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A Study to Assess the Effectiveness of Structured Teaching Program on Knowledge Regarding Primary Prevention of Oral Cancer among Adolescents, In Selected P.U Colleges, Bangalore

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Abstract

Introduction: Oral cancer is the most common cancer in India due to the high prevalence of tobacco chewing. Lifestyle changes can cause major health problems, due to lack of timely access to treatment, preventive measures, and health education, oral cancer remains one of the most common cancers. The present study was conducted to assess the knowledge regarding primary prevention of oral cancer and to find the effectiveness of structured teaching programs (STP) among adolescents.

Materials and methods: A pre-experimental one-group pre-test post-test design was selected. A total of 90 samples were selected through a simple random sampling technique. A self-administered questionnaire was used to assess the effectiveness of an STP on knowledge regarding primary prevention of oral cancer.

Results: The study findings showed that 75.6% of subjects had inadequate knowledge, and 24.4%subjects had moderately adequate knowledge before STP. Among the subjects, 65.6% had sufficient knowledge, and 34.4% had moderately adequate knowledge after STP. The mean score before STP was **9.97±2.533** and after STP was **17.97±1.814**. The obtained 't' value is -22.82, and the calculated p-value is 0.00 statistically significant at $p< 0.05$. A significant association exists between pre-test knowledge score and selected socio-demographic variables such as age, gender, and class. There is no significant association between knowledge score and other socio-demographic variables.

Conclusion: STP creates a highly visual learning environment that promotes understanding of concepts, activities, and expectations, effectively improving adolescent knowledge.

Keywords: Knowledge; primary prevention; oral cancer; adolescent.

Introduction

Globally, cancer affects people extensively. Oral cancer is among the top three cancers in India and is rapidly rising to the top of the global health priority list. According to Global Health Status, around 3.5 billion

individuals worldwide suffer from oral disorders, and three out of every four of them reside in middle-income nations.[1] The Global incidence of oral cancer of the lip and oral cavity is estimated to be 3,77,713 new cases and 1,77,757 deaths.[2]

In India, the total number of new lip and oral cavity cases accounts for 1,35,929, whereas males were affected by 1,04,661, females were affected by 31,268 and the total number of deaths was 75,290. The incidence rate of oral cancer is 38% higher in rural areas (22.4 per 1,00000 population) when compared to urban areas.[3]

The most recent estimates for oral cavity and oropharyngeal cancer in the United States are about 58,450 new cases of oral cavity or oropharyngeal cancer. Approximately 12,230 fatalities were due to oropharyngeal or mouth cancer.[4]

Cancer is an abnormal cell growth in any body part with the potential to invade or spread to other parts. Cancer that occurs in the oral cavity is called oral cancer. It can be benign or malignant. Benign are noncancerous and do not spread to the other organs. Malignant is cancerous and spread to other organ of the body. [5]

The following areas are most frequently affected by oral cavity and oropharyngeal cancer: the tongue, tonsils, oropharynx, gums, and floor of the mouth. Other regions include the lips and small salivary glands.[3]

As the most prevalent non-communicable disease worldwide, oral cancer affects people of all ages, genders, races, and socioeconomic backgrounds. Oral cancer is twice as common in men as in women because of the increased use of tobacco and alcohol. The risk factors for oral cancer include chewing tobacco, smoking, cigarettes, bidi, alcohol, betel nuts, human papillomavirus (HPV), and prolonged exposure to UV rays. Oral cancer is the most common cancer in India because of the high prevalence of tobacco chewing.[5]

In India, smokeless tobacco is the most widely used kind of tobacco. Products like khaini, gutkha, betel quid with tobacco, and zarda are often used. Bidis, cigarettes, and hookahs are examples of tobacco products that are smoked. Approximately one in every two men and two in five women smoke more than five cigarettes or bidis (hand-rolled cigarettes) daily.[6]

Whether at home or in public, over half (54.3%) of Indian youths (15–19 years old) are exposed to second-hand smoke.[7]

According to the World Bank, 82,000–99,000 children and adolescents worldwide begin smoking tobacco every day. Approximately half continue to smoke into adulthood, and half of adult smokers pass away prematurely due to tobacco-linked illnesses.[8]

Oral cancer is treatable and also preventable. Primary prevention helps to reduce morbidity and mortality rates. Therefore, there is ample opportunity for intervention before actual malignancy develops. Oral cancer responds well to treatment if detected early. When oral cancer is detected early and treated appropriately 5-year survival rate of oral cancer is approximately 90%. When oral cancer is detected at a later stage five years of survival decreases significantly.[5]

Objectives of the study

- To evaluate the effectiveness of a structured teaching program on knowledge regarding primary prevention of oral cancer.
- To find the association between knowledge of primary prevention of oral cancer with selected socio-demographic variables.

