Effectiveness of Structured Teaching Programme on Hazards of Water Pollution

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Abstract

Water pollution occurs when unwanted material enter into water bodies (eg: lakes, rivers, sea, ponds, oceans) and contaminate the standard or quality of water. Humans and every one living species within the world are facing worst hazards of contaminated water. Raising awareness and knowledge regarding this issue is of great importance. At this point, environmental education on hazards of water pollution plays a key role. This study aims to assess the effectiveness of structured teaching program on knowledge regarding hazards of water pollution among undergraduate nursing students of Symbiosis College of nursing, Pune city. A pre-experimental one group pre-test post-test research study was conducted to assess the effectiveness of teaching. A structured questionnaire and checklist consists of total 30 question was the tool of the study to conduct the pre-test and post-test to the sample. From the results of pre-test it is evident that undergraduate students had average knowledge on hazards of water pollution and after the structured teaching program the results of post-test it is evident that students gained excellent knowledge regarding hazards of water pollution after teaching program. The main focus was to develop knowledge, skills and ways to shield the water through structured teaching program and absolutely was achieved.

Keywords: *water pollution, hazards, structured teaching programme, effectiveness, knowledge.*

Introduction

Water is that the essential element that creates life on earth possible. Without water there would be no life. Although 71% of the earth surface is covered with water only a tiny fraction of this water is available to us as fresh water. About 97% of the entire water available on earth is found in oceans and is just too salty for drinking or irrigation. The remaining 3% is fresh is fresh water. Of this 2.997% is locked in ice caps. Thus only 0.003% of the earth's total volume of water is easily available to us as lakes, groundwater, rivers, streams and wetlands. [1]

When the standard or composition of water changes directly or indirectly as a results of man's activities such it becomes unfit for any useful purpose is claimed to be polluted. Source of pollution can be readily identified and cannot be identified which is said to be as point and non-point sources of pollution. [2]

The major cause of water pollution are urban runoff, excess pesticides usage, industrial waste, oil spillage, sewage water and many improper way of using water in household. This lead to major hazards of water pollution like water borne disease, increase in mortality rate of under five children due to water borne disease, unfit drinking water, Arsenic poisonings, danger to marine life.While the foremost necessity is prevention, fixing effluent treatment plans and treating waste through these can reduce the pollution load within the recipient water. There is need for awareness of water pollution and its effects are essential so that we can act responsibly to protect and conserve water for future generations. [3]

Statement

A study to assess effectiveness of structured teaching program on knowledge regarding hazards of water pollution among undergraduate students of Symbiosis College of Nursing, Pune city.

Objectives

1) To assess the pre-test knowledge regarding hazards of water pollution among under-graduate students of Symbiosis College of Nursing of Pune City.

2) To assess the post-test knowledge regarding hazards of water pollution among under-graduate students of Symbiosis College of Nursing Pune City.

3) To determine the effectiveness of Structured Teaching Programme regarding hazards of water pollution among under-graduate students of Symbiosis College of Nursing Pune City.

4) To find out the association pre-test level of knowledge with their selected demographic variables.

Operational Defintion

- **Assess**

In this study it means the assessment of the effectiveness of Structured Teaching Program amongst under-graduate students of Symbiosis College of Nursing Pune City.

- **Effectiveness**

In this study effectiveness means improving the knowledge and practice regarding hazards of water pollution among under-graduate students of Symbiosis College of Nursing of Pune City.

- **STRUCTURED TEACHING PROGRAMME**

In this study it refers to systematically planned teaching programme designed to provide knowledge regarding hazards of water pollutions among under-graduated students of Symbiosis College of Nursing Pune City.

- Knowledge

In this study, knowledge means to understand the level of information, understanding and skills gained by the under-graduate students of Symbiosis College Nursing Pune City regarding the hazards of water pollutions.

- Hazards

In this study, hazards means those dangerous things that likely cause water pollution which knowledge is to be assessed among under-graduate students of Symbiosis College of Nursing Pune City.

- Water Pollution

In this study, it is referred to the assessment of the effectiveness of Structured Teaching Programme on knowledge regarding substances that are harmful to water among the under-graduate students of Symbiosis College of Nursing Pune City.

- Under-Graduate Students

In this study, under-graduate students are the students who the research will be carried out on regarding their knowledge on hazards of water pollution in Symbiosis College of Nursing Pune City.

ASSUMPTION:

- The structured teaching programme may have effectiveness on knowledge regarding hazards of water pollution among undergraduate students.

- The teaching activities may show them to protect and conserve water for future generations.

Research Design:

The selection of research design is the most important step as it provides the framework for the study.

