and its prevention. Teaching was given with the use of power point presentation.

Scoring Procedure: It consists of 34 questions. Each question has four options in which 3 are distracted and one is the correct answer. Correct answer carries the score of one and distracters carries zero score. Maximum score was 34 and minimum score was 0 and the total score is 34.

By applying statistical formula, the level of knowledge is categorized as follows

Level of Knowledge	Score
Inadequate knowledge	0-11
Moderate knowledge	12-23
Adequate knowledge	24-34

Validity of tool
Content Validity
The prepared tool along with problems statement and objectives was sent to experts for the content validity which was from nursing field. All the suggestions of tool validation were incorporated and final tool was prepared after consultation with the research supervisor.

Reliability of Tool
It is a degree of consistency or dependability with which an instrument measures the attributes. Internal consistency of the tool was calculated by Split Half Method and Karl Pearson Method. The reliability of the tool was 0.86.

Pilot study
Pilot study was conducted to find out the practicability and feasibility of the tool. Simple random sampling technique was used to select the sample. Questionnaire was used to assess the knowledge. It was conducted on 10% of total sample size. The pilot study was conducted in Singha Devi Colony, Nayagaon, Mohali, Punjab. The researcher approached to target population and informed consent was taken from them, that they were willing to participate. Their confidentiality and anonymity were maintained while collecting information. It was found that tool was feasible.

Ethical Consideration
1. Written permission was taken from Sarpanch of Shaheed Udham Singh Colony, Nayagaon, Mohali, Punjab and from Municipal Corporation of Singha Devi Colony, Nayagaon, Mohali, Punjab.
2. Written permission was taken from Director Principal of Rayat Bahra College of Nursing Sahauran (Mohali).
3. Informed consent was taken from each study subject.
4. Confidentiality and anonymity of the subjects was maintained throughout study.

Procedure for data collection
The data collection for the study was done at selected slum areas of District Mohali. After getting the written permission from the head of the slum areas. The purpose of the study was explained to the subjects and informed consent was taken. The respondents were assured of confidentiality. The data was collected by using Questionnaire. By using the Simple Random Sampling Technique, 60- samples were selected to assess the knowledge regarding Dengue Fever and its preventions. Pre-test was taken, after pre-test Structured teaching Program was given after through lecture-cum-discussion with the use of charts, flash cards, and blackboard. On the seventh day, post-test was conducted using the same questionnaire. The time taken by each respondent at an average was 5-10 minutes. The data was collected from 60 people. The time of data collection will be from 9 am to 4 pm.

Ethical Consideration
- Written permission was taken from the Director Principal of Rayat Bahra College of Nursing.
- Written permission was taken from Principal of selected schools.
- Informed Consent was taken from each study subject.

Plan of Data Analysis
Data analysis and interpretation was done on the basis of objectives of the study through SPSS-21-software. The analysis was done by using descriptive and inferential statistics.
Descriptive statistics was used to analyse the Frequency, Percentage, Mean, Standard deviation. Inferential statistics was used to determine the effectiveness and comparison to identify the differences. It was presented in the forms of tables, charts, diagrams and graphs in the next chapter.
Table 2 depicts that in Pre-test majority of participants had In- adequate knowledge 37(61.7) where as in Post-test majority of participants had In-adequate knowledge 42(70%). Hence, findings indicate that the knowledge was increased after intervention.

Table 1: Frequency and percentage distribution of socio-demographic variables.

S. No.	Variables	Opts	Frequency	Percentage
1	Age	18-28 years	21	35.0%
		29-38 years	14	23.3%
		39-48 years	16	26.7%
		49-58 years	9	15.0%
2	Gender	Male	24	40.0%
		Female	34	56.7%
		Transgender	2	3.3%
3	Family Type	Joint	19	31.7%
		Nuclear	31	51.7%
		Extended	10	16.7%
4	Occupation	Employed	19	31.7%
		Self employed	28	46.7%
		Unemployed	13	21.7%
5	Previous Information	Yes	27	45.0%
		No	33	55.0%
6	Dietary Habitat	Vegetarian	9	15.0%
		Non vegetarian	27	45.0%
		Both	24	40.0%
7	Environmental Hygiene	Maintained	33	55.0%
		Not maintained	27	45.0%

