Original Article

Effectiveness of Video-Assisted Educational Program Regarding Prevention of Oral Mucositis among Patients Receiving Radiotherapy

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ABSTRACT

Objectives: Oral mucositis refers to erythematous and ulcerative lesions in the oral mucosa observed in patients with head and neck cancer receiving radiotherapy (RT). It is an acute complication or side effect of RT. The aim of the study was to assess the effectiveness of video assisted educational program regarding the prevention of oral mucositis in terms of knowledge and reported practices among patients receiving RT.

Materials and Methods: A quantitative approach, pre-experimental one group pre-test post-test design was used among 50 head and neck cancer patients coming to the radiation unit by non-probability purposive sampling technique. Structured knowledge interview schedule tools, that is, socio-demographic variables, knowledge MCQ's and reported practices rating scale were used. Data analysis was performed using Statistical Package for the Social Sciences version 20.

Results: The study findings reveal that there is a significant improvement in the level of knowledge of patients ($t = 4.54$, $P < 0.05$) and reported practices of patients ($t = 6.08$, $P < 0.05$) which proves that video-assisted educational program on oral mucositis prevention was effective in improving the knowledge and practices of head and neck cancer patients. The result shows a significant association of pre-test reported practices with the occupation of the patient. There is a moderately positive correlation (0.54) between knowledge and reported practices in pre-test and a strong positive correlation (0.76) between knowledge and reported practices in post-test.

Conclusion: The present study reveals that video-assisted educational program regarding the prevention of oral mucositis was effective in improving the knowledge and reported practices among head and neck cancer patients receiving RT.

Keywords: Video-assisted educational program, Oral mucositis, Knowledge, Reported practices, Radiotherapy

INTRODUCTION

Cancer is a set of diseases that involve the growth of cells abnormally with the possibility to spread or invade to other body parts. Throughout our lives, healthy cells in our bodies divide in a controllable manner and replace themselves in a fashion of control. The disease of cancer starts when cell functions and gets altered and it multiplies in an uncontrolled manner. A tumour or mass is composed of a cluster of such abnormal or uncontrollable growth cells. Most of the cancers are tumours, but not all tumours have the property of cancerous.[1]

According to the World Health Organisation, worldwide cancer is the second most leading cause of mortality whereas cardiovascular diseases remain the topmost cause of mortality.[2]

According to GLOBOCAN (global cancer incidence, mortality, and prevalence), IARC (international agency for research on cancer) released on 14 December 2020, the updated GLOBOCAN with new estimates on the global cancer burden, indicating that it has risen in cancer cases around 19.3 million and 10 million cancer deaths in 2020.[3]

Head and neck cancer is a cancers group that begins in the mouth, nose, larynx, throat, sinuses, or salivary glands. The most frequent type of head and neck cancer is squamous cell carcinoma or squamous cell cancer. About 9 in 10 head and neck cancer starts in the squamous cell.

In 2020, worldwide, head and neck cancer patients are having more than 650,000 cases and 330,000 deaths annually.[4]

In India, by the year 2020, head and neck cancer cases are estimated to be around 218,421 (19% of all cancers). Males are affected significantly more than females.[5]

Radiation therapy or radiotherapy (RT) is the treatment of choice which uses high doses of ionizing radiation, generally, as a part of the treatment of cancer to kill or control cancer cells and shrink the tumour and normally delivered by a medical linear accelerator (LINAC) that is used for external beam radiation (teletherapy treatments). It distributes high energy electrons or X-rays to the region of the patient's tumour.[6]

Oral mucositis refers to erythematosus and ulcers in the oral mucosa observed in patients who are having head and neck cancer and receiving RT. It is an acute complication or side effect of RT. This condition influences almost all patients with head and neck cancer receiving RT.[1]

It was revealed that proper oral care also resolved the oral mucositis condition among patients receiving radiation therapy. It is essential to study the knowledge and practices regarding the prevention of oral mucositis for addressing this problem in the health-care systems. For effective implementation regarding treatment and prevention of oral mucositis among head and neck cancer patients toward video-assisted educational program is essential.[7]

Hence, this research was undertaken to assess the effectiveness of video-assisted educational programs regarding the prevention of oral mucositis in terms of knowledge and reported practices among patients receiving RT at the radiation unit.

