ORIGIN ALL ARTICLE

Clinical, sonographic and manometric characteristics and impact on quality of life of anal incontinence in 92 men referred for endoanal ultrasonography

Données cliniques, échographiques, manométriques et retentissement sur la qualité de vie de l’incontinence anale chez 92 hommes consécutifs adressés pour endosonographie

F. Leger a, L. Henry a, F. Mion a, S. Roman a, X. Barth b, C. Colin c, A.-M. Schott c, H. Damon a,∗

a Fédération des spécialités digestives, hôpital Édouard-Herriot, place d’Arsonval, 69437 Lyon cedex, France
b Service de chirurgie, hôpital Édouard-Herriot, Lyon, France
c Département d’information médicale, hospices civils de Lyon, Lyon, France

Available online 10 April 2008

Summary Anal incontinence (AI) is a frequent symptom with considerable impact on quality of life. The aim of this study was to describe the clinical, sonographic and manometric characteristics of a male population with AI.

Materials and methods. — Endoanal ultrasonography (EAU) was performed in 92 men referred for exploration of AI. Anal incontinence severity was evaluated by the Jorge and Wexner score (JW). The gastrointestinal quality-of-life index (GIQLI) was determined in 57% of patients. Anorectal manometry was performed in 62.6% of patients.

Results. — The average JW score was 11 ± 1. Anal incontinence had considerable impact on quality of life: average GIQLI = 81 ± 4. Seventeen patients presented an anal sphincter defect on EAU, 16 of whom had a history of coloproctological surgery. Prior surgery was significantly more common among patients who had a defect on ultrasonography; manometry showed significantly lower resting anal pressure.

Conclusion. — Our study confirms the severity of AI in a male population and its impact on quality of life. It also highlights the high prevalence of anal sphincter defects in patients with a history of anal surgery.

© 2008 Published by Elsevier Masson SAS.

∗ Corresponding author.
E-mail address: henri.damon@chu-lyon.fr (H. Damon).

0399-8320/$ – see front matter © 2008 Published by Elsevier Masson SAS.
doi:10.1016/j.gcb.2008.02.010
Résumé
L’incontinence anale (IA) est un handicap fréquent avec un retentissement important sur la qualité de vie. L’objectif de cette étude était de préciser les caractéristiques cliniques, échographiques et manométrique de l’IA chez l’homme.

Matériels et méthodes. — Quatre-vingt-douze hommes ayant une IA ont été adressés pour échographie endoanale (EEA). La gravité de l’IA était évaluée par le score de Jorge et Wexner (JW). Le retentissement sur la qualité de vie était évalué par le score de GIQLI dans 57 % des cas. Une manométrie anorectale était réalisée dans 62,6 % des cas.

Résultats. — Le score de JW moyen était de 11 ± 1, le retentissement sur la qualité de vie était important avec un score de GIQLI moyen à 81 ± 4. Dix-sept patients avaient un défaut sphinctérien en EEA et parmi eux, 16 avaient un antécédent de chirurgie coloproctologique. Les antécédents chirurgicaux étaient significativement plus fréquents chez les patients avec un défaut échographique et leurs pressions de repos significativement plus basses en manométrie.

Conclusion. — Notre étude a confirmé la gravité de l’IA chez l’homme et son retentissement important sur la qualité de vie. Elle a également confirmé la fréquence des défauts sphinctériens chez les patients opérés.

© 2008 Published by Elsevier Masson SAS.

Introduction

Anal incontinence (AI) is a public health problem because of its prevalence and impact on quality of life. According to a recent review of the literature [1], its prevalence ranges from 1.4 to 19.6 %, with considerable differences in its definition. In a mailed questionnaire study in the Rhône Alps region in France [2], we observed a 5.1 % prevalence of AI in the general adult population. Although it was significantly higher in women (7.5 %), it nevertheless remained high (2.4 %) in men. The characteristic features of AI in the male population are, however, less well known, probably because men seek care less readily [2–4].

