

Quality of life assessment using the World Health Organization quality questionnaire pre- and post-otolaryngological surgery among patients in western Saudi Arabia

Saad M. Almuhayawi, FRCSC, Zainab A. Bakhsb, MBBS, Mutasem S. Almuhayawi, Medical Student.

ABSTRACT

الأهداف: لتقييم جودة حياة المرضى قبل وبعد جراحة الأنف والأذن والحنجرة.

الطريقة: أقيمت هذه الدراسة المقطعية على المرضى الذين أجري لهم عمليات جراحية في قسم الأنف والأذن والحنجرة والرأس والعنق في المنطقة الغربية بالمملكة العربية السعودية خلال الفترة من مارس إلى أكتوبر 2013م، وقمنا بقياس جودة حياة المرضى باستخدام النسخة العربية من منظمة الصحة العالمية لتقييم جودة حياة المرضى قبل الجراحة و بعد أسبوعين إلى أربع أسابيع من الجراحة. وقد شملت التفاصيل الديمغرافية على التالي: العمر، الجنس، مستوى التعليم، الحالة الاجتماعية، الدخل الشهري، وبالإضافة للتشخيص الطبي وتحليل نوع الجراحة الأذن والحنجرة.

النتائج: أكمل 99 مريض الاستبيان، من بينهم (43 ذكر، و 52 أنثى)، وتتراوح أعمارهم من 1-75 سنة (21.6 سنة). وكانت أكثر العمليات نسبة هي جراحة استئصال اللوزتين واللحمية وتليه جراحة تعديل انحراف الحاجز الأنفي ثم عملية وضع أنابيب تهوية في طبلة الأذن. وقد وجدنا تحسن واضح في مختلف مجالات جودة حياة المرضى من بعد الجراحة وقد كانت أعلى نسبة في مجال العلاقات الاجتماعية وأقل نسبة في مجال الصحة البدنية ولكن كان فرق التحسن في جودة حياة المرضى قبل و بعد العملية أكثر في مجال الصحة البدنية (7.9%) وتليها الصحة النفسية (5.1%) ثم البيئية (2.5%) وأقل تحسن في مجال العلاقات الاجتماعية (2.3%).

الخلاصة: إن جودة حياة المرضى تحسنت بشكل واضح بعد جراحة الأنف والأذن والحنجرة.

Objectives: To evaluate the health-related quality of life (HRQoL) of patients' pre- and post- otolaryngological surgery.

Methods: We conducted a cross-sectional study of patients who underwent otolaryngological surgery in the western region of Saudi Arabia between March and

October 2013. We administered the Arabic version of the World Health Organization Quality of Life assessment instrument to all patients before surgery, and 2-4 weeks after surgery. The demographic details such as age, gender, level of education, marital status, patients' incomes, otolaryngology diagnosis, and type of otolaryngology surgery were analyzed.

Results: A total of 99 patients (43 males and 52 females), ranging from 1-75 years of age (mean: 21.6 years), were included in this study. The most frequently diagnosed conditions were chronic tonsillitis and obstructive sleep apnea due to adenoid enlargement. Adenotonsillectomy was the most frequently performed surgery, followed by septoplasty and myringotomy with grommet tube insertion. For all domains, patients had significantly higher scores post-surgery. The highest score was obtained for the social relationship domain, and the lowest for the physical health domain. However, the highest differences between the pre- and post- surgery scores were for physical health (7.9), psychological (5.1), environmental (2.5), and social health (2.3) domains.

Conclusion: The HRQoL of patients improved significantly after otolaryngology surgery.

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From the Otolaryngology, Head & Neck Surgery Department, (Almuhayawi S, Bakhsb), and the Faculty of Medicine (Almuhayawi M), King Abdulaziz University, Jeddah, Kingdom of Saudi Arabia.