For this study, the conceptual frame work used was based on the general system theory by Bertanlanffy (1968). The objectives of the study were: (1) To assess and compare the knowledge regarding prevention of oral mucositis before and after video-assisted educational program, (2) to assess and compare the reported practices regarding prevention of oral mucositis before and after video assisted educational program, (3) to determine association of knowledge with selected demographic variables, (4) to determine association of reported practices with selected demographic variables and (5) to find out the correlation between knowledge and reported practices in pre-test and post-test.

MATERIALS AND METHODS

A quantitative approach with a pre-experimental one group pre-test post-test research design was used among 50 head and neck cancer patients coming to the radiation unit, AIIMS, Jodhpur. Non-probability purposive sampling technique was used.

In video-assisted educational program, the researcher was asked to use a self-prepared animated video regarding the prevention of oral mucositis among patients receiving RT. Content validity of the video was established by taking the expert's opinion. On the 1st day, a pre-test was done. After

taking the pre-test, 4 min 15 s video-assisted educational program on oral mucositis was delivered in Hindi. It had covered the introduction of self and the oral mucositis, causes of the oral mucositis, assessment and diagnosis of the oral mucositis, dietary management in oral mucositis, oral hygiene and brushing, mouthwash in oral mucositis prevention, prohibition of smoking, alcohol, and other substances and follow-ups. After 7 days, a post-test was conducted.

Inclusion criteria were: The patients having head and neck cancer, receiving RT (teletherapy), age more than 18 years, who was able to understand and speak Hindi language, and who was willing to participate in the study.

Three structured knowledge interview schedule tools, that is, socio-demographic data, knowledge MCQ's and reported practices rating scale were used. Knowledge level was categorised as poor (score<10), average (score 11–15), and good (score 16–20). The level of reported practices was categorised as poor (score 20–40), average (score 41–50), and good (score 51–60). Informed consent was obtained from adult research participants and participant information sheet was provided and confidentiality of subjects was ensured. Data were collected by face-to-face interviews. Ethical approval was taken from the institutional ethical committee (certificate reference number – AIIMS/IEC/2020-21/3000, dated 01/06/2020).

The tool was translated into Hindi. Knowledge MCQ's (0.90) and reported practices rating scale (0.96) content validity was determined by scale content validity index.

Internal consistency of knowledge MCQ's was determined by Kuder Richardson 20 (reliability 0.81) and the reported practices rating scale was determined by Cronbach's Alpha (reliability 0.77).

The pilot study was conducted among ten patients receiving RT at the radiation unit. Data collection for the pilot study was completed in 2 weeks from 31 August 2020 to 12 September 2020. During the pilot study no as such major problem was encountered. Average 5–10 min was taken to collect data from each patient. These patients were excluded during the main data collection of the study.

RESULTS

Analysis and interpretation of data were done based on the objectives and hypothesis of the study. Data were categorised and analysed using a statistical package for social sciences version 20. Quantitative data analysis included descriptive statistics, that is, Mean, frequency, percentage, and standard deviation. In inferential statistics, that is, Parametric tests such as paired t-tests used to assess the research hypothesis and effectiveness of video assisted educational programs on knowledge and reported practices regarding oral mucositis prevention among patients receiving RT and non-parametric tests like fisher's exact test used to assess the association of patient's knowledge and reported practices with selected

socio-demographic variables. Probability (*P*-value) < 0.05 considered statistically significant and < 0.001 considered as highly statistically significant.

Data presented in [Table 1] depict the socio-demographic details of the patients under study. About 36% of the patients were of the age group of 60–69 years. The majority of patients (56%) were men whereas 44% patients were women. Nearly one third (34%) of patients were educated up to the primary level and about 28% were having a government job. Family income-wise 42% of patients were having more than 20,000/month. Most of the patients (70%) belong to urban areas.