Materials and methods

Study Design: Pre-experimental one group pre-test post-test design

Variables

Independent variables: structured teaching program

Dependent variables: knowledge regarding primary prevention of oral cancer

Demographic variables: age, gender, class, religion, area of residence, father's occupation, mother's occupation, type of family, family monthly income, habit of alcohol consumption, habit of tobacco usage, heard about oral cancer, number of siblings, family history of oral cancer.

The setting of the study: Reva-pre University College, Bangalore

Sample size: The study sample comprised 90 students from Reva pre-university college, Bangalore, studying 1st and 2nd pre-university courses.

Sampling technique: Simple random sampling techniques

Criteria for sample selection

The sample was selected with the following pre-determined criteria.

Inclusion criteria

- The adolescent's age group is between 16 to 19 years
- Students who are willing to participate.

Exclusion criteria

- The college students who already attended the awareness programs and health education on oral cancer.
- Those who are clinically diagnosed with oral cancer.
- The students who are not available at the time of data collection.

Development of the tool

Through a review of the literature, discussion with experts, and the investigator's personal and professional experience the tool was developed and divided into two parts;

Section -A: Socio-demographic data:

The socio-demographic variables such as age, gender, class, religion, area of residence, father's occupation, mother's occupation, type of family, family monthly income, habit of alcohol consumption, habit of tobacco usage heard about oral cancer, number of siblings, and family history of oral cancer.

Section-B: Knowledge questionnaire:

The knowledge questionnaire consists of closed index questions about oral cancer and its primary prevention. A total number of 23 questions and the total score was 23. The calculated score was then converted to a percentage.

Validity

A blueprint of the tool along with the study objectives was prepared and submitted to the experts. The content validity of the tool was obtained from 9 experts, comprising 2 medical oncologists, 1 dentist, and 6 HODs of medical-surgical nursing departments in various colleges. The suggested corrections were considered and desired changes were carried out.

Reliability

The reliability of the tool was established by using Cronbach's alpha method. The reliability score obtained was r= 0.847, thus the r value was revealed, and the tool is reliable.

Ethical Clearance

Ethical clearance was obtained from the M.S Ramaiah University Ethics Committee for human trials on July 2023 (**Reference no: EC-23/31-PG-RINER)**

Pilot study

The pilot study was conducted from 11th January to 18th January 2024 at Ramaiah Pre-university College, Bangalore. A total number of 10 students were selected. On completion of the study, the result was found that the study was appropriate and feasible to conduct the main study.

Data Collection Procedure

The main study was conducted at Reva Pre-university College, Bangalore.

- Formal permission was obtained from the Principal of Ramaiah Institution of Nursing Education and Research and the Principal of Reva Pre-University College, Bangalore.
- The student researcher gave a self-introduction and the purpose of the study was explained to each subject and written consent was obtained from subjects and their parents those students age group below 18 years, to participate in the study. Student researchers assured the subjects that the data collected from them would be kept confidential.
- A total number of 90 samples were selected through simple random sampling techniques, with inclusion criteria. A structured questionnaire was used to gather data from the participants.
- Two teaching sessions were conducted for data collection. In each session, 45 students were there.
- A pre-test was conducted, and the average time taken was 15-20 minutes. Structured teaching programs were administered to the participants for 45 minutes, followed by 7-day intervals, and a post-test was conducted.