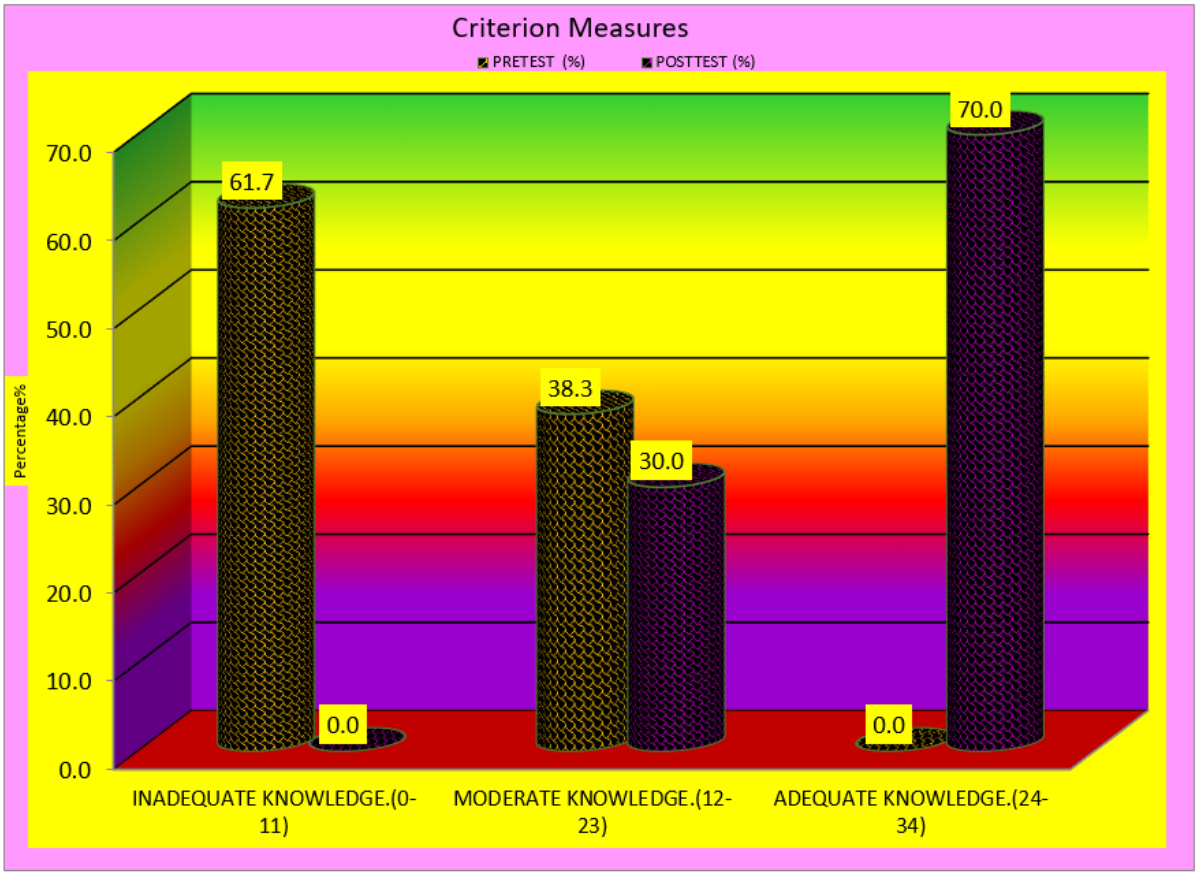

Fig 1: Cylindrical Diagram representing comparison of percentage distribution of pre-test and post-test level of knowledge

Table 2: Comparison of frequency & percentage distribution of pre-test and post-test level of knowledge

Criteria Measure of Knowledge Score		
Score Level (N= 60)	**Pre Test f(%)**	**Post Test f(%)**
Inadequate Knowledge (0-11)	37(61.7%)	0(0%)
Moderate Knowledge (12-23)	23(38.3%)	18(30%)
Adequate Knowledge (24-34)	0(0%)	42(70%)
Maximum Score=34 Minimum Score=0		

Table 3: Findings related to association of level of knowledge score regarding dengue fever among slum population with selected demographic variables.