Data on AI are therefore scarce for men, although certain studies [5] have recorded a prevalence as high as or greater than that for women.

The purpose of our study was to ascertain the clinical characteristics, as well as the sonographic and manometric features of AI in a male population referred to our unit for endoanal ultrasonography (EAU).

Material and methods

From June 1998 through January 2006, 92 consecutive male patients were referred for EAU. All EAU procedures were performed by two operators in our referral unit.

AI was defined as follows: inability to voluntarily retain intestinal contents (flatulence, fluid or solid fecal matter) in the rectum until socially acceptable evacuation [3]. In addition, the Jorge and Wexner (JW) score [6] was ≥ 5/20 in all patients.

Each patient completed a standard self-administered questionnaire with items concerning current clinical history, symptoms, and past medical and surgical history. The questionnaire, which included the symptomatic JW score and the gastrointestinal quality-of-life index (GIQLI), was completed before the EAU. The JW score [6] (Table 1), a semi-quantitative score used to measure the severity of AI, is composed of five items: score 0: normal anal continence; and score 20: total incontinence. The active or passive nature of the AI was also noted.

We used the validated French version of the GIQLI questionnaire (see Appendix A). The questionnaire has 36 items that can be scored from 0 (worst) to 4 (best) to measure five dimensions of quality of life:

- symptoms (19 items);
- associated physical disease (seven items);
- emotions (five items);
- social integration (four items);
- effect of treatment (one item).

The period studied covered the two weeks prior to completing the questionnaire [7,8]. The physician completed history-taking at consultation, and confirmed the patients’ surgical, proctological, urological and diabetic history. Their functional complaints were also recorded.

Anorectal manometry

A four-channel perfusion catheter was used for anorectal manometry. Values recorded were resting pressure, duration and amplitude of voluntary contraction, threshold of rectoanibar inhibitor reflex, rectal sensation and sensation of first urge as well as rectal compliance.

Endoanal ultrasonography

Endoanal ultrasonography was performed with a 10-MHz Bruel & Kjaer rigid mechanical rotation probe [9]. The patient was placed in the left lateral position, with no other specific preparation. The study began with the superior part of the anal canal and worked downwards to explore three levels as follow:

- the superior puborectal level;
- the intermediary level, with visualization of the internal and external sphincters;
- the lower level, to check the presentation of the external sphincter.

Any defects of the internal and/or external sphincters were noted and measured. A defect of the internal sphincter was defined as a hypoechogenic zone interrupting the continuous hypoechogenic ring. A defect of the external sphincter was defined as a hypoechogenic zone interrupting the hypoechogenic muscular ring. The radial extension of any defect identified was recorded in degrees.

Statistical analysis

Results were expressed as means ± standard deviation. ANOVA was used to compare values. P < 0.05 was considered statistically signifi-
Table 1  Jorge and Wexner anal-incontinence score.
Score d’incontinence anale selon Jorge et Wexner.

<table>
<thead>
<tr>
<th>Frequency of episodes:</th>
<th>Never</th>
<th>&lt; 1/month</th>
<th>&gt; 1/month and &lt; 1/week</th>
<th>&gt; 1/week</th>
<th>&gt; 1/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of incontinence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gas</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Fluids</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Solids</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Use of dressings</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Altered quality of life</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Statview VF 4.5 for Macintosh (Abacus concept, Berkeley, CA) was used for the statistical analyses.

Results

Study population (Table 2)

From 9 June 1998 to 24 January 2006, 92 men with AI were recruited into the study. Mean age was 62 ± 3.0 years (range 18–83). Twenty-five patients were referred by a surgeon and 67 by another physician. Forty-four patients (47.8%) had a proctological history (surgery or trauma), including 15 (16.3%) who had undergone hemorrhoidectomy. Ten patients were diabetic, and 10 were taking antidepressants. Micturition urgency was noted in two patients (Table 2).

