



## Quality of Life among Group of Iraqi Patients with Oral Cancer after Surgical Treatment at Different Time Intervals

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### ABSTRACT

**Introduction:** Relating to the oral and maxillofacial region, there is an increase in the incidence of malignant tumors. The surgical removal of neoplasm with or without the adjuvant therapy is the most preferred treatment. With advances in diagnosis and treatment, the survival rate of the patients has increased. The qualities of survivors become an important issue. **Aim of the study:** The purpose of current study was to evaluate the patient's quality of life with oral cancer (OC) after surgical treatment at different time intervals. **Patients and methods:** Total 50 patients were included in the study with oral cancer after surgical treatment, with an age ranged from (41-77) years. All patients were evaluated for their quality of life using the University of Washington quality of life questionnaire (UW-QOL), which was filled after 7 days, 1 month, 3 months and six months after the surgical treatment of oral cancer. The data were analyzed using the SPSS version 20. **Results:** After the surgical removal of oral cancer, individual domains and subjective complaints deteriorated, which was improved gradually over the time intervals. Pain, mood, and anxiety rated were the most important domains while reaction, activity appearance, shoulder, taste, chewing, saliva, speech, and swallowing were considered to be less important. **Conclusion:** The University of Washington quality of life questionnaire was a practical and the easiest questionnaire for the assessment of the quality of life of the patients and the subjective complaints. An improvement in the overall and health-related quality of life was necessary to be observed following the surgical treatment for patients with oral cancer.

**Keywords:** Oral cancer, Universal of Washington quality of life

### INTRODUCTION

Oral cancer comprises of the neoplasm that involves the mucosa located in the oral cavity, it is the most common site of malignancy in the head and neck [1]. Oral cancer is one of the most common life-threatening diseases represented as the 6<sup>th</sup> most common type of cancers worldwide [2]. The etiology of oral cancer is multifactorial, based on the genetic or the environmental factors. The risk factors known to us could be grouped as established, strongly suggestive, possible and speculative factors [3]. The most important etiological factors are various forms of tobacco smoking and chewing [4]. Excess consumption of alcohol and, these previous factors act separately or synergistically [5]. Diet deficient in antioxidants or free radical scavenging is a further factor that predisposes to oral cancer [6]. Several viruses have been implicated in head and neck carcinogenesis, including human papillomavirus (HPV), human immunodeficiency virus (HIV), herpes simplex virus (HSV) and Epstein-Barr virus (EBV) [7].

Quality of life (QOL) is an old and a broad concept, in the last decades. There has been an increasing attention towards the concept of "quality of life", not only in the biomedical field but also in other fields. The most common domains of QOL include the physiological, psychological, social and in some models spiritual [8]. There is no universally accepted definition of QOL, it can be described and measured in individual terms and depends on the lifestyle present, past experience, hopes for the future, the general well-being of the individuals and societies negative and positive outline features of the life [9]. The World Health Organization defines QOL "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals expectations standards and concern [10]. Thus, QOL should be evaluated from the patient's perspective [11]. There is evidence that routine QOL assessment has a positive impact on patient-doctor communication and could actually improve QOL and the emotional functioning [12].

The UW-QOL questionnaire has been extensively validated, particularly in the oral cancer patients treated by primary surgery. The main benefits of QOL questionnaire include a structured means of capturing patient-derived scoring for common problems, QOL priorities can guide shared decision-making in many oncologic situations, including palliative care, cases with very high survival, and cases where two treatment options offer equivalent survival but a different side effect profile [13]. The current UW-QOL version used is version 4. It is a patient-based, self-administered questionnaire including 12 disease questions which includes a specific parameter such as pain, appearance, activity, swallowing, chewing, speech, shoulder problems, taste, saliva, mood, and anxiety (Table 1) [14]. All questionnaires focus on the present patient health and quality of life within the past 7 days at different time intervals.

