RESEARCH ARTICLE

ASSESSMENT OF PREVALENCE AND MEASURES TO MANAGE ORAL MUCOSITIS AMONG RADIATION THERAPY PATIENTS AT TERTIARY CARE CENTER OF ANDHRA PRADESH

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ABSTRACT

Objectives:
⌡ To assess the prevalence and measures to manage oral mucositis among patients receiving radiation therapy.
⌡ To find out the association between prevalence & measures to manage oral mucositis among clients receiving radiation therapy with their selected socio-demographic variables.
Material and methods: The present study was a cross-sectional descriptive research design with non-probability convenient sampling technique was used which 176 patients who are receiving radiation therapy, SVIMS, Tirupati. Data was collected by using demographic variables and WHO oral mucositis grading scale (2004) and data was analyzed by using mean, standard deviation, chi-square test.
Results: The study findings revealed that participants 49% are having mild oral mucositis, 41% are having moderate oral mucositis and 10% are having severe oral mucositis. The mean and standard deviation shows the grade of oral mucositis was 1.61 ± 0.666.
Conclusion: The study findings concluded that 49% were having mild oral mucositis. Patients developed a positive attitude towards measures to manage oral mucositis by instructional pamphlet. So, certain measures can be useful in the prevention of oral mucositis in all the patients receiving radiation therapy.

INTRODUCTION

"Never say 'No'; for you are infinite. All the power is within you .You can do anything"

-Swami Vivekananda

Cancer is a group of disease involving abnormal cell growth with the potential to invade or spread to other parts of the body. These benign tumors, which do not spread possible signs and symptoms, include a lump, abnormal bleeding, prolonged cough, unexplained weight loss and a change in bowel movements. There were 17 million new cases of cancer worldwide in 2018. Cancer is the second leading cause of death globally, and is responsible for an estimated 9.6 million deaths in 2018. Globally, about 1 in 6 deaths are due to cancer.

The four most common cancers occurring worldwide are lung, female breast, bowel and prostate cancer. Worldwide there will be 27.5 million new cases of cancer each year by 2040[1]. Oral mucositis refers to erythematous and ulcerative lesions of the oral mucosa observed in patients with cancer being treated with chemotherapy or with radiation therapy to fields involving the oral cavity. It is a painful condition in patients with cancer, as small patches to big ulceration and hemorrhage in oral mucosa [2]. The prevalence of mucositis is 40-100% dependent on the type of cancer and therapy used. In 40% of chemotherapy and in 100% of radiotherapy treated patients, mucositis happened. Oral mucositis not only damages the epithelial cells but also the local tissue reaction causes damages from reactive oxygen species & inflammatory cytokines which finally results in sub mucosal tissue damage. Oral mucositis appears in oral mucosa after the fifth to tenth after radiotherapy or chemotherapy. It manifests as a burning sensation to ulcer formation that affect the quality of life of patients by producing pain and discomfort for swallowing which ultimately leads to malnutrition and dehydration[3].

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The severity of mucositis can range from mild erythema to severe ulceration and bleeding. Visible changes associated with mucositis include erythema, ulceration and pseudo membrane formation. Patients with membrane changes experience varying degrees of pain & changes in function including difficulty speaking and swallowing. As a result, patients focus on the symptoms that affect quality of life rather than the risk of life-threatening infection that is of concern to healthcare professionals. Some tips that may help the patient to manage acute side effects; Don't wash off our marks from the radiation simulation. These help us ensure were direction the radiation to the right place during the treatment; clean the skin gently with warm water and a mild soap. Avoid using powders, perfumes, lotions, aluminum deodorants and products containing alcohol in the treatment area unless approved by oncology nurse; avoid putting anything hot (heating pads) or cold (ice packs) directly on the treated skin. If spend time outside, wear a hat or clothing to protect skin. Many cancer patients face malnutrition .while certain types of radiation therapy may require a change in patient diet to minimize side effects like malnutrition and nausea, it's important to maintain weight. Prevention and management options of oral mucositis include: oral hygiene maintenance- locally applied agents (glycyrrhetinic acid /sodium hyaluronate gel), cryotherapy, keratinocyte growth factor (manganese superoxide dismutase) Amifostine (local anesthetics) Helium –neon laster (oral and systemic anesthetics), anti bacterials, antifungal and anti virals[3].