Experiment Group	Pre-test	Teaching Program	Post test

Keeping in view the objective of the study, the research design selected for the study is pre-experimental one group pre-test post-test design. In this present study we have a one experiment group. We will assess the previous knowledge by conducting pre-test and provide a teaching program. After that we will conduct the post-test to assess the effectiveness of our structured teaching program.

In this study independent variable is structured teaching program and dependent variable is knowledge regarding hazards of water pollution among undergraduate students.

Setting of The Study

Symbiosis College of nursing which is located in Senapati Bapat road of Pune city is the setting of the study.

POPULATION:

The population of this study comprises of undergraduate students of Symbiosis College of nursing**,** Pune city.

SAMPLE

The sample of our study is undergraduate student of Symbiosis College of nursing.

Sample size:-

Sample size consists of 60 nursing students.

Criteria for selection of sample

The criteria that specify population characteristics are referred to as inclusion and exclusion criteria.

INCLUSION CRITERIA

- Nursing students of symbiosis college of nursing
- Those who understands English

EXCLUSION CRITERIA

- Those who are not willing to participate
- Those who were absent during data collection.

SAMPLING TECHNIQUE

Non-probability convenience sampling technique was used for selecting the sample for the research study.

DATA COLLECTION TECHNIQUE AND INSTRUMENTS:

This study is aimed at assessing the knowledge regarding hazards of water pollution among undergraduate nursing students through structured teaching program. Hence a self-structured questionnaire and checklist tool was prepared to collect the data.

DEVELOPMENT OF TOOL

Self-structured questionnaire and checklist was prepared to assess the effectiveness of structured teaching program regarding hazards of water pollution among undergraduate nursing students.

DECRIPTION OF TOOL

SECTION 1 - Demographic variable which comprised of name of the student, age, gender, marital status, Education, and household annual income and email-id of the student.

SECTION 2- self structured questionnaire consists of 20 question regarding hazards of water pollution.

SECTION 3- Checklist to know the views on hazards of water pollution.

CONTENT VALIDITY

To check the content validity of the tool it was submitted to seven experts. The experts were experience in clinical expertise, interest in the problem being studied. They were requested to give their opinion on the appropriateness and relevance of items in the tool. As a whole the suggestions and comments of experts included was to add demographic variables and grammatical corrections. The necessary modifications were made as per as the expert advice and tool was found to be relevant.

RELIABILITY:

Reliability is a degree to which an assessment tool produces stable and consistent results. An instrument is reliable to the extent that its measure reflect true scores that is, to the extent that measurement errors are absent from obtained scores.

Karl Pearson test-retest method was used to establish a reliability of structured questionnaire and checklist. Reliability was satisfactory and the value of knowledge obtained is 0.80.

DATA COLLECTION:

On day one we explained the purpose of our research

study to each students and instructions regarding the pre-test was given. Confidentiality of their response was assured. Pre-test response was received on the same day using the tool.

On day two we provided them a video presentation of our teaching program and a power point presentation file and made sure they watched the video and file.

On day three, post-test was taken using the same tool.

Analysis of Data

SECTION – I

Table - 1 Frequency and percentage distribution of samples on selected demographic variables.

n=60

Sr. no.	Demographic data	Frequency	Percentage (%)
1.	Age		
	● Less than 17	-	-
	● 17-20 year	32	53.3%
	● 20years and above	28	46.7%
2.	Gender		
	● Male	15	25%
	● Female	45	75%
	● Other	-	-
3.	Marital status		
	● Married	3	5%
	● Unmarried	57	95%
4.	Education		
	● Secondary school	1	1.7%
	● Higher secondary	9	15%
	● Undergraduate	50	83.3%
5.	Household annual income		
	● 50000-100000	27	45%
	● 100000-300000	18	30%
	● 300000 and above	15	25%

The data presented in the above table shows, no samples were found in the age group of less than 17, 32(53.3%) samples were in the age group of 17-20 years, and 28(46.7%) samples were in the age of 20years and above.

The above table shows, 15(25%) were male students, 45(75%) were female students and the other students were not there.

The above table demonstrates that 3(5%) of the students are married and 57(95%) of the students are unmarried.

Related to education, 1(1.7%) of the Nursing students were secondary school qualified, 9(15%) were higher secondary qualified, and 50(83.3%) were undergraduate.

The above table shows that 27(45%) of the samples household annual income is between 50,000-1,00,000, 18(30%) of the samples household annual income is between 1,00,000-3,00,0000, and 15(25%) of the samples household annual income is 3,00,000 and above.

SECTION- II

Table- 2 Distribution of samples according to the pretest knowledge scores of the nursing students regarding hazards of water pollution. (n=60)

	Pre-test	
Level of knowledge	**Frequency**	**Percentage (%)**
Excellent	20	33.33%
Good	38	63.33%
Poor	2	3.34%

Table- 2 shows the frequency and percentage distribution of samples according to the pre-test knowledge score of the nursing students regarding hazards of water pollution. It revealed that 20(33.33%) of the students have excellent knowledge, 38(63.33%) have good knowledge and 2(3.34%) of the Nursing students have poor knowledge regarding hazards of water pollution.

