

Research Article

Health-Related Quality of Life of Patients Surgically Treated for Benign Oral and Maxillofacial Tumours and Tumour-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 tumours and tumour-like lesions at Muhimbili National Hospital, Tanzania.

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

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

Conclusion: Pain, appearance, swallowing, mood, anxiety and financial difficulty were the most important issues patients faced. The patients' age, their income, size and location of tumour 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 region 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 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 influenced by several factors including sociodemographic (e.g. age, sex, occupation, level of education) and clinical factors (e.g. tumour site, tumour size and treatment modality).^[2] It varies significantly between individual patients with the same disease or who have undergone 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 Organisation for Research and Treatment of Cancer, and Functional Assessment of Cancer Therapy.^[5,7] When it comes to head and neck cancers, the University of Washington Quality of Life (UW-QoL) questionnaire is one of the most preferred main tools^[8] because it allows assessment of the effects of head and neck cancer and its treatment changes over a spectrum of time.^[9] The UW-QoL questionnaire was developed for use in oral oncology but its modification has validated its use in assessing HRQoL in benign jaw tumours as well.^[4]

In Tanzania, and probably elsewhere in Africa majority of patients with benign lesions often report late^[10] therefore presenting with large tumours which have an impact on their HRQoL. Yet still, the impact of oral and maxillofacial benign conditions on HRQoL has been underreported. This creates a gap in identifying and addressing areas of concern from patients' point of view.^[9] Often, the clinician and the patient judge treatment success differently, whereby for clinicians success is seen in terms of recurrence and survival, the patients consider issues like return to the normal pre-disease state 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 tumours and tumour-like lesions at Muhimbili National Hospital, Tanzania which is 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 Sept 2017 and March 2018 and included patients with benign tumours and tumour-like lesions which involved the oral and maxillofacial region.

The inclusion criteria were patients who were aged 13 years and above, had histologically proven diagnosis of a benign lesion in the oral and maxillofacial region and had never undergone any surgical procedure for their presenting conditions. The patients who met the inclusion criteria were requested to participate after they had been briefed

about the purpose and procedures of the study, and those who agreed to participate signed a statement of informed consent.

A predesigned questionnaire that was used to collect data consisted of two parts whereby the first part collected sociodemographic and clinical data from the patients. Data recorded included age, sex, education level, marital status and occupation of the patients. The other data concerned duration, location, size and histological diagnosis of the lesions, and type of treatment offered. The second part was a modified version of the University of Washington Quality of Life (UW-QoL) questionnaire version 4. Two domains which included mouth opening and financial difficulty were added to the original 12 domains of UW-QoL questionnaire. A Swahili version questionnaire was used in this study because majority of the patients could not speak or write in English.

Scoring of the modified UW-QoL questionnaire was scaled so that a score of 0 represented the worst subjective function while a score of 100 represented 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, all respondents' scores on a particular domain were added and the mean was calculated. This calculation was performed for all responses and summed to yield the total score for that item. The assessment was done during the three phases: pre-operative (PrO), one-month post-op (PO₁), and three months post-operatively (PO₂).

All filled-in questionnaires were checked by the investigator for completeness. Data was then entered, and analysed using Statistical Package for Social Sciences (SPSS) version 23.0. For general descriptive analysis of data, age was categorized into groups with a range of 20 years such as <20, 20-39, 40-59 and 60+. Tumour size was dichotomized into ≤10 cms and >10 cms. Duration of a lesion was grouped as <2 years, 2 to 5 years and more than 5 years. To facilitate multivariate logistic regression analysis, dichotomization of sociodemographics was as follows: age (≤40 years and >40 years), level of education (primary or below as low level and secondary or above as high level). Marital status was categorized as those with spouses (married/ cohabiting) and those without 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 dichotomized into ablative (mandibulectomy, maxillectomy and sialoadenectomy) and non-ablative (bone remodeling, tumor enucleation and tumour excision).

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

The study was approved by the Institution Review Board of the Muhimbili University of Health and Allied Sciences (MUHAS) and permission was granted by the Muhimbili National Hospital. Participation was voluntary and refusal to participate or withdraw from the study did not compromise the management of the patient. For each participant, a signed informed consent form was obtained before data collection. No names were used to avoid identification and the participants were assured of confidentiality and their 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 tumours and tumour-like lesions of the oral and maxillofacial region. There were 40 (44.9%) males with 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 (41.6%) participants were in the age group 20-39 years. Almost half (49.4%) of the participants had primary level of education. Most (34.8%) participants were peasants and about 47.2% were married (Table 1).

