Pesquisa Brasileira em Odontopediatria e Clínica Integrada 2021; 21:e0062
https://doi.org/10.1590/pboci.2021.016
ISSN 1519-0501 / eISSN 1983-4632

ORIGINAL ARTICLE

Quality of Life in Iranian Patients with Oral and Head and Neck Cancer

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Academic Editor: Yuri Wanderley Cavalcanti

Received: 29 March 2020 / **Review:** 05 July 2020 / **Accepted:** 11 August 2020

How to cite: Torabi M, Jahanian B, Afshar MK. Quality of life in Iranian patients with oral and head and neck cancer. Pesqui Bras Odontopediatria Clín Integr. 2021; 21:e0062. https://doi.org/10.1590/pboci.2021.016

ABSTRACT

Objective: To assess sociodemographic factors and cancer information on patients' quality of life with head and neck cancer. **Material and Methods:** This cross-sectional study was conducted on 69 patients with head and neck cancer who attended in one of the oncology centers in Mashhad, Iran, from September 2019 to December 2019. Data was collected through a questionnaire consisted of demographic information (gender, age, educational level, and job) and cancer information (type, location, treatment, clinical stage) and standard quality of life questionnaire (QLQ-H&N35). Data analyzed in SPSS22 software using T, ANOVA, Linear regression tests at 0.05 significant levels. **Results:** 49 participants (72.1%) were men. The mean age was 60.48 ± 13.74 years. Forty-nine participants (72.1%) had squamous cell carcinoma and 26 participants (38.2%) had a larynx tumor. Forty-six participants (67.6%) were in clinical stage 3, mainly with a problem and complain about hard food swallowing, xerostomia and speech. The mean score of QLQ-H&N35 was 42.06 ± 20.12 from 90. Quality of life in 47.1% of cases was moderate. There was no significant relationship between gender, job, educational level, type and location of cancer ($p>0.05$). There was a significant relationship between the patient's age, clinical stage, type of treatment, and quality of life ($p<0.05$). **Conclusion:** Quality of life in 47.1% was moderate. Clinical stage, age of patients and type of treatment statically and significantly affected the quality of life. Assessing quality of life in HNC patients can identify important side effects of treatment that affected quality of life and look for ways to improve QoL.

Keywords: Head and Neck Neoplasms; Radiotherapy; Drug Therapy; Quality of Life.

Introduction

Head and neck cancer includes lip, mouth, tongue, tonsil, pharynx, larynx, hypopharynx, and salivary glands and because determining their boundaries is difficult contrary to other parts of the body, it is an important challenge [1]. Head and neck cancers are the 10th most common cancers worldwide [2]. The studies indicate the increase of oral cancer worldwide [3], and it is a major problem of global health that more than two-thirds of deaths caused by it can be seen in developing countries [4].

The unpleasant side effects on the quality of life (QoL) in the patients with head and neck cancers are higher than other cancers because the key functions are affected due to the disease and its treatment [5]. The treatment side effects of head and neck cancer are pain, mucositis, xerostomia, loss of olfactory and gustatory sense, anorexia, and weight loss, affecting a patient's quality of life [6].

Many factors influence the results obtained of patients' quality of life, including treatment methods and demographic conditions of the patient [7]. In a study conducted in India, the main factors affecting the QoL in the patients with head and neck cancer were weight loss, painkillers, viscous saliva, decreased mouth opening, and the eating disorders in public [5]. Pain in swallowing and problems were significantly higher in those who had radiotherapy and surgery [5]. In Pakistan, the mean score quality of individuals' lives before and after treatment of the head and neck cancer was observed in diarrhea, constipation, nausea/vomiting, and economic problems [8]. The highest complaint in the patients treated by the surgery was the numb and problem in speech and pain. The patients' most common side effects under chemotherapy with or without radiotherapy were weight loss and fatigue [9].

Quality of life in individuals with head and neck cancer was significantly worse than the beginning of the treatment in some cases, including gustatory sense, swallowing, and weight loss [10]. Previous authors showed that the pain severity had a direct effect on the QoL [11]. Quality of life in 30% of patients with squamous cell carcinoma was improper and the location and type of treatment had a role in reducing the QoL. The type of treatment had a significant effect on swallowing, pain and feeling illness [12]. Quality of life in the patients who had chemotherapy due to oropharyngeal cancer had higher scores in the fatigue, pain, problems of swallowing, eating in public, and inability for social reactions [13]. Knowing the relationships between QoL and potential determinants may assist with designing interventions aimed at improving QoL.

