

REVISED, SHORT, FAECAL INCONTINENCE ASSESSMENT INSTRUMENTS FOR CLINICAL PRACTICE, EPIDEMIOLOGICAL AND OUTCOMES RESEARCH

Hypothesis / aims of study

The development of instruments for the measurement of faecal incontinence symptoms is still at an early stage in psychometric terms. The absence of large scale studies and clinical data makes the selection of reliable and valid measures difficult. Also, issues surrounding the actual content of questionnaires and scoring systems have been hotly debated (1). Recently, the Wexner Faecal Continence Grading Scale (also known as the Cleveland Clinic Florida Faecal Incontinence Score) (2) (hereafter Wexner) and some additional faecal incontinence items were included in a population-based survey (N=3015). The purpose of including these items was to obtain current prevalence estimates for faecal incontinence in our country, and to examine the psychometric properties of the faecal incontinence items.

Study design, materials and methods

Developed by a urogynaecologist, the additional faecal incontinence items covered faecal urgency, frequency, soiling and bowel patterns. It had previously been noted that the Wexner does not include an item concerning faecal urgency and some issues had also been raised concerning the inclusion of the pad item in the Wexner (1). For prevalence estimates the data was weighted by census data to ensure representativeness, for the psychometric analyses unweighted data was used. All faecal items were pooled for analysis. The psychometric properties of the faecal incontinence items were initially examined using Classical Test Theory approaches. This included examination of item descriptive statistics, item endorsement and discrimination, item-total correlations, internal consistency reliability and an exploratory factor analysis (EFA) of the items in the scale. Modern Test Theory approaches (Item Response Theory, IRT) were also used to examine item properties. IRT is used to find the model with the best fit to the data within the minimum number of items and it is a process commonly used to shorten scales. Short scales are particularly useful for epidemiological research.

Results

The Cronbach's alpha for the standard Wexner in this community sample was $r = 0.57$ which is considered to be in the unacceptable range (3). The item concerning leakage of gas/flatus had a low corrected item-total correlation (0.20) and clearly didn't fit with the other items. Removal of this item improved the reliability to $\alpha = 0.77$. The exploratory factor analysis of the faecal incontinence items indicated a 3 factor structure, explaining 61% of the variance and representing an acceptable solution (3). The items that loaded highly on the first factor were mainly items concerning soiling / wearing a pad, leakage and the effect of leakage on lifestyle. This factor may be considered to be a 'general faecal incontinence' factor, as all items are concerned with leakage and soiling. The items that loaded highly on the second factor were the flatus leakage item from the Wexner, a question about type of bowel pattern (normal, constipation, diarrhoea, alternating) and a question concerning faecal urge (Do you experience an urgent need to have a bowel movement that makes you rush to the toilet?). These items appear to be tapping 'other bowel symptoms'. The only item that loaded on the third factor is 'frequency of bowel motions' and this item had extremely low loadings on the other two factors. It appeared to be unrelated to faecal leakage or soiling. Following removal of items with poor properties, a 5-item scale resulted and this was labelled the Revised Faecal Incontinence Scale (RFIS). The IRT analysis broadly confirmed the EFA analysis through identifying difficulties with the items assessing flatus, the number of bowel movements, and bowel pattern. The item concerning changes to lifestyle also did not fit the model quite as well as the chosen items. Exclusion of these items led to a 4-item scale (2 items from the standard Wexner and 2 new items) for assessing faecal incontinence. This scale was labelled the Faecal Continence Assessment Scale (FCA).

Interpretation of results

Analysis of the corrected item-total correlations for the Wexner indicated that the item concerning flatus had a low corrected item-total correlation and that Cronbach's alpha would be improved (0.77) if this item were removed from the scale. It is recommended this item be removed from the Wexner as it appears to confound prevalence estimates. The prevalence estimates were 8% if the flatus item was excluded but rose to 35% if flatus was included. The endorsement rates for the flatus item indicate this is common in the community as contrasted with the endorsement rates for leakage of solid and liquid stool and thus it may be endorsed by those without symptoms of faecal incontinence. The results discussed above would also suggest that preferred and future faecal incontinence scales should not include flatus in epidemiological research. Two slightly different short scales were identified, the RFIS and the FCA, from classic and modern test theory analyses, respectively. Both scales had superior measurement properties when compared with the Wexner. The items comprising these scales are:

1. Do you leak, have accidents or lose control with solid stool? (Wexner)
 2. Do you leak, have accidents or lose control with liquid stool? (Wexner)
 3. Do you leak stool if you don't get to the toilet in time?
 4. Does stool leak so that you have to change your underwear?
 5. Does bowel or stool leakage cause you to alter your lifestyle? (Wexner)*
- (* = item not in the FCA)

It is possible that many clinicians may prefer the inclusion of the lifestyle question (Item 5) as this assesses the impact of faecal incontinence.

Concluding message

Both the 5 item Refined Faecal Incontinence Scale (RFIS) and the 4 item Faecal Continence Assessment scale (FCA) have superior psychometric properties to the standard Wexner, both include an item associated with faecal urge incontinence (Item 3), and could be considered by clinicians looking for short, reliable and valid scales of faecal incontinence. It should be noted that these scales were derived from modelling exercises and need to be further assessed in clinical settings. The flatus item included in the standard Wexner should be excluded from epidemiological studies and its equal weighting with items concerning the leakage of liquid and solid stool may present problems in clinical applications. Clinical feedback indicates, however, that flatus is important to include in outcomes assessment, particularly post surgery. A further prospective clinical study is planned to assess this issue. The RFIS may be more acceptable to clinicians as it includes the effect of faecal incontinence on lifestyle. The 4 item FCA may be the preferred instruments to use in prevalence studies or where assessing the effect of faecal incontinence on lifestyle is not necessary.

References

1. Gut (1999) 44; 77-80.
2. Diseases of the Colon and Rectum (1993) 36; 77-97.
3. Health Measurement Scales: A practical guide to their development and use (3rd Ed.); Oxford, Oxford Medical Publications, 2003.

FUNDING: Project funds from the Australian Government Department of Health and Ageing.

HUMAN SUBJECTS: This study was approved by the Ethics approval was provided by the South Australian Health Omnibus Advisory Committee. Informed consent consistent with the Australian National Health and Medical Research Council requirements was obtained. and followed the Declaration of Helsinki Informed consent was obtained from the patients.