Data presented in [Table 2] depict mean and standard deviation of level of knowledge in pre-test and post-test. [Table 2] depicts that the mean level of knowledge in the post-test (12.64 ± 4.62) was higher than the level of knowledge in the pre-test (11.18 ± 4.84). This shows that a video-assisted educational program was effective in upgrading knowledge regarding oral mucositis prevention in patients receiving RT.

Data presented in [Table 3] depict mean and standard deviation of level of reported practices in pre-test and post-test. [Table 3] depicts that the mean level of reported practices in the post-test (45.62 ± 8.10) was higher than the level of reported practices in the pre-test (43.3 ± 9.63). This shows that a video-assisted educational program was effective in improving practices regarding oral mucositis prevention among patients receiving RT.

Data presented in [Table 4] depict the comparison of pre-test and post-test levels of knowledge. For testing the hypothesis, paired t-test was used and findings showed that the highly significant (*P* = 0.000) difference was observed between the pre-test and post-test level of knowledge.

Data presented in [Table 5] depict a comparison of pre-test and post-test levels of reported practices. For testing the hypothesis, paired t-test was used and results showed that the highly significant (*P* = 0.000) difference was observed between the pre-test and post-test levels of reported practices.

[Table 6] depicts the association of level of knowledge with selected socio-demographic variables using fisher's exact test. The findings clearly reveal that there was no significant association of level of knowledge with age, gender, education level of the patient, occupation of patient, family income, and residential area.

[Table 7] depicts the association of level of reported practices with selected socio-demographic variables using fisher's exact test. The findings reveal that there was a significant association of level of reported practices with the occupation of the patient (*P* = 0.05) whereas other socio-demographic variables, that is, age, gender, education level of the patient, family income per month, and residential area were not significant.

[Table 8] depicts the correlation between the knowledge and reported practices regarding oral mucositis prevention

Table 1: Frequency and percentage distribution of patient as per socio-demographic variables. *n*=50.

Socio-demographic variables	Frequency (f)	Percentage
Age (years)		
18–39	8	16
40–59	14	28
60–69	18	36
More than 70	10	20
Gender		
Men	28	56
Women	22	44
Educational level		
Illiterate	10	20
Primary school	17	34
High school	13	26
Graduate and above	10	20
Occupation		
Farmer	10	20
Housewife	13	26
Private job	11	22
Government job	14	28
Others/self-employment	2	4
Family income (per month)		
≤10000 rs	6	12
10001–15000rs	9	18
15001–20000rs	14	28
≥20001rs	21	42
Residential area		
Urban	35	70
Rural	15	30

Table 2: Level of knowledge regarding oral mucositis prevention among patients receiving radiotherapy. *n*=50.

Level of knowledge	Frequency f (%)		Mean±SD	
	Pre-test	Post-test	Pre-test	Post-test
Poor (0–10)	17 (34)	11 (22)	11.18±4.84	12.64±4.62
Average (11–15)	24 (48)	25 (50)		
Good (16–20)	9 (18)	14 (28)		

Maximum score – 20, minimum score – 0

among patients receiving RT in pre-test using Karl Pearson formula. The result shows a moderately positive correlation between the knowledge and reported practices in the pre-test at r = 0.54. [Table 9] depicts the correlation between the knowledge and reported practices regarding oral mucositis prevention among patients receiving RT in post-test using Karl Pearson formula. The result shows a strong positive correlation between the knowledge and reported practices in post-test at r = 0.76.

Table 3: Level of reported practices regarding oral mucositis prevention among patients receiving radiotherapy. *n*=50.

Level of reported practices	Frequency f (%)		Mean±SD	
	Pre-test	Post-test	Pre-test	Post-test
Poor (20–40)	15 (30)	8 (16)	43.3±9.63	45.62±8.10
Average (41–50)	23 (46)	29 (58)		
Good (51–60)	12 (24)	13 (26)		

Maximum score – 60, minimum score – 20

Table 4: Comparison of knowledge score between pre-test and post-test regarding oral mucositis prevention among patients receiving radiotherapy. *n*=50.

	Mean±SD	Df	T	*P*-value
Pre-test	11.18±4.84	49	4.54	0.000*
Post-test	12.64±4.62			

(Level of significance *P*<0.05), *: Significant

Table 5: Comparison of reported practices score between pre-test and post-test regarding oral mucositis prevention among patients receiving radiotherapy. *n*=50.

