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Original Article

Determining the non-pharmacological methods using to cope with radiation-related oral mucositis in patients with head and neck cancer

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ABSTRACT

Background & Aim: The radiation-related oral mucositis is common in patients with head and neck cancer. Patients trying pharmacological and non-pharmacological methods to cope with oral mucositis. In this study, it was aimed to determine the non-pharmacological methods in dealing with oral mucositis of head and neck cancer patients.
Methods & Materials: In this descriptive study, the data were collected from a University Hospital's radiotherapy unit and a special cancer treatment center between June 2017 and October 2018. The study included 108 individuals aged 18 and over, who were diagnosed with head and neck cancer, could be communicated verbally and accepted to take part in the study during the study period. A convenience sample of patients was obtained from among all patients meeting the criteria for inclusion. A 20-item questionnaire (including the sociodemographic items, risk factors, oral mucositis history, and non-pharmacological methods) form developed by researchers were used in the study. The written permissions were obtained from the Ethics Committee of Ege University, Faculty of Nursing, the centers that research conducted and the participants. IBM Statistical Package for Social Science for Windows package program version 25.0 was used for analyzing the data.
Results: Of the 108 individuals included in the study, 64.8% (n=70) were male. The mean age of the participants was 59.73±8.92. It was found that 58.3% (n=63) of the participants had mouth problems after starting treatment. 69.8% of the individuals who developed oral mucositis used a non-pharmacological method to cope with oral mucositis. The most commonly used non-pharmacological method was the mixture of carbonate and salt with 60.7%. The second most common method was black mulberry syrup with 37.7%. Other methods were including propolis, mulberry syrup, raspberry syrup, tea tree oil, thyme, and sumac.
Conclusion: While some methods used by the patients were effective, the others were ineffective. Health professionals, especially nurses, requirement be informed about the non-pharmacological methods, therefore, they can guide the patients about using the right methods.

Introduction

Cancer is a common disease in Turkey and the World and its incidence has been increasing (1). Cancer is one of the main causes of mortality in Turkey and in the world (2, 3). Head and neck cancers are cancer types that present involvement in the tissues and organs of the head and neck. Head and neck cancers include malignant tumors of the larynx, pharynx, lips, mouth, nose and salivary glands (4).

Head and neck cancers are reported to be responsible for 3% of all cancer cases in the United States (USA). It is estimated that 51.540 people were diagnosed with head and neck cancer and 10,030 people died from head and neck cancer in 2018 (5). In Turkey, the incidence of mouth and pharynx cancers is reported to be 6.4/100,000 in males and 2.8/100,000 in females (3). Chemotherapy, radiotherapy, and surgical

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treatment are used in the treatment of head and neck cancer. In these individuals, radiotherapy is frequently used singly or in combination with chemotherapy (6).

Radiotherapy is affecting the surface of the mucosa in individuals with head and neck cancer. Radiotherapy-induced mucositis lasts for 3-12 weeks. Difficulty in swallowing, reduction or loss of taste sensation, excessive secretion oscillation causing retching, nausea, and vomiting, loss of appetite, fatigue, weight loss, and aspiration are observed in individuals with mucositis (7). Radiotherapy-induced mucositis decreases the quality of life and the comfort level of patients with cancer.

The management of oral mucositis is mostly palliative and or supportive care. Palliative measures such as pain management, nutritional support, and maintenance, of good oral hygiene, were suggested by guidelines instead of trying to treat or prevent oral mucositis (8).

The aim of this study was to determine non-pharmacologic methods for coping with oral mucositis in individuals with head and neck cancer receiving radiotherapy.

Methods

The study was designed as descriptive. The study was conducted in a private oncology center and a university hospital's radiotherapy center between the June 2017 and October 2018. The study included 108 individuals aged 18 and over, who were diagnosed with head and neck cancer, could be communicated verbally and accepted to take part in the study during the study period. A convenience sample of patients was obtained from among all patients meeting the criteria for inclusion.

The data were collected by the investigator using the "Demographic Questionnaire" and "The Radiotherapy Related Oral Mucositis Form" after the patients who met the inclusion criteria were informed about the aim of the study and their approval was taken.

The Personal Identification Form developed by researchers was a form including information about gender, age, marital status, education level, and income level.

The Radiotherapy Related Oral Mucositis Form: This form was also developed by the researcher according to the oral mucositis literature and containing the 15 items about radiotherapy related oral mucositis included disease duration, tumor involvement, risk factors (smoking, alcohol consumption, oral hygiene etc.) and the methods used to cope with oral mucositis. This form was pretested on 10 patients and three researchers in order to check the clarity of the items, and no changes were recommended. One researcher asked items to the patients and marked the answers.