Therefore in continuing our interest in dental and medical research [14-16], this study aimed to investigate the quality of life in the patients with head and neck cancer referred to one of the oncology centers in Mashhad, northeast of Iran, in 2019 based on EORTC-QLQ-H&N 35 Questionnaire, which has been the most valid questionnaire for investigating the oral dental side effects of cancer treatment and its impact on the patient's life [7,17]. Due to the lack of similar studies on the quality of life of patients with head and neck cancer, especially in Iran, this study was conducted to assess the impact of sociodemographic status, type and tumor location, patients'stage and type of tumor treatment on QoL.

Material and Methods

Study Design and Subjects

This is a descriptive cross-sectional study conducted on individuals with head and neck cancer referred to one of the oncology centers in Mashhad in the northeast of Iran.

The inclusion criteria were the patients over 18 years old and the patients with primary cancers of the head and neck area, and the individuals with reading and writing skills. The patients with skin cancers in the head and neck area were excluded from the study because of the nature of cancer and type of treatment. The

patients were taken oral satisfaction. The researcher visited the oncology center every morning from September 1 to the end of December 2019. Among the daily clients, the patients were selected by simple random sampling among clients with the inclusion criteria and were satisfied to participate in the plan.

Data Collection

Data were gathered through demographic characteristics (age, education level, and job). Patients' education levels consisted of elementary, under diploma, diploma, upper diploma, license, upper license. Patients' job were asked based on the following: government's employee, worker, teacher, military, retired, free job and housewives. The information was related to the disease (type, clinical stage, type of treatment and area of cancer from patients' records) and EORTC-H &N35 Quality of Life Questionnaire.

The questionnaire consisted of 35 questions for achieving the quality of life-related to health developed in 7 sections (pain, swallowing, olfactory and gustatory sense, speech, eating in public, social communication and sex). The questionnaire has 11 items about dental problems, mouth opening, xerostomia, sticky saliva, coughing, restlessness, using painkillers, feeding tube, and weight changes, questions about demographic status and EORTC-H &N35 Quality of Life Questionnaire completed by patients. The answer to questions except for the questions of the individual's status in the last week was scored as a four-point scale of never (one), sometimes (two), most times (three) and always (four). The higher score indicates the lower/worse quality of life [9,13]. According to the final scores obtained, three modes of good (less than 35), moderate (70-35) and low (more than 70) quality of life were defined.

Data Analysis

Data analyzed by using t-test (comparison between gender and mean of QoL) and ANOVA (comparison mean of QoL and demographic variables) and linear regression (for multivariate analysis) by SPSS 22 software (IBM Corp. in Armonk, NY, USA) at the significant level of 0.05.

Ethical Clearance

This research was approved with the Code (IR. KMU. REC. 1398.337) of by the Ethics Committee of Kerman University of Medical Sciences.

Results

Forty-nine subjects were male (72.1%) and 19 (27.9%) were female. The mean age was 60.48 ± 13.74 years. Twenty-seven (39.7%) had a diploma degree. Fifteen participants (22.1%) were housewives and 27.9% were self-employed (Table 1).

Table 1. Demographic characteristics of the sample.

Variables	N	%	Mean	SD	p-value
Gender					
Male	49	72.1	41.11	20.62	0.517
Female	19	27.9	45.14	18.79	
Age					
18-30 Years	8	11.7	43.92	16.22	0.046
31-60 Years	26	38.3	44.17	12.51	
>60 years	34	50.0	49.32	19.67	
Educational Level					
Elementary	10	14.7	42.00	24.77	0.386

Under Diploma	16	23.5	41.33	17.96	
Diploma	27	39.7	47.64	19.30	
Upper Diploma	3	4.4	41.33	28.74	
License	8	11.8	43.12	24.56	
Upper License	4	5.9	20.75	8.38	
Job					
Employee	13	19.1	51.18	22.13	0.433
Worker	1	1.4	54.00	-	
Teacher	6	8.8	52.50	16.26	
Military	2	2.9	32.50	1.60	
Retired	11	16.2	46.00	21.88	
Free Job	19	27.9	35.55	16.60	
House Wives	15	22.1	44.10	21.26	