Duration of AI disorders

The duration of the AI disorders was known in 66 patients (60.7%) and was, on average, 50 ± 15 months. Ten patients (15.1%) had had AI for less than six months, 30 (45.4%) for less than 48 months and 16 for more than 48 months. Their mean JW scores were 11 ± 1.8, 11 ± 3, 11 ± 1.2, and 11 ± 1.6, respectively. The differences were not significant.

Description of AI

The mean JW score was 11 ± 1 (range 5–20). Eighty patients (73.6%) had to use dressings. Uncontrolled flatulence was noted in 64 patients (59%). The incontinence concerned fluid fecal matter in 63 patients (58%) and solid fecal matter in 38 (35%). For 37 patients (34%), the AI was considered mixed — both active and passive; it was defined as passive in 16 (14.7%) and as active in 29 (26.7%). The type of AI was not detailed in 10 cases.

Episodes of AI occurred daily in 44% of patients who complained of uncontrolled flatulence. They occurred weekly in 30% of patients who complained of incontinence of fluid fecal matter and in 39% of patients who complained of incontinence of solid fecal matter (Table 3).

Influence of age

Eleven patients (11.2%) were under 45 years of age, 38 (41.6%) were aged 45–65 and 43 (47.2%) were over 65, with mean JW scores of 11.3 ± 2.3, 11.6 ± 1.2, and 11 ± 1, respectively. The differences were not significant.

Table 2  Clinical status of evaluated patients.
Caractéristiques cliniques de la population.

<table>
<thead>
<tr>
<th>Number of patients</th>
<th>92</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age (range)</td>
<td>62 ± 3 years (18–83)</td>
</tr>
<tr>
<td>Number of patients with history of coloproctological surgery (%)</td>
<td>44 (47.8)</td>
</tr>
<tr>
<td>Hemorrhoidectomy</td>
<td>15</td>
</tr>
<tr>
<td>Cure of anal fistula, abscess</td>
<td>13</td>
</tr>
<tr>
<td>Anal dilatation</td>
<td>2</td>
</tr>
<tr>
<td>Colorectal and/or coloanal anastomosis</td>
<td>9</td>
</tr>
<tr>
<td>Diverse surgery</td>
<td>2</td>
</tr>
<tr>
<td>Cure of anal fissure</td>
<td>2</td>
</tr>
<tr>
<td>Perineal wound</td>
<td>1</td>
</tr>
<tr>
<td>Number of diabetic patients (%)</td>
<td>10 (15.1)</td>
</tr>
<tr>
<td>Number of patients taking antidepressants (%)</td>
<td>10 (15.1)</td>
</tr>
<tr>
<td>Duration of disorders (months)</td>
<td>50 ± 15</td>
</tr>
<tr>
<td>Type of anal incontinence</td>
<td></td>
</tr>
<tr>
<td>Active (%)</td>
<td>66 (60.7)</td>
</tr>
<tr>
<td>Passive (%)</td>
<td>53 (48.7)</td>
</tr>
<tr>
<td>Total GIQLI</td>
<td>81 ± 3.7</td>
</tr>
</tbody>
</table>

Table 3  Frequency of anal incontinence episodes.
Fréquence des accidents d’incontinence.

