

Research Article

Health-Related Quality of Life in Patients with Surgically Treated for Benign Oral and Maxillofacial Tumors and Tumor-like Lesions at Muhimbili National Hospital, Tanzania

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Abstract

Objectives: To assess the Health-Related Quality of Life of patients diagnosed and treated for benign oral and maxillofacial tumors and tumor-like lesions at Muhimbili National Hospital, Tanzania.

Methods: This was a cross-sectional hospital-based study involving patients with benign tumors and tumor-like lesions in the oral and maxillofacial region. Sociodemographic and clinical data were collected from the patients, and a modified version of the UW-QoL questionnaire was used by inclusion of 2 domains (mouth opening and financial difficulty). Chi-square test and Friedman's test were used for paired samples and the level of significance was set at $p < 0.05$.

Results: 89 patients with a male to female ratio of 1:1.2. were included in this study. The age of patients ranged from 13 to 78 years (mean age 36.16 years \pm 17.21 SD). Ameloblastoma followed by ossifying fibroma were the most common lesions. The pain site, appearance, swallowing, chewing, mood, anxiety and financial problems were significantly affected at different treatment phases. Patients with volatile income faced 3 times more financial problems than those with stable income. Patients with tumors in the mandible were 3 times more likely to complain about their appearance. Patients who underwent an ablative surgical procedures 7 times more likely to have difficulty chewing.

Conclusion: Pain, appearance, swallowing, mood, anxiety, and financial difficulty were the most important issues patients faced. The patients' age, income, size, and location of tumor and types of surgery significantly affected the domain scores.

Keywords: Benign tumours, oral and maxillofacial region, Tanzania, Quality of life

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Numerous benign pathological conditions occur in the oral and maxillofacial regions which arise from either hard or soft tissues.^[1] The presence of these lesions affects patients' ability to eat, speak, interact with others in daily social life and their physical appearance hence negative self-perception.^[2, 3] Majority of these benign conditions of the oral and maxillofacial region are treated surgically,

which by itself has profound and long-term effects on the overall health, appearance, breathing, speech, and ability to chew and swallow.^[4] Therefore, management of these patients must aim not only at cure but also at improving or maintaining the health-related quality of life (HRQoL) during and after treatment.^[2]

Health-related quality of life (HRQoL) has been defined as

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the functional and psychosocial outcome of an ailment and its subsequent management upon the patient, as perceived by the individual patient.^[5, 6] HRQoL is affected by various factors including sociodemographic (e.g. age, sex, occupation, education level) and clinical factors (e.g. tumor site, tumor size, and treatment modality).^[2] It varies considerably between patients with the same disease or receiving the same management.^[5]

Several tools have been developed to measure HRQoL of patients, including the University of Washington Quality of Life, Short-Form 36, European Organization for Research and Treatment of Cancer, and Functional Assessment of Cancer Therapy.^[5, 7] Regarding head and neck cancers, the University of Washington Quality of Life (UW-QoL) questionnaire is one of the most favored main tools^[8] because it allows assessment of the effects and changes in treatment of head and neck cancer over a period of time.^[9] The UW-QoL questionnaire was developed for use in oral oncology but its modification has confirmed its use in assessing HRQoL also in benign jaw tumors.^[4]

In Tanzania and possibly elsewhere in Africa, most patients with benign lesions often report late,^[10] therefore presenting with large tumors affecting their HRQoL. Nevertheless, the impact of oral and maxillofacial benign conditions on HRQoL has been under-reported. This creates a gap in identifying and addressing areas of concern from patients' perspective.^[9] Often, clinicians and patients evaluate the success of treatment differently, whereby for clinicians success is seen in terms of recurrence and survival, the patients consider issues such as return to the normal pre-disease condition and overall disease-free survival.^[4] In light of this, this study was carried out to assess the HRQoL of patients diagnosed and treated for benign oral and maxillofacial tumors and tumor-like lesions at Muhimbili National Hospital, a tertiary referral hospital in Tanzania.

Methods

This was a cross-sectional, hospital-based study carried out in the Oral and Maxillofacial Surgery Unit of the Muhimbili National Hospital (MNH) between September 2017 and March 2018, and comprised patients with benign tumors and tumor-like lesions involving the oral and maxillofacial region.

The inclusion criteria were patients 13 years of age and older who were histologically diagnosed with a benign lesion in the oral and maxillofacial region and no surgical procedure was performed for their admission conditions. The patients meeting the inclusion criteria were asked to participate after being informed the purpose and procedures of the study, and those who agreed to participate signed the

informed consent statement.