Statistical analysis

The data were analyzed using IBM SPSS version 20 and according to the study's objectives using both descriptive and inferential statistics.

a) Descriptive statistics

- Frequency distribution and percentage were used to describe the socio-demographic variables.
- Mean and standard deviation were used to describe the difference between pre-test and post-test scores.

b) Inferential statistics

- A paired t-test was used to compare pre-test and post-test scores before and after the structured teaching program.
- The chi-square test was used to determine the association between knowledge of primary prevention of oral cancer and socio-demographic variables.

Results

Table 1: Frequency and percentage distribution of subjects concerning socio-demographic variables n=90

Sn.	Socio-demographic variables	Frequency	Percentage
1.	Age in years		
	16 years	22	24.4
	17 years	32	35.6
	18 years	27	30
	19 years	9	10
2.	Gender		
	Male	50	55.6
	Female	40	44.4
3.	Class		
	1st pre-university course	45	50
	2nd pre-university course	45	50
4.	Religion		

	Hindu	78	86.7
	Muslim	10	11.1
	Christian	2	2.2
5.	Area of residence		
	Urban	80	88.9
	Rural	10	11.1
6.	Father's occupation		
	Unemployed	1	1.1
	Govt job	9	10
	Private job	45	50
	Farming/ other business	35	38.9
7.	Mother's occupations		
	Housewife	54	60
	Govt job	2	2.2
	Private job	16	17.8
	Farming /other job	18	20
8.	Type of family		
	Nuclear	72	80
	Joint	18	20
9.	Family monthly income		
	10,000-20,000	5	5.6
	20,000-40,000	26	28.9
	40,000-60,000	19	21.1
	>60,000	40	44.4
10.	A habit of alcohol consumption		
	Yes	6	6.7
	No	84	93.3
11.	Habit of tobacco usage		
	Yes	7	7.8
	No	83	92.2
12.	Heard about oral cancer		
	Yes	64	71.1
	No	26	28.9
	If yes, how did you get the information about oral cancer?		

	Media	51	56.7
	Physician	2	2.2
	Dentist	2	2.2
	Friend	9	10
13.	No of siblings		
	One	63	70
	Two	20	22.2
	Three	5	5.6
	four	2	2.2
14.	Family history of oral cancer		
	yes	4	4.4
	No	86	95.6

Table 1 depicts that, the majority of the subjects 35.6% belonged to the age of 17 years, the majority of the subjects (55.6%) were male, 50% of the subjects were enrolled in 1st and 2nd pre-university courses, 86.7% of subjects belonging to the Hindu religion, 88.9% of the subjects were urban residents and 50% of the subject's father's occupations were a private job, 60% of the subject's mothers were housewives, 80% of the subjects belonged to a nuclear family, 44.4% of subject's family monthly income was >60,000 and 93.3% of subjects do not have any habit of alcohol consumption, 92.2% of subjects do not have a habit of tobacco usage, more than half of the subjects (71.1%) heard about oral cancer, 56.7% of the subjects heard about oral cancer information through media, more than half of the subjects (70%) have one sibling, and 95.6% of subjects do not have a family history of oral cancer.

Table 2: Frequency and percentage distribution regarding level of knowledge in pre-test and post-test n=90

Pre-Test Level of Knowledge			
Sn.	Level of knowledge	Frequency	Percentage
1.	<50 inadequate	68	75.6
2.	51-75% moderately adequate	22	24.4
3.	>75%	0	0
Post-Test Level of Knowledge			
1.	<50%	0	0
2.	51-75% moderately adequate	31	34.4
3.	>75% adequate	59	65.6

Table 2 shows the frequency and percentage distribution of level of knowledge among adolescents regarding primary prevention of oral cancer, 75.6% of the subjects had inadequate knowledge during the pre-test, whereas 65.6% of the subjects had adequate knowledge after the post-test.

Table 3: Mean and standard deviation before and after structured teaching program (stp) by using paired t-test n=90

Paired T-Test Samples Statistics					
S. No.	Variables	Mean	Std. deviation	t-value	p-value
1.	Pre-test score	9.97	2.533	-22.825 (df=89)	0.000
	Post-test score	17.97	1.814		

The above table 3 shows that the pre-test mean score was 9.97 ± 2.53 and the post-test mean score was 17.97 ± 1.81. The obtained 't' value is 22.82, and the calculated p-value is 0.00 statistically significant at $p < 0.05$ levels. Hence the research hypothesis (H_1) states that "there is a significant improvement in knowledge after a structured teaching program" has been accepted.