<table>
<thead>
<tr>
<th>Gas through the anus</th>
<th>65 patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1/month</td>
<td>6</td>
</tr>
<tr>
<td>&gt; 1/month and &lt;1/week</td>
<td>11</td>
</tr>
<tr>
<td>&gt; 1/week and &lt;1/day</td>
<td>20</td>
</tr>
<tr>
<td>&gt; 1/day</td>
<td>28</td>
</tr>
<tr>
<td>Fluid fecal matter</td>
<td>63 patients</td>
</tr>
<tr>
<td>&lt; 1/month</td>
<td>12</td>
</tr>
<tr>
<td>&gt; 1/month and &lt;1/week</td>
<td>15</td>
</tr>
<tr>
<td>&gt; 1/week and &lt;1/day</td>
<td>19</td>
</tr>
<tr>
<td>&gt; 1/day</td>
<td>17</td>
</tr>
<tr>
<td>Solid fecal matter</td>
<td>38 patients</td>
</tr>
<tr>
<td>&lt; 1/month</td>
<td>11</td>
</tr>
<tr>
<td>&gt; 1/month and &lt;1/week</td>
<td>6</td>
</tr>
<tr>
<td>&gt; 1/week and &lt;1/day</td>
<td>15</td>
</tr>
<tr>
<td>&gt; 1/day</td>
<td>6</td>
</tr>
</tbody>
</table>
Impact on GIQLI

The GIQLI was known for 62 patients (57%), whose mean index score was $81 \pm 4$. Altered quality of life as measured by the GIQLI was significantly correlated with severity of AI ($P = 0.0004$, $r = 0.41$).

Endoanal ultrasonography

Endoanal ultrasonography was performed in all patients. A defect was noted in 17 patients:

- 11 patients (12%) had defects of the external and internal sphincters;
- three (2.7%) had defects of the internal sphincter alone;
- three (2.7%) had defects of the external sphincter alone.

Mean extension of the defect, as measured by ultrasound, was $114 \pm 7.4^\circ$ for the internal sphincter and $93 \pm 6.6^\circ$ for the external sphincter. The presence or absence of a sphincter defect was not significantly correlated with either severity of the AI or its impact on the GIQLI.

Surgery and sphincter defects

Sphincter defects were significantly more frequent in patients who had undergone proctological surgery than in those who had not ($P < 0.0001$). Among the 17 patients with an ultrasonographically identified sphincter defect, 16 had a history of coloproctological surgery; 28 of the 44 operated-on patients had no sphincter defects; and one patient with a defect of the internal sphincter alone had not undergone prior coloproctological surgery (Tables 4 and 5).

Anorectal manometry

Anorectal manometry was performed in 68 patients (63%). The results are detailed in Table 6. The resting pressure recorded in patients with sphincter defects was lower ($3.8 \pm 2$ kPa) than in those without defects ($6 \pm 3$ kPa) ($P = 0.0054$). Compliance and amplitude of voluntary contraction were not significantly different between patients with and without defects (Table 7). Similarly, there was no significant correlation between type of AI (passive, active, mixed) and manometric findings. Since manometry had not been performed in all of the non-operated-on patients, the relationship between manometric findings and type of surgery could not be meaningfully analyzed.

Discussion

The purpose of this study was to determine the clinical, sonographic and manometric characteristics of AI in men. To our knowledge, few studies have been devoted to this topic. Mitrani et al. [10] and Ferrara et al. [11] studied the clinical, manometric and electromyographical features of AI in male and female populations, and found that sphincter function was more affected in women who had lower resting pressures, and weaker and shorter-duration voluntary contractions. In their work, Ferrara et al. [11] found that severity of AI was greater in men than in women. Sentovich et al. [12] studied the clinical and manometric characteristics in men who complained of "leakage" in comparison to...
symptom-free volunteers. This study was based on a small population — 25 patients and 20 volunteers — and revealed shorter-duration, lower-amplitude voluntary contractions and a lower rectal sensation threshold in patients with AI. On the other hand, the duration and amplitude of voluntary contractions were less affected in patients complaining of leakage.

Our study demonstrated a significant correlation between the severity of AI in a male population and its impact on quality of life. The mean JW score was high in our population (11 ± 0.7/20) and significantly correlated with altered quality of life, as measured by the GIQLI. Because of our recruitment method, no conclusions can be drawn concerning the true prevalence of severe AI in men. Nevertheless, other teams, particularly Chen et al. [13], have demonstrated a high (27%) prevalence of severe AI in male patients.