A predesigned questionnaire that was used to collect data composed of two parts whereby the first part collected sociodemographic and clinical data from the patients. The recorded data included the age, sex, education level, marital status, and occupation of the patients. The second section was a modified version of the University of Washington Quality of Life (UW-QoL) questionnaire version 4, which included the data on the duration, location, size and histological diagnosis of the lesions, and type of treatment recommended. Two domains involving mouth opening and financial difficulties were added to the original 12 domains of UW-QoL questionnaire. A Swahili version of the questionnaire was used in this study because majority of the patients were unable to speak or write in English.

The scoring of the modified UW-QoL questionnaire was scaled so that a score of 0 represents the worst subjective function while a score of 100 represents the best score. The five-option questions (pain, appearance, activity, recreation, and mood) were scored as follows A= 100, B= 75, C= 50, D= 25, and E= 0. The four-option questions (speech, shoulder, taste, saliva, and anxiety) were scored as A= 100, B= 66.6, C= 33.3, and D= 0, while the three-option questions (chewing, mouth-opening and financial difficulty) were scored as A= 100, B= 50, and C= 0. To calculate the mean score per domain, the scores of all respondents in a particular domain were added and the mean was calculated. This calculation was performed for all answers and summed to yield the total score for that item. The assessment was done in three phases: pre-operative (PrO), one-month post-op (PO1), and three months post-operatively (PO2).

All questionnaires filled out were checked for completeness by the researcher. The Data were then entered, and analyzed using Statistical Package for Social Sciences (SPSS) version 23.0. For general descriptive analysis of data, the age was categorized into groups as <20, 20-39, 40-59 and 60+. Tumor size was grouped into ≤ 10 cm and > 10 cm. The Duration of a lesion was grouped as <2 years, 2 to 5 years and more than 5 years. To facilitate multivariate logistic regression analysis, sociodemographic data were grouped under the categories as follows: age (≤ 40 years and > 40 years), educational attainment (primary or lower as low level and secondary or above as high level). Marital status was categorized as those with spouses (married/cohabiting) and non-spouses (singles, divorced, widowed). The occupation was categorized into volatile income (no formal employment, students, petty traders and peasants) and stable income (business person, civil servants, private-sector employees). Surgical procedures were divided into

into ablative (mandibulectomy, maxillectomy and sialoadenectomy) and non-ablative (bone remodeling, tumor enucleation and tumor excision).

Chi-square test and Friedman's test were used for paired samples and p-value was set as <0.05 . The Wilcoxon signed-rank test was used to compare the sample means at different measurement times. Binary regression analysis was applied to determine the independent predictors that most affected a particular given domain of HRQoL. The regression coefficient and 95% confidence intervals for each independent variable were also calculated.

The study was approved by the Institutional Review Board of the Muhimbili University of Health and Allied Sciences (MUHAS) and authorized by the Muhimbili National Hospital. Participation was voluntary and refusing to participate in or withdrawing from the study did not jeopardize the management of the patient. For each participant, a signed informed consent form was obtained before the data collection. No name was used to prevent identification, and the participants were assured of confidentiality and the right to participate or withdraw without any conditions. All patients were treated according to the established protocol at MNH.

Results

This study included 89 patients with benign tumors and tumor-like lesions in the oral and maxillofacial regions. There were 40 (44.9%) men with a male to female ratio of 1:1.2. The age of patients ranged from 13 to 78 years, with the mean age of 36.16 years \pm 17.21 SD. Most of the participants (41.6%) were in the 20-39 age group. Almost half of the participants (49.4%) had primary school level of education. Most of the participants (34.8%) were peasants and about 47.2% were married (Table 1).

A total of sixteen different types of benign oral and maxillofacial tumors and tumor-like lesions were operated. Approximately half of the patients (52.8%) had lesions for less than 2 years and in most patients (62.9%), these lesions were smaller than 10 cm at presentation. In 46 patients (51.7%) these lesions were located in the mandible (Table 2). The most common histological types of these lesions were ameloblastoma 29 (32.5%) followed by ossifying fibroma 15 (16.9%) (Fig. 1). The surgical procedures performed included tumor enucleation 26 (29.2%), mandibulectomy 25 (28.1%), tumor excision 21 (23.6%), maxillectomy 7 (7.9%), sialoadenectomy 6 (6.7%), and bone remodeling 4 (4.5%).

