A Cross-sectional Validation Study of Self-evaluation of Communication Experiences after Laryngeal Cancer

A Questionnaire for Use in the Voice Rehabilitation of Laryngeal Cancer Patients

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Acta Oncologica Vol. 38, No. 5, pp. 573–580, 1999

A psychometric evaluation of the questionnaire 'Self-Evaluation of Communication Experiences after Laryngeal Cancer' (S-SECEL) addressing communication dysfunction in patients with laryngeal cancer was carried out. Ninety-three patients with laryngeal cancer were studied. For comparison of response patterns and external validation, 21 patients with non-small cell lung cancer (NSCLC) and 26 patients with hoarseness, caused by benign laryngeal disease, were included in the analysis. The patients completed three questionnaires; the S-SECEL, the Sickness Impact Profile (SIP) and the Hospital Anxiety and Depression scale (HAD). The S-SECEL questionnaire was well-accepted by the patients, compliance was satisfactory, and missing value rates were low. The reliability of the S-SECEL was satisfactory for the Environment and Attitude subscales, whereas the General subscale did not reach the reliability levels recommended for group comparisons. In general, the response pattern in the three diagnostic groups and the pattern of correlations between the S-SECEL scores and the SIP- and HAD-subscales and dimensions lent support to the construct validity of the S-SECEL.

Received 21 July 1998
Accepted 23 February 1999

The ability to communicate through speech is essential and fundamental to human beings. For patients with laryngeal cancer, the disease can affect the ability to communicate, thereby disrupting interactions with other people and resulting in considerable social and psychological dysfunction.

In western Sweden, the initial treatment for almost all patients with laryngeal cancer is radical radiotherapy with induction chemotherapy in the advanced stages and, in cases with residual or recurrent disease, laryngectomy with a tracheo-oesophageal prosthesis (TEP). Earlier studies of patients with laryngeal cancer have mostly focused on laryngectomized patients and rehabilitation in terms of speech proficiency and voice characteristics (1, 2). In a review of the literature on psychosocial adjustment after laryngectomy, Mathieson et al. (3) concluded that, when rehabilitation outcomes are defined as quality of life (QL) or psychological state per se, predictors of these outcomes are confined by multiple variables, and not just by variables related to speech. These studies included only a few laryngectomized patients communicating with a TEP. Communication with a TEP is now the most common voice rehabilitation after laryngectomy and gives the laryngectomized patient the possibility to speak as early as a few weeks post-surgery, which might facilitate the patient's psychosocial rehabilitation (3).

Very few studies have been carried out concerning voice quality and psychosocial adjustment after radical radiotherapy treatment. Some studies suggest that patients with laryngeal cancer treated with radiotherapy could have quite a few problems with their voice after treatment (4–6), which could contribute to psychological distress and impaired QL.

With the aim of evaluating rehabilitation needs and the psychosocial care for patients with laryngeal cancer, a voice questionnaire, the Self-Evaluation of Communication Experiences after Laryngectomy (SECEL), was developed (7). The methodological considerations involved in

 ISSN 0284-186X

constructing the SECEL questionnaire have been discussed in detail elsewhere (7). Briefly, the questionnaire was designed and found valid for patients treated with laryngectomy in the United States. It is a short, comprehensive, self-report instrument that measures perceived adjustment to communication experiences and is designed for use in both research and clinical assessment.

To date no such psychometrically tested questionnaire evaluating communication experiences in laryngeal cancer patients exists in Sweden.

There is also a lack of experiences in laryngeal cancer patients treated with radiotherapy or radiotherapy combined with chemotherapy, since the American questionnaire (SECEL) addresses laryngectomized patients.

The primary purpose of the present study was to evaluate the psychometric properties and adaptation of a Swedish version of the SECEL questionnaire, as well as compliance in the study group. We also sought to measure the patients' psychosocial adjustment after completion of treatment for laryngeal cancer, using different treatment modalities, and to compare the results of using SECEL in Swedish laryngectomized patients with those of the previously studied laryngectomized American patients.