Forty-nine (72.1%) had squamous cell carcinoma. In 38.2%, the lesion location was larynx and in 35.3%, it was mouth. Forty-six (67.6%) were in clinical stage 3. Thirty-one individuals were in the treatment stages (45.6%). According to treatment time, 11.7% were at the beginning of treatment and 42.6% were in the process of completing treatment (Table 2). ANOVA test showed no significant relationship between the cancer location, type of cancer, and individuals' quality of life. A significant relationship was observed between the disease staging and type of treatment with quality of life. Individuals who had higher clinical staging and individuals who had all three treatments had worse quality of life, and this difference was significant. Regarding health status in the last week, 89.7% had used painkillers. Fifty-six subjects (82.4%) had used vitamin C and 70.6% had weight loss.

Table 2. Correlation between cancer variables and mean score of quality of life.

Variables	N	%	Mean	SD	p-value
Type of Cancer					
Sarcoma	5	7.4	44.40	24.09	0.592
Adenocarcinoma	14	20.5	48.22	18.60	
Squamous Cell Carcinoma (SCC)	49	72.1	40.72	20.46	
Cancer Location					
Oral Cavity	24	35.3	40.05	18.88	0.503
Pharynx	4	5.9	42.50	41.71	
Larynx	26	38.2	44.16	18.50	
Oropharynx	3	4.4	58.66	37.28	
Salivary Glands	11	16.1	36.00	18.06	
Clinical Stage					
I	-	-	-	-	0.004
II	1	1.5	55.00	-	
III	46	67.6	36.60	19.26	
IV	18	26.5	55.62	17.18	
Type of Treatment					
Chemotherapy	3	4.4	35.00	19.00	0.020
Radiotherapy	7	10.3	28.00	19.30	
Chemotherapy + Surgery	1	1.5	14.00	10.11	
Radiotherapy + Surgery	27	39.7	41.14	15.86	
Radiotherapy + Surgery + Chemotherapy	12	17.6	56.41	13.12	
Radiotherapy + Chemotherapy	17	25.0	41.56	24.77	
Surgery	1	1.5	40.21	-	
Time of Treatment					
Initiation	8	11.7	23.40	17.43	0.076
During Treatment	31	45.6	40.41	16.70	
End of Treatment	29	42.6	45.27	21.97	

The mean of the quality of life score was 42.06 ± 20.12. No significant difference was observed between the mean score of individuals' quality of life with gender. Multivariate analysis by Backward method showed that the disease staging (p=0.005), treatment type (p=0.041), using painkiller (p=0.037), and weight loss in the past week (p=0.030) caused the reduction of the quality of life in individuals (Table 3).

Table 3. Prediction of QoL scores in the multivariate regression model.

Variables	B	Beta	t	p-value
Stage of Tumor	14.777	0.340	3.018	0.005
Treatment Type	2.511	0.225	2.120	0.041
Using Painkiller	15.237	0.283	2.161	0.037
Weight Loss	12.636	0.291	2.259	0.030

The patients who were chemotherapy with radiotherapy treatments had significantly more xerostomia problems (p=0.001). In the higher clinical stage, the patients had the worse quality of life in all areas of pain, swallowing, speech, eating, social, xerostomia, and marriage. Multivariate analysis was performed on each field of the quality of life and showed that type of treatment had a significant relationship with xerostomia and marital status and also social fields, eating problems, speech, swallowing and pain with clinical staging.

The scoring of the quality of life levels based on weak, moderate and good has been shown in Figure 1. The quality of life was moderate in 47.1% of individuals.

