Quality of Life assessment in patients that underwent tongue cancer resection utilizing a specific designed questionary

Original Article

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ABSTRACT

Quality of life is important in patients given the diagnosis of cancer of oral and oropharyngeal areas, due to the complex and morbid surgeries usually speech, language, in addition to swallowing function are affected, therefore, quality of life can potentially be significantly impacting causing esthetics, functional and social issues for the patients. There are multiple investigations that assess the quality of life of this previously mentioned patient after surgical procedures. However, few studies focus on oral cancer specially tongue cancer. Since most of articles assess all head and neck cancers, which conform to a heterogeneous group with several different features depending on location (oral cavity, oropharynx, larynx, hypopharynx, nasopharynx, and salivary glands). The aim of this study was to assess the quality of life (QOL) and survival in patients with tongue cancer adjusted for important clinical, demographic, and lifestyle-related factors in a tertiary referral center using and specific design questionary evaluating subjectively the impact of tongue cancer in their daily life.

INTRODUCTION

Malignancies of the head and neck affect a variety of anatomic organs and structures and systems. As with other cancers, oral cancers greatly affect the patient's morbidity and mortality. for every 100,000 people, 12 new Oral Cavity and Pharynx cancer cases were reported and 3 people died of this cancer [1].

In 2018in the United States, 46,667 new cases of Oral Cavity and Pharynx cancer were reported, where by 10,158 people died of their disease [1]. While in the UK there are around 12,400 new head and neck cancer cases in the UK every year, being 8th most common cancer in the UK, accounting for 3% of all new cancer cases [2].

According to Globocan 2020 , the overall incidence rates ranged from 0.5 to 21.2 in males and from 0.5 to 12.0 in females [3]. Oral tongue cancer was the second most common cancer, with the highest incidence rates in males ranging between 2- 4% and 1- 2% in women worldwide [3].

The lifestyle behaviors are associated to oral cancer with convincing evidence, with 25% of oral cancers are attributable to tobacco usage (smoking and/or chewing), 7–19% to alcohol drinking, 10–15% to micronutrient deficiency is low fruit and vegetable consumptions, and more than 50% to betel quid chewing in areas of high chewing prevalence [4].

Current treatment for oral cancer includes surgical resection and reconstruction follow by possible adjuvant radiotherapy depending on disease staging. This treatment will affect the mostly values of the orofacial system affecting the deglutition, mastication, salivation, speech skills which all from the point of view of the medicine based causing an inevitable functional deterioration and high level of overall dissatisfaction. Therefore, before deciding on an oral cancer treatment, we must be aware of long term after-sequels and side effects in qualitive of life (QL) terms, because an extension in a patient's survival does not necessarily mean an improvement in QL results[1] Patient's and family's social relationships can also be affected, yielding to isolation and loss of general cognitive, social, emotional or physical functions [1]. Hence, it is an important tool for evaluating outcome in conjunction with mortality, morbidity, survival, and recurrence rates.

The primary value of understanding individual variation in QL is to minimize the impact of head and neck cancer specifically tongue cancer on a patient's life. By understanding the detrimental effects on QL, curative methods can be designed with the aim of maximizing a patient's long-term QL after surgical resection and possible radiotherapy. To gain a better understanding the objective of this study was to describe tile quality of life related to speech and swallowing in patients treated for tongue cancer using a specific questionnaire for this research following worldwide health related quality of life assessment, taking into consideration patient and cancer demographics. .

MATERIALS AND METHODS

A total of 61 consecutive patients, who have undergone primary tongue cancer surgery from 2015 to 2018 were enrolled. All patients had a minimum follow up of 4 years after surgery, were invited to complete

a series of questions evaluating their quality of life.

Patients whose primary diagnosis was not a tongue cancer, patients with metastatic disease, base of the tongue cancer, deceased patients, or those who did not want to participate were excluded from the study.

Patient demographics (gender, race, educational and socioeconomic level) and cancer demographics (pathology, staging, treatment adjunctive such as radio or chemotherapy, flap reconstruction) were recorded. Patients' files were retrospectively examined to obtained outcome data. Each patient included was contacted and asked to fill in 10 questions with a yes or no answer (Table 1).