Association of Pretest Knowledge Scores with Selected Socio-Demographic Variables.									
Variables	**Opts**	**Adequate Knowledge**	**Moderate Knowledge**	**Inadequate Knowledge**	**Chi Test**	**P Value**	**df**	**Table Value**	**Result**
Age	18-28 years	0	8	13	3.827	0.281	3	7.815	Not Significant
	29-38 years	0	7	7					
	39-48 years	0	7	9					
	49-58 years	0	1	8					
Gender	Male	0	10	14	1.356	0.508	2	5.991	Not Significant
	Female	0	13	21					
	Transgender	0	0	2					
Family Type	Joint	0	7	12	0.031	0.984	2	5.991	Not Significant
	Nuclear	0	12	19					
	Extended	0	4	6					
Occupation	Employed	0	7	12	0.029	0.986	2	5.991	Not Significant
	Self employed	0	11	17					
	Unemployed	0	5	8					
Previous Information	Yes	0	11	16	0.120	0.729	1	3.841	Not Significant
	No	0	12	21					
Dietary Habitat	Vegetarian	0	5	4	1.402	0.496	2	5.991	Not Significant
	Non vegetarian	0	10	17					
	Both	0	8	16					
Environmental Hygiene	Maintained	0	10	23	2.000	0.157	1	3.841	Not Significant
	Not maintained	0	13	14					

Table 3: Table showing association of level of Pre-test knowledge score regarding Dengue Fever among slum population with their selected demographic variables. The chi-square test was used to determine the association between the score levels and selected demographic variables

- There is no significant association between age groups (18-28 years, 29-38 years, 39-48 years, 49-58 years) and pretest knowledge scores (p-value = 0.281, df = 3). The chi-square test result is not significant at the 0.05 level.
- Similarly, there is no significant association between gender (Male, Female, Transgender) and pretest knowledge scores (p-value = 0.508, df = 2). The chi-square test result is not significant.
- There is no significant association between family type (Joint, Nuclear, Extended) and pretest knowledge scores (p-value = 0.984, df = 2). The chi-square test result is not significant.
- There is no significant association between occupation (Employed, Self-employed, Unemployed) and pretest knowledge scores (p-value = 0.986, df = 2). The chi-square test result is not significant.
- There is no significant association between previous information availability (Yes, No) and pretest knowledge scores (p-value = 0.729, df = 1). The chi-square test result is not significant.

There is no significant association between dietary habitat (Vegetarian, Non-vegetarian, Both) and pretest knowledge scores (p-value = 0.496, df = 2). The chi-square test result is not significant. There is no significant association between environmental hygiene (Maintained, Not maintained) and pretest knowledge scores (p-value = 0.157, df = 1). The chi-square test result is not significant.

Discussion

The present study has undertaken with a view to assess the knowledge regarding Dengue fever, and its prevention among slum population at selected area of Distt. Mohali, Punjab. The findings of the present study have been discussed in accordance with the objectives of research study.

We found that during pre test out of 60 people 68.7% had inadequate knowledge 38.3% had moderate knowledge and 0% had adequate knowledge but after giving standard teaching and taking post test out of 60 people 0% had inadequate knowledge 30% had moderate knowledge and 70% had adequate knowledge.

A study which was conducted in six districts of central Nepal. The study revealed that both the awareness about Dengue Fever and prevention measures were low. Among the surveyed participants, 40.6% had previously heard about DF with a significantly higher number in the lowland areas. Similarly, IDI and FGD participants from the lowland areas were aware about DF, and it's associated symptoms, hence they were adopting better preventive practices against DF. The findings of both the qualitative and quantitative data indicate that people residing in the lowland areas had better knowledge on DF compared to people in highland areas. All IDI participants perceived a higher chance of increasing future dengue outbreaks due to increasing temperature and the mobility of infected people from endemic to non-endemic areas. The most quoted sources of information were the television (71.8%) and radio (51.5%). Overall, only 2.3% of the HHS participants obtained high knowledge scores, 74.1% obtained high attitude scores and 21.2% obtained high preventive practice scores on DF.