All 89 (100%) patients filled out the HR-QoL questionnaires during pre-operative (PrO), while 72 (80.9%) filled in the post-operative phase 1 (PO1), and only 41 (46.1%) responded in post-operative phase 2 (PO2). The mean score

Table 1. Distribution of study participants according to their Socio-demographic characteristics

Socio-demographic characteristics	Patients	Percentage (%)
Age Groups (years)		
<20	17	19.1
20-39	37	41.6
40-59	24	26.9
60+	11	12.4
Sex		
Male	40	44.9
Female	49	55.1
Education		
Non formal	15	16.9
Primary	44	49.4
Secondary	18	20.2
College and above	12	13.5
Occupation		
Non formal	11	12.4
Student	16	18.0
Peasant	31	34.8
Petty trader	8	9.0
Business personnel	10	11.2
Civil servant	7	7.9
Private sector employee	6	6.7
Marital Status		
Married	42	47.2
Single	39	43.8
Divorced	1	1.1
Widow/widower	7	7.9

of different sub-domains of HR-QoL questions are given in Table 3.

There were statistically significant differences ($p<0.05$) for sub-domains of pain, appearance, swallowing, chewing, mood, anxiety and, financial problems at different treatment phases (Table 3). For these sub-domains, post hoc analysis with Wilcoxon signed-rank tests was conducted by applying Bonferroni correction, and as a result a significance level was set at $p<0.017$. For the pain sub-domain, there was no significant difference between PrO pain and PO1 ($Z=-2.02$, $p=0.044$). A statistically significant reduction in pain was noted between PrO and PO2 ($Z=-2.90$, $p=0.004$) and PO1 and PO2 ($Z=-3.63$, $p<0.001$).

For sub-domain of appearance, there were no statistically significant difference between PO1 and PO2 ($Z=-0.243$, $p=0.808$). However, there was a statistically significant improvement in appearance from PrO to PO1 ($Z=-5.79$, $p<0.001$) and from PrO to PO2 ($Z=-4.03$, $p<0.001$). The difference in the mean mood scores in PrO differed signifi-

Table 2. Distribution of study participants according to their clinical characteristics of benign tumours and tumour-like lesions of the oral and maxillofacial region

Clinical characteristics	Patients (n)	Percentage (%)
Duration of the lesions (years)		
<2	47	52.8
2-5	23	25.8
>5	19	21.4
Size (in centimeter)		
≤10	56	44.9
>10	33	55.1
Location		
Mandible	46	51.7
Maxilla	18	20.2
Submental/submandibular	14	15.7
Palate	8	9.0
Temporal	2	2.3
Parotid	1	1.1

cantly from those of PO1 (Z=-4.51, p<0.001) and PO2 (Z=-3.06, p<0.001). Likewise, there was a significant decrease in anxiety score from PrO to PO1 (Z=-4.55, p<0.001) and PO2 (Z=-3.84, p<0.001).

For the sub-domain of swallowing, the only statistically significant difference was between PO1 and PO2 (Z=-3.01, p=0.002). The financial problems did not differ significantly

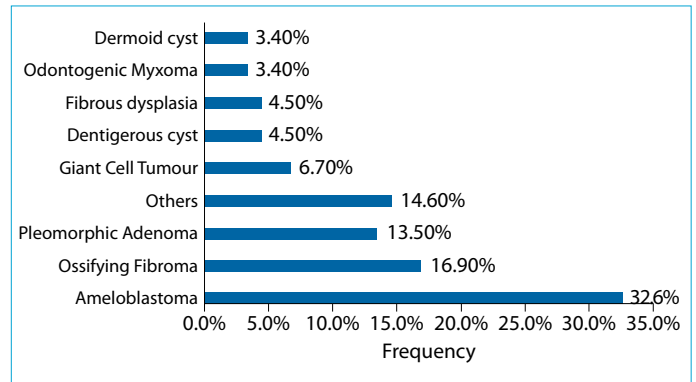


Figure 1. Distribution of patients according to histopathological diagnosis.

(Z=- 0.687, p=0.492) between PrO and PO1 phases. However, there was a statistically significant reduction in financial problems between PrO and PO2 phases (Z=-2.79, p=0.005) and between PO1 and PO2 (Z=-2.63, p<0.009).