Our work thus confirms a major impact of AI on quality of life in such patients as evidenced by the mean GIQLI of 81. It is important to use a specific quality-of-life index as it has been demonstrated that quality of life is otherwise poorly evaluated by solely symptom-based scores [7]. As AI is a functional disorder, the purpose of treatment is not only to improve symptoms, but also, and more important, the quality of life. The evidence shows clearly that the quality of life of people with AI is greatly affected: Sailer et al. [14] demonstrated that severe AI and constipation are two pathological conditions that have a major impact on quality of life compared with other benign anorectal conditions such as hemorrhoids. Furthermore, it is known that there is a significant relationship between the severity of the JW score and altered quality of life: Rothbarth et al. [15] showed that a JW score greater than nine was significantly correlated with a GIQLI of less than 105.

The French guidelines for good clinical practice published in 2000 [16] emphasized the importance of using a standardized questionnaire and, specifically, the AI severity score. We chose the JW score because it is the most widely used. We decided to use a self-administered questionnaire on the basis of the work published by Davis et al. [17], who demonstrated a significant difference in screening performance for incontinence between a self-administered questionnaire and physician history-taking, with a higher prevalence using the self-administered system. This is related to patients’ reluctance to discuss AI, which is detected by the physician in only 16% of cases [2].

Our findings reveal that coloproctological surgery, which had been undergone by 48% of the patients in our series, plays an important role in the development of AI in men. In the series reported by Lindsey et al. [18], of 93 patients with postoperative AI, more than half (52%) was male. These authors also found that, during the same period, 9% of patients consulting for incontinence were men with AI. Nevertheless, in our study, the high percentage of patients with a history of surgery could be related to recruitment bias. All of the patients in our study were referred for EAU and such procedures may have been requested because of prior surgery. The series reported by Leroi et al. [19] found that 38% of the patients studied had a history of proctological surgery, most frequently for treatment of fistulas, but also anal dilatations and other coloproctological procedures. Anal sphincter damage was a nearly ubiquitous finding reported by Lindsey et al. [18] in 93 patients with a history of proctological surgery. Other studies have also found high prevalences of these lesions [20,21]. Endoanal ultrasonography (EAU) confirms the high prevalence of sphincter defects in incontinent patients [10], especially in men [18] after proctological surgery; in our study, 18% of the patients presented with such a defect. The prevalence of sphincter defects was significantly higher in patients with a history of coloproctological surgery.

Our work demonstrates the significant functional impact of an ultrasonographically detected sphincter defect as evidenced by a significantly lower resting pressure [22]. Functional effects were also demonstrated by Chen et al. [13], who identified defects with ultrasonography in nine of 37 patients (24%). Resting pressure and amplitude of voluntary contractions were lower in patients with a sphincter defect, or poor “sphincter function”. These authors also demonstrated the prognostic value of ultrasonographically detected defects: 92% of defect-free patients were improved with conservative treatment, yet the severity of AI was equivalent in patients with and without defects. This apparently paradoxical finding could be related to the fact that patients seek medical care when their symptoms reach a certain level and not because of a specific etiology.

### Table 6
Anorectal manometry results.

<table>
<thead>
<tr>
<th>Manometry result</th>
<th>With defect (kPa)</th>
<th>Without defect (kPa)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resting pressure (kPa)</td>
<td>3.8 ± 2</td>
<td>6 ± 3</td>
<td>0.0054</td>
</tr>
<tr>
<td>Compliance (mL/kPa)</td>
<td>35 ± 27</td>
<td>35 ± 21</td>
<td>0.98</td>
</tr>
<tr>
<td>Amplitude of voluntary contraction (kPa)</td>
<td>6.6 ± 4</td>
<td>7.8 ± 5</td>
<td>0.44</td>
</tr>
</tbody>
</table>