	Mean±SD	Df	T	*P*-value
Pre-test	43.3±9.63	49	6.08	0.000*
Post-test	45.62±8.10			

(Level of significance *P*<0.05), *: Significant

DISCUSSION

The study was conducted to assess the effectiveness of the video-assisted educational program on knowledge and reported practices regarding oral mucositis prevention among patients receiving RT.

According to the results of the study, in socio-demographic variables, the patients of oral mucositis were higher in males (56%) than females (44%), which was similar to the results of a study concluded in Jordan regarding knowledge and practices regarding oral mucositis among cancer patients.[8]

The results of the present study indicated that there was a significant difference between the mean of the patient's knowledge before and after the intervention (*P* < 0.05); therefore, the video-assisted educational program increased the patient's knowledge after the intervention. The findings of the research indicate that using the new educational method for educating head and neck cancer patients can increase their knowledge. The findings of our study support another study which

was conducted by Yuce *et al.* The results revealed that the experimental group had decreased frequency of oral mucositis as compared to the control group at *P* < 0.05.[9] A study conducted by Potting *et al.* the result of the study revealed that there was a statistically significant difference observed in the knowledge and skill scores before and after the implementing education in the experimental group, whereas there was no statistically significant difference observed in the control group, where no education was provided to the participants.[10]

The study revealed that there was no significant association of knowledge with the socio-demographic variables. It also revealed that video-assisted educational program was effective in upgrading the knowledge of patients with a *t*-value of 4.54 and *P* < 0.05 which was indistinguishable from the results of the study conducted by Khanagar *et al.* in which there was a significant improvement in the knowledge regarding oral health among the caregivers and status of oral hygiene of the elderly residents after the intervention. This research clearly revealed that effective implementation of education should be included by the nurses in the routine care of patients who were receiving RT among head and neck cancer patients.[11]

The results of the study showed that there was a significant improvement in practices of head and neck cancer patients after the intervention. Potting *et al.* carried out a study to evaluate the education effectiveness on knowledge and practices. The study showed that there was a statistically significant difference observed in the knowledge and skill scores before and after the implementing education in the experimental group, whereas there was no statistically significant difference observed in the control group, where no education was provided to the participants.[10]

The study showed that there was a significant association of reported practices with the occupation of the patient. Radha and Namrata carried out research to estimate the knowledge and practices regarding oral care among the patients who were receiving chemotherapy. The result revealed that there was a significant association between socio-demographic data with practice - age and education of the patient.[1]

The study finding revealed a moderately positive correlation (r = 0.54) of knowledge with reported practices in pre-test and a strong positive correlation (r = 0.76) of knowledge with reported practices in post-test. Shanbhog *et al.* carried out a study to estimate knowledge, attitude, and practices on oral hygiene of handicapped children. The result of the research revealed that the correlation of knowledge with attitude was highly significant with negative value and practices with attitude were also highly significant with a negative value at *P* < 0.001.[12]

Oral mucositis can be effectively managed and prevented by taking various preventive measures such as taking a soft

Table 6: Association of level of knowledge among patients with selected socio-demographic variables. *n*=50.

Socio-demographic variables	Level of knowledge			Df	Fisher's exact test	*P*-value
	Poor	Average	Good			
Age (years)						
18–39	2	4	2	6	2.48	0.90[ns]
40–59	6	5	3			
60–69	6	10	2			
More than 70	3	5	2			
Gender						
Men	11	10	7	2	4.07	0.15[ns]
Women	6	14	2			
Educational level						
Illiterate	6	3	1	6	6.15	0.4[ns]
Primary school	7	7	3			
High school	2	8	3			
Graduate and above	2	6	2			
Occupation						
Farmer	4	4	2	8	4.22	0.64[ns]
Homemaker	6	4	3			
Private job	4	5	2			
Government job	2	10	2			
Others/self-employment	1	1	-			
Family income (per month)						
≤10000 rs	3	2	1	6	4.14	0.69[ns]
10001–15000rs	5	3	1			
15001–20000rs	4	8	2			
≥20001rs	5	11	5			
Residential area						
Urban	10	18	7	2	1.49	0.51[ns]
Rural	7	6	2			

(level of significance P<0.05), [ns]- non significant

diet and good oral hygiene. The study findings indicate that there was a significant increase in knowledge and reported practices after the implementation of video-assisted educational programs. Proper education is essential for facilitating quality learning among patients of any age group, caste, creed, religion, and region. It is the process of achieving knowledge, skills, values, beliefs, and moral habits.

