

ORIGINAL ARTICLE

# Gender and quality of life in laryngectomized patients

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## ABSTRACT

**BACKGROUND:** The aim of this study was to investigate possible correlations between the perception of postoperative quality of life and gender.

**METHODS:** The questionnaires “The Brief Illness Perception Questionnaire” (B-IPQ) and “Voice Handicap Index” (VHI) were administered to 94 patients divided into two groups according to gender group A: 73 men, group B: 21 women.

**RESULTS:** The results showed that gender should be considered a factor influencing perceived quality of life in laryngectomized patients. Specifically, women showed greater concern towards the disease, its evolution, and the consequences on their lives, compared to men.

**CONCLUSIONS:** The care of the laryngectomized woman should consider the impact that loss of voice has on the perception of her femininity, and the physical, functional, and above all emotional issues that such surgeries may lead to for women.

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**KEY WORDS:** Neoplasms; Laryngectomy; Quality of life; Gender identity.

Total laryngectomy represents the correct and necessary surgical procedure for the treatment of advanced neoplasms of the hypopharyngeal-laryngeal region. This procedure involves the total removal of the larynx, a structure consisting of a cartilaginous and ligamentous skeleton and a complex neuromuscular network that performs several functions, including a sphincteric/protective function, a respiratory function, a fixation, and apnea-blocking function, a phonatory function, and an emotional function. Total laryngectomy, therefore, drastically alters all of the above functions.<sup>1,2</sup> The voice is a powerful means of communication and personal expression, thus its deprivation has a significant impact on the individual's self-image, daily functioning, and social relationships. Laryngectomy therefore greatly affects the quality of life of the patient.<sup>3-5</sup>

In recent years, the concept of “quality of life” (QoL) has become increasingly prominent. It is defined by the World Health Organization (WHO) as “the individual's perception of their position in life, in the cultural context

and value system in which they live and in relation to their goals, expectations, standards and interests.”<sup>6</sup>

Quality of life should be understood as a complex and multifaceted whole that includes wellbeing in various domains, namely emotional, physical, functional, social, financial, and spiritual.<sup>7,8</sup> Scientific evidence shows that the disease has repercussions in all the above areas and laryngectomy is a striking example of the impact that surgical treatment has on basic daily functions (e.g., breathing, swallowing, speech, physical appearance). There is a significant increase in the state of frustration and depressive symptoms that lead the patient to isolation. This sense of loneliness is mainly related to vocal deprivation. Since the voice is an indicator of identity, personality, and state of mind, its loss represents the loss of a part of one's identity. However, it should be noted that reactions to disease and surgery can differ broadly in individuals, and are related to the personality, profession, age, cultural environment, and social status of the patient.<sup>9-17</sup>

This study aimed to investigate possible correlations between the perception of postoperative quality of life and gender.

### Materials and methods

The sample of patients was recruited from the Otolaryngology Unit of the Department of Neuroscience, Reproductive Sciences and Odontostomatology of the Federico II University of Naples. All patients had to be able to adequately answer the questions asked. Patients with clinically evident cognitive deficits or psychiatric pathologies were excluded from the sample. The research involved 94 patients aged between 43 and 88 years (mean age 65.5).

Patients, after being informed about the purpose of the research, gave informed consent, and then filled out the Brief Illness Perception Questionnaire (B-IPQ) and Voice Handicap Index (VHI) questionnaires.

The Brief Illness Perception Questionnaire (B-IPQ) is a questionnaire consisting of 9 items on a 10-point Likert Scale and is useful for measuring a patient's perception of their disease. Specifically, the questions investigate the influence of the disease on their life; the duration of the disease; the extent to which they felt the disease was under control; the effects of treatment on the disease; their perception of symptoms; their concern regarding the disease; their understanding of the disease; and the influence of the disease on their emotions. The total score represents the degree to which the disease is perceived as a threatening event. A higher score reflects a perception of the disease as more troubling and threatening.<sup>18</sup>