MATERIAL AND METHODS

Design

The design was a cross-sectional questionnaire study of patients with laryngeal cancer treated with external irradiation with or without laryngectomy. For comparison and evaluation of response patterns, two additional groups of patients were included: (i) patients with locoregionally advanced non-small cell lung cancer (NSCLC) treated with chest irradiation, and (ii) patients with benign laryngeal disease and hoarseness.

Questionnaires were mailed to the patients once, with one reminder after 14 days.

Patients

Laryngeal cancer patients. Patients who had been treated for laryngeal cancer with a curative intent at the Sahlgrenska Hospital during the years 1985–1997 were identified from the hospital records. Patients with recurrent cancers were included.

All patients had received radiotherapy as a part of the primary treatment. Patients with T1 disease received conventionally fractionated radiation therapy (one fraction per day) four to five times per week to a biologically equivalent dose of 62–68 Gy. Patients with T2, T3 or T4 disease received either hyperfractioned accelerated radiation therapy, two fractions of 1.7 Gy per day with a total dose of 64.6 Gy for 4.5–5 weeks, or conventionally fractionated radiation therapy with a total dose of 62–68 Gy. For patients with T3 or T4 disease, the irradiated fields included regional lymph nodes. The regional lymph nodes were irradiated with a total dose of 40.8–50 Gy, with the same fractionation regime as the primary tumour. Some patients with advanced disease (T3 or T4) received combined treatment with laryngectomy and post-operative irradiation, or induction chemotherapy with two cycles of cisplatin and 5-fluorouracil, followed by radical radiotherapy. In cases of relapsing disease, patients previously treated with radical radiotherapy were laryngectomized as salvage surgery.

Groups with other diagnoses included for external validation. (i) Non-small cell lung cancer (NSCLC) patients: patients with locoregionally advanced NSCLC diagnosed between 1990 and 1997 at Sahlgrenska Hospital who received radiotherapy (1.7 Gy twice a day to 61.1–64.6 Gy) with or without induction chemotherapy (two courses of cisplatin and etoposide) with curative intent. (ii) Patients with hoarseness caused by benign laryngeal disease: patients treated at Sahlgrenska Hospital during 1996–1997 for hoarseness resulting from chronic inflammatory changes of the larynx.

Baseline clinical characteristics of all three patient samples are displayed in Table 1.

Questionnaires

SECEL. SECEL is a 35-item self-administered questionnaire that was developed to assess the communication needs of patients who had undergone laryngectomies. The psychometric properties of the questionnaire and the suggested scales have been tested in an American study and proved to be satisfactory (7). The S-SECEL addresses the last 30 days. In the first 34 items the patients rate each statement on a 4-point scale (0 = never, 1 = sometimes, 2 = often, 3 = always). A higher score indicates greater perceived difficulty with adjustment to the post-treatment voice. Single items are aggregated into three subscales measuring general, environmental and attitudinal experiences. Scoring is carried out by simple addition of the item scores circled by each respondent. Thus, scale scores can be obtained for the General, Environment and Attitude subscales, ranging between 0 and 15, 0 and 42, and 0 and 45 score points, respectively (7). A total score can be calculated with a range of 0–102 score points. The 35th item: 'Do you talk as much now as before your laryngectomy' is not included in the scoring system but answered by three response categories: (Yes; More; Less). The SECEL has previously been used in studies of patients with laryngeal cancer (8, 9).

Adaptation of the S-SECEL pilot study

The SECEL questionnaire was translated into Swedish by four independent bilingual translators, using a formal forward–backward translation method. The wording of some of the items in the final Swedish version, i.e. 'Self-Evaluation of Communication Experiences after Laryngeal cancer' (S-SECEL), was slightly modified to allow better

comprehension of the different treatments for laryngeal cancer. The S-SECEL was pre-tested on 20 patients with laryngeal cancer. These patients were selected to represent different ages, sex, treatment modalities and ways of communication. Most patients (70%) completed the questionnaire within 20 min without assistance, and no one used more than 30 min. The patients felt that the questionnaire described important aspects relating to their disease and treatment. No one found the questions upsetting or disturbing, and only one patient found one question difficult to understand (unpublished data).