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Address correspondence and reprint request to: Dr. Saad M. Almuhayawi, Department of Otolaryngology, Head and Neck Surgery, King Abdulaziz University Hospital, PO Box 80215, Jeddah 21589, Kingdom of Saudi Arabia. Tel. +966 (12) 6408351. Fax. +966 (12) 6408281. E-mail: Dr.Muhayawi@gmail.com

Clinical observations and laboratory data were used to measure the outcomes of medical care. Recently, healthcare practitioners recognized that the clinical observations and laboratory data had to be complemented with quantitative measures using the health-related quality of life (HRQoL) questionnaire. Healthcare professionals have created a few classes of complementary health status measures for assessing the functional health status, health, and well-being.¹ However, due to lack of consensus among researchers, the World Health Organization Quality of Life assessment (WHOQOL) measures the HRQoL of individuals by considering how satisfied or dissatisfied people are with the important aspects of their lives, which is subjective. The importance of the WHOQOL has been demonstrated in several quality of life studies, and it has been used to assess the quality of life in patients with inherited metabolic disorders,² sickle cell anemia,³ and those with chronic diseases.⁴

In otolaryngology, several studies have assessed the HRQoL in one particular type of otolaryngology and head and neck surgery,⁵⁻⁸ but none of these used the WHOQOL to assess the patients' quality of life. One of these studies was an assessment of the quality of life before and after septoplasty and rhinoplasty using a subjective questionnaire of the quality of life.⁷ Another study investigated the long-term, health-related quality of life among survivors of head and neck cancer.⁸ The current study was designed to evaluate the patients' HRQoL pre- and post- otolaryngological surgery using the Arabic version of the World Health Organization Quality of Life assessment instrument (WHOQOL-BREF).

Methods. *Human subjects.* This cross-sectional study was conducted at the Otolaryngology, Head and Neck Surgery Department, King Abdulaziz University Hospital, Jeddah, Saudi Arabia between March and October 2013. Patients were included if they underwent otolaryngology surgery. We excluded patients who declined to participate in the study and all cases with partial response. We obtained an informed written consent from all participants prior to inclusion in the study. Permission to conduct the study was granted by the Institutional Review Board of the Western region of Saudi Arabia under the principle of the Helsinki Declaration.

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Data collection process. A total of 116 questionnaires were administered to the patients at the Otolaryngology Clinic of King Abdulaziz University Hospital. The form was self-administered. Adult patients, in the case of children, parents completed the forms. Of the 116 questionnaires that were distributed, 99 were returned as complete, resulting in a response rate of 85.3%.

We administered the Arabic version of the WHOQOL-BREF, which is a valid assessment of the quality of life. The questionnaire comprises 26 items consisting of the following 4 domains: physical health (7 items), psychological health (6 items), social relationship (3 items), and environmental health (8 items). It also contains quality of life and general health items. Each item of the WHOQOL-BREF is scored on a scale of 1-5, where one refers to a poor response and 5 refers to an excellent response. The scores are then transformed linearly to a 0-100 scale.⁹ Higher transformed scores indicate a better HRQoL. The health-related quality of life outcome was measured for all patients before surgery and 2-4 weeks after surgery. Other data points included the age, gender, level of education, marital status, patients' incomes, otolaryngology diagnosis, and type of otolaryngological surgery.

Statistical analysis. Data were analyzed using the Statistical Package for the Social Sciences (SPSS Inc., Chicago, IL, USA) (version 16.00). Descriptive statistics was computed for all variables. The results are expressed as the frequency (percent) for the demographic data, type of diagnosis, and type of surgery. The method included the comparison of the mean±standard deviation (SD) of pre and post otolaryngological surgeries in 4 quality of life domains (physical, psychological, social and environmental). The paired t-test was used to identify the presence of statistical significance difference in the 4 domains of the WHOQOL pre and post otolaryngological surgeries and the significant *p*-value was set at a value of less than 0.05.

Results. We enrolled 99 patients with a mean (±SD) age of 21.6±19.3 years (range, 1-75 years); children comprised approximately one-third of the sample (Table 1). Of the 99 patients, females accounted for over half of the sample; a large proportion of these patients were housewives (Table 1). Approximately 50% of the patients had completed at least intermediate education, and fewer than 50% earned salaries >5000 Saudi Riyads (SAR).

Domain scores. For all HRQOL domains (physical, psychological, social, and environmental), patients had significantly higher scores post-surgery compared with the mean scores pre-surgery (Table 2). The highest

score was obtained for the social relationship domain, and the lowest was obtained for the physical health domain. However, differences in the scores (pre- and post-surgery) were greater for the physical health scale (7.9), with a significant value of $p=0.00027$, followed

Table 1 - Demographic characteristics of patients who underwent assessment with the World Health Organization Quality of Life assessment pre and post otolaryngological surgery.