The Voice Handicap Index (VHI) is a questionnaire consisting of 30 items on a 5-point Likert Scale, wherein the patient is asked to describe their voice and its effects on their life. Specifically, the questionnaire is divided into sections investigating different aspects of any perceived handicap. These sections pertain to the physical (*i.e.* the impact of vocal problems on normal daily activities); functional (*i.e.*, the patient's perception of the characteristics of their own vocal emission); and emotional (*i.e.*, the psychological impact caused by vocal impairment) aspects of voice handicap. The total score indicates a mild handicap when >33, a moderate handicap when >44, and a severe handicap when >61.<sup>19, 20</sup>

We chose the VHI questionnaire because it is comparable to the SECEL Test. In fact, both are valid tools for the evaluation of communication in laryngectomized patients, and consequently of their quality of life, the VHI was the one used by our School, for the characteristics of our patients.

Schindler *et al.*, showed that the VHI has an excellent reliability, and that its use is particularly indicated in patients who are native speakers of Italian.<sup>21</sup> Furthermore, another important factor is that the VHI test is a questionnaire filled in directly by the patient.

The data obtained was collected and entered in the database anonymously in compliance with privacy laws. The patients were divided into two groups based on gender: group A: 73 men, group B: 21 women, in order to assess how much belonging to a certain gender influenced the quality of life.

Within each group, patients were further divided based on the mode of communication they used following laryngectomy:

- tracheoesophageal voice (TEP): group A-TEP (43 men), group B-TEP (12 women); in these two groups 23 patients (group A-TE: 16 men and group B-TE: 7 women) underwent primary vocal rehabilitation, with the TE fistula made during their laryngectomy, while the remaining 32 patients;
  - 27 men and 5 women had the fistula made and prosthesis implanted later;
  - esophageal voice (ES): group A-ES (18 men) and group B-ES (5 women);
  - whispered voice and/or use of an electrolarynx (NV): group A-NV (12 men) and group B-NV (4 women).

All the scores obtained were linearly transformed on a scale from 0 to 100.

### Results

A percentage of 46.5% and 44.4% of patients in the A-TEP and A-ES groups respectively provided total scores ranging from 0 to 3 in the B-IPQ questionnaire, indicating that the disease is of little concern to these patients. A different situation was observed in the A-NV group, *i.e.*, patients who do have not undergone significant vocal rehabilitation to use esophageal voice or tracheoesophageal voice with prosthesis. Total scores from 0 to 3 in this group were given only by 25% of patients, and 41.7% provided total scores of 8-11. As for female patients (group B), greater concern for the disease was reported in all groups. A more serene perception of the disease (total score from 0 to 3) was reported by only 25% of patients in the B-TE group, 20% of patients in the B-ES group, and 25% of patients in the B-NV group. On the other hand, a very concerned attitude towards the disease, its evolution, and its consequences on life (scoring from 8 to 11 on the B-IPQ) was reported by 41,7% of patients in the B-TE

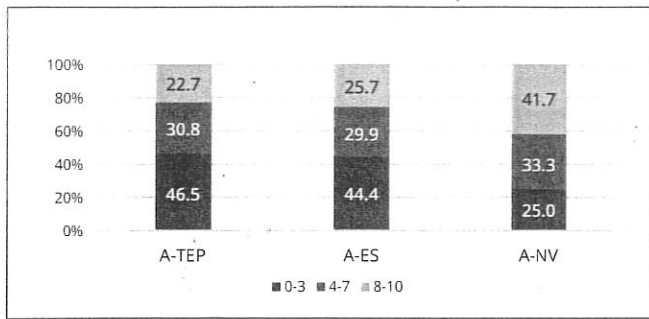


Figure 1.—Score of B-IBQ of man.

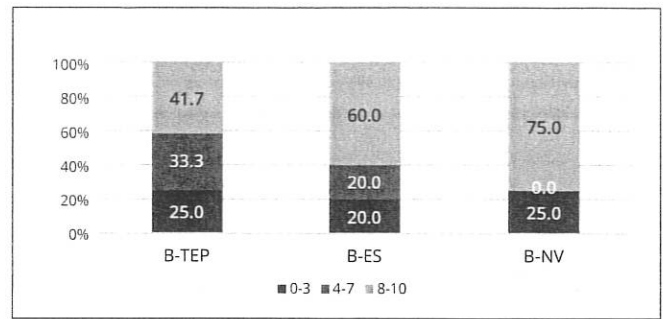


Figure 2.—Score of B-IPQ of woman.