The questionnaire was based on multiple validated and published questionnaire that reflect specifically the effects of having tongue surgery on their quality of life such as General Health Questionnaire (GHQ), Global Assessment of Recent Stress (GARS) General cancer measures EORTC Quality of Life (EORTC C30 version 2) and the EORTC head and neck cancer module QLQ-H&N35.

The data was analyzed using the SPSS software, version 11.5, statistical package for Window (SPSS, Chicago, Il). Categorical data was recoded as percentages and final discrete data from the questionnaire was counted to represent the final numerical outcomes of yes and no. A paired t-test was used to compare for each question those that were affected and not affected by their surgery. We also compared between those affected and not affected based on cancer stage, type, method of reconstruction, and adjuvant treatments. Statistical significance was considered at P value less than 0.05.

DATA ANALYSIS

Statistical analyses were performed using STATA Statistics V.17. The Kolmogorov Smirnov test was performed to determine distribution normality. Skewness and kurtosis were also considered. Non-parametric tests were chosen because the data distribution did not match the criteria for normality. Gender differences were investigated using the Mann-Whitney test. Spearman's correlation and Kruskal-Walli's test were used to measure correlations and investigated demographic disparities, respectively.

RESULTS

Out of the 62 questionnaires distributed, 38 were returned giving a response rate of 61.2%. The mean age of participants was 48.07 ± 9.89, IQR (41,54), and the sample was divided into two age groups: 20 (52.6%) of the patients were younger than 50 years of age, and 18 (47.4%) patients were 50 years or older. The sample included 25 (71.1%) males and 11 (28.9%) females (Figure 1.)

Table 1. Characteristics of the study population

| Variables	Mean ±SD	N/%	P-Value
Age	48.07 ± 9.89	1/3%	0.312
20-29		8/21%	
30-39		11/29%	
40-49		13/34%	
50-59		5/13%	
60-80			
Gender, N (%)			0.059
Male		28/ 73.7%	
Female		10/ 26.3%	
Nationality, N (%)			0.173
Middle east		4/10.5%	
Asia		25/65.8%	
Africa		8/21.1%	
South America		1/2.6%	
Pathology, N (%)			0.022
Moderate Differentiated Squamous		14/36.8%	
Well to Moderate Squamous		10/26.3%	
Poorly Differentiated Squamous		7/18.4%	
Squamous cell carcinoma		5/13.1%	
Adenosquamous Carcinoma		1/ 2.6%	
Carcinoma in Situ		1/2.6%	
Staging, N (%)			0.202
pTis Nx		1/2.6%	
pT1 Nx		4/10.5%	
pT1 N0		3/7.9%	
pT1 N1		1/2.6%	
pT2 Nx		2/5.3%	
pT2 N0		1/2.6%	
pT2 N1		4/10.5%	
pT2 N3b		1/2.6%	
pT3 Nx		1/2.6%	
pT3 N0		6/15.8%	
pT3 N1		2/5.3%	
pT3 N3a		1/2.6%	
pT3 N2b		1/2.6%	
pT3 N3b		2/5.3%	
Site of the tumor			0.058
Right site		15/39.5%	
Left site		23/60.5%	
Lesion Size	5.13±4.07		
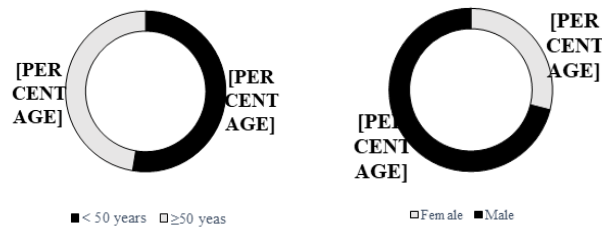
Figure 1. Pie charts representing age categories & sex distribution in the study sample

More than half of the patients were male 28 (73.3%). Thirty-nine percent of them were Indian nationality; most of the Indian patients were smokers and worked in labor, and Arabs were teachers. Nearly forty percent of cases were moderate differentiated squamous cell carcinoma (39.4%) followed by Well to Moderate Squamous cell carcinoma (26.3%) and Poorly Differentiated Squamous cell carcinoma (18.3%) and others. Eleventh patients presented with T3, 17 with T2, 9 with T1, and 1 with Tis-stage of oral cancer. The most common site of the tumor was in the left lateral tongue, followed by right lateral tongue and left floor and ventral surface (Table.1).