IBM Statistical Package for Social Science for Windows package program version 25.0 was used for analyzing the data. Normality of variables was checked before statistical analyses, and normally distributed variables were evaluated by parametric tests whereas non-normally distributed variables were evaluated by nonparametric tests. Number and percentage distributions were used to evaluate descriptive data. The chi-square method was used to evaluate the distribution of the independent variables. Independent variables were compared using parametric or nonparametric analyses.

Written approval was obtained from the ethics committee of the Ege University Nursing Faculty, and written consent was obtained from the research institution and each patient to conduct the study.

Results

Of the 108 cases, 70 (64.8%) were male and the mean age was 59.73±8.92. The majority of the participants (82.4%) were married and more than half (58.3%) were primary school graduates. More than half of the participants (52.8%) reported that they had an income equivalent to their expenses (Table 1). The mean disease duration was 10.15±9.24 months and the majority of the patients had oropharynx involvement (41.7%), followed by larynx cancer (40.7%).

It was determined that 60.2% of the participants had been receiving radiotherapy for 3 weeks or longer. In addition, It was found that more than half of the participants (58.3%) developed oral mucositis after beginning treatment.

In this study, 69.4% (n=75) of the participants said that they rarely or never brushed their teeth and 90.7% (n=98) did not use dental floss. Also, 36.1% of the participants were smoking and 29.6% consumed alcohol (Table 1).

Table 1: Socio-demographic and disease-related characteristics of Patients

		n	%
Gender	Male	70	64.8
	Female	38	35.2
Marital status	Married	89	82.44
	Single	19	17.8
Education level	Primary School	12	11.1
	High School	63	58.3
	Bachelor's Degree	26	24.1
	Postgraduate	7	6.5
Income level	Income is less than the outcome	38	35.2
	Income is equal to the outcome	57	52.8
	Income is higher than the outcome	13	12
Disease duration	0-6 Months	39	36.1
	7-12 Months	42	38.9
	13 Months and over	27	25
Radiotherapy duration	1st week	20	18.5
	2nd week	23	21.3
	3rd week	21	19.4
	4th week	23	21.3
	5th week	16	14.9
	6th week	5	4.6
Regular teeth brushing	Yes	33	30.6
	No	75	69.4
Dental floss using	Yes	10	9.3
	No	98	90.7
Smoking	Yes	39	36.1
	No	69	63.9
Alcohol consumption	Yes	32	29.6
	No	76	70.4

In this study, the prevalence of oral mucositis was higher in male patients than female, but there was no statistically significant difference (p=0.196). It was determined that the disease duration was effective in the development of oral mucositis and the prevalence of oral mucositis was significantly higher in patients who had head and neck cancer for longer than 13 months (p<0.001).

It was found that the rate of oral mucositis development was significantly lower in patients who had the habit of regular tooth brushing (p=0.008) and used

dental floss (p<0.001). It was determined that smoking (p=0.001) and alcohol consumption (p=0.001), which are also among the risk factors in the development of oropharynx and laryngeal cancer, affected oral mucositis development, and the rate of oral mucositis development was significantly higher in individuals who were smoking and alcohol consumption (Table 2).

Table 2. Comparison of some socio-demographic and disease-related characteristics of patients with oral mucositis

		Oral Mucositis			Test Statistics
		Developed n (%)	**Non-Developed n (%)**	**Total n (%)**	**Pvalue**
Gender	Male	43 (61.4)	27 (38.6)	70 (100)	X^2=1.675
	Female	20 (52.6)	18 (47.4)	38 (100)	p=0.196
Cancer involvement	Oropharynx	31 (68.9)	14 (31.1)	45 (100)	X^2=6.897
	Larynx	20 (45.4)	24 (54.6)	44 (100)	p=0.032
	Other	12 (63.2)	7 (36.6)	19 (100)	
Disease duration	0-6 Months	7 (17.9)	32 (82.1)	39 (100)	X^2=45.142
	7-12 Months	30 (71.4)	12 (18.6)	42 (100)	p<0.001
	13 Months and over	26 (96.3)	1 (3.7)	27 (100)	
Radiotherapy duration	1st Week	11 (55)	9 (45)	20 (100)	X^2=3.356
	2nd Week	16 (69.6)	7 (30.4)	23 (100)	p=0.645
	3rd Week	11 (52.4)	10 (47.6)	21 (100)	
	4th Week	12 (52.2)	11 (47.8)	23 (100)	
	5th Week	11 (68.8)	5 (31.2)	16 (100)	
	6th Week	2 (40)	3 (60)	5 (100)	
Regular teeth brushing	Yes	13 (39.4)	20 (60.6)	33 (100)	X^2=7.013
	No	50 (66.7)	25 (33.3)	75 (100)	p=0.008
Dental floss using	Yes	1 (10)	9 (90)	10 (100)	X^2=10.592
	No	62 (63.3)	36 (36.7)	98 (100)	p=0.001
Smoking	Yes	31 (79.5)	8 (20.5)	39 (100)	X^2=11.239
	No	32 (46.4)	37 (53.4)	69 (100)	p=0.001
Alcohol consumption	Yes	31 (96.9)	1 (3.1)	32 (100)	X^2=27.792
	No	32 (42.1)	44 (57.9)	76 (100)	p=0.001