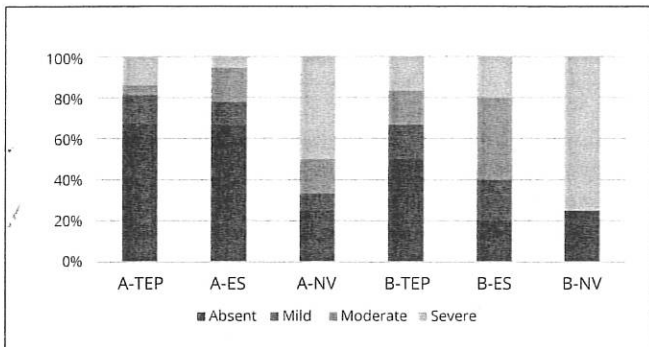


Figure 3.—VHI physical area.

group, 60% of patients in the B-ES group, and 75% of patients the B-NV group.

These data indicate that achieving a more efficient mode of communication (tracheoesophageal voice or esophageal voice as opposed to neither rehabilitation nor prosthesis) is certainly beneficial for the patient. Despite this, the impact of total laryngectomy on women is particularly dramatic. This is likely linked to the physical changes after surgery and to the quality of the voice which, even with a tracheo-

esophageal prosthesis, has a particularly harsh and therefore not very feminine tone (Figure 1, 2).

Regarding the VHI questionnaire, questions pertaining to the physical area, in men (group A-TEP and group A-ES), reported the absence of handicap in over 60% of cases. Responses to questions into the functional section highlighted an absence of handicap in 58.1% of the A-TEP group and in 55.6% of the A-ES group. Finally, in the emotional section, absence of handicap was 51.2% in the A-TE group and 50% in the A-ES group. For women in the B-TEP group there was still a fair percentage reporting absence of handicap in all three areas (50% physical section, 33% functional section, 58.3% emotional section) (Figure 3).

In the B-ES group, however, reported absence of handicap is seen only in the physical area (20%), while in the other section the handicap varies from moderate to severe in over 60% of cases, reaching a high percentage of severity (80%) in the emotional section. Also, in the B-NV group there is a severe handicap is highly reported (from 75 to 100%) in all three areas examined (Table I, II).

We then performed a statistical analysis to highlight the differences in responses between men and women (Table III, IV, V).

TABLE I.—Functional area.

	A-TEP	A-ES	A-NV	B-TEP	B-ES	B-NV
Absent	58.1%	55.6%	0%	33.3%	0%	0%
Mild	9.3%	16.7%	0%	33.3%	20%	0%
Moderate	13.9%	0%	16.7%	16.7%	40%	0%
Severe	18.6%	27.8%	83.3%	16.7%	40%	100%

TABLE II.—Emotional area.

	A-TEP	A-ES	A-NV	B-TEP	B-ES	B-NV
Absent	51.2%	50%	16.7%	58.3%	0%	25%
Mild	18.6%	44.4%	8.3%	16.7%	0%	0%
Moderate	13.9%	5.6%	25%	8.3%	20%	0%
Severe	16.3%	0%	50%	16.7%	80%	75%

TABLE III.—BIPQ.

	Men-BIPQ	Women-BIPQ
Average	4.109589	6.47619
Standard error	0.33536	0.656901
Median	4	8
Fashion	4	9
Standard deviation	2.865318	3.0103
Sample variance	8.210045	9.061905
Curous	-0.83323	-1.32963
Asymmetry	0.323891	-0.4967
Interval	10	9
Minimum	0	1
Maximum	10	10
Sum	300	136
Count	73	21
Confidence level 95.0%	0.668528	1.370272

TABLE IV.—VHI F.