**Table 1 University of Washington quality of life development**

Domains	Version
Pain	4
Appearance	4
Activity	4
Reaction	4
Swallowing	4
Chewing	4
Speech	4
Shoulder	4
Taste	4
Saliva	4
Mood	4
Anxiety	4

## PATIENTS AND METHODS

The present investigation was conducted at different hospitals in Baghdad, Iraq at Department of maxillofacial surgery to measure the quality of life among the 50 patient, for both the gender within the age 41-77 year, who received surgical treatment for oral cancer attending for follow up appointment post-operative. Information about quality of life assessment and subjective complaints were obtained from each patient with a structured personal interview including quality of life questioners. All the participants (patients post to surgical excision of cancer), were asked to respond to the questionnaire. A standard UW-QOL questionnaire version 4 was used. The surgical treatment of oral cancers was completed and the data were recorded on day 7 postoperatively. The UW-QOL questionnaire has been repeated with the same patient at a time interval of 1 month, 3 months and 6 months after surgery. Scores were evaluated, a score of 0 was considered the worst possible response, and a score of 100 signifies the best possible response. Scoring is ascended in equal phases from 0-100 to reveal the number of probable responses. Thus the pain domain has five probable responses which are scored as (0, 25, 50, 75 and 100), as shown in Table 2.

**Table 2 Scoring of UW-QOL domains**

Pain Responses	Score
I have no pain	100
There is mild pain no needing medication	75
I have moderate pain requires regular medication.	50
I have severe pain controlled only by prescription medicine	25
I have severe pain not controlled by medication.	0

## RESULTS

The age of patients was ranged from (41-77) years, the mean age was  $56.28 \pm 10.13$  years. Around 37 patients (74%) were males and 13 (26%) were females. In the current study, the most common malignant tumor was squamous cell carcinoma and was present in 35 (70%) patients, osteosarcoma in 2 (6.9%) of the patients, adenocarcinoma in 8 (16%) of the patients, lymphoma in 6 (12%) of the patients, and melanoma in 1 (2%).

About 22 of the patients (44%) had an anterior tumor, 7 (14%) had a posterior tumor and 21 (44%) had a tumor in other sites (maxillae, parotid gland, cheek). T-1 and T-2 tumors were present in 16 (32%) patients, T-3 and T-4

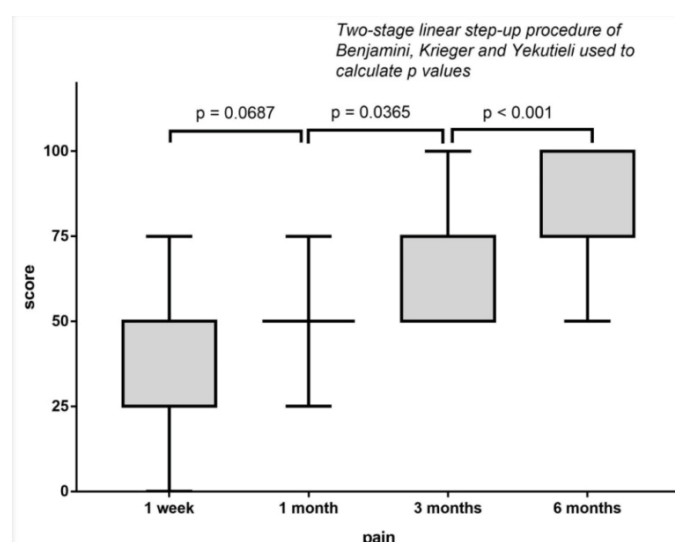
tumors were present in 34 (68%) patients. Total 25 (50%) patients had primary closure, 12 (24%) patients had local flap reconstruction, and 6 (12%) patients had regional flap reconstruction, while 7 (14%) patients were left to get heal by the secondary intention. Selective neck dissection was performed in 30 (60%) patients, and radical neck dissection was performed in 1 (2%) patients. Total 30 (60%) patients had adjuvant radiotherapy, and 5 (10%) had chemotherapy.

### Individual Domain Scores

**Pain:** Overall there was a significant increase in the pain score from 1<sup>st</sup> week post-operative after surgical operation until 6 months. Initially, the median score was 50, however, the significant change starts from 1 month to 3 months, and remain thereafter as illustrated in Table 3 and Figure 1. Postoperatively after 1<sup>st</sup> week of surgical operation 100% of patients had significant pain and represent a significant problem for one month, and was then decreased after 3 months to 62% and after 6 months to 10%.