A total of sixteen different types of benign oral and maxillofacial tumours and tumour-like lesions were operated upon. About half (52.8%) of the patients had the lesions for less than 2 years and in most (62.9%) patients, these lesions were less than 10 cms on presentation. In 46 (51.7%) patients 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 tumour enucleation 26 (29.2%), mandibulectomy 25 (28.1%), tumour excision 21 (23.6%), maxillectomy 7 (7.9%), sialoadenectomy 6 (6.7%) and bone remodeling 4 (4.5%).

All 89 (100%) patients filled the HR-QoL questionnaires dur-

Table 1. Distribution of study participants according to 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

ing pre-operative (PrO), while 72 (80.9%) filled them during the 1st post-operative phase (PO₁), and only 41 (46.1%) responded in 2nd post-operative phase (PO₂). The mean score of different sub-domains of HR-QoL questions are included in table 3.

There were statistically significant differences (p<0.05) for sub-domains of pain, appearance, swallowing, chewing, mood, anxiety and financial problems during different treatment phases (Table 3). For these sub-domains, post hoc analysis with Wilcoxon signed-rank tests was conducted with a Bonferroni correction applied, resulting in a significance level set at p<0.017. For the sub-domain of pain, 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 statistically significant improvement in

Table 2. Distribution of study participants according to 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

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 mean scores for mood at PrO differed significantly from those of PO₁ (Z=-4.51, p<0.001) and PO₂ (Z=-3.06, p<0.001). Likewise, there was significant decrease in anxiety 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

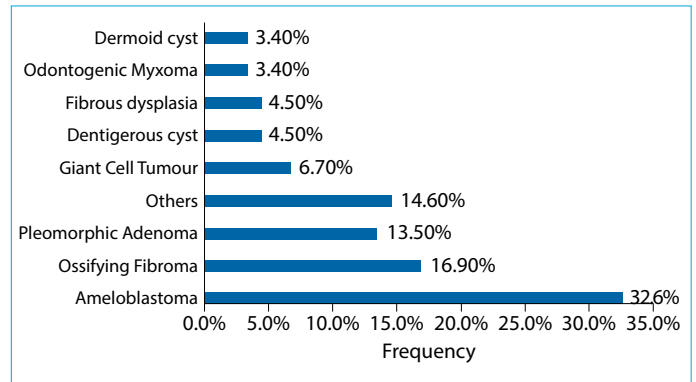


Figure 1. Distribution of patients according to histopathological diagnosis.

significant difference was between PO₁ and PO₂ (Z=-3.01, p=0.002). The financial problems did not differ significantly (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).

During 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 aged above 40 years 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 the problems 3 times more (OR 3.53; 95%

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

CI 1.50–20.52, $p=0.01$). The education level was significantly associated with financial problems, appearance, and mood. Odds of having financial problems were higher in those patients with low education level (OR 6.28; 95% CI 1.95–20.24, $p=0.002$). Patients with a low level of education were two times more unsatisfied with their appearances compared to those with high level of education (OR 2.93; 95% CI 1.16–7.40, $p=0.023$). Chances of having negative mood were 6 times more in patients with low level of education than their counterparts (OR 6.35; 95% CI 2.13–18.86, $p=0.001$).

No statistically significant association was noted between location of tumour and various sub-domains apart from the one between the mandible and appearance. Patients with tumours in the mandible were 3 times more likely to complain about their appearance than those without (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 tumours larger than 10 cms had 3 times higher odds of complaining of financial difficulties (OR 3.23; 95% CI 1.33–8.11, $p=0.01$), 9 times more likely to be unsatisfied with their appearance (OR 9.31; 95% CI 2.54–34.07, $p=0.001$) and 8 folds higher odds of negative mood (OR 8.00; 95% CI 3.01–21.23, $p<0.001$).

One month after surgery (PO_1), a statistically significant association ($p<0.05$) was found between the level of education and financial difficulties; chewing and age; and between the type of surgery and problems with chewing. Patients aged 40 years and above were 3 times more prone to difficulty in chewing compared to those below 40 years (OR 3.33; 95% CI 1.21–9.16, $p<0.02$). The chances of having financial problems were 17 folds higher in patients with low education levels (OR 17.9; 95% CI 2.23–9.16, $p<0.02$). Patients who underwent ablative surgical procedures had 7 times higher odds of difficulty with chewing than those who had non-ablative surgery (OR 7.22; 95% CI 2.42–21.58, $p<0.001$).