Participants' responses to different questions of QOL, the questionnaire consisted of 10 question (Table 2).

Table 2. QOL questionnaire

No.	Questions
Q1	Has your quality of life affected after the surgery?
Q2	Has your social live changed since you were operated from oral cancer?
Q3	Has your working life been affected since you were operated from oral cancer?
Q4	Would you undergo again oral cancer resection?
Q5	Would you advise a patient to go for surgery to be cancer free knowing your current health and life status?
Q6	Has your speech been affected after the surgery?
Q7	Are you able to express your thought and needs in understandable words?
Q8	Are you able to express your thought and needs in understandable conversation?
Q9	Do you need in instances to repeat once what you are trying to say?
Q10	Do you have improper phonation of mainly /S / SH/ /F/ /TH/ had any impact in your psychological status?

The majority of 28 males were answered yes Q1 (17/28), Q2 (20/28), Q10 (22/28) (Figure 2.A). On another hand, questions were answer no Q3 (17/28), Q5 (22/28), Q6 (20/28), Q7 (18/28), Q8 (20/28), Q9 (18/28) (Figure 2.B), meanwhile the Q4 is equal answer between Yes and No. For 10 females, most questions were answered yes Q2 & Q3 (6/10) (Figure 2.A). For questions were answered no Q1 (6/10), Q4 & Q7 (8/10), Q5 & Q6 (9/10), Q8 (10), and Q9 (8/10) (Figure 2.B). In addition, Q10 (5/10). No statistically significant correlation (P =0.059).
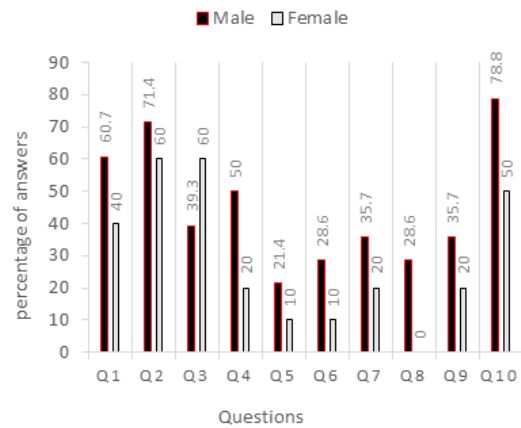

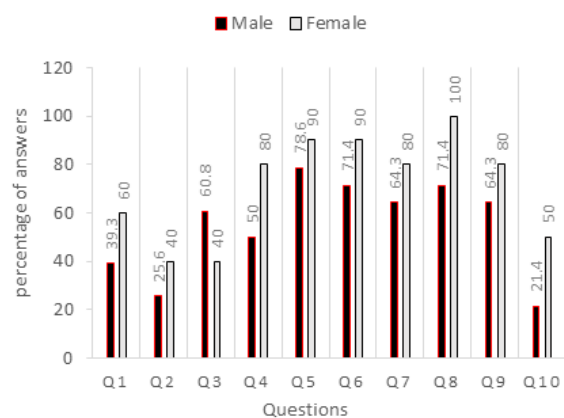**Figure2.** A. Percentage of "yes" answering

Figure 2. B. Percentage of "no" answering
Figure 2. Bar charts representing percentage of answering questionnaire among gender

The QOL identified from the responses were grouped based on the pathology report; for participants responses who were diagnosed as a moderate differentiated more than 64% were answered yes in Q1 to Q3, and 100% were answered no in Q5, 92.9% in Q7 & Q8. For well to moderate squamous patients 60% and more were answered yes in Q2, Q4, Q10, and more than 80% were answered no in Q3, Q6, and Q9 (Table.3). Only a few patients responded who were other pathological diagnoses. In addition, we found different responses from patients on QOL questions and pathology (P= 0.02) with no statistically significant association.