Evaluation of the S-SECEL

For descriptive purposes and for evaluation of the construct validity of the S-SECEL, two well-established questionnaires were used:

The Sickness Impact Profile (SIP). The SIP is a comprehensive and widely used generic instrument for health assessment (10), which has been adapted to Swedish conditions (11, 12). The questionnaire consists of 136 items, describing the relative functional limitations across 12 specified areas within everyday living: ambulation, body care/movement, mobility, emotional behaviour, social interaction, alertness behaviour, communication, work, sleep/rest, eating, home management and recreation/pastimes. For each SIP domain a relative scale score is calculated and expressed as a percentage of total possible dysfunction. The SIP subscales can be summarized into a physical, a psychosocial and a total index. Previous data lend support to its usefulness in cancer populations (13). Cut-off levels for clinically significant dysfunction (i.e., > 10 in the SIP total index) discriminate between different groups of patients (including cancer patients) and healthy controls (14).

The Hospital Anxiety and Depression scale (HAD). The HAD is a self-assessment scale designed to detect psychological distress in physically ill patients (15). The questionnaire comprises 14 items with four response categories, measuring the levels of anxiety and depression in two separate subscales. Scale scores range from 0 (no symptoms) to 21 (maximum of distress). Scores ≥ 11 in either of the subscales indicate probable psychological distress. The questionnaire has previously been used for screening psychological distress in different cancer populations including head and neck (H&N) cancer patients (13, 16–19).

Study-specific questionnaire. A brief study-specific questionnaire was used to collect information on sociodemographic data such as family situation, education level, occupation, and smoking habits.

Validity

The validity of the S-SECEL questionnaire was estimated in several ways:

Discrimination between items. Item–scale correlations were calculated to determine whether the item groupings in a Swedish patient sample corresponded to the scales previously found in the American patient sample. Evidence of item convergent validity was defined as a correlation of 0.40 or higher between an item and its own hypothesized scale (corrected for overlap). Support for item discriminant

Table 1

Clinical and sociodemographic characteristics by diagnosis

	Laryngeal cancer (n = 93)	NSCLC (n = 21)	Benign hoarseness (n = 26)
Age in years, mean (range)	70 (48–92)	69 (56–79)	59 (30–82)
Sex			
Female	13 (14%)	5 (24%)	11 (42%)
Male	80 (86%)	16 (76%)	15 (58%)
Living alone	26 (28%)	6 (29%)	3 (12%)
Education in years, mean (range)	9 (1–18)	9 (3–14)	9 (2.5–20)
Compulsory school	59 (63%)	12 (57%)	15 (58%)
Secondary school	23 (25%)	5 (24%)	8 (31%)
University	11 (12%)	4 (19%)	3 (11%)
Occupation			
Full-time work	15 (16%)	2 (9%)	11(42%)
Part-time work	0	1 (5%)	3 (12%)
Pension by age	59 (64%)	14 (67%)	7 (27%)
Disablement pension	15 (16%)	4 (19%)	4 (15%)
Unemployed	4 (4%)	0	1 (4%)
Smoking habits			
Never smokers	10 (11%)	1 (5%)	1 (4%)
Ex-smokers	60 (64%)	13 (62%)	16 (61%)
Smokers	23 (25%)	7 (33%)	9 (35%)

NSCLC = non-small cell lung cancer.
Benign hoarseness = hoarseness caused by benign laryngeal disease.

Table 2

Treatments given to patients with laryngeal cancer

	No. of patients (%)
Radical radiotherapy only	56 (60)
Radical radiotherapy and chemotherapy	18 (20)
Primary total laryngectomy and radiotherapy	3 (3)
Primary radiotherapy with total laryngectomy as salvage surgery	16 (17)

validity was based on a comparison of the magnitude of the correlation of an item and its own scale, as compared with other scales. A definite scaling error was defined as a case where the correlation of an item with another scale exceeded the correlation with its own hypothesized scale by at least one standard error (SE). Scaling successes were defined as those cases in which an item correlated by at least one SE better with its own scale (corrected for overlap) than with another scale.