In the pre-operative period, there was no statistically significant association of sex and marital status of the patients with various sub-domains (p>0.05). A statistically significant association between age and pain was noted whereby patients above 40 years of age had more pain (OR 3.53; 95% CI 1.36–9.31, p=0.01). The income of the patients was associated with financial problems, and those with volatile income faced with the problems 3 times more (OR 3.53; 95% CI 1.50–20.52, p=0.01). The education level was significantly associated with financial problems, appearance,

Table 3. Mean scores for each domain of UW-QoL in patients with benign tumours and tumour-like lesions at the different phases of treatment

Domain name	Treatment Phases			p (Friedman's test with n=40)
	Pre-operative (n=89)	1-month post-op (n=72)	3-months post-op (n=41)	
Pain	76.69±23.78	81.94±17.91	90.85±19.97	<0.001
Appearance	55.90±23.24	76.39±18.24	75.00±24.36	<0.001
Activity	86.52±18.49	92.71±12.89	92.68±11.52	0.08
Recreation	89.04±18.45	94.10±11.49	91.46±22.78	0.616
Swallowing	91.00±17.98	90.26±18.94	96.74±10.03	0.003
Chewing	84.27±25.67	68.75±29.60	75.61±25.30	0.021
Speech	92.12±15.12	86.55±16.50	85.34±18.36	0.07
Shoulder	92.12±15.12	100	100	-
Taste	92.50±17.96	89.34±22.96	94.30±18.12	0.121
Saliva	95.88±16.54	94.44±17.70	94.44±16.34	0.651
Mood	59.83±37.43	86.46±27.17	82.93±27.64	<0.001
Anxiety	55.40±34.79	82.84±21.69	85.34±21.69	<0.001
Mouth opening	91.57±18.82	90.28±18.82	89.02±23.75	0.939
Financial problems	46.07±40.75	52.78±42.70	64.63±39.12	0.009
Mean total score	1116.41±146.76	1186.84±148.08	1218.22±168.66	0.000

and mood. Patients with lower education levels were more likely to experience financial problems (OR 6.28; 95% CI 1.95–20.24, $p=0.002$). Patients with a low education level were twice as dissatisfied with their appearances as those with high level of education (OR 2.93; 95% CI 1.16–7.40, $p=0.023$). Patients with low education levels were 6 times more likely to experience negative mood than others (OR 6.35; 95% CI 2.13–18.86, $p=0.001$).

No statistically significant relationship between location of tumor and the various sub-domains apart from the one between the mandible and appearance. Patients with mandibular tumors were 3 times more likely to complain about their appearance (OR 3.13; 95% CI 1.25–7.87, $p=0.015$). The sizes of the lesions were significantly associated with several sub-domains, including financial problems, appearance and mood. Patients with tumors larger than 10 cm were 3 times more likely to complain of financial difficulties (OR 3.23; 95% CI 1.33–8.11, $p=0.01$), 9 times more likely to be dissatisfied with their appearance (OR 9.31; 95% CI 2.54–34.07, $p=0.001$) and 8 times higher probability of negative mood (OR 8.00; 95% CI 3.01–21.23, $p<0.001$). One month after the surgery (PO1), a statistically significant correlation ($p<0.05$) was found between the education level and financial difficulties, chewing and age, and between the type of surgery and chewing problems. Patients 40 years and older were 3 times more prone to chewing difficulties compared to those under 40 years of age (OR 3.33; 95% CI 1.21–9.16, $p<0.02$). The probability of facing with financial problems were 17 times higher in patients with low education levels (OR 17.9; 95% CI 2.23–9.16, $p<0.02$). Patients who underwent an ablative surgical procedures had 7 times higher odds of difficulty in chewing than those who had non-ablative surgery (OR 7.22; 95% CI 2.42–21.58, $p<0.001$).

At the 3rd month postoperatively, the only statistically significant relationship was between the type of surgery and chewing problems. Patients who underwent ablative surgical procedures and had problems with chewing were 18 times higher than those who had non-ablative surgery (OR 18.13; 95% CI 3.71–88.55, $p<0.001$).

Discussion

The present study evaluated the Health-Related Quality of Life (HRQoL) of patients with benign tumors and tumor-like lesions affecting the oral and maxillofacial region attending treatment at MNH. The purpose of adding two domains (financial difficulty and mouth opening) to the University of Washington-Quality of Life Questionnaire was due to their applicability in our setting. Moreover, the financial difficulty domain was included to obtain first-hand informa-

tion from the patients on the impact of the tumors on their daily income-generating activities.

The results of this study revealed a decrease in number of patients filling out postoperative questionnaires. This failure for postoperative follow up was largely attributed to travel costs, a result that was similar to findings in the study by Msolla et al.,^[10] which revealed that cost was one of the main reasons for not feedbacking a health facility, and that delay in reporting was increasing 10 times for those residing further than 400 km from Dar es Salaam.

