The Functional Intraoral Glasgow Scale (FIGS) as a practical measure of speech and swallowing in HNC
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Eleanor Slaven
Speech and Language Therapist.
Queen Elizabeth University Hospital, Glasgow.
Eleanor.Slaven@ggc.scot.nhs.uk
Outcome measures dichotomised as PROMs and CROMs

- Patient-reported outcome measures
  - Function-specific HRQOL questionnaires
  - General HRQOL questionnaires

- Speech and swallow assessment
  - Instrumental assessment
  - Standardised assessments

- Clinician-reported outcome measures
  - Clinical assessment
  - Non-standardised rating scales and checklists,

HRQOL; Health Related Quality of Life
Speech and swallowing difficulties are a well-documented outcome of HNC and its treatment (Hutcheson and Lewin 2013; Kanatas et al. 2013; Stier-Jarmer et al. 2014).

Measurement of treatment outcomes is considered an integral part of quality healthcare provision (National Institute for Clinical Excellence 2004; Laraway and Rogers 2012).

Calls have been made for a comprehensive approach to speech and swallowing outcome measurement that takes account of both the clinician’s and the patient’s perspective (Jacobi et al. 2010; Kraaijenga et al. 2014; Mlynarek et al. 2008).
Functional Intraoral Glasgow Scale (FIGS)

- Devised at the Canniesburn Unit (Nicoletti, et al. 2004)
- Short 3-item scales – Chew, Swallow, Speech.
- Completed by patients - PROM
- 5-point Likert scale scoring
the FIGS

I can chew…

Any food, no difficulty 5
Solid food with difficulty 4
Semisolid food, no difficulty 3
Semisolid food with difficulty 2
Cannot chew at all 1
the FIGS cont.

I can swallow …

- Any food, no difficulty 5
- Solid food, with difficulty 4
- Semisolid food only 3
- Liquids only 2
- Cannot swallow at all 1
the FIGS cont …

My speech is …

- Clearly understood always 5
- Requires repetition sometimes 4
- Requires repetition many times 3
- Understood only by relatives 2
- Unintelligible 1
Aims of the project

- Test-retest reliability?
- Validity?
  - comparison the M.D. Anderson Dysphagia Inventory (MDADI) (Chen et al. 2001)
  - comparison with the Speech Handicap Index (SHI) (Rinkel et al. 2008)
- Describe/outline the speech and swallowing difficulties experienced by HNC patients in the West of Scotland.
105 patients approached in the clinic

13 could not remember having received prior notice of the survey

93 patients

7 declined to participate – no reason given
8 declined to participate due to no reading glasses/print too small
2 unable to read written English
2 carers stated the patients would not cope with the questionnaires

73 participants completed questionnaires

1 non-cancer and 2 palliation patients excluded

70 participants in final cohort

53 completed retest FIGS in its entirety
<table>
<thead>
<tr>
<th>Variables</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>45</td>
<td>64.3</td>
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<tr>
<td>Female</td>
<td>25</td>
<td>35.7</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>70</strong></td>
<td><strong>100</strong></td>
</tr>
<tr>
<td>Oral cavity</td>
<td>26</td>
<td>37.1</td>
</tr>
<tr>
<td>Oropharynx</td>
<td>14</td>
<td>20</td>
</tr>
<tr>
<td>Larynx</td>
<td>18</td>
<td>25.7</td>
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<tr>
<td>Hypopharynx</td>
<td>1</td>
<td>1.4</td>
</tr>
<tr>
<td>Other</td>
<td>9</td>
<td>12.9</td>
</tr>
<tr>
<td>More than 1 tumour site</td>
<td>2</td>
<td>2.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>70</strong></td>
<td><strong>100</strong></td>
</tr>
<tr>
<td>Stage 0 (CIS)</td>
<td>2</td>
<td>2.9</td>
</tr>
<tr>
<td>Stage I</td>
<td>11</td>
<td>15.7</td>
</tr>
<tr>
<td>Stage II</td>
<td>13</td>
<td>18.6</td>
</tr>
<tr>
<td>Stage III</td>
<td>9</td>
<td>12.9</td>
</tr>
<tr>
<td>Stage IV</td>
<td>27</td>
<td>38.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>62</strong></td>
<td><strong>88.6</strong></td>
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<tr>
<td>Missing values</td>
<td>8</td>
<td>11.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>70</strong></td>
<td><strong>100</strong></td>
</tr>
<tr>
<td>Surgery only</td>
<td>23</td>
<td>32.9</td>
</tr>
<tr>
<td>Radiotherapy only</td>
<td>10</td>
<td>14.3</td>
</tr>
<tr>
<td>Chemoradiotherapy only</td>
<td>8</td>
<td>11.4</td>
</tr>
<tr>
<td>Surgery plus (C)RT</td>
<td>28</td>
<td>40</td>
</tr>
<tr>
<td>Missing values</td>
<td>1</td>
<td>1.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>70</strong></td>
<td><strong>100</strong></td>
</tr>
<tr>
<td>Pre-treatment</td>
<td>1</td>
<td>1.4</td>
</tr>
<tr>
<td>Treatment ongoing</td>
<td>2</td>
<td>2.9</td>
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<tr>
<td>Post-treatment</td>
<td>67</td>
<td>95.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>70</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
Figure 3. Scottish Index of Multiple Deprivation Quintiles
Test-retest reliability