**Table 1 Scoring of UW-QOL domains for a patient with oral cancer after 1 week, 1 month, 3 and 6 months after surgical treatment**

Individual domains	Scores Post-operation (N (%))				p-value
	1 week	1 month	3 month	6 month	
Pain	50 (25-50)	50 (50-50)	50 (50-75)	75 (75-100)	<0.001
Appearance	75 (69-75)	75 (75-75)	75 (75-75)	75 (75-75)	<0.004
Activity	0 (0-25)	50 (50-75)	75 (75-75)	75 (75-100)	<0.001
Recreation	25 (0-25)	50 (50-50)	75 (75-75)	75 (75-75)	<0.001
swallowing	100 (30-100)	30 (30-100)	70 (70-100)	100 (100-100)	<0.001
Chewing	50 (50-100)	50 (50-100)	50 (50-100)	50 (50-100)	<0.001
Speech	100 (70-100)	70 (30-100)	70 (70-100)	100 (70-100)	<0.001
Shoulder	100 (100-100)	70 (70-100)	70 (70-100)	100 (100-100)	<0.001
Taste	100 (100-100)	100 (100-100)	100 (100-100)	100 (70-100)	<0.001
Saliva	100 (100-100)	100 (100-100)	100 (70-100)	70 (70-70)	<0.001
Mood	75 (50-75)	50 (40-50)	75 (75-75)	75 (75-75)	<0.001
Anxiety	70 (60-70)	70 (30-70)	70 (70-70)	100 (70-100)	<0.001



**Figure 1 Boxplot of pain domain score for all patients**

**Appearance:** Overall there was a significant increase in the appearance score from 1<sup>st</sup> week post-operative after surgical operation until 6 months. The median score was 75 for almost all of the patients for 1 month, 3 months and 6 months postoperatively as illustrated in Table 3 and Figure 2.

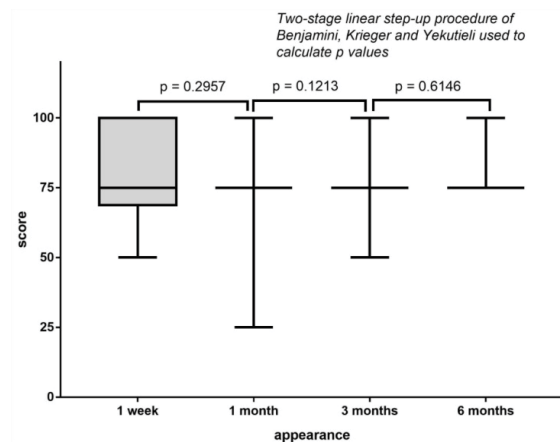


Figure 2 Boxplot of appearance domain score for all patient

**Activity:** Initially, the median score was zero. It was increased significantly to 50 after 1 month, then increased significantly to 75 after 3 months postoperatively after that no significant difference between 3 months and 6 months was observed, as illustrated in Table 3 and Figure 3.

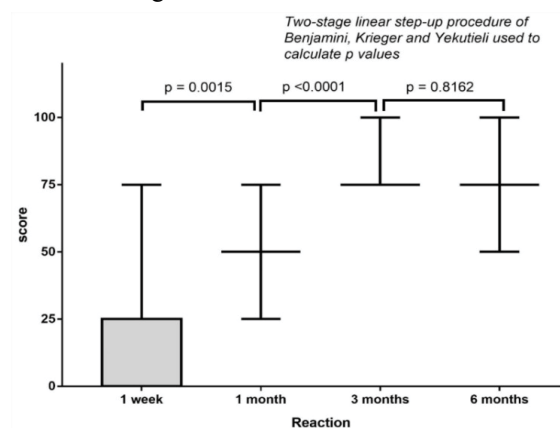


Figure 3 Boxplot of activity domain score for all patients

**Recreation:** There is a significant increase in the recreation score from 1<sup>st</sup> week post-operation till 6 months. Initially, the median score was 25 which occurred after 1<sup>st</sup> week postoperatively and increased to 50 after 1 month and then rapidly increased to 75 after 3 months, while there was no significant difference between 3 months and 6 months as illustrated in Table 3 and Figure 4.

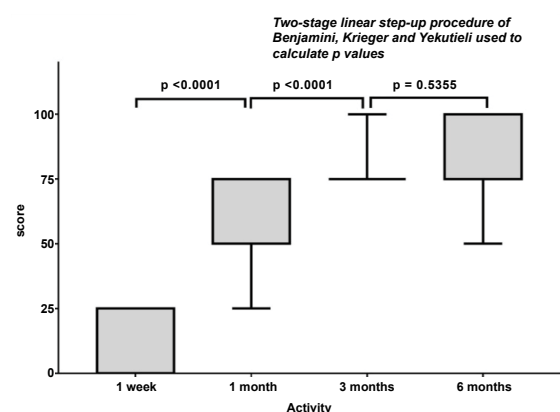


Figure 4 Boxplot of reaction domain score for all patients

**Swallowing:** Overall there was a significant increase in the swallowing score from 1<sup>st</sup> week post-operation till 6 months. However, initially there a reduction in the score occurred between 1<sup>st</sup> week to 1 month, but after that, a clear increase in the score continued till 6 months, as illustrated in Table 3 and Figure 5.