MATERIALS AND METHODS

Study Design: The study was a cross-sectional descriptive research design with a non-probability convenient sampling technique was performed among 176 patients receiving radiation therapy, SVIMS, Tirupati.

Eligibility Criteria: The criteria were as following: Patients who were receiving radiation therapy, age more than 18 years and who were willing to participate in the study and available at the time of data collection .Patients receiving both radiation and chemotherapy and deterioration of other diseases (such as Renal disorders) were excluded in the study.

Procedure: Prior permission was obtained from head of the department of Radiation Oncology to conduct the study 176 samples were selected by non-probability convenient sampling technique with minimum of 10-15 cases per day from 8am to 4pm.The investigator made them to sit comfortably and introduces herself to each participant and explained the purpose of the study and took a written consent and administered the questionnaire to the patients through interview schedule and response of the participants were recorded. The data collection work took 10-15 minutes from each participant .After completion of data collection with help of A.V Aids the investigator explained measures to manage oral mucositis and then distributed an instructional pamphlet to each participant for future references and thanked them for their cooperation .The same procedure was followed for all 176 samples.

Instruments: The data was collected via the demographic characteristics questionnaire which included 15 questions, with 8 personal information questions such as age, gender, religion, marital status, occupation, residence, family monthly income and type of family and 7 questions related to the

disease such as family history of cancer, relationship with the patient, diagnosis of cancer, underwent any other treatment modality for cancer, if yes which modality, number of fractions –radiation therapy and information regarding oral mucositis and WHO Oral mucositis grading scale (2004). Items were measured by WHO scoring grades their score was from 0 to 4.The reliability of questionnaire was established by split half method with Karl Pearson correlation formula with r=0.7.

Statistical Analysis: SPSS version 12.0 for windows was used to analyze the data. To describe the characteristics of research units, firstly the descriptive statistics including central (mean & standard deviation) indicators and frequency distribution were calculated .Then chi-square test analysis were done for analysis of main variables.

RESULTS

Demographic characteristics: Altogether 176 cancer patients were participated in the present study shows majority i.e., 40.9% were in the age group of 41-50 Years, 50.6% are females, 76.7% are Hindus, 92.0% are married, 30.7% are un-employees, 58.0% participants are from rural area, 50% belongs to nuclear family, 50.6% having monthly income of Rs.4001/- to 8000/-, 72.7% are not having a family history of cancer, 57.4% had undergone other treatment modalities (chemo therapy, surgery) and 36.4% have received other treatment modalities(chemo therapy, surgery) by 3-4 times, 83.5% are having information regarding radiation therapy side effects through different sources (Table 1).

Distribution of prevalence and measures to manage Oral mucositis among patients receiving radiation therapy: With respect to prevalence the participants 49% of the patients are having mild oral mucositis, 41% of the patients are having moderate oral mucositis and 10% of the patients are having severe oral mucositis. The mean and standard deviation of total grades of oral mucositis was 1.61and 0.666.(Table-2).

Item wise analysis of checklist on measures to manage oral mucositis: Among the total sample of 176 patients 91.5% are able to check oral cavity daily,66.5% are able to brush their teeth,73.9% are able to rinse oral cavity daily,61.4% are maintaining adequate hydration,68.8% noticed change in the taste perception,63.6% had difficulty in swallowing because of oral sores,65.3% had altered diet pattern,55.7% has speech restriction because of mouth sores,54.5% difficulty in speaking, 40.3% are having mouth pain,61.5% are using vitamin supplements,66.5% are using local applicants for oral mucositis (Table-3).