Concurrent validity. The correlation pattern between the S-SECEL and the HAD- and SIP-subscales and indices was analysed. It was hypothesized that a significantly stronger correlation would be found between the SIP psychosocial index and S-SECEL than between the SIP physical index and S-SECEL. It was also hypothesized that both of the HAD-subscales would correlate significantly with the S-SECEL, and that the strongest correlation would be that with the S-SECEL attitude subscale.

S-SECEL scores by diagnosis. It was hypothesized that patients with laryngeal cancer and lung cancer patients would have similar scores on the SIP physical index, which may reflect the severity of the underlying malignant disease rather than specific laryngeal symptoms. In contrast, it was hypothesized that patients with laryngeal cancer and patients with benign laryngeal disease would have similar scores on voice- and communication-related scales in S-SECEL, but different scores with regard to physical dysfunction measures in SIP.

Statistical methods

The mean scores and the first, second (median value), and third quantiles were calculated for all items and scales. The reliability (i.e. the internal consistency) of the multi-item scales was assessed by Cronbach's alpha coefficient. Internal consistency of a magnitude of ≥ 0.70 was considered acceptable for group comparison (20). For correlation analysis, Pitman's non-parametric permutation test was used (21), while for descriptive purposes Pearson's correlation coefficient was calculated. Other tests used included Fisher's non-parametric permutation test for comparison between groups (22), the sign test for comparison of the amount of speech before and after treatment, and Pitman's non-parametric permutation test for time effect correlation analysis (21). A missing value within a subscale was replaced by the patients' mean item score of that subscale, except in the reliability estimation, where the missing value was not replaced. The level of significance was set at 5% throughout. Analysis of response patterns according to assumptions of inter-relationships minimized the risk of overestimation of the number of significant tests.

RESULTS

Compliance with questionnaire responses

Patients with laryngeal cancer. The set of questionnaires was sent to 125 patients who had been treated for laryngeal cancer. Of these 125 patients, 7 declined to participate because of illness related to the disease, 7 because of another disease or problems with vision, 3 owing to problems with the Swedish language, and 15 declined for unknown reasons. In all, 93 respondents completed the questionnaires (74% return rate) and were used for further evaluation. The distribution of responding patients across different treatment modalities is presented in Table 2. Seventy-four patients (80%) had a preserved larynx and communicated through the vocal cords, 14 patients (15%) communicated by means of a tracheo-oesophageal prosthesis, 4 (4%) with an electro-larynx, and one patient (1%) communicated by handwriting.

The time between completion of cancer treatment and participation in the study ranged from 0 to 144 months, median 36 months.

Patients with non-small cell lung cancer (NSCLC). Thirty-five surviving patients with irradiated NSCLC received the set of questionnaires, and 24 patients completed the questionnaires (69% response rate). Three patients declined to participate because of illness related to lung cancer, 2 declined owing to another disease or problems with vision, and 6 declined for unknown reasons. Three responding patients who had a verified paralysis of the recurrent laryngeal nerve were excluded from the analysis. Finally, 21 patients were used for further evaluation.

The time between cancer treatment and the study ranged between 0 and 72 months, median 38 months.

Patients with hoarseness caused by benign laryngeal disease. Of the 33 patients who received a set of questionnaires, 27 responded (82% response rate). Six patients declined to participate for unknown reasons, and one responding patient was excluded from the analysis because of poor compliance with study instructions, making a total of 26 patients included in the comparative analysis.

None of the three patient groups seemed systematically to have missing data. There was only a maximum of one missing item per patient in the S-SECEL, and the overall frequency of missing values was 0–3% per item. There was no missing data in the HAD questionnaire.