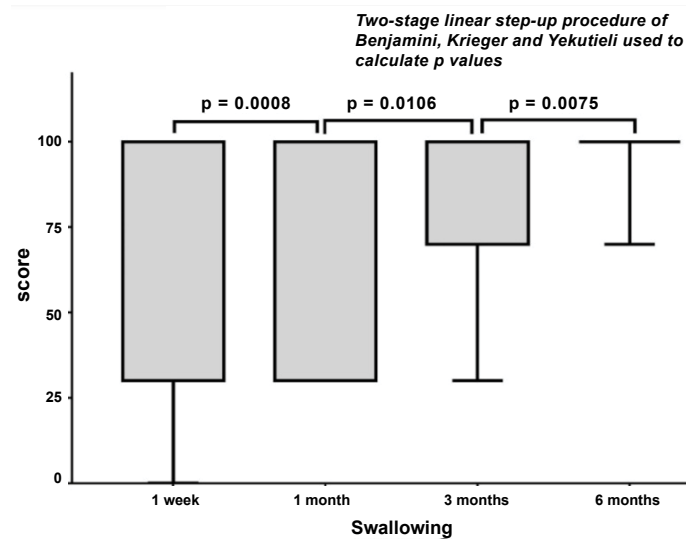


Figure 5 Boxplot of swallowing domain score for all patients

**Chewing:** Overall there was a significant increase in the chewing score from 1<sup>st</sup> week post-operation till 6 months. However, between each pair of the time interval, no significant difference was found. From 1<sup>st</sup> week till 6 months there is a significant difference (i.e. it require 6 months to change swallowing probably because all have a high score from the beginning), as illustrated in Table 3 and Figure 6.

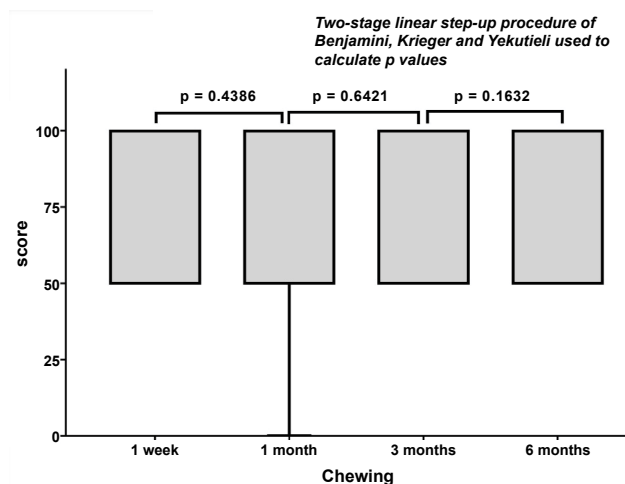


Figure 6 Boxplot of speech domain score for all patients

**Speech:** Overall there was a significant increase in the speech score from 1<sup>st</sup> week post-operation till 6 months. Initially, between 1<sup>st</sup> week to 1 month there was a decline in the score, between 1 month and 3 months there was an increase in the score and after that, no significant difference between 3 months and 6 months was observed, as illustrated in Table 3 and Figure 7.

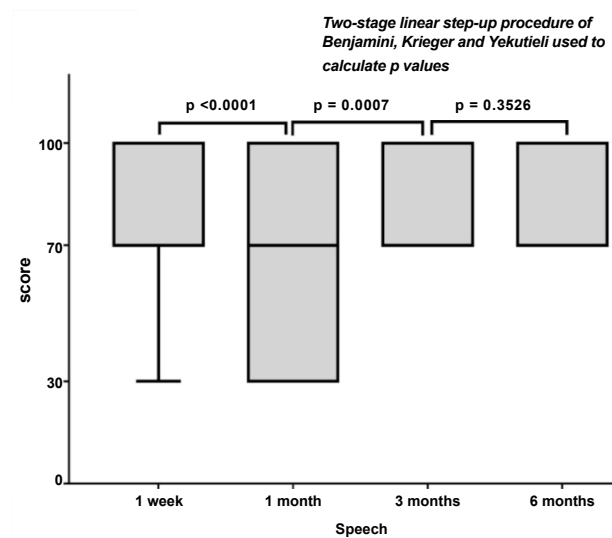


Figure 7 Boxplot of chewing domain score for all patients

**Shoulder:** Overall there was a significant increase in the shoulder score from 1<sup>st</sup> week post-operation till 6 months. Initially, between 1<sup>st</sup> week to 1 month there was a significant decline in the score, between 1 month and 3 months there was no significant change, but an increase between 3 months and 6 months was observed, as illustrated in Table 3 and Figure 8.