	Men VHI F	Women VHI F
Average	2.109589	2.904762
Standard error	0.267864	0.446706
Median	1	3
Fashion	0	5
Standard deviation	2.288629	2.047065
Sample variance	5.237823	4.190476
Curous	-1.81737	-1.65224
Asymmetry	0.312012	-0.28369
Interval	5	5
Minimum	0	0
Maximum	5	5
Sum	154	61
Count	73	21
Confidence level 95.0%	0.533977	0.931813

TABLE V.—VHI E.

	Men-VHI E	Women-VHI E
Average	1.712329	2.571429
Standard error	0.229551	0.509769
Median	1	3
Fashion	0	5
Standard deviation	1.961288	2.336053
Sample variance	3.846651	5.457143
Curous	-1.13405	-1.99117
Asymmetry	0.688524	-0.04777
Interval	5	5
Minimum	0	0
Maximum	5	5
Sum	125	54
Count	73	21
Confidence level 95.0%	0.457602	1.063359

The P value for the three evaluations that resulted was also calculated:

- for BIPQ P=0.046;
- for VHI F P=2.837E-07;
- for VHI E P=1.436E-06.

## Discussion

We conducted this study on a group of patients who had undergone laryngectomy, examining the impact of the new vocal techniques in various aspects of their daily life, in physical, social, and functional contexts. Furthermore, we tried to demonstrate a difference in response between the different genders. Among many others, we primarily used two rating scales, the Brief Illness Perception Questionnaire (B-IPQ) and the Voice Handicap Index (VHI). In particular, the VHI, used by our School, seemed to us the most suitable, and it is also recommended by the European Laryngeal Society, especially for dysphonic patients. Patients in our study used different methods of vocal rehabilitation. Fifty-five patients were rehabilitated with tracheoesophageal voice and prosthesis (TEP), using Blom-Singer prostheses; 23 patients were rehabilitated to use esophageal voice (ES); and 16 patients had no voice rehabilitation and used a natural whispered voice and/or an electrolarynx (NV).

The results obtained showed that gender should be considered a factor influencing perceived quality of life in laryngectomized patients. There are few studies in the existing literature investigating the effects of gender on postlaryngectomy outcomes, those that do are discussed in comparison to our results. Keszte *et al.* evaluated 12 women and 138 men in a multicenter study, both from a functional and psychological point of view, and the results obtained confirmed a lower use of prosthetics and electrolarynxes in women, while the psychosocial problems were comparable.<sup>22</sup> van Sluis *et al.* carried out their evaluation on only 32 women, without comparison to men.<sup>23</sup> Similar results have been observed by Lee *et al.*, demonstrating that after total laryngectomy, women had a worse overall clinical condition than men, and reduced physical, emotional, and social function. Likewise, Cox *et al.* confirmed that after total laryngectomy, changes in voice and language led to changes in behavior in women, pertaining to the loss of femininity.<sup>24, 25</sup>

We can confirm that women reported greater concern for the threat posed by disease, its evolution, treatment, and consequences on their lives. Women also showed a severe degree of perceived disability in the three areas (physical, functional, and emotional) examined, unlike men, where there was mainly an absence of disability. In agreement with the existing literature, we found that regarding vocal rehabilitation, especially with the use of tracheoesophageal prostheses, women were dissatisfied, this was probably due to the too low tone of the speech produced, which generated discontent among laryngecto-



mized women. Furthermore, even the youngest age was found to have a significant vocal handicap especially in women. The care of the laryngectomized woman must therefore consider the impact that the laryngectomy has on her perception of her femininity, and the handicap that this represents for them physically, functionally and above all emotionally.

## Conclusions

In conclusion, our work emphasizes the importance of adopting a multidisciplinary protocol for the comprehensive care of patients undergoing total laryngectomy, involving a variety of professions. Collaboration between speech therapists, physical therapists, and psychologists is important to achieve vocal, physical, and emotional rehabilitation for patients.

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*Conflicts of interest.*—The authors certify that there is no conflict of interest with any financial organization regarding the material discussed in the manuscript.

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