Patient characteristics

The clinical and sociodemographic characteristics of patients with laryngeal cancer, NSCLC and benign laryngeal disease who were considered possible candidates for evaluation with respect to questionnaire data are displayed in Table 1. Patients with a benign laryngeal disease were younger, most of them were females, and they were usually gainfully employed in comparison with patients with a malignant diagnosis.

Table 3

SIP scores in patients with laryngeal cancer (n = 93)

	SIP score			
	SIP mean	Quantiles		
		Q1	Q2	Q3
SIP total index	7.4	0.4	4.5	11.2
SIP physical index	5.5	0	1.0	9.0
Ambulation	9.4	0	0	14.4
Body care/movement	3.7	0	0	3.2
Mobility	6.1	0	0	9.2
SIP psychosocial index	7.4	0	3.2	11.3
Emotional behaviour	5.2	0	0	6.5
Social interaction	8.2	0	3.5	12.0
Alertness behaviour	6.1	0	0	8.6
Communication	9.7	0	0	20.3
Independent scales				
Sleep/rest	11.2	0	9.8	16.3
Home management	9.5	0	0	12.6
Work	15.2	0	0	7.2
Recreation/pastimes	13.9	0	9.2	24.2
Eating	2.8	0	0	0

SIP = Sickness Impact Profile.
The table shows the mean value and first, second (median) and third quantiles for patients with laryngeal cancer. High scores in a scale represent a high level of dysfunction.

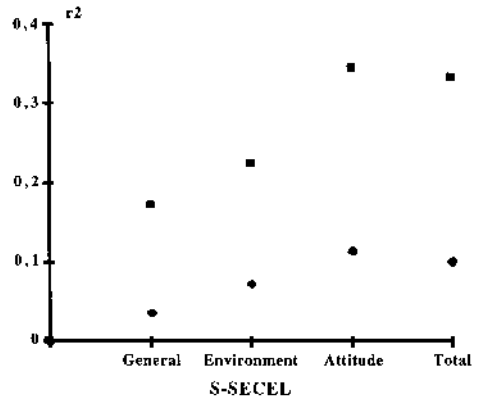

Fig. 1. Correlations, displayed as coefficients of determination (r^2), between SIP indices and S-SECEL subscales and total score. S-SECEL = Swedish questionnaire—Self-Evaluation of Communication Experiences after Laryngeal Cancer; SIP = Sickness Impact Profile. (◆ SIP physical index; ■ SIP psychosocial index.)

Reliability of S-SECEL scale scores

In laryngeal cancer patients (n = 93) Cronbach's alpha was 0.93 for the Environment and the Attitude subscale, respectively. In the combined patient sample (n = 140), the alpha coefficient was 0.93 for the Environment and 0.92 for the Attitude subscale. Thus internal consistency for both scales exceeded the 0.70 level recommended for group comparisons. By contrast, the alpha coefficient for the General subscale was only 0.60 in laryngeal cancer patients and 0.59 in the combined patient sample.

Validity

Discrimination between items in the S-SECEL questionnaire. In laryngeal cancer patients (n = 93), higher item–scale correlations were seen between 29 out of 34 items and their own hypothesized scale (corrected for overlap) vs. the other scales. One item in the General subscale, two items in the Environment subscale and two items in the Attitude subscale showed a divergent correlation pattern. Only one definite scaling error (i.e., when the correlation between an item and another scale exceeded the correlation with its own scale by more than one SE) was detected, while, in 48 out of 65 possible item–scale correlations, scaling successes (i.e., when the correlation between an item and its own scale exceeded the correlation with another scale by more than one SE) were seen. Two items in the General subscale and one item in the Attitude subscale correlated poorly ($r < 0.40$) with their own hypothesized scale (corrected for overlap), while all remaining items correlated well ($r > 0.50$) with their own scales.

Item–scale correlations were also calculated for the combined patient sample (n = 140). Higher item–scale correlations were seen between 32 out of 34 items and their own hypothesized scale (corrected for overlap) vs. the other scales. One item in the General subscale and one item in the Environment subscale showed a divergent correlation pattern. No definite scaling error was detected, while in 52 out of 65 possible item–scale correlations, scaling successes were seen. Three items in the General subscale and one item in the Attitude subscale correlated poorly with their own scales ($r < 0.40$).