A study which was conducted in village Payal, Ludhiyana, Punjab. In present study maximum of subjects i.e. 86% had good knowledge, 14% had average knowledge and none of the subject had poor knowledge regarding dengue fever. Regarding practice, it was found that maximum of subjects i.e. 98% had good practice and only 2% had poor practice regarding dengue fever. The study concluded that maximum of subjects i.e. 86% had good knowledge, 14% had average

knowledge and none of the subject had poor knowledge regarding dengue fever. Regarding practice, it was found that maximum of subjects i.e. 98% had good practice and only 2% had poor practice regarding dengue fever. Further it was found that there was statistically significant difference of knowledge score with age, gender, marital status and per capita income and in case of practice, there was statistically significant difference of practice score with marital status.

Conclusion

The conclusion was drawn on the basis of findings of the study. The findings showed that the post-test knowledge score was greater than pre-test knowledge score among the slum population of selected area. It showed that the structured teaching program was effective. Therefore, motivation and information were felt needs of people. Our finding highlight need for more intensive efforts to promote proper and effective knowledge regarding Dengue Fever. In the pre-test knowledge score, 67.1% people had inadequate knowledge, 38.3% people had moderate knowledge and 0% people had adequate knowledge. Whereas in post-test, 0% people had inadequate knowledge, 30% people had moderate knowledge and 60% people had adequate knowledge.

The chapter gives a brief account of present study including conclusion drawn from the finding, limitation, implications, and recommendations for future research. Major finding of the study showed most of the subjects (35.0%) were in age group of 18-28 years. Majority (56.7%) of the subject were females. Majority of subjects (46.7%) were self-employed. Majority of families (51.7%) were nuclear. Majority of subjects (45.0%) has previous knowledge about the topic dengue fever and it's prevention. Food pattern of major subjects (45.0%) were non vegetarian. Majority of subjects (55.0%) maintain environmental hygiene.

The findings of the present study showed that there were significant difference between pre-test and post-test knowledge and impact score of subjects post test mean knowledge score i.e. 25.03 was higher than the pre-test mean knowledge score i.e. 10.72. The mean difference in post test score and pre test score is 14.32.

This reveals the structured teaching program was effective to improve the knowledge regarding dengue fever and it's prevention. There was no significant association between pre intervention knowledge score with socio demographic variables i.e. age, gender, dietary habits, occupation, family type and environmental hygiene

Data was analyzed by using statistical and inferential test i.e. percentage, frequency. The data has been presented in the form of figure and tables and these are used to decipt some findings.

Recommendations

On the basis of the findings of the study it is offered that:

- The study can be replicated with large sample to generalize the findings.
- The study can be done in different settings.
- Studies can be conducted by using different health educational methods such as lectures.
- The same study can be done with an experiment research approach having a control group.
- The same study can be done on different sample.

Implications

Nursing Education

The Nursing educators utilize the study findings to enhance the knowledge of Nursing Students regarding Dengue Fever.

Nursing Practice

The Nursing educators utilize the study findings to improve the knowledge of Nursing Students regarding Dengue Fever to raise the standard of knowledge of Nursing Students.

Nursing Research

The Nursing researchers utilize the results to expand the scientific body of profession upon which further researchers can be conducted.

Nursing Administration

Nursing Administrators in the Nursing Institute can organize in-service education for other Nursing Students regarding Dengue Fever. Adequate information material regarding Dengue Fever.

Summary

This chapter deals with summery, limitations, conclusion, implication and recommendations based on the finding studies.

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Our research project has never become successful without the coordinated efforts of members involved. The satisfaction and pleasure that accompanies the successful completion of any task would be incomplete without the mention of the people who made it possible.

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