Variable	Frequency (%)
Gender	
Male	43 (45.3)
Female	52 (54.7)
Nationality	
Saudi	55 (60.4)
Non-Saudi	36 (39.6)
Marital status	
Single	34 (35.4)
Married	18 (18.8)
Divorced	3 (3.1)
Widowed	6 (6.3)
Child	35 (36.5)
Level of education	
Illiterate	16 (17.8)
Read and write	6 (6.7)
Elementary	23 (25.6)
Intermediate	6 (6.7)
High school	17 (18.9)
University	21 (23.3)
Post-university graduate	1 (1.1)
Occupation	
Professional	17 (23.3)
Non-professional	2 (2.7)
Housewife	52 (71.2)
Retired	2 (2.7)
Monthly income	
<5000 SAR	42 (53.2)
>5000 SAR	37 (46.8)

SAR - Saudi Riyals

Table 2 - Comparison of the mean±standard deviation in 4 main quality of life domains (physical, psychological, social, and environmental) between pre- and post- otolaryngological surgery

Domains	Mean±SD	P-value
Physical health		
Pre-surgery	67.8 ± 15.0	0.00027
Post-surgery	75.70 ± 16.7	
Psychological health		
Pre-surgery	74.3 ± 13.8	0.0003
Post-surgery	79.4 ± 13.6	
Social relationship		
Pre-surgery	85.3 ± 13.3	0.036
Post-surgery	87.6 ± 13.5	
Environmental health		
Pre-surgery	72.3 ± 16.6	0.00078
Post-surgery	74.8 ± 16.5	

by the psychological (5.1) ($p=0.0003$), environmental (2.5) ($p=0.00078$), and social health (2.3) domains ($p=0.036$). There was no statistically significant difference in the results according to gender.

Table 3 shows that the most frequently diagnosed conditions were chronic tonsillitis and obstructive sleep apnea due to adenoid hypertrophy (n=43; 43.5%). Less frequent diagnoses included nasopharyngeal carcinoma (n=1; 1%), and salivary gland tumor (n=1; 1%). Adenotonsillectomy was the most frequently performed surgery, followed by septoplasty and myringotomy with grommet tube insertion (Table 4).

Discussion. This study describe the HRQoL of patients who underwent otolaryngology surgery using the WHOQOL-BREF instrument. In this study, we used the Arabic version of the WHOQOL-BREF, which was proven in a previous report to be a valid and robust method for assessing the HRQoL.⁹ In their study, Ohaeri et al¹⁰ stated that the Arabic translation of the questionnaire is a cross-culturally valid generic instrument that addresses the main issues of the subjective quality of life construct in medicine. However, there are no reports used in the Arabic version of the WHOQOL-BREF to describe the HRQoL in patients who underwent otolaryngological surgery. We compare our findings with other previous

Table 3 - The frequency and percent of the different types of otolaryngological diagnoses in patients whose quality of life pre and post otolaryngological surgery was assessed using the World Health Organization Quality of Life.

Diagnosis	Frequency (%)
Chronic tonsillitis and obstructive sleep apnea due to adenoid hypertrophy	43 (43.5)
Middle ear abnormality	
Chronic otitis media	11 (11.1)
Tympanic membrane perforation	2 (2.0)
Chronic sinusitis	6 (6.0)
Nasal abnormality	
Deviated nasal septum	11 (11.1)
Nasal deformity	6 (6.0)
Head and neck benign lesion	
Thyroid graves disease	4 (4.0)
Parathyroid gland adenoma	1 (1.0)
Head and neck malignant tumor	
Nasopharyngeal carcinoma	1 (1.0)
Salivary gland tumor	1 (1.0)
Thyroid cancer	2 (2.0)
Mandibular tumor	2 (2.0)
Chonal atresia	2 (2.0)
Subglottic stenosis	4 (4.0)
Vocal cord paralysis	2 (2.0)
Not identified	1 (1.0)

Table 4 - The frequency and percent of the different types of otolaryngological surgery in patients whose quality of life pre and post otolaryngological surgery were assessed using the World Health Organization Quality of Life.