### Table 7
Correlation between anorectal manometry results and the presence of anal sphincter defect.

<table>
<thead>
<tr>
<th>Manometry results</th>
<th>With defect</th>
<th>Without defect</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resting pressure (kPa)</td>
<td>3.8 ± 2</td>
<td>6 ± 3</td>
<td>0.0054</td>
</tr>
<tr>
<td>Compliance (mL/kPa)</td>
<td>35 ± 27</td>
<td>35 ± 21</td>
<td>0.98</td>
</tr>
<tr>
<td>Amplitude of voluntary contraction (kPa)</td>
<td>6.6 ± 4</td>
<td>7.8 ± 5</td>
<td>0.44</td>
</tr>
</tbody>
</table>
It is important to determine the radial extent of the defects [22,23] because of its prognostic value [9]. Damon et al. [24] found a significant association between the radial extent of the sphincter defect, the severity of AI and the index of canal pressure asymmetry as recorded by vector manometry. When the defect is diagnosed during an EAU procedure, the operator should note its localization as well as its radial extension. In addition, there is a relationship between radial extension and height of the defect [25].

However, the significance of sphincter defects as a cause of AI should be considered with caution. False positives are possible. This may explain, in part, the EAU-diagnosed sphincter defects in patients with no history of surgery. Unreported sphincter trauma (high-risk sexual practices, rape) might be another explanation. On the other hand, ultrasonographically revealed defects may be asymptomatic [23]. Felt-Bersma et al. [26] reported a series of 50 subjects who underwent EAU after anorectal surgery and found that 70% of those with sphincter defects were free of AI. Furthermore, in our study, the presence of a sphincter defect was not significantly correlated with either the severity of AI or its impact on quality of life.

**Conclusion**

Our study confirms the presence of a significant relationship between the severity of anal incontinence in men and its impact on quality of life. Endoanal ultrasonography revealed the presence of a sphincter defect almost exclusively in operated-on patients, an observation which raises the question of the pertinence of performing an EAU exploration in a male subject who has no relevant surgical history. Our particular method of study recruitment may have introduced some bias. Thus, no conclusions can be drawn concerning either the prevalence of severe AI in the male population or the prevalence of prior coloproctological surgery in men with AI.

**Study funding**

HCL PHRC 02.113, Fondation de la Caisse d’Epargne Rhône-Alpes Lyon.

**Appendix. The Gastrointestinal Quality of Life Index (GIQLI)**

<table>
<thead>
<tr>
<th>Question</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How often during the past two weeks have you had pain in the abdomen?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All the time</td>
<td>(0)</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>Most of the time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some of the time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A little of the time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. How often during the past two weeks have you had a feeling of fullness in the upper abdomen?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All the time</td>
<td>(0)</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>Most of the time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some of the time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A little of the time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. How often during the past two weeks have you had bloating (sensation of too much gas in the abdomen)?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All the time</td>
<td>(0)</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>Most of the time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some of the time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A little of the time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. How often during the past two weeks have you been troubled by excessive passage of gas through the anus?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All the time</td>
<td>(0)</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>Most of the time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some of the time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A little of the time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. How often during the past two weeks have you been troubled by strong burping or belching?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All the time</td>
<td>(0)</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>Most of the time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some of the time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A little of the time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. How often during the past two weeks have you been troubled by gurgling noises from the abdomen?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All the time</td>
<td>(0)</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>Most of the time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some of the time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A little of the time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. How often during the past two weeks have you been troubled by frequent bowel movements?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All the time</td>
<td>(0)</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>Most of the time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some of the time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A little of the time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. How often during the past two weeks have you found eating to be a pleasure?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All the time</td>
<td>(0)</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>Most of the time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some of the time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A little of the time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Because of your illness, to what extent have you restricted the kinds of food you eat?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very much</td>
<td>(0)</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>Much</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somewhat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A little</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not at all</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. During the past two weeks, how well have you been able to cope with everyday stresses?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extremely poorly</td>
<td>(0)</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>Poorly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderately</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Well</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extremely well</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
11. How often during the past two weeks have you been sad about being ill?
   - All the time
   - Most of the time
   - Some of the time
   - A little of the time
   - Never