SIP scores and correlations between S-SECEL and SIP. The mean scores and the quantile distribution of the SIP subscales and indices in patients with laryngeal cancer are shown in Table 3. In general the levels of physical and overall dysfunction, as measured by the SIP physical and total index, were low and comparable to those reported by other cancer populations 2–3 years after diagnosis (14). Within the psychosocial domain, problems related to communication or social interaction were most frequently reported, although the mean and median scores for corresponding scales remained low.

Correlations, displayed as coefficients of determination (r^2), between SIP indices, S-SECEL subscales and total

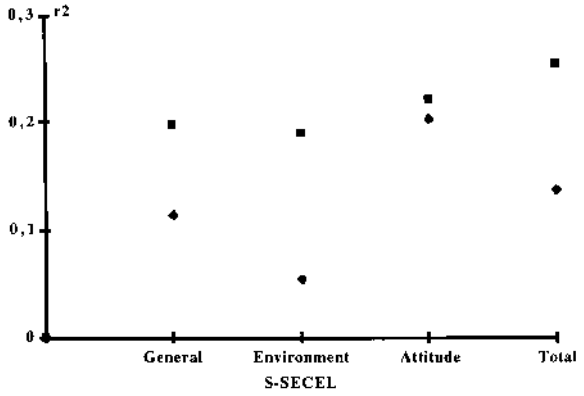

Fig. 2. Correlations, displayed as coefficients of determination (r^2), between HAD scales and S-SECEL subscales and total score. S-SECEL = Swedish questionnaire—Self-Evaluation of Communication Experiences after Laryngeal Cancer; HAD = Hospital Anxiety and Depression scale. (◆ HAD anxiety; ■ HAD depression.)

score are shown in Fig. 1. The S-SECEL scores were to a higher extent associated with the SIP psychosocial index ($r = 0.57$; $p < 0.001$) than with the SIP physical index ($r = 0.32$; $p < 0.01$).

Correlations with the Hospital Anxiety and Depression scale. Analysis of the HAD questionnaire indicated that 9% of the patients with laryngeal cancer had probable anxiety and that 13% had probable depression (i.e., score levels ≥ 11 of either scale). These patients had a higher mean S-SECEL total score (mean S-SECEL = 37.6 for patients with probable anxiety and 41.0 for patients with probable depression), compared to the patients scoring < 11 on both HAD scales, who had a mean S-SECEL total score of 18.3. Correlations, displayed as coefficients of determination (r^2) between the S-SECEL subscales, the total score and the HAD scales are shown in Fig. 2. With the exception of the S-SECEL attitude scale, the correlations between S-SECEL and HAD were somewhat stronger with the depression subscale than with the anxiety subscale of HAD. All correlations were significant ($p < 0.05$ for S-SECEL vs. HAD-A, $p < 0.001$ for remaining correlation pairs).

S-SECEL scores in different diagnoses. The score levels of the subscales and indices in S-SECEL, HAD and SIP in the three diagnosis groups are recorded in Table 4. The patients with laryngeal cancer and benign laryngeal disease had the highest mean and median S-SECEL scores, while the NSCLC patients had comparably low S-SECEL scores. With the exception of the General subscale, the pattern of the S-SECEL distribution across diagnoses corresponded to the hypothesized pattern of physical and communication dysfunction.

The levels of SIP scores indicated a more pronounced physical dysfunction in the NSCLC group than in the other groups, while no distinct diagnosis-related pattern could be seen with regard to the *levels* of HAD scores. However, the magnitude of *correlation* between HAD scores and S-SECEL scores was greater in NSCLC ($r = 0.59–0.70$) and in laryngeal cancer patients ($r = 0.37–0.5$) than in patients with a benign laryngeal diagnosis ($r = -0.05–0.03$).

Time effects

The effects of time since diagnosis and completed cancer treatment on S-SECEL total score results were evaluated, but no significant interactions were found ($p = 0.27$ Pitman's test).