SECTION-III

Table- 3 Distribution of samples according to the post-test knowledge scores of the nursing students regarding hazards of water pollution. (n=60)

	Post-test	
Level of knowledge	**Frequency**	**Percentage (%)**
Excellent	34	56.66%
Good	26	43.34%
Poor	0	0

Table- 3 shows the frequency and percentage distribution of samples according to the post-test knowledge scores of the Nursing students regarding hazards of water pollution. It revealed that 34(56.66%) of the Nursing students have excellent knowledge and 26(43.34%) of the Nursing students have good knowledge.

SECTION-IV

Table-4 Comparison of the pre-test and post-test knowledge scores of the nursing students regarding hazards of water pollution.

To test the statistically significant difference between the mean pre-test and post-test knowledge scores of the Nursing students regarding hazards of water pollution. the following null hypothesis was stated.

Hypothesis-01

The mean post-test knowledge score is higher than the mean pre-test knowledge scores of the nursing students regarding hazards of water pollution. (n=60)

Knowledge	Mean	Mean difference	T-test value	Probability value
Pre-test	18.767	1.783	2.1845	P = 0.0107
Post test	20.55			

Table- 4 shows that, mean post-test knowledge score of the nursing students regarding hazards of water pollution are significantly higher than their mean pre-test knowledge scores. In order to find out the significant difference between the mean score of pre and post-test knowledge score of the nursing students regarding hazards of water pollution paired't' test was computed. The calculated value is higher than the table value (T-test value 2.1845), the null hypothesis was rejected, and the research hypothesis was accepted. Hence the researcher concluded that gain in knowledge is not by chance but by structured teaching program on hazards of water pollution.

SECTION V

Association between the pre- test knowledge and practice scores of the nursing students regarding hazards of water pollution and demographic variables

To identify the association between the pre-test knowledge scores on Nursing students and the selected demographic variables. The following null hypothesis was stated

HYPOTHESIS-02

There will be no significant association between the pre-test knowledge scores of Nursing student's knowledge and selected demographic variables.

Table-5 Association between the pre- test knowledge score of the nursing students regarding hazards of water pollution with the demographic variable (n=60)

Demographic Variable	Frequency numbers	Excellent	Good	Poor	Fisher's exact test
Age Less than 17 17-20 year 20years and above	 00 32 28	 00 11 09	 00 20 18	 00 01 01	1.0

Cont... **Table-5 Association between the pre- test knowledge score of the nursing students regarding hazards of water pollution with the demographic variable (**n=60)

Gender Male Female Other	 15 45 00	 05 15 00	 09 29 00	 01 01 00	 0.634
Marital status Married Unmarried	 03 57	 02 18	 01 37	 00 02	 0.346
Education Secondary school Higher secondary Undergraduate	 01 09 50	 00 03 17	 01 06 31	 00 00 02	 0.999
Household annual income 50000-100000 100000- 300000 300000 and above	 27 18 15	 10 05 05	 16 13 09	 01 00 01	 0.836

In the table-5 shown above, fisher's exact test is carried to find out the association between the knowledge of nursing students regarding hazards of water pollution and demographic variables. The result shows there is no significance association between age, gender, marital status, education, household annual income of the student.

Recommendation:

- A study can be conducted to assess the awareness of environmental issues among undergraduate students.

- A study can be conducted to assess the effectiveness of environmental science on school students.

Conclusion

The structured teaching program through presentation found to be effective in improving the knowledge regarding hazards of water pollution among undergraduate nursing students. Through this study, researchers have come to the statement of conclusion that nursing students had average knowledge before structured teaching programme regarding hazards of water pollution. Thereafter, the raised post test score gained from the structured teaching programme suggested effective in upgrading their knowledge about water pollution. Education activities on the hazards of water pollution is extremely important as it helps students to apply right attitudes when dealing with the environment.

Ethical Clearance:

- The study proposal was sanctioned by the ethical committee of Symbiosis college of Nursing.

- The study was explained to participants and informed consent was taken from the participants.

- Confidentiality of data collected was maintained.

Source of Funding: Self

Conflict of Interest:

There is a need to have teaching activities or raising awareness program regarding the environmental issue like water pollution among undergraduate students. Upgrading knowledge helps students understand

how their decisions and actions affect the renewable sources. The students will seek more knowledge about environment issue and this will help to conserve renewable resources, it also teaches about ways we can take action to keep our environment healthy and sustainable for the future. The need for sustainable development is a key to future mankind. This will empower them to protect and act responsibly towards environment.

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