Diagnosis	Frequency (%)
Adenotonsillectomy	43 (43.5)
<i>Middle ear surgery</i>	13 (13.1)
Myringotomy with grommet tube insertion	11 (11.1)
Tympanoplasty	2 (2.0)
Functional endoscopic sinus surgery	4 (4.0)
<i>Nasal surgery</i>	19 (19.1)
Rhinoplasty	4 (4.0)
Septoplasty	13 (13.1)
Nasal polypectomy	2 (2.0)
<i>Head and neck surgery for benign lesion</i>	5 (5.1)
Thyroidectomy	4 (4.1)
Parathyroidectomy	1 (1.0)
<i>Head and neck surgery for malignant tumor</i>	6 (6.0)
Nasopharyngeal biopsy	1 (1.0)
Sialoadenectomy	1 (1.0)
Thyroidectomy with neck dissection	2 (2.0)
Mandibulectomy	2 (2.0)
Chonal atresia repair	2 (2.0)
Bronchoscopy for dilatation of subglottic stenosis	4 (4.0)
Tracheostomy	2 (2.0)
Not Identified	1 (1.0)

study who used other instruments to report the HRQoL in patients who underwent ear, nose, and throat surgery. We found that the HRQoL of patients increased significantly across all domains after surgery. Although the highest score was obtained for the social relationship domain, the differences in the scores (pre- and post-surgery) were greater for the physical health domain and lowest for the social relationship domain. The significant improvement in the physical and psychological health domains was due to the alleviation of symptoms after intervention, as occurs in cases of adenotonsillectomy, and the improvement is expected to be greater in these 2 domains for the patients who undergo rhinoplasty, which considerably changes the patient's appearance.¹¹ Conversely, for patients with adenotonsillar disorders, who constituted nearly half of our sample, improvements are not expected in the social relationship or environmental domains, which include financial resources, safety, and transportation. Although the improvement was not high for all domains, a change in some will positively affect the overall quality of life.

Similar to our findings, other studies^{7,12-17} reported a significant increase in the HRQoL of patients who underwent otolaryngological surgery. Bezzera et al¹⁶ used the nasal obstruction symptom evaluation (NOSE) questionnaire before and 3 months after surgery to assess the impact of septoplasty on patients with

nasal obstruction secondary to deviated nasal septum, which is based on the disease-specific quality-of-life questionnaire. Forty-six patients were included in that study. There was a statistically significant improvement in the preoperative NOSE score (md=75, IQR=26); after 3 months (md=10, IQR=20) ($p<0.001$, T-Wilcoxon), the authors concluded that septoplasty resulted in a statistically significant improvement in the disease-specific QOL questionnaire.

In Schwentner et al's¹⁷ study, that used the Glasgow Children's Benefit Inventory (GCBI), found an improvement in all GCBI subscales and concluded that adenotonsillectomy has a positive impact on the patients' HRQoL. Furthermore, they found that the HRQoL outcomes were long-lasting after adenotonsillectomy. In general, increases in the HRQoL are expected after treatment. However, this is not always the case, as demonstrated in a study by Swan et al,¹⁸ who used the Health Utilities Index mark 3 (HUI-3) and the Glasgow Benefit Inventory (GBI) to assess the effect of otolaryngology management on the HRQoL of patients. They found a significant increase in the HRQoL for 2 subdivisions of patients: cases of sensorineural hearing loss treated by hearing aid provision and cases of active middle ear disease treated surgically. However, their results might have been affected by the sample size in some subdivisions. We unfortunately did not assess the differences in scores when the patients were subdivided by the diagnosis and type of surgery because our small sample size did not permit us to make such relevant comparisons.

Study limitations. Our sample size was too small for us to find changes in the HRQoL according to the diagnosis or surgery type. We were able to survey patients 2-4 weeks after surgery, a period that is characterized by postoperative pain, which may affect the patients' quality of life.

In spite of these limitation, this study emphasizes the positive effect of otolaryngology surgery in improving the patients' quality of life by assessing the quality of life with a standardized questionnaire, the WHOQoL. We recommend a future study that includes more patients and a longer duration of follow up after surgery (up to approximately 6 months) to further assess the quality of patient life after otolaryngological surgery.

In conclusion, patients who underwent otolaryngological surgery showed significant improvement in the HRQoL after surgery. In addition, changes in the domain scores were greater for the physical health domains than they were for the other domains, which helps us understand the benefits of surgery in patients with otolaryngology disorders.