Table 4

S-SECEL, HAD and SIP scores by diagnosis

	Laryngeal cancer (n = 93) Mean (quantiles) Q1; Q2; Q3	NSCLC (n = 21) Mean (quantiles) Q1; Q2; Q3	Benign hoarseness (n = 26) Mean (quantiles) Q1; Q2; Q3
SECEL total score	22.6 (10; 18; 31)	14.9 (5; 13; 20)	19.1 (11; 19; 27)
SECEL General subscale	5.0 (3; 5; 7)	5.3 (4; 5; 7)	5.6 (4; 6; 7)
SECEL Environmental subscale	12.3 (5; 10; 18)	6.6 (0; 5; 9)	10.3 (4; 10; 16)
SECEL Attitude subscale	5.3 (0; 2; 8)	2.9 (0; 1; 4)	3.2 (0; 2, 4)
HAD Anxiety	3.6 (0; 2; 6)	5.3 (1; 5; 7)	5.0 (3; 4; 8)
HAD Depression	3.9 (1; 2; 7)	4.3 (1;4; 7)	2.7 (0; 1; 5)
SIP Total Index	7.4 (0; 4; 11)	8.6 (2; 6; 10)	6.5 (1; 3; 8)
SIP Physical Index	5.5 (0; 1; 9)	7.5 (1; 4; 11)	4.8 (0; 0; 4)
SIP Psychosocial Index	7.4 (0; 3; 11)	8.0 (0; 2; 9)	5.9 (0; 1; 13)

The table shows the mean value and first, second (median value) and third quantiles for the three different diagnosis groups. High scores in a scale represent a high level of dysfunction or distress.
Abbreviations: S-SECEL = Swedish questionnaire—Self Evaluation of Communication Experiences after Laryngeal Cancer; HAD = Hospital Anxiety and Depression scale; SIP = Sickness Impact Profile; NSCLC = Non-Small Cell Lung Cancer.
Benign hoarseness = hoarseness caused by benign laryngeal disease.

Table 5

S-SECEL results in patients with laryngeal cancer, subdivided into three treatment groups and SECEL (American version) in well-adjusted laryngectomized patients

SECEL	S-SECEL Radiotherapy (n = 74) Mean (SD)	S-SECEL Laryngectomy (n = 19) Mean (SD)	SECEL Laryngectomy (n = 78) Mean (SD)
Total score	20.5 (15.3)	30.7 (24.0)	36.6 (12.4)
General subscale	5.2 (2.6)	3.9 (3.8)	5.2 (2.8)
Environment subscale	11.2 (8.7)	16.6 (11.6)	18.0 (7.5)
Attitude subscale	4.1 (6.2)	10.2 (9.9)	13.4 (7.3)

Radiotherapy = patients treated with radical radiotherapy with preserved larynx; laryngectomy = patients treated with laryngectomy (including all ways of communication).
S-SECEL = Swedish version of SECEL. SECEL = American version of SECEL.
The table shows the mean value and standard deviations for the different treatment groups. High scores in a scale represent a high level of dysfunction.

Amount of speech after treatment for laryngeal cancer

The patients reported a significant decrease in the amount of speech ($p < 0.001$) after treatment for laryngeal cancer, with 45% of the patients talking less, 53% talking the same amount, and 2% talking more.

Comparison between the original SECEL (American version) and S-SECEL

For this purpose the patients with laryngeal cancer were subdivided into two groups: (i) patients treated with radiotherapy and communicating with a preserved larynx (n = 74), and (ii) patients surgically treated with a total laryngectomy including all ways of communication (electrolarynx (n = 4), TEP (n = 14), handwriting (n = 1)). The results are presented in Table 5. The Swedish patients who had received radiotherapy showed generally lower (i.e. better) scores compared with the American sample. When the laryngectomized Swedish patients were compared with the laryngectomized (well-adjusted) patients in the American sample, only small differences were found.