Association between demographic variables with prevalence& measures to manage oral mucositis among clients receiving radiation therapy: The association of demographic variables with prevalence & measures to manage oral mucositis among clients receiving radiation therapy age shows significant association at p<0.01 level and gender, diagnosis of cancer, client had undergone any other treatment modality, previous radiation therapy at p<0.05 level. The other variables were not found to have any significant association with level of selected side effects of radiation therapy (Table-4).

Table 1. Frequency percentage distribution of demographic variables among patients receiving radiation therapy

S.no	Demographic variable		No. of Patients	Percentage
1.	Age	< 30 Years	9	5.1
		31 - 40 Years	32	18.2
		41 - 50 Years	72	40.9
		51 - 60 Years	52	29.5
		Above 60 Years	11	6.3
2.	Gender	Male	87	49.4
		Female	89	50.6
3	Religion	Hindu	135	76.7
		Muslim	34	19.3
		Christian	7	4.0
4	Martial Status	Married	162	92.0
		Unmarried	14	8.0
		Separated/divorced	0	0.0
		Widow/Widower	0	0.0
5	Occupation	Home Maker	50	28.4
		Un employee	54	30.7
		Coolie	24	13.6
		Private Employee	44	25.0
		Govt. employee	1	.6
		Retired	3	1.7
6.	Residence	Rural	102	58.0
		Urban	55	31.3
		Semi-urban	19	10.8
		Urban slums	0	0.0
7.	Type of Family	Nuclear family		88
		Joint family		56
		Extended family		32
8.	Monthly income	Below 4000	44	50.0
		4001 – 8000	89	31.8
		8001- 12000	32	18.2
		Above 12000	11	
9.	Family History	Yes	48	25.0
		No	128	50.6
				18.2
				6.3
10.	If Yes Relationship	No Response	128	27.3
		Twins/ siblings	14	72.7
		Grand Parents	3	
		Mother/father	1	
		Close relative	30	
11	Cancer diagnosis	Below 2 times	52	72.7
		3 - 4 times	64	8.0
		5 – 6 times	36	1.7
		Above 6 times	24	.6
				17.0
12	Client Had undergone	Yes	101	29.5
		No	75	36.4
				20.5
				13.6
13	If yes Among	No Response	101	57.4
		Surgery	33	42.6
		Chemotherapy	42	
14.	Radiation Therapy	Nil	101	57.4
		1	48	27.3
		2	9	5.1
		3	11	6.3
		4	4	2.3
		5	3	1.7
15.	Information Regarding radiation	Television	0	0
		Newspaper	1	6
		Internet	28	15.9
		Other source	147	83.5

Table 2. Frequency and percentage distribution of participants on Prevalence and Measures to manage Oral Mucositis among patients receiving radiation therapy

				n=176
Prevalence And Measures To Manage Oral Mucositis Among Patients Receiving Radiation Therapy	Frequency (f)	Percentage (%)	Mean	SD
Mild	86	49	1.61	0.666
Moderate	72	41		
Severe	18	10		
Life threatening	0	0.0		

Table 3. Show the item analysis of check list on measures to manage oral mucositis

n=176

S.No	Measures to manage oral mucositis	Yes		No	
		f	%	f	%
1.	Are you able to check your oral cavity daily	161	91.5	15	8.5
2.	Are you able to brush your teeth	117	66.5	59	33.5
3.	Are you able to rinse your oral cavity daily	130	73.9	46	26.1
4.	Are you maintaining adequate hydration	108	61.4	68	38.6
5.	Whether you noticed change in taste perception	121	68.8	55	31.3
6.	Difficulty in swallowing because of mouth sores	112	63.6	64	36.4
7.	Alteration in diet pattern	115	65.3	61	34.7
8.	Any restriction of speech because of mouth sores	98	55.7	78	44.3
9.	There any difficulty in speaking because of mouth sores	96	54.5	80	45.5
10.	Are you having mouth pain	71	40.3	105	59.7
11.	Are you using any vitamin supplements	108	61.4	68	38.6
12.	Use any local applicants like Gention violet /Glycerin/Vaseline for oral mucositis	117	66.5	59	33.5