X^2: Chi square test statistics value p<0.05: Signifiance level

In the current study, most of the women (85%) and more than half of men (58.1%) who developed oral mucositis referred to non-pharmacologic methods. 60% of women and 44% of men reported that they used a non-pharmacologic method in addition to medication. When the non-pharmacologic methods used by individuals to cope with oral mucositis were examined, it was found that the most common method was the mixture of salt and carbonate with 60.7%, followed by the use of black mulberry syrup with 37.7% and cryotherapy with 19.2%, respectively. Other non-pharmacologic methods included propolis, mulberry syrup, raspberry syrup, tea tree oil, thyme, and sumac (Table 3).

Table 3. Non-pharmacological methods to cope with oral mucositis

Methods	Number of patients that use the methods; n (%)
The mixture of salt and carbonate	38 (60.7)
Black mulberry syrup	24 (37.7)
Cryotherapy	12 (19.2)
Propolis	5 (7.9)
Thyme	5 (7.9)
Sumac	3 (4.8)
Mulberry syrup	1 (1.6)
Raspberry syrup	1 (1.6)
Tea tree oil	1 (1.6)

Discussion

In this study, it was found that 58.3% of the patients with head and neck cancer had encountered oral mucositis problem at one stage of treatment. 58.1% of these individuals used non-pharmacologic methods for coping with oral mucositis. In a current study, Yıldız et al. (2013) reported that the frequency of cancer patients in Turkey to use complementary and supportive applications was 57.4%. In this respect, the current study is consistent with the literature (2).

Hogan (2009) reported that oral care and tooth brushing reduced the severity of oral mucositis (8). Dodd et al. (1999) reported that smoking increased the severity and duration of oral mucositis. In this respect, our findings are consistent with the literature (10). Vera-Llonch et al. (2006) reported that there was no significant relationship between alcohol consumption and oral mucositis. Similarly, no statistically significant relationship was found between alcohol consumption and oral mucositis in the current study (11).

In this study, it was found that the most common method was the mixture obtained from salt and carbonate. McGuire et al. (2013) evaluated the methods used to cope with oral mucositis and reported that sodium bicarbonate was an effective method for coping with oral mucositis (12). It is thought that this mixture obtained from salt and carbonate can have the same efficacy as sodium bicarbonate.

The second common method was black mulberry syrup. Demir Doğan et al. (2017) examined the effectiveness of black mulberry in preventing oral mucositis and reported that black mulberry reduced the frequency and severity of oral mucositis. However, no statistically significant difference was found between the groups in the same study (13).

The third most common method in this study was cryotherapy. In an article by Worthington et al. (2011) evaluating the methods used to cope with oral mucositis, oral cryotherapy was reported to be effective in preventing the development of oral mucositis and in reducing its severity (14). However, no guidelines are suggesting cryotherapy.

In a randomized controlled trial conducted by Abdulrhman et al. (2012), it was reported that a mixture containing propolis was not effective in preventing the development of oral mucositis and reducing its severity (15).

Although the effects of thyme, sesame, mulberry syrup, raspberry syrup and tea

tree oil on oral mucositis have not been evaluated yet, it has been reported that they reduce oxidative stress and present antibacterial properties (16-21). Therefore, they are thought to be effective in coping with or preventing oral mucositis.

According to the results of our study, it was found that some methods used by the patients were effective and others were not effective. Thyme, sesame, mulberry syrup, raspberry syrup and tea tree oil are the new methods in our study. The effectiveness of these methods has not yet been evaluated.

As a result, it was determined that the frequency of using to non-pharmacologic methods for coping with oral mucositis in patients with head and neck cancer is high in Turkey, and women use more non-pharmacologic methods than men.

Among the individuals with head and neck cancer receiving radiotherapy, the most common non-pharmacologic methods are the mixture of salt and carbonate, black mulberry syrup, cryotherapy, propolis, thyme, sumac, mulberry syrup, raspberry syrup, and tea tree oil. Some of these methods are reported to be effective in coping with oral mucositis, whereas others are reported to be ineffective. Some of these methods have not yet been examined in oral mucositis, although they are thought to be effective for various reasons. We suggest the evaluation of the efficacy of these new methods in the treatment of oral mucositis.

The frequency of use of non-pharmacologic methods for coping with oral mucositis in patients receiving radiotherapy is quite high. It is recommended that nurses, physicians, and other healthcare professionals should be informed about these issues and inform the patients about non-pharmacologic methods with proven efficacy.

Limitations of the study; it was carried out in a single center, had been carried out in a limited time and the number of people involved in the study was low for these reasons.

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Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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