Table 3. Response of participants in Quality of Life (QOL) questionnaires and Pathology

Variables	Q1 Yes/ No	Q2 Yes/ No	Q3 Yes/ No	Q4 Yes/ No	Q5 Yes/ No	Q6 Yes/ No	Q7 Yes/ No	Q8 Yes/ No	Q9 Yes/ No	Q10 Yes/ No
Adenosquamous Carcinoma	0/1	0/1	0/1	1/0	1/0	0/1	1/0	0/1	0/1	0/1
Carcinoma in Situ	0/1	0/1	0/1	1/0	0/1	0/1	0/1	0/1	0/1	1/0
Moderate Differentiated	9/5	10/4	12/2	6/8	0/14	3/11	1/13	1/13	4/10	9/5
Poorly Differentiated	5/2	5/2	5/2	1/6	1/6	3/4	3/4	2/5	5/2	7/0
Well to Moderate	3/7	7/3	2/8	6/4	4/6	1/9	5/5	3/7	1/9	7/3
Squamous cell carcinoma	4/1	4/1	4/1	1/4	1/4	2/3	2/3	2/3	2/3	3/2

DISCUSSION

The focus of surgeons and oncologists of all disciplines has been curing patients. Unfortunately, this focus has sometimes resulted in lack of also maintaining functional outcomes and QOL that patients experience. Although treatment must remain our primary intention, the latter effects have a similar degree of significance and impact.

This is more evident in tumors such as tongue cancer, which have therapies that can profoundly changes in the patient's life. This present study investigates the longitudinal changes in quality of life and speech in a well-defined sample of head and neck cancer patients treated with surgical resection +/- radio-chemotherapies for advanced oral cancer. Our goal was to examine how tongue cancer affects overall HRQOL and speech function in a cohort of patients with relatively mature follow-ups. According to previous studies on HRQOL in patients with the oral cavity and oropharyngeal cancer, showing wide variety of regional - specific symptoms after the treatment [5, 6] however, the changes over postoperative time might differ from each patients due to several factors. Most general findings of head and neck specific oral cancer HRQOL argued deterioration at 6 months but returning to baseline levels at 12 months occurred regarding physical functioning, social contacts, and teeth problems. The gradual improvement during the first year will remain relatively stable from then onwards [5, 7-9]. Thus, this stability of findings uncovers the variations by studies that have explored the patients' groups, questionnaires, treatment, and follow-up interval. The studies revealed changes from baseline of 6 to 12 months in: cognitive functioning, social functioning, global quality of life, diarrhea, speech, and sexuality. In the present study, nine HRQOL changes patterns were distinguished using a questionnaire in post-surgical resection of advanced tongue cancer in 61 patients. We gathered information on patients at the one-year follow-up, bearing in mind, tumor site and stage comorbidity, to a reasonable extent, influenced the health-related quality of life (HRQOL) over time [2, 9-11].

It can be argued that several patterns of HRQOL changes were distinguished: most general issues do change after treatment or improve compared to baseline scores. It should be emphasized that although the improvement to baseline levels was often noted, baseline levels of patients are often deviant from "normal" scores from the general population [9, 12, 13].

The assessment of QL is a complex issue involving the overall and specific evaluation of different perspectives (speech, pain, chewing, and others) covariates for socio-demographic and clinical conditions. It is true that both outcomes and the elaborative variables entail multiple factors, however, we shed light on the most specific clinical factors. We suggest future research to cover various area of multivariate assessments of QL domains in depth. One of the multivariate factors is personality. It influences the health outcomes either directly or indirectly through many mechanisms, including symptom reporting and coping styles [14, 15].