Table 4. Association of demographic variables prevalence & measures to manage oral mucositis among clients receiving radiation therapy

n=176

		Grade scale						Chi-square 2	'P' Value
		Mild		Moderate		Severe			
		f	%	f	%	f	%		
1	**Age**								
	Below 30 Years	0	0.0	5	6.9	4	22.2		
	31 - 40 Years	16	18.6	10	13.9	6	33.3		
	41 – 50 Years	35	40.7	31	43.1	6	33.3	22.353	0.004**
	51 – 60 Years	29	33.7	21	29.2	2	11.1		
	Above 60 Years	6	7.0	5	6.9	0	0.0		
2	**Gender**								
	Male	37	43.0	36	50.0	14	77.8	7.208	0.027*
	Female	49	57.0	36	50.0	4	22.2		
3	**Religion**								0.020
	Hindu	62	72.1	57	79.2	16	88.9		NS
	Muslim	23	26.7	11	15.3	0	0.0	11.651	
	Christian	1	1.2	4	5.6	2	11.1		
4	**Marital Status**								
	Married	79	91.9	66	91.7	17	94.4	0.160	0.923
	Unmarried	7	8.1	6	8.3	1	5.6		NS
	Separated/ divorced	0	0.0	0	0.0	0	0.0		
5	**Occupation**								
	Home Maker	27	31.4	21	29.2	2	11.1	21.417	0.018
	Un employee	20	23.3	22	30.6	12	66.7		NS
	Coolie	13	15.1	8	11.1	3	16.7		
	Private Employee	26	30.2	17	23.6	1	5.6		
	Govt. employee	0	0.0	1	1.4	0	0.0		
	Retired	0	0.02	3	4.2	0	0.0		
6	**Residence**								
	Rural	60	69.8	36	50.0	6	33.3		0.004
	Urban	23	26.7	24	33.3	8	44.4	15.131	NS
	Semi-urban	3	3.5	12	16.7	4	22.2		
7	**Type of Family**								
	Nuclear family	52	60.5	30	41.7	6	41.7	15.263	0.004
	Joint family	25	29.1	27	37.5	4	37.5		NS
	Extended family	9	10.5	15	20.8	8	20.8		
8	**Monthly Income**								
	Below 4000	23	26.7	17	23.6	4	22.2	6.301	0.390
	4001 – 8000	43	50.0	38	52.8	8	44.4		NS
	8001- 12000	16	18.6	10	13.9	6	33.3		
	Above 12000	4	4.7	7	9.7	0	0.0		
9	**Family History**								
	Yes	61	70.9	54	75.0	13	72.2	0.330	0.848
	No	25	29.1	18	25.0	5	27.8		NS
	IF Yes								
	Twins/ siblings	8	32.0	5	27.8	1	20.0	2.616	0.855
	Grand Parents	1	4.0	2	11.1	0	0.0		NS
	Mother/father	1	4.0	0	0.0	0	0.0		
	Close relative	15	60.0	11	61.1	4	80.0		
10	**Diagnosis**								
	Below 2 times	20	23.3	21	29.2	11	61.1	12.868	0.045*
	3 – 4 times	32	37.2	27	37.5	5	27.8		
	5 - 6 times	18	20.9	16	22.2	2	11.1		
	Above 6 times	16	18.6	8	11.1	0	0.0		
11	**Client Had undergone**								
	Yes	52	60.5	34	47.2	15	83.3	8.331*	0.016*
	No	34	39.5	38	52.8	3	16.7		
12	**If yes Among**								
	Surgery	10	29.4	20	52.6	3	100.0		0.019*
	Chemotherapy	24	70.6	18	47.4	0	0.0	7.904	
13	**Radiation Therapy**								
	1 time	20	58.8	28	73.7	0	0.0	15.497	0.050*
	2 times	5	14.7	4	10.5	0	0.0		
	3 times	6	17.6	3	7.9	2	66.7		
	4 times	2	5.9	1	2.6	1	33.3		
	5 times	1	2.9	2	5.3	0	0.0		
14	**Information Regarding radiation**								
	Television	0	0.0	0	0.0	0	0.0		
	Newspaper	0	0.0	1	1.4	0	0.0	2.687	0.612
	Internet	15	17.4	9	12.5	4	22.2		
	Other source	71	82.6	62	86.1	14	77.8		