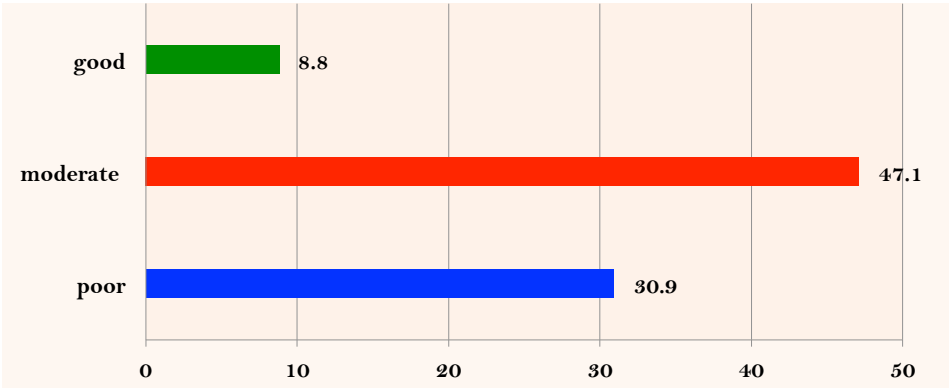

Figure 1. Frequency of patients based on level of quality of life.

Discussion

The QLQ-H&N35 questionnaire is a specific questionnaire to measure patients' quality of life with head and neck cancer. It has seven multi-question items that evaluate pain, swallowing ability, olfactory and gustatory sense, speech, social communication, and eating in public and marital relationships. Six items include the evaluating of dental problems, opening mouth, xerostomia, cough and weakness. The higher score indicates the worse quality of life in the patient [18].

Most patients with head and neck cancer were male 72.1% and the most common location was larynx (38.2%) in the current study. The study conducted in Brazil [11] showed that 87.4% of individuals were men and 60.6% of cases were the head and neck cancers in the mouth. In the study conducted by Rogers et al., 63.3% of individuals were male and 71.2% of cases were cancer in the oral cavity [19]. In a study conducted by Liao et al. [18], 84% of individuals were male and 40% of cases were cancer in the oral cavity.

A study conducted by Beck et al. [20] showed that 19.5% (46 individuals) of head and neck cancers were in the larynx and 23.3% (50 individuals) were in the oral cavity. In their study, 172 individuals (72.9%)

were men. In the study in Iran, 75.4% of patients with head and neck cancer were male [21], which is consistent with the current study in terms of prevalence in males and the most common area of cancer (70.8%) was in larynx, which is consistent with the present study in terms of location [21].

The current most common type of oral cancer is SCC, which is consistent with the present study. The higher prevalence of cancer in larynx can be the low availability of the area for diagnosis by the individual and referral to the physician at the appropriate time. In the present study, the most common type of oral cancer was SCC, which is consistent with the study conducted by Rogers et al. [19] with the most common type (89.2%) and Zamanzadeh et al. [21], 97% of SCC cancer.

In this study, none of the patients were in clinical stage 1 and 67.6% were in stage 3 of disease. In the research conducted by Oliveira et al. [11] and Zamanzadeh et al. [21], 19.6% and 32.4% were in clinical stage 1, respectively, which is inconsistent with the present study. However, Liao et al. [18] found that 18% were in stage 3 and 39% were in stage 4. Considering that the number of patients with laryngeal carcinoma was higher than mouth, it can be mentioned that the late referral has increased the size and involvement of lymph nodes and, consequently, the higher clinical stage in the present study.

The least treatment method was surgery and surgery with chemotherapy. Since oral lesions were less than other areas, cancer location has been the determinant of treatment methods. In the study conducted by Zamanzadeh et al. [21], the most common method of treatment (35.4%) was chemotherapy with radiotherapy, while Rogers et al. [19] found that the most common method was surgery.

In this study, 89.7% of people have used painkillers in the last week. The study conducted by Cramer et al. [22] in patients with head and neck cancer 6.6 years after diagnosis showed that 45.1% of patients had pain. In the study conducted by Oliveira et al. [11], 66.9% of patients used painkillers for pain control. In the present study, those patients that use painkiller had significantly worse mean score of QoL. The cause of pain in the head and neck cancers is due to the direct effects of the tumor or, consequently, its treatment. The pains non-related with the tumor may contribute to the pain caused by the tumor in the patient's pain experience [23].

In the present study, those patients that didn't use tube feeding had significantly worse mean score of QoL. Nutrition impact symptoms negatively influence HNC patients. These symptoms are associated with decreased nutrition and quality of life.