12. How often during the past two weeks have you been nervous or anxious about your illness?
   - All the time
   - Most of the time
   - Some of the time
   - A little of the time
   - Never

13. How often during the past two weeks have you been happy with life in general?
   - Never
   - A little of the time
   - Some of the time
   - Most of the time
   - All of the time

14. How often during the past two weeks have you been frustrated about your illness?
   - All of the time
   - Most of the time
   - Some of the time
   - A little of the time
   - Never

15. How often during the past two weeks have you been tired or fatigued?
   - All of the time
   - Most of the time
   - Some of the time
   - A little of the time
   - Never

16. How often during the past two weeks have you felt unwell?
   - All of the time
   - Most of the time
   - Some of the time
   - A little of the time
   - Never

17. Over the past week, have you woken up in the night?
   - Every night
   - 5–6 nights
   - 3–4 nights
   - 1–2 nights
   - Never

18. Since becoming ill, have you been troubled by changes in your appearance?
   - A great deal
   - A moderate amount
   - Somewhat
   - A little bit
   - Not at all

19. Because of your illness, how much physical strength have you lost?
   - A great deal
   - A moderate amount
   - Somewhat
   - A little bit
   - Not at all

20. Because of your illness, to what extent have you lost your endurance?
    - A great deal
    - A moderate amount
    - Somewhat
    - A little bit
    - Not at all

21. Because of your illness, to what extent do you feel unfit?
    - Extremely unfit
    - Moderately unfit
    - Somewhat unfit
    - A little unfit
    - Fit

22. During the past two weeks, how often have you been able to complete your normal daily activities (school, work, household)?
    - All of the time
    - Most of the time
    - Some of the time
    - A little of the time
    - Never

23. During the past two weeks, how often have you been able to take part in your usual patterns of leisure or recreational activities?
    - All of the time
    - Most of the time
    - Some of the time
    - A little of the time
    - Never

24. During the past two weeks, how much have you been troubled by the medical treatment of your illness?
    - Very much
    - Much
    - Somewhat
    - A little
    - Not at all

25. To what extent have your personal relations with people close to you (family or friends) worsened because of your illness?
    - Very much
    - Much
    - Somewhat
    - A little
    - Not at all

26. To what extent has your sexual life been impaired (harmed) because of your illness?
    - All of the time
    - Most of the time
    - Some of the time
    - A little of the time
    - Never

27. How often during the past two weeks, have you been troubled by fluid or food coming up into your mouth (regurgitation)?
    - All of the time
    - Most of the time
    - Some of the time
    - A little of the time
    - Never
28. How often during the past two weeks have you felt uncomfortable because of your slow speed of eating?
   (0) All of the time  (1) Most of the time  (2) Some of the time  (3) A little of the time  (4) Never

29. How often during the past two weeks have you had trouble swallowing your food?
   (0) All of the time  (1) Most of the time  (2) Some of the time  (3) A little of the time  (4) Never

30. How often during the past two weeks have you been troubled by urgent bowel movements?
   (0) All of the time  (1) Most of the time  (2) Some of the time  (3) A little of the time  (4) Never

31. How often during the past two weeks have you been troubled by diarrhea?
   (0) All of the time  (1) Most of the time  (2) Some of the time  (3) A little of the time  (4) Never

32. How often during the past two weeks have you been troubled by constipation?
   (0) All of the time  (1) Most of the time  (2) Some of the time  (3) A little of the time  (4) Never

33. How often during the past two weeks have you been troubled by nausea?
   (0) All of the time  (1) Most of the time  (2) Some of the time  (3) A little of the time  (4) Never

34. How often during the past two weeks have you been troubled by blood in the stool?
   (0) All of the time  (1) Most of the time  (2) Some of the time  (3) A little of the time  (4) Never

35. How often during the past two weeks have you been troubled by heartburn?
   (0) All of the time  (1) Most of the time  (2) Some of the time  (3) A little  (4) Never