- Comparison between FIGS given at timepoints 1 and 2.
- Assessed using the intra-class correlation coefficient (ICC) where ‘1’ indicates highest degree of similarity and ‘0’ indicates no similarity.
- ICC scores were:
  - chew = .902
  - swallow = .891
  - speech = .940, (95% confidence interval. Results were significant (p=0.001)).
Validity – Spearman’s rho was used

<table>
<thead>
<tr>
<th></th>
<th>SHI total score</th>
<th>SHI global item</th>
<th>MDADI total score</th>
<th>MDADI global item</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIGS speech</td>
<td>- 0.845 (n=61)*</td>
<td>- 0.736 (n=66)*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FIGS chew</td>
<td></td>
<td></td>
<td>0.512 (n=56)*</td>
<td>0.582 (n=64)*</td>
</tr>
<tr>
<td>FIGS swallow</td>
<td></td>
<td></td>
<td>0.595 (n=55)*</td>
<td>0.531 (n=63)*</td>
</tr>
</tbody>
</table>

* statistically significant

- 0.00 indicates that there is no linear association at all
- -1.00 or 1.00 indicates a perfect negative or positive association
- 0.6-1 > strong relationship,
- 0.3-0.59 > moderate to fairly strong relationship
- 0.15-0.3 > weak relationship (Walker and Almond, 2010)
## FIGS mean scores

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Number</th>
<th>Mean score</th>
<th>Standard Deviation</th>
<th>Median score</th>
<th>Interquartile range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chew subscale</td>
<td>N=70</td>
<td>3.34</td>
<td>1.41</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Swallow subscale</td>
<td>N=69</td>
<td>3.83</td>
<td>1.01</td>
<td>4</td>
<td>2</td>
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<tr>
<td>Speech subscale</td>
<td>N=70</td>
<td>3.96</td>
<td>0.97</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

NB a score of 5 on each subscale indicates normal function and a score of 1 indicates very poor function.
FIGS chew score

FIGS swallow score

First Chew score

First Swallow score
FIGS speech score

First Speech score
## Outlying Scores on the FIGS Speech scale

<table>
<thead>
<tr>
<th>Participant no.</th>
<th>Tumour site</th>
<th>Tumour stage</th>
<th>treatment</th>
<th>Time point in treatment</th>
<th>SIMD quintile</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>larynx</td>
<td>Stage IV</td>
<td>Surgery and adjuvant (C)XRT</td>
<td>Post-treatment</td>
<td>1</td>
</tr>
<tr>
<td>52</td>
<td>larynx</td>
<td>Stage IV</td>
<td>Surgery and adjuvant (C)XRT</td>
<td>Post-treatment</td>
<td>1</td>
</tr>
<tr>
<td>64</td>
<td>Larynx</td>
<td>Stage III</td>
<td>Salvage surgery (Lx with prior XRT)</td>
<td>Post-treatment</td>
<td>1</td>
</tr>
<tr>
<td>70</td>
<td>More than 1 site (oral cavity and Lx)</td>
<td>Stage IV</td>
<td>Surgery and adj XRT with further surgery</td>
<td>Post-treatment</td>
<td>2</td>
</tr>
<tr>
<td>55</td>
<td>Oral cavity</td>
<td>Stage II</td>
<td>Surgery and adjuvant (C)XRT</td>
<td>Post-treatment</td>
<td>1</td>
</tr>
</tbody>
</table>
OM completion rates

- **FIGS** – 69/70 (99%)
- **SHI** - 54/70 (77%)
- **MDADI** - 56/70 (80%)

- ?high pt burden – pts prefer a short questionnaire of less than twenty items (Mehanna and Morton, 2006)
Strengths ... and weaknesses

- Simplicity and brevity
- Low patient-burden/pt acceptability
- Generally contains only plain, everyday language
- Does not require numerical interpretation or summing of scores
- It uses an ‘overall’/global score approach
- Reliable
- Valid

- Doesn’t give detailed information about function
- Originally developed through expert opinion only
- Uses “unintelligible” in the speech scale
- No scale for ‘voice’
Key points

- All OMs have strengths and weaknesses
- No single OM will deliver all the speech and swallowing information that we desire – a range of measures is required
- Work continues to be done to develop a consensus on what that range of measures should look like
- The FIGS is a brief, plain-language, clinically useful PROM which can be administered and interpreted by all members of the MDT and can be interpreted easily by patients.
- The FIGS is worthy of further investigation and development
- The FIGS can make a valuable contribution to a selective battery of OMs for use with HNC across the UK.
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References


Ref cont.