In this study, ameloblastoma and ossifying fibroma were the most frequently operated benign lesions. These results are consistent with previous studies conducted by the same institute.^[1,10,11] The common surgical procedures performed including, tumor enucleation, mandibulectomy, and tumor excision, revealed the results similar to findings in a recent study reported on the spectrum of oral and maxillofacial surgical procedures at MNH.^[1]

In this study, the changes in the pre- and post-operative QoL scores were statistically significant in the domains of pain, appearance, swallowing, mood, anxiety and financial difficulty. These findings were similar to those reported in Nigeria.^[4] In this study, a postoperative improvement was observed in the domain of pain at 3rd-month compared to the scores at preoperative and 1-month post-operative phases. Benign tumors are usually painless^[10,12] but can be painful when infected,^[4] and this was probably the reason for the lower preoperative pain scores in this study. As pain is the primary reason for seeking healthcare in our settings,^[10] it was not surprising to encounter with the pain in benign lesions preoperatively. One month after surgery, the pain scores were almost similar to those in preoperative period, and this might be due to the fact that patients were still in their recovery time from the surgery.

The overall burden of patients with benign tumors and tumor-like lesions affecting the oral and maxillofacial region is identified by the appearance domain of UW-QOL.^[13] In this study, there was a significant improvement in the post-operative appearance score, possibly because the cause of disfigurement (tumor or tumor-like lesion) had been removed.

In this study, it was found that patients with low education levels were not satisfied with their post-operative appearances two times more compared to their counterparts. This may be because most of the patients with low educational levels reported large tumors that required rather extensive surgery causing large defects, hence having a greater effect on the general appearance. This fact was further sustained by the findings from this study which revealed that the size of the lesions was significantly associated with the

appearance of an individual. On the other hand, having a good appearance is an important tool for recreation that can positively affect the mood of the patients,^[4] and this fact was obvious in this study that the mean mood score of the patients was lower during the pre-operative phase and increased following the surgery. This suggested that the presence of tumours and tumor-like lesions in patients caused a negative psychological state and that the surgery had some positive impact on their mood.

In the present study, there was a decrease in mean swallowing scores in the 1st post-operative phase, however, the score improved significantly in the 2nd post-operative phase. While swallowing difficulty may be caused by preoperative pain, swallowing is usually affected in the first month as a result of the difficulty in sealing the mouth caused by edema, and limited function of the muscular system. musculature. In the 3rd month post-operatively, soft tissues generally healed and adapted to the demands of the body. In this study, the mean post-operative scores (at the 1st month and 3rd month) of the chewing domain were lower compared to the pre-operative phase. Ablative surgical procedures resulted in 7 times more possible chewing difficulty than those who had non-ablative surgery. The resulting detachment of muscles, loss of teeth and some bones, caused the decrease in biting force, occlusal disharmony and chewing difficulty, as observed in this study. Therefore, patients must change their food type and its way of preparation.

The findings of this study pointed out that financial difficulties were strongly associated with the patients' tumor size, education level and income. With a low educational level one usually has a more temporary job allowing him leading little savings to afford the treatment. Having less savings, patients delay seeking the treatment, thus develop rather large tumors that may in turn make a person unable to work for earning, so financial difficulties become the outcome of a vicious circle between these three mentioned factors. The financial difficulties were significantly declined after surgery, presumably because the patients returning to work and thus keeping their earnings stable.

This study had some limitations, including patient's quitting during subsequent follow-ups. Despite these limitations, this study provided very useful information regarding the quality of life of patients managed for benign oral and maxillofacial tumors and tumor-like lesions. This requires oral and maxillofacial surgeons to address and take the issues of the quality of life into consideration when deciding on the treatment of patients with benign oral and maxillofacial tumors and tumor-like lesions.

Conclusion

Pain, appearance, swallowing, mood, anxiety and financial difficulty were the most important domains of quality of life associated with benign tumors and tumor-like lesions affecting the oral and maxillofacial region. The age of the patients, their income, size of the tumors, tumor location and type of surgery significantly affected the domain scores. In general, most of the patients had a better quality of life after their conditions was managed.

Disclosures

Ethics Committee Approval: The study was approved by the Institution Review Board of the Muhimbili University of Health and Allied Sciences (MU/PGS/SAEC/Vol.X) and permission was granted by the Muhimbili National Hospital. A written informed consent was obtained from all patients.

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Conflict of Interest: None declared.

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