36. How often during the past two weeks have you been troubled by uncontrolled stools?
   (0) All of the time  (1) Most of the time  (2) Some of the time  (3) A little of the time  (4) Never

Annexe. Détail du questionnaire de qualité de vie GIQLI

1. Durant les 15 derniers jours, vous avez eu mal au ventre:
2. Durant les 15 derniers jours, vous avez eu la sensation d’avoir l’estomac gonflé:
3. Durant les 15 derniers jours, vous avez eu la sensation d’avoir beaucoup de gaz dans le ventre:
4. Durant les 15 derniers jours, vous avez été gêné(e) par l’émission de «vents»:
5. Durant les 15 derniers jours, vous avez été gêné(e) par des éructations ou des renvois:
6. Dans les 15 jours qui ont précédé, vous avez été gêné(e) par des bruits de «glouglou» dans le ventre:
7. Durant les 15 derniers jours, vous avez été gêné(e) par des selles fréquentes:
8. Durant les 15 derniers jours, vous avez mangé avec plaisir et appétit:
9. A cause de votre maladie, vous êtes obligé(e) de supprimer certains aliments:
10. Durant les 15 derniers jours, vous avez été capable de surmonter les problèmes quotidiens:
11. Durant les 15 derniers jours, combien de fois vous avez-\text{vous rendu(e) triste}:
12. Durant les 15 derniers jours, combien de fois avez-vous été anxieux(e) à cause de votre maladie:
13. Durant les 15 derniers jours, combien de fois avez-vous ressenti la joie de vivre:
14. Durant les 15 derniers jours, combien de fois avez-vous été frustré(e) à cause de votre maladie:
15. Durant les 15 derniers jours, combien de fois vous êtes-vous senti(e) fatigué(e):
16. Durant les 15 derniers jours, combien de fois avez-vous été souffrant:
17. Durant la dernière semaine, vous êtes-vous réveillé(e) pendant la nuit:
18. Depuis que vous êtes malade, avez-vous été chagriné(e) par les modifications de votre apparence:
19. A quel degré est-ce que la maladie a réduit votre condition physique en général:
20. A cause de votre maladie, vous avez perdu de votre endurance:
21. De par votre maladie, vous estimez la perte de votre tonus:
22. Durant les 15 derniers jours, combien de fois avez-vous été capable d’accomplir vos activités habituelles (travail, école, ménage, etc):
23. Durant les 15 derniers jours, vous avez été capable de vaquer à vos loisirs habituels ou d’entreprendre de nouvelles activités:
24. Durant les 15 derniers jours, avez-vous été incommodé(e) par le traitement médical:
25. Dans quelle mesure votre maladie perturbe-t-elle vos relations avec les autres (famille ou amis):

Dans quelle mesure votre maladie a-t-elle causé du tort à votre vie sexuelle :

Durant les 15 derniers jours, combien de fois avez-vous été incommodé(e) par des remontées de liquide ou d’aliments dans la bouche (régurgitations) :

Durant les 15 derniers jours, vous êtes-vous senti(e) obligé(e) de diminuer la vitesse avec laquelle vous mangez :

Durant les 15 derniers jours, vous avez eu des problèmes pour avaler :

Durant les 15 derniers jours, vous avez ressenti le besoin urgent d’aller à la selle :

Durant les 15 derniers jours, vous avez été inquiété(e) par la diarrhée :

Durant les 15 derniers jours, vous avez été inquiété(e) par une constipation :

Durant les 15 derniers jours, vous avez été inquiété(e) par une nausée :

Durant les 15 derniers jours, vous avez été inquiété(e) par la présence de sang dans les selles :

Durant les 15 derniers jours, vous avez été inquiété(e) par une brûlure ou une acidité remontant dans la poitrine :

Durant les 15 derniers jours, vous avez été inquiété(e) par une incontinence pour les selles :

References