During the 3rd month postoperatively, the only statistically significant association was between the type of surgery and problems with chewing. The odds of patients who underwent ablative surgical procedures and had problems during chewing were 18 folds 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 tumours and tumour-like lesions affecting the oral and maxillofacial region who attended treatment at MNH. The purpose of adding the 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 added to obtain first-hand information from the patients on the effect of the tumours on their daily income-generating activities.

Results of this study revealed a drop in number of patients who filled in the questionnaires post-operatively. This failure to turn up for post-operative follow up was largely attributed to the cost of travel, results which were similar to findings in a study by Msolla et al.^[10] which revealed that cost was one of the main problems for not reporting to a health facility, and chances for delay in reporting increased by 10 folds for those who resided more than 400 km from Dar es Salaam.

In this study, ameloblastoma and ossifying fibroma were the most frequently operated benign lesions. These results concurred with previous studies from the same institute.^[1, 10, 11] The surgical procedures that were commonly performed included tumour enucleation, mandibulectomy and tumour excision, the results which were similar to findings in a recent study that reported on the spectrum of oral and maxillofacial surgical procedures at MNH.^[1]

In the current study the changes in the pre-operative 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 what was reported in Nigeria.^[4] In this study, there was an improvement in the domain of pain 3rd-month post-operatively compared to the scores at pre-operative and 1-month post-operative phases. Benign tumours are usually painless^[10, 12] but maybe painful when infected,^[4] and this was probably the reason for the lower scores of pain experienced preoperatively in this study. Since pain is the major cause of one to seek health care in our settings,^[10] it was not surprising to encounter pain in benign lesions preoperatively. One month post-operatively, the scores of pain were almost similar to those in pre-operative period, and this could have been due to the fact that patients were still recovering from the surgery.

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

In this study, it was found that patients with a low level of education were not satisfied with their post-operative appearances by two folds compared to their counterparts. This may be because most of the patients with low edu-

cation reported with big tumours which required rather extensive surgery causing large defects, hence more effect on the general appearance. This was further augmented 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, a good appearance is an important tool for recreation that can positively influence the mood of the patients,^[4] and this was evident in this study, whereby patients' mean mood score was lower during pre-operative phase and increased after surgery. This suggested that the presence of tumours and tumour-like lesions in patients caused a negative psychological state and that the surgery had some positive influence on their mood.

In the current study, there was a reduction in mean swallowing scores in the 1st post-operative period, however, the score had significantly improved during the 2nd post-operative period. While preoperative pain could be the reason for the difficulty in swallowing, in the first-month post-operatively, swallowing is usually affected as a result of the difficulty in obtaining an oral seal caused by oedema, and limited function of the musculature. During the 3rd month post-operatively, the soft tissues generally had healed and adapted to the demands of the body.

In the current study, the mean post-operative scores (at 1 month and 3rd month) of the domain of chewing were lower compared to the pre-operative phase. Ablative surgical procedures caused 7 times higher odds of difficulty in chewing than those who had non-ablative surgery. The resultant detachment of muscles, loss of teeth and some bone caused decreased bite force, occlusal disharmony and difficulty in chewing as experienced in this study. Due to this, patients ought to change the types of food and make modification in its preparation.

The findings of this study pointed out that financial difficulties were strongly associated with the tumour size, level of education and income of the patient. With low education level one usually ends up with a job that is more of hand to mouth, and these individuals have little saving if any at all to cater for treatment. Having less savings, patients delay to seek treatment, thereby end up developing rather large tumours which could, in turn, incapacitate a person to earn, hence financial difficulties become a product of a vicious circle between the three said factors. The financial difficulties declined significantly after surgery, probably because the patients had reverted to work and hence stabilized their earning.

This study had some limitations, including patient drop-out during subsequent follow-ups. Despite this limitation, this study provided very useful information regarding the

quality of life of patients who were managed for benign oral and maxillofacial tumours and tumour-like lesions. This calls for oral and maxillofacial surgeons to address and take into account the issues of the quality of life when deciding on the treatment of patients with benign oral and maxillofacial tumours and tumour-like lesions.

Conclusion

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

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.

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

Authorship Contributions: Concept – N.S., S.S.O.; Design – N.S., S.S.O., B.M.K., K.S.S.; Supervision – S.S.O., B.M.K.; Materials – N.S., S.S.O., B.M.K., K.S.S.; Data collection &/or processing – N.S., K.S.S.; Analysis and/or interpretation – N.S., K.S.S.; Literature search – N.S., S.S.O., B.M.K., K.S.S.; Writing – N.S., K.S.S.; Critical review – S.S.O., B.M.K., K.S.S.

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