Strength of the study

Animated video on oral mucositis was prepared from a brief review of literature, books and suggestions from experts. With an emphasis on correct knowledge and practices related to oral mucositis which can help the patients to prevent oral mucositis during radiation therapy. The video was used in the radiation unit department to educate the head and neck cancer patients receiving RT regarding the prevention of oral mucositis. The present study would help to understand the level of knowledge and reported practices of patients with head and neck cancer receiving RT. The study also emphasises the need for education to upgrade the knowledge and reported practices of patients with head and neck cancer receiving RT.

Limitation of the study

Research findings cannot be generalised as only a single setting was selected to conduct the study and the study did not use a control group. The researcher had no control over the events that took place between pre-test and post-test.

Implication and recommendations

The findings of the study have implications on nursing practice, nursing education, nursing administration, and nursing research.

On the basis of findings of the study, it is recommended that: A research can be conducted on a large sample and in different setting thereby findings can be generalised for a large population, a study can be conducted on interventional and control group by using interventions such as information booklet and structured teaching programs regarding prevention and management of oral mucositis, a study with an intervention of longer duration can be evaluated to get a clear picture, randomised control trial can be done, multi-centre research can be done, research can be conducted for the future research to seek systematic research and

Table 7: Association of level of reported practices among patients receiving radiotherapy with selected socio-demographical variables. *n*=50.

Socio-demographic variables	Level of reported practices			Df	Fisher's exact test	*P*-value
	Poor	Average	Good			
Age (years)						
18–39	1	5	2	6	2.40	0.92^{ns}
40–59	4	7	3			
60–69	6	7	5			
More than 70	4	4	2			
Gender						
Men	12	10	6	2	5.15	0.07^{ns}
Women	3	13	6			
Educational level						
Illiterate	6	3	1	6	10.06	0.11^{ns}
Primary school	6	7	4			
High school	2	9	2			
Graduate and above	1	4	5			
Occupation						
Farmer	5	5	-	8	13.54	0.05*
Homemaker	5	4	4			
Private job	2	5	4			
Government job	1	9	4			
Others/self-employment	2	-	-			
Family income (per month)						
≤10000 rs	2	2	2	6	3.08	0.84^{ns}
10001–15000rs	3	5	1			
15001–20000rs	4	5	5			
≥20001rs	6	11	4			
Residential area						
Urban	11	16	8	2	0.24	1.00^{ns}
Rural	4	7	4			

(Level of significance *P*<0.05), ns: Non significant, *: Significant

Table 8: Correlation between knowledge and reported practices regarding oral mucositis prevention among patients receiving radiotherapy in pre-test.

	Mean	SD	R
Knowledge	11.18	4.84	0.54
Reported practices	43.3	9.63	

Table 9: Correlation between knowledge and reported practices regarding oral mucositis prevention among patients receiving radiotherapy in post-test.

	Mean	SD	R
Knowledge	12.64	4.62	0.76
Reported practices	45.62	8.10	

intervention to discover a better understanding of disease and prevention and video can be used to impart continuing education program for the nursing personnel.

CONCLUSION

The result of the study indicates that after implementation of video-assisted educational program patients gained knowledge and improved practices regarding the prevention of oral mucositis. Physicians and nurses should always pay attention to educate the patients suffering from head and neck cancer about oral mucositis, its sign, and symptoms, management, and prevention. The video-assisted educational program will help in bridging this gap which will further help in improving the overall knowledge and practices of patients. There is a high incidence of oral mucositis occurs in palliative care patients. Most of the patients lose their communication ability because of oral mucositis. This study helps palliative patients to treat, manage and prevent oral mucositis.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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