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The Carcinologic Handicap Index: validation of the upgraded version and ability to highlight head and neck cancer patients' needs

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Context

Need to take into account the quality of life of cancer patients

Existing assessment tools

Quality of life

Disabilities

Functional impact: Patient Concerns Inventory


Carcinologic Handicap Index (CHI)

Aim: identify frequency of symptoms and impact on everyday life

Disabilities

“Limitation of neck and shoulder movements”

Functional impact

“Psychosocial impact of changes in the physical appearance”

Objectives

Main objective

Validate the upgraded version of the questionnaire

Secondary objective

Study the link between the outcomes of the questionnaire and the actual expectations of patients in terms of care
Materials and Methods

9 dimensions from the first version of the CHI:

- Sensory functions: 4
- Upper aerodigestive tract functions: 4
- Psychosocial impact: 1

2 new dimensions in the French version:
- Items elaborated with carers and patients
- Pretest phase

Subjects - Inclusion criteria:
- Patients with head and neck related complaints
- Healthy controls
Materials and Methods

CHI upgraded version + Visual Analog Scale

Cases
Controls

Construct validity
Clinical validity

Criterion validity

T0

Test-retest reliability

T1

7 to 15 days

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Materials and Methods

Analysis of priority dimensions to be supported:

Hierarchical ranking by the patient of all the dimensions in order of importance (ICC)

Categorization of each patient’s top-3 priorities

Performance evaluation of the top-3 priority dimensions:
- Sensitivity
- Specificity
- Area Under the Curve

Determination of the best threshold starting from which the dimension is in the top 3 of the patient’s priorities
**Results**

Cases and controls: descriptive data

**Controls**
17 M, 19 F
Mean age 59.5 years

**Cases**
46 M, 25 F
Mean age 64.6 years

Tumor locations:
- Oral cavity: 19.7%
- Larynx: 21.1%
- Pharynx: 29.6%
- Other location: 29.6%
## Results

Psychometric properties of the 2 new dimensions:

<table>
<thead>
<tr>
<th>Validity</th>
<th>Limitation of neck and shoulder movements</th>
<th>Psychosocial impact of changes in the physical appearance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Construct validity</strong></td>
<td>$r_{\text{Spearman}}: .38 - .73$</td>
<td>$r_{\text{Spearman}}: .35 - .61$</td>
</tr>
<tr>
<td><strong>Clinical validity</strong></td>
<td>Mann-Whitney U test: $p&lt;.001$</td>
<td>Mann-Whitney U test: $p&lt;.001$</td>
</tr>
<tr>
<td><strong>Criterion validity</strong></td>
<td>$r_{\text{Spearman}} = .68 (p&lt;.001)$</td>
<td>$r_{\text{Spearman}} = .74 (p&lt;.001)$</td>
</tr>
<tr>
<td><strong>Internal consistency</strong></td>
<td>Cronbach’s alphas &gt; .72</td>
<td>Cronbach’s alphas &gt; .75</td>
</tr>
<tr>
<td><strong>Test-retest reliability</strong></td>
<td>$r_{\text{Spearman}} = .80 (p&lt;.001)$</td>
<td>$r_{\text{Spearman}} = .67 (p&lt;.001)$</td>
</tr>
</tbody>
</table>

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## Results

### Determination of the top-3 threshold:

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>AUC (Area Under the Curve)</th>
<th>CI 95 %</th>
<th>Chosen threshold</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>Correct classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>.73</td>
<td>[.58 ; .87]</td>
<td>7</td>
<td>64.7%</td>
<td>73.6%</td>
<td>71.4%</td>
</tr>
<tr>
<td>Swallowing</td>
<td>.84</td>
<td>[.73 ; .94]</td>
<td>4</td>
<td>93.6%</td>
<td>56.5%</td>
<td>81.4%</td>
</tr>
<tr>
<td>Feeding</td>
<td>.78</td>
<td>[.67 ; .89]</td>
<td>7</td>
<td>80.8%</td>
<td>72.7%</td>
<td>75.7%</td>
</tr>
<tr>
<td>Respiration</td>
<td>.74</td>
<td>[.54 ; .94]</td>
<td>4</td>
<td>87.5%</td>
<td>50.0%</td>
<td>54.3%</td>
</tr>
<tr>
<td>Phonation</td>
<td>.85</td>
<td>[.74 ; .95]</td>
<td>6</td>
<td>90.9%</td>
<td>65.4%</td>
<td>81.4%</td>
</tr>
<tr>
<td>Hearing</td>
<td>.88</td>
<td>[.79 ; .96]</td>
<td>8</td>
<td>83.3%</td>
<td>81.0%</td>
<td>81.4%</td>
</tr>
<tr>
<td>Vision</td>
<td>.55</td>
<td>[.35 ; .75]</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
<td>NC</td>
</tr>
<tr>
<td>Olfaction–Gustation</td>
<td>.86</td>
<td>[.69 ; 1.00]</td>
<td>7</td>
<td>77.8%</td>
<td>85.3%</td>
<td>84.3%</td>
</tr>
<tr>
<td>Psychosocial impact of changes in the physical appearance</td>
<td>.68</td>
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<tr>
<td>Neck and/or shoulder limitations</td>
<td>.70</td>
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<td>7</td>
<td>70.8%</td>
<td>52.2%</td>
<td>58.6%</td>
</tr>
<tr>
<td>Psychosocial</td>
<td>.48</td>
<td>[.21 ; .75]</td>
<td>NC</td>
<td>NC</td>
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<td>NC</td>
</tr>
</tbody>
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IALP 2019 – THE CARCINLOGIC HANDICAP INDEX. COMPLETED VERSION
**Discussion**

Acceptable psychometric properties:

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<th>Clinical validity</th>
<th>Criterion validity</th>
<th>Internal consistency</th>
<th>Test-retest reliability</th>
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</thead>
<tbody>
<tr>
<td>11-dimension structure validated</td>
<td>Pain and Vision: weak</td>
<td>Good correlations between CHI scores and VAS</td>
<td>High Cronbach’s alphas &gt; .72</td>
<td>Good correlations between T0 and T1 (r &gt; .67): reproducible measure</td>
</tr>
</tbody>
</table>
Discussion

Clinical use:
- Modular application

Threshold:
- No threshold for 3 dimensions
- Cautious interpretation for 3 other dimensions
- Acceptable performance (> 75%) for the other dimensions

CHI: valid and reliable tool

<table>
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