Along the same lines, regarding the role of social support, the studies failed to find direct relationship between the 'extent of social support from family, friends and neighbors' and HRQOL, but they demonstrated that 'satisfaction with physician support' accounted for 45% [16, 17]. The findings conclude that social support is a complex interactive construct, which may only be effective when matched with the patient's needs. Other studies have also confirmed that the perceived quality of social support affects outcomes such as well-being and depression [18]. An attempt was made to observe the interrelation between survival rate and HRQOL, despite the lack of sufficient evidence of the association between them. It is well established that age, tumor location and stage, smoking, alcohol intake, and comorbidity are significantly associated with survival [19, 20], in our cohort, we had the same variables, that can be adjusted to support the beliefs in the reviewed studies [21-26], but might be biased. However, the choice of confounders remains somewhat arbitrary, and it is known that other factors such as more extended tumor characteristics and other socio-demographic factors may be essential confounders as well [21, 26-28].

This research explores the fundamental confounders of Clinical impact on the practice; however, it overlooks other social confounders that are part and parcel in contributing to ensure patients' needs and wants. One of the confounders is the social psychological aspect that is concerned about the patients' interpersonal feelings, emotions, and behaviors as well as their relationship with other, after undergoing a major operation, such as altering the appearance/symmetry/contour of the face and neck. Depression is considered as a commonly triggered illness among postsurgical/post ICU admission.

Over the literature, nine studies were explored in this research, seven studies reported [8, 13, 16, 29-32] a significant relationship between depression and HRQoL, despite the different quality ratings that cause depression and its various measurements which was stated in the studies. Therefore, the relationship between physical symptoms/ impairment and depression is inconclusively identified. Further investigation is required to uncover this area to explore these relationships. Moreover, the research must expand its scope beyond key confounders to cover the area of Sexual Function and Performance of patients as it can have a long-term outcome on patients after surgical operation.

Apart from the socio-psychological confounders that this research fails to cover, the limitations are also compound by the use of the traditional methods of Data Collection (through using phone) as the researchers encountered various difficulties since the method took longer time than expected, regardless of this obstacle, HRQOL remains to be useful in clinical behavior. Therefore, the touch screen computer-assisted have the efficacy to ensure the quality-of-life data collection in field of Head and Neck cancer. Research [26] uses the previous method and ensures its feasibility and applicability, it schematically presents an online scores of the EORTC scales as well.

All in all, the HRQOL is significantly important in surgical practices and settings, its importance is reflected in preoperative care such as: preparations/education/ reassurance/ informed consent process and psychological pre-surgical preparation, furthermore, HRQOL was fruitful Postoperative Care including medical and surgical management. It can also have a positive impact on patients' treatment plans and various surgical techniques/ flaps operated to determine the kind of postoperative sociopsychological care, as well as to address the language barriers issues and inimitably bridge the gap between healthcare providers and family members after the treatment.

To sum up, this study showed that HRQOL, particularly physical functioning and change in global QL, was independently associated with some other clinical and non-clinical cofounder such as the impact of general health,

effect on saliva, chewing functions, dental hygiene and the other non-clinical factors as personality, social support, depression, and sexual functions. Improving these HRQL domains may therefore be an interesting intervention with the aim to the optimal improve of the HRQL post-surgery and raise patient's awareness to prevent their high expectations prior to major surgeries, the data can also be used for clinical and scientific documentation. All in all, medical decisions should incorporate analyses that consider both costs and systematic HQOL studies.

CONCLUSION

In recent studies QL in patients with oral cancer have achieved more importance as per oral cancer is one of the main causes of incidence and mortality in most countries. Most studies evaluate QL normally within the first year after the diagnosis. However, in this study follow up period extended up to 10 years post-surgical status and adjuvant treatment for better assessment of outcomes. Data related with QL are mostly related to patient (age, sex, co-morbidity), tumour (location, size), and treatment (surgical treatment, radiotherapy association, reconstruction, cervical dissection).

However, it is proved now that there is association

between other factors such as habits, gender which makes us more committed now to performing detailed QOL for patients. Nowadays QL assessment is considered an essential component of an oral cancer patient as well as the survival, morbidity, and years free of disease, more systematic research is needed to be able to apply it on a daily basis. Regarding the limitations of this research a bigger population than the population assessed and evaluated in this paper would be necessary to cover a wider number of individuals and conclude whether the treatment of oral cancer has an impact of the quality of life of the patients, this is a novel research in the state of Qatar which will help the population, institutions and medical professional in the middle east to understand the fact discussed in the paper

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