Table 4: Association of pre-test level of knowledge with selected socio-demographic variables such as age, gender, and class n=90

S.N0.	Socio-demographic variables	Knowledge		Statistical analysis used (Chi-square/fishers exact test)	P value
		Inadequate	Moderately Adequate		
Age in years					
a)	16-17 years	45	9	4.422 df=1 S	.035
b)	18-19 years	23	13		
Gender					
a)	Male	32	18	.006 df=1 S	.004
b)	Female	36	4		
Class					
a)	1st pre-university course	39	6	.026 df=1 S	.013
b)	2nd pre-university course	29	16		

NS= not significant, S= significant, df= degree of freedom

Table 4 depicts that there is a significant association between pre-test knowledge and socio demographic factors such as age, gender, and class.

Discussion

The study findings revealed that out of 90 subjects, 68 (75.6%) had inadequate knowledge, 22 (24.4%) had moderately adequate knowledge regarding the primary prevention of oral cancer before STP, and after STP, 31(34.4%) of the subjects had moderately adequate knowledge and 59(65.6%) of the subjects had adequate knowledge regarding primary prevention of oral cancer. The mean score before STP was **9.97±2.533** and after STP was **17.97±1.814**, and the calculated 't' value was (-22.825) at a p-value of 0.00 thus there is a significant improvement in the knowledge after the structured teaching program. Also, hypothesis 1 (H_1) states that the

mean post-test knowledge score of the participants regarding primary prevention of oral cancer is significantly higher than the mean post-test knowledge score after the structured teaching program has been accepted.

A pre-experimental study was conducted on the effectiveness of a structured teaching program on knowledge regarding preventive measures of oral cancer among late adolescents in selected junior colleges, Karimnagar, Telangana, among 30 samples using a probability simple random sampling technique. The study results show that the mean score of the pre-test was **9.6±3**.14 and the post-test mean score was **17.43±4.64** after the structured teaching program. The computed t-value is 7.83 which is more than the table value of 1.701 at the 0.05 level. This reveals that there is a significant difference between pre and post-test.

The present study findings show that the chi-square value of gender and class studying is less than the table value (<0.05), which denotes a significant association between pre-test knowledge score and demographic variables such as age, gender, and class study. Whereas, the chi-square value of other variables is higher than the table value (>0.05) which denotes that there is no significant association between knowledge score and socio-demographic variables such as religion, area of residence, father occupation, mother occupation, type of family, family monthly income, a habit of alcohol consumption, tobacco usage, heard about oral cancer, number of siblings and family history of oral cancer.

These findings are consistent with the descriptive study conducted in the government higher secondary school in Kerala with 160 samples by using a convenience sampling technique in a study "Risk behavior and knowledge on oral cancer among adolescents". The study findings revealed that there was a significant association between age, and gender with the use of tobacco/ tobacco products ($p<0.05$). The calculated values are greater than the table values for gender ($p<0.01$) and area of residence ($p<0.01$), hence there is a significant association between gender and area of residence with the use of alcohol.

Limitation

This study is limited only to assessing knowledge and does not attempt to measure the attitudes and practices of adolescents regarding primary prevention of oral cancer.

Conclusion

- The study findings show that among 90 subjects, 75.6% of subjects had insufficient knowledge, and 24.4%subjects had moderately adequate knowledge before STP.
- The majority of the subjects 65.6% had sufficient knowledge, and 34.4% had moderately adequate knowledge after STP.
- The pre-test mean score before the intervention was 9.97±2.533 and the post-test mean score after the intervention was 17.97±1.814.
- The obtained 't' value is -22.82, and the calculated p-value is 0.00 statistically significant at $p< 0.05$.
- The chi-square value findings revealed a significant association between pre-test knowledge score and selected socio-demographic variables such as gender and class.
- There is no significant association between knowledge score and socio-demographic variables such as age, religion, area of residence, father's occupation, mother's occupation, type of family, family monthly income, a habit of alcohol consumption and tobacco usage, heard about oral cancer, number of siblings, and family history of oral cancer.

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