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References

- Skevington SM, Lotfy M, O'Connell KA; WHOQOL Group. The World Health Organization's WHOQOL-BREF quality of life assessment: psychometric properties and results of the international field trial. A report from the WHOQOL group. *Qual Life Res* 2004; 13: 299-310.
- Cazzorla C, Del Rizzo M, Burgard P, Zanco C, Bordugo A, Burlina AB, et al. Application of the WHOQOL-100 for the assessment of quality of life of adult patients with inherited metabolic diseases. *Mol Genet Metab* 2012; 106: 25-30.
- Asnani MR, Lipps GE, Reid ME. Utility of WHOQOL-BREF in measuring quality of life in sickle cell disease. *Health Qual Life Outcomes* 2009; 7: 75.
- Li L, Young D, Xiao S, Zhou X, Zhou L. Psychometric properties of the WHO Quality of Life questionnaire (WHOQOL-100) in patients with chronic diseases and their caregivers in China. *Bull World Health Organ* 2004; 82: 493-502.
- de Bree R, Verdonck-de Leeuw IM, Keizer AL, Houffelaar A, Leemans CR. Touch screen computer-assisted health-related quality of life and distress data collection in head and neck cancer patients. *Clin Otolaryngol* 2008; 33: 138-142.
- Rudmik L, Mace J, Ferguson BJ, Smith TL. Concurrent septoplasty during endoscopic sinus surgery for chronic rhinosinusitis: does it confound outcomes assessment? *Laryngoscope* 2011; 121: 2679-2683.
- Baumann I. [Quality of life before and after septoplasty and rhinoplasty]. *Laryngorhinootologie* 2010; 89 Suppl 1: S35-S45. German.
- Funk GF, Karnell LH, Christensen AJ. Long-term health-related quality of life in survivors of head and neck cancer. *Arch Otolaryngol Head Neck Surg* 2012; 138: 123-133.
- World Health Organization. WHOQoL User Manual: WHO/HIS/HIS/Rev.2012.03 WHO Programme on Mental Health. Geneva: World Health Organization; 2012. p. 1-106.
- Ohaeri JU, Awadalla AW. The reliability and validity of the short version of the WHO Quality of Life Instrument in an Arab general population. *Ann Saudi Med* 2009; 29: 98-104.
- Izu SC, Kosugi EM, Lopes AS, Brandão KV, Sousa LB, Suguri VM, et al. Validation of the Rhinoplasty Outcomes Evaluation (ROE) questionnaire adapted to Brazilian Portuguese. *Qual Life Res* 2014; 23: 953-958.
- Jung KH, Cho YS, Hong SH, Chung WH, Lee GJ, Hong SD. Quality-of-life assessment after primary and revision ear surgery using the chronic ear survey. *Arch Otolaryngol Head Neck Surg* 2010; 136: 358-365.
- Pınarbaşı MO, Caklı H, Gürbüz MK, Cingi C, Özüdoğru E. [Quality of life before and after surgery in patients with nasal polyposis]. *Kulak Burun Bogaz Ihtis Derg* 2010; 20: 277-284. Turkish.
- Bezerra TF, Piccirillo JF, Fornazieri MA, Pilan RR, Pinna Fde R, Padua FG, et al. [Assessment of quality of life after endoscopic sinus surgery for chronic rhinosinusitis]. *Braz J Otorhinolaryngol* 2012; 78: 96-102. Portuguese.
- Henriquez OA, Schlosser RJ, Mace JC, Smith TL, Soler ZM. Impact of synechia after endoscopic sinus surgery on long-term outcomes in chronic rhinosinusitis. *Laryngoscope* 2013; 123: 2615-2619.
- Bezerra TF, Stewart MG, Fornazieri MA, Pilan RR, Pinna Fde R, Padua FG, et al. [Quality of life assessment septoplasty in patients with nasal obstruction]. *Braz J Otorhinolaryngol* 2012; 78: 57-62. Portuguese.
- Schwentner I, Schmutzhard J, Schwentner C, Abraham I, Höfer S, Sprinzl GM. The impact of adenotonsillectomy on children's quality of life. *Clin Otolaryngol* 2008; 33: 56-59.
- Swan IR, Guy FH, Akeroyd MA. Health-related quality of life before and after management in adults referred to otolaryngology: a prospective national study. *Clin Otolaryngol* 2012; 37: 35-43.

Related Articles

Al-Khatib T, Alhubaiti AM, Ahmed DG. The perception of otolaryngology-related diseases among parents of children with Down syndrome in Jeddah, Saudi Arabia. *Saudi Med J* 2014; 35: 761-764.

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Abdul-Baqi KJ, Mohammed FI, Shubair KS, Sarhan YS, Tawalbeh MI. Evaluation of dizziness at Jordan University Hospital. *Saudi Med J* 2004; 25: 625-631.