DISCUSSION

The purpose of the study is to assess the prevalence and measure to manage oral mucositis in patients receiving Radiation Therapy, at Radiation Oncology wards, SVIMS, Tirupati. The discussion of the present study was based on the findings obtained from descriptive and inferential statistical analysis of collected data; it is presented in the view of the objectives of the study. Basically there are three main modalities of cancer treatment that is surgery, radiotherapy and chemotherapy .Radiation therapy has been in use as a cancer treatment for more than 100 years. Radio sensitivity is the innate sensitivity of cells, tissues or tumors to radiation. Both normal and cancer cells are affected by radiation .Generally, rapidly dividing cells are more sensitive (eg. Mucosa) and non dividing or slowly dividing cells generally are less radiosensitive or radio resistant (eg: muscle cells, neurons). The epithelial cells of the mucous membrane lining the oral cavity are extremely radiosensitive, which results in oral mucositis .There are different strategies employed to control oral mucositis such as anti –inflammatory agents, anti microbial therapy, cytosine therapy, and local and systemic analgesics as well as other unique agents and approaches .Some of these therapies are designed to treat the toxicities once they occur, other are aimed at prevention.

The first objective of the study was to assess the prevalence and measures to manage oral mucositis among patients receiving radiation therapy. The prevalence and measures to manage oral mucositis among patients receiving radiation therapy by oral mucositis grading. The study findings revealed 49% were had mild oral mucositis, 41% were had moderate oral mucositis and only 10% were had severe oral mucositis. So the null hypothesis H_01 which states that there is no significant relationship between oral mucositis & radiation therapy was rejected. Guru karthikeyan et al., (2012) conducted a cross sectional observational study to find out the prevalence of fatigue among cancer patients receiving various anti cancer therapies and its impact on quality of life .The sample size was 121 cancer patients those who are receiving radiotherapy ,chemotherapy and concurrent chemo-radiation. The assessment for severity of fatigue was done using Brief Fatigue Inventory (BFI) and QOL was assessed by using FACT-G scale. The results of the study were severe fatigue was more prevalent in chemotherapy [58/59(98.30%)], and concurrent chemo-radiation [33/42(78.57% and moderate in patients with chemotherapy [9/20(45%)].The study concluded that severity of fatigue was more after chemotherapy and concurrent chemo-radiation therapy while impact of QOL was more after the radiation therapy[4].

The second objective of the study was to find out the association between prevalence & measures to manage oral mucositis among clients receiving radiation therapy with their selected socio-demographic variables the study findings revealed that age shows significant association at p<0.01 level and gender, diagnosis of cancer, client had undergone any other treatment modality, previous radiation therapy at p<0.05 level. The other variables were not found to have any significant association with level of selected side effects of radiation therapy. So the null hypothesis HO2 which states that there is no significant association between the level of knowledge and measures to manage among patients receiving radiation therapy with their selected socio-demographic variables was rejected. Seher cakmak RN, Nesrin Neuran **RN** (2018) conducted a study to know the incidence and risk factors for development of oral mucositis in patients undergoing chemotherapy .The sample of the study was 147 patients and the data was collected by using a questionnaire and the "WHO mucositis grading scale" the results of the study was shown that the frequency of oral mucositis was 51.7% and also it reveals the common oral problems were mouth dryness (55.1%) ,a reduced /changed sense of taste (52.4%) and lack of appetite(47.6%) .The study concluded half of all patients undergoing cancer chemotherapy developed oral mucositis[5].

Conclusion

The study findings concluded that 49% of cancer patients receiving radiation therapy were having mild oral mucositis. Patients developed a positive attitude towards measures to manage oral mucositis by informational pamphlet. There is précising need for public awareness on measures to manage oral mucositis to minimize complications.

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