DISCUSSION

The SECEL was adapted to Swedish conditions because of the need for an instrument to measure the perceived adjustment to communication experiences in patients with laryngeal cancer, not only in laryngectomized patients but also in patients treated with radiotherapy or radiotherapy combined with chemotherapy. The instrument may be useful for assessment of rehabilitation needs and outcome of psychosocial care in patients with laryngeal cancer. As mentioned earlier, there are no voice-specific questionnaires available in Sweden. There are, however, questionnaires for H&N cancer patients where a few questions address voice and communication dysfunction, (e.g., FACT-H&N and EORTC QLQ-H&N35) (23, 24). Previous Swedish studies of laryngeal cancer patients have shown the EORTC QLQ-H&N35 questionnaire to be suitable for measuring laryngeal cancer patients' QL longitudinally (19) and cross-sectionally (25) and it seems this questionnaire could be promising in combination with the S-SECEL in future prospective studies.

In the present study, the S-SECEL questionnaire was well-accepted by the patients, compliance was satisfactory, and missing value rates were low, supporting its feasibility in clinical settings. The reliability of the S-SECEL was satisfactory for the Environment and Attitude subscales, while the General subscale did not exceed the 0.70 level recommended for group comparisons, mainly because of two items that correlated poorly with the hypothesized scale. This may, in part, be explained by a heterogeneity of the General subscale, which covers a conceptually wide dimension, although this effect would have been expected to give similar results in the original American evaluation study (7), in which the General subscale showed a satisfactory internal consistency (i.e., Cronbach's alpha 0.84). Other possible explanatory factors for the diverging results are treatment modality differences (the Swedish study included other treatments for laryngeal cancer than total laryngectomy), other study population differences or effects of the translation procedure.

In general, the correlation pattern between the S-SECEL and the SIP, HAD and clinical criteria lent support to the construct validity of the voice and speech questionnaire. The S-SECEL had a better correlation with factors within the psychosocial dimension than with factors within the physical dimension of SIP. Also, the overall S-SECEL score levels in laryngeal cancer patients compared more favourably with those of patients with benign laryngeal disease than with those of patients with lung cancer. These results indicate that the S-SECEL measures primarily the effects of perceived communication dysfunction, as opposed to the effects of general dysfunction related to the severity of the underlying disease.

Thirteen percent of the patients with laryngeal cancer had probable depression according to the HAD results (scale scores ≥ 11. Similar results have been obtained in other studies of patients with laryngeal cancer (19, 25) and in studies of patients with lung or breast cancer (26). Interestingly, in the present study, the correlation between HAD and S-SECEL was higher in NSCLC and laryngeal cancer patients than in patients with benign hoarseness. These results suggest that perceived communicating dysfunction in cancer patients to some extent measures the level of emotional distress, which is also reasonable to believe from clinical experiences.

When the laryngectomized patients in the S-SECEL were compared with the well-adjusted laryngectomized American patients measured by the original SECEL, only small differences were found. The laryngectomized patients communicating with a TEP had generally better mean S-SECEL values than the laryngectomized patients when all ways of communication were included, which indicates that TEP communication in laryngectomized patients might facilitate their psychosocial rehabilitation (3, 25).

CONCLUSION

In conclusion, the Swedish SECEL version in this cross-sectional study proved to be a valid and reliable instrument for assessment of communication dysfunction in patients with laryngeal cancer treated with different treatment modalities, although the General scale construct is probably not optimal.

ACKNOWLEDGEMENTS

The study was made possible by grants from the Assar Gabrielsson Foundation, the King Gustav V Jubilee Clinic Cancer Research Foundation in Göteborg, the Rosa and Emanuel Nachmanson's Foundation, the Aximas Foundation, the Olympus Optical AB Foundation, the Hjalmar Svensson Foundation, The Sahlgrenska Hospital Foundations, the Swedish Association for Cancer and Traffic Victims, the Swedish and Göteborg Medical Societies and the Medical Faculty, Göteborg University. We also thank Gordon W Blood, PhD, Pennsylvania State University, USA, for his permission to translate and use the SECEL questionnaire and for his expert advice.

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