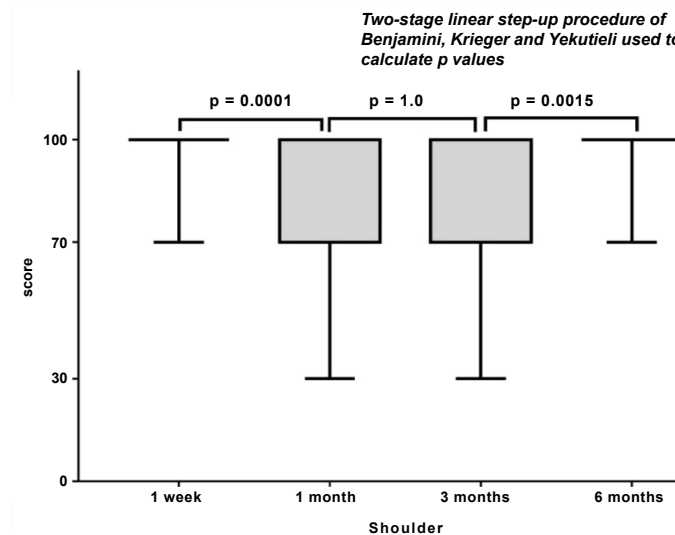


Figure 8 Boxplot of shoulder domain score for all patients

**Taste:** Overall there was a significant increase in the taste score from 1<sup>st</sup> week post-operation till 6 months. However, between each pair of the time interval, no significant difference was found. Only from 1<sup>st</sup> week till 6 months there was a significant difference (i.e. it require 6 months to change taste probably because all have a high score from the beginning), as illustrated in Table 3 and Figure 9.

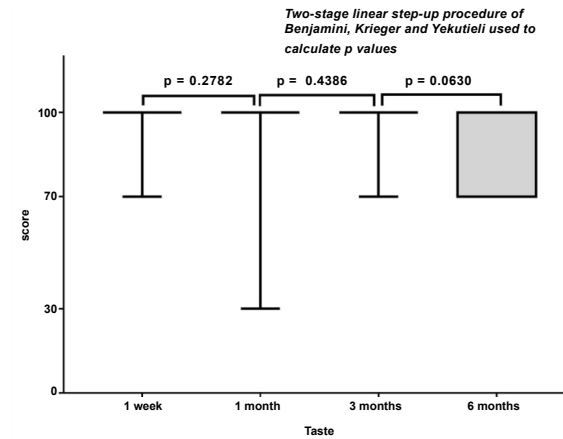


Figure 9 Boxplot of taste domain score for all patients

**Saliva:** Overall there was a significant increase in the saliva score from 1<sup>st</sup> week post-operation till 6 months. However, between each pair of time interval, no significant difference was found except for 1 month to 3 months, a significant reduction was observed, as illustrated in Table 3 and Figure 10.

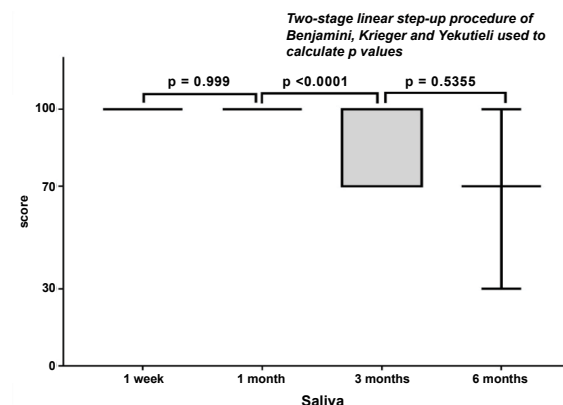


Figure 10 Boxplot of saliva domain score for all patients

**Mood:** Overall there was a significant increase in the mood score from 1<sup>st</sup> week post-operation till 6 months. Initially, there was a significant reduction between 1<sup>st</sup> week to 1 month, from 1 month to 3 months there was a significant increase and between 3 months and 6 months, no significant change was observed, as illustrated in Table 3 and Figure 11.