In terms of answering the questions, the best status of feeling pain in the jaw and the teeth' problem in terms of pain, hypersensitivity or color change, 31 people (45.6%) had selected all options. The type of cancer has had the least effect on the cases mentioned according to the cancer cases. In the current study, 86.8% of people complained of xerostomia more often or always. One study showed that 97.5% of individuals complained of xerostomia at the end of radiotherapy [24]. The xerostomia is one of the most common and unpleasant side effects of radiotherapy of head and neck cancers [25].

In this study, 54.4% responded always and most often to the question of eating problems and 65.2% had a problem with the hard food swallowing always and most often. Dysphagia is one of the common consequences of head and neck tumors [26]. In the study conducted by Caudell et al., 47% of patients had some degree of dysphagia [27]. In the present study, the mean score of the quality of life was 42.06 ± 20.12 out of 90.

There was no significant difference between gender and quality of life. The results are consistent with the other studies [12,21] that didn't observe a significant difference between males and females. But it is not

consistent with the findings from the study conducted by Liao et al. [18] that did not show a difference between gender and quality of life.

Older people had a significantly lower quality of life. This may be because older people are generally more disabled than young people, and the problems caused by cancer and its treatment have a worsened effect on their quality of life.

In the current study, marriage and job had no significant effect on the quality of life. The results are inconsistent with previous findings described by Liao et al. [18], which showed that marital status and low family income significantly affected the quality of life.

The clinical stage had a significant effect on the quality of life of individuals in this study. A higher clinical stage had a worse quality of life. The results are consistent with other studies [12,21,28,29]. But Liao et al. [18] showed no significant difference between the clinical stage and the quality of life. In the study conducted by Torabi et al. [30], the clinical stage of the tumor did not have a significant relationship with the quality of life related to the oral health of individuals with head and neck cancer, which is not consistent with the present study; the reason can be the difference in the questionnaire used in both studies.

In the present study, the treatment method had a significant effect on the patients' quality of life. The patients who had a combination of treatments had a lower QoL. It seems that the side effects of each treatment are combined and reduce the quality of life of individuals. The results are consistent with similar studies [12,21,31], but it is inconsistent with the study conducted by Indrapriyadharshini et al. [32], which did not show a significant relationship between the treatment methods of the quality of life score. It should be noted that the reason for this difference may be due to the different measurement tools in the current study. Among patients treated just by one method, the worst QoL was in surgery, followed by chemotherapy and radiotherapy. It may be due to surgical treatment that causes morbidity and can reduce patients' quality of life.

In the current study, no significant relationship was observed between the cancer location and the individuals' quality of life. However, the patients with oropharyngeal cancer had a worse quality of life. The results are consistent with similar studies [12,21,33] found that people with pharyngeal cancer had a worse quality of life.

The weight loss and using painkillers caused the worse quality of life significantly, based on the multivariate test by Backward's method. It has been shown that swallowing problems persist long after the completion of chemotherapy/radiation therapy and it may decrease in the long term, but it does not return to its former state [34]; this issue may justify the weight loss and thus, worse quality of life of individuals.

As this study was performed in only one center, it could not be generalized to all patients with head and neck cancer. It is recommended that the quality of life in patients with head and neck cancer to be evaluated using the different radiotherapy methods or special surgical and chemotherapy methods in future studies.

Conclusion

The findings of this study showed 47.1% of patients had a moderate quality of life. There was no significant relationship between gender, place, education and job with the quality of life. There was a significant relationship between the patients' age, the staging of disease and type of treatment with the quality of life.

Authors' Contributions

MT	---	Conceptualization, Methodology, Formal Analysis, Investigation, Data Curation, Writing - Original Draft and Project Administration.
BJ	https://orcid.org/0000-0001-5968-2585	Data Curation and Project Administration.
MKA	https://orcid.org/0000-0003-4485-5476	Conceptualization, Methodology, Formal Analysis, Investigation and Writing - Review and Editing.

All authors declare that they contributed to critical review of intellectual content and approval of the final version to be published.

Financial Support

None.

Conflict of Interest

The authors declare no conflicts of interest.

Data Availability

The data used to support the findings of this study can be made available upon request to the corresponding author.

Acknowledgments

The authors would like to thank all patients that cooperate in this study.

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