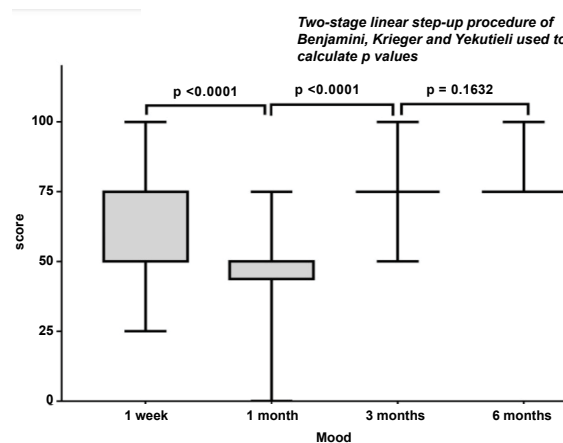
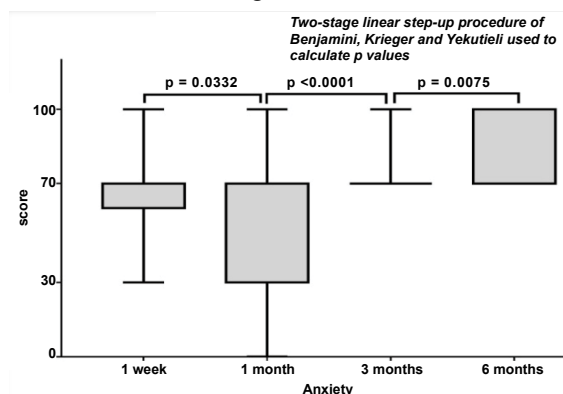


Figure 11 Boxplot of mood domain score for all patients

**Anxiety:** Initially median score was 70 after 7 days, it was steady for 1 month to 3 months and increased significantly to 100 after six months, as illustrated in Table 3 and Figure 12.



**Figure 12** Boxplot of anxiety domain score for all patients

## DISCUSSION

In the current study, the majority of patients with different type of oral cancer and OSCC were above 40 years of age with a mean age of  $56.28 \pm 10.13$  years for oral cancer and, the most affected age group was 50-69 years (32.0%). This finding is in agreement with many previous Iraqi studies [15-19]. The association of oral cancer development with aging could be explained by the accumulative effects and the prolonged exposure to the environmental carcinogens such as chemicals, radiation, and viruses which are important promoting factors in the development of oral cancer [20].

The increase habit of tobacco chewing, alcohol consumptions, and increase in the levels of environmental pollution are the most important carcinogenic agents. The immune system impairment due to senescent decline in the immune surveillance may lead to the accumulation of cellular DNA mutations since these mutations result in the alteration in oncogenes and tumor suppressor genes leading to carcinogenesis [21].

The observational and follow up study evaluate the QOL of patients after surgical treatment of malignant tumor in the oral and maxillofacial region. The QOL assessment is an essential issue for certain reasons. The oral and maxillofacial region plays a vital role which not only serves as the primary identification of a person but is also associated with the important life-maintaining functions like, breathing, mastication, speech, etc. In addition to the assessment of QOL for patients, oral cancer is more objective clinical metrics, because the salience of QOL for this population means that survival statistics alone cannot provide a valid assessment of treatment outcomes. So, the routine use of QOL measurements is critical to clinical research and practice. QOL assessment with head and neck cancer could also be used to assess the changes in a range of psychosocial variables during the survival period and measure the efficacy of treatment, which in turn would inform clinical decision making.

Assessing the QOL through the application of UW-QOL questionnaire is a complex process which involves the general and specific questions about different variables that affect head and neck.

Regarding the pain domain, in the current study it was recorded that all the patient had a significant score for the pain domain which adversely affects the most of the other domains during the 1<sup>st</sup> week postoperatively after the surgical treatment, 100% of patients had a significant pain and represent a significant problem which remained for 1 month, and then decreased after 3 months to 62% and then to 10% after 6 months. This may be due to the surgery which causes a systemic inflammatory response that is graded (the more severe the injury greater is the response which is mediated by the classical neuroendocrine pathways of the stress response). The use of epidural analgesia is used to reduce pain, block the cortisol stress response and attenuate postoperative insulin resistance which may affect the body's protein economy, favorably affect many of the patient-centered outcomes that are important to postoperative recovery. In this study, the pain was an important issue for the patient after 1<sup>st</sup> week (100%, 98% of the patient) the pain represents the significant and the most important issues after 1<sup>st</sup> week and 1 month respectively which decreases 3 months and 6 months. The finding of the current study in agreement with Rogers, et al., who reported pain, as a common issue by 62% of the patients [22], while Efunkoya, et al., in a prospective study found that the pain domain



had the lowest mean score [23]. In the finding of the study, the pain domain was found to be improved with time. This finding was agreed with Rathode, et al., who found that the systematic review pain continued to improve with time after the treatment [24,25].

In the current study, there was a significant increase in the recreation and activity score from 1<sup>st</sup> week post-operation till 6 months. When the patients were asked about the concerning activity and reaction, and the causes why they were unable to do their routine job mostly after 1<sup>st</sup> week and 1 month, it was found that this lack in activities may be due to the combined effect of mental stress and pain associated surgical treatment. The finding of current study agrees with Efunkoya, et al., and Rathode, et al., [23,25].

Regarding the swallowing speech domain there was a reduction in the score which occurs between 1<sup>st</sup> week and 1 month but after that a clear increase in the score continued till 6 months, this may be due to the fact that the most of the patient in this study were diagnosed with the tumor of the tongue and anterior lesions which is closed primarily in the prospective questioner and the clinical study on the predictors of speech and swallowing function. Primary surgery for oral cancer was predictive of good speech and swallowing and it was found that after the surgical treatment posterior site tongue resection showed more deterioration in QOL [27].

Regarding the shoulder pain domain there was a decline in the score between 1<sup>st</sup> week and 1 month and was continued till 3 months, there was no significant change but the score increased after 3 months till 6 months. Some patient had neck dissection which showed slightly worse response and was associated with pain during mobility, and pain due to adhesion of neck muscles fibrosis and scarring [23,28].

Overall there was a significant increase in the taste score from 1<sup>st</sup> week post-operation till 6 months. However, between each pair of the time interval, no significant difference was found from 1<sup>st</sup> week till 6 months as it requires 6 months to change the taste probably because all have a high score from the beginning.

Regarding the saliva domain, there was a significant increase in the saliva score from 1<sup>st</sup> week after surgical treatment till 6 months. However, between each pair of time interval no significant difference was found except only from 1 month, after 3 months there was a significant reduction. The decrease in the salivation may be due to some patient in this study who needs radiotherapy as adjuvant therapy which may lead to worse the response after 3 months, although this is not sufficiently assessed due to the delay in appointment of radiotherapy treatment and short follow up time of the current study. This finding was agreed with De Graeff, et al., who founded that combination treatment was associated with the more symptomatic problem and worse score [29]. Rogers, et al., showed better QOL score in surgically resected oral cancer requiring post-operative radiotherapy [30].

Regarding the mood anxiety domain, overall there was a significant increase in the mood score from 1<sup>st</sup> week post-operation till 6 months. Initially, there was a significant reduction between 1<sup>st</sup> week to 1 month then there was a significant increase from 1 month to 3 months, and between 3 months and 6 months, there was no significant change.

Regarding the anxiety domain initially median score was 70 after 7 days, it was steady for 1 month postoperatively and after 3 months increased significantly to 100. After six months this domain was the most important domain and still an important issue even after 3 months and 6 months. This may be due to cancer, as it has a bad reputation of being incurable or having devastating consequences associated with surgical treatment especially in the head and neck region, that's why a considerable number of the patients (100%) score significantly at initial assessment regarding anxiety domain in UW-QOL questionnaire. Patients preparing for tumor resection have reasons to be anxious because they are affected by a life-threatening disease, and forthcoming surgery may impact on their quality of life, as the treatment is non-compliance, and increase the length of hospital stay [31]. Also, the finding of this study was agreed with Biazevic, et al., who reported that anxiety and mood was the only domain that improved its rating in the longitudinal assessment.

## CONCLUSION

It can be concluded from the study that improvement in the overall and health-related quality of life was necessary to be observed following surgical treatment for patients with oral cancer.

## DECLARATIONS

### Conflict of Interest

The authors have disclosed no conflict of interest, financial or otherwise.

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