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## Diagnostic tools for fecal incontinence: Scoring systems are the crucial first step

Peter Liptak, Martin Duricek, Peter Banovcin

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### Abstract

The main aim of this editorial is to comment on the recent article published by Garg *et al* in the *World Journal of Gastroenterology* 2023; 29: 4593-4603. This original research presents a new scoring system for fecal incontinence. Fecal incontinence is a chronic disease with a severe impact on the quality of life of the patients. Substantial social stigmatization often leads to significant underreporting of the condition even during visits to a specialist and could lead to further mismanagement or non-existent management of the disease. An important fact is that patients are often unable to describe their condition when not asked precisely defined questions. This problem is partially resolved by scoring questionnaires. Several scoring systems are commonly used; however, each of them has their shortcomings. For example, the absence of different kinds of leakage besides flatus and stool could further lead to underscoring the incontinence severity. Therefore, there has long been a call for a more precise scoring system. The correct identification of the presence and severity of fecal incontinence is paramount for further diagnostic approach and for choosing the appropriate therapy option. This editorial describes fecal incontinence, its effect on quality of life in general and further evaluates the diagnostic approach with a particular focus on symptom scoring systems and their implications for clinical practice.

**Key Words:** Incontinence; Fecal; Scoring system; Questionary; Quality of life

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**Core Tip:** The main aim of this editorial is to comment on the recent article published by Garg *et al* in the *World Journal of Gastroenterology* 2023; 29: 4593-4603. This original research present new scoring system for fecal incontinence. Fecal incontinence is a chronic disease with severe impact on quality of life of the patients. There is a long existing call for more precise scoring system than those in current use. The correct identification of presence and severity of fecal incontinence is paramount for further diagnostic approach and for choosing the appropriate therapy option.

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## INTRODUCTION

Fecal incontinence could be defined as the involuntary leakage of rectal content (stool, gas, mucus) through the anal canal and the inability to hold back the evacuation for a socially acceptable time. Depending on the presenting circumstances, fecal incontinence is generally classified as[1]: Passive incontinence (involuntary voiding without realizing that the stool is passing), urgent incontinence (emptying despite an active effort to retain content) and fecal soiling (leakage of stool with approximately normal continence and evacuation).

The etiopathogenesis is often multifactorial. Changed defecation patterns (chronic diarrhea, irritable bowel syndrome, (non)specific intestinal inflammation, food intolerances or constipation with subsequent paradoxical overflow incontinence) are the most common independent risk factors for fecal incontinence[1]. Another common (and important) pathophysiological factor is peripartum injury to the perineum and the sphincters (often decades before the onset of symptoms), surgical procedures in the anorectal area (hemorrhoidectomy, fistulotomy, sphincterotomy), prolapse, regular and/or traumatic anal sexual penetration or conditions after reconstructive procedures in the pelvic floor. Fecal incontinence due to gynecological trauma (traumatic vaginal birth) can occur in up to 8% of women[2]. It is important to note that symptoms often do not manifest until several years after the injury, and factors such as hormonal changes during menopause, accelerated aging of traumatically damaged sphincter muscles, or decompensation of compensatory mechanisms probably contribute to this delay[1]. In primiparous women, it is possible to prove occult or at least minimal sphincter injuries in approximately 35% of cases, while delivery using forceps, occipito-posterior position of the child, and prolonged delivery represent independent risk factors for subsequent fecal incontinence[3].

A relatively high percentage of women (13%) experience some degree of incontinence or stool urgency after their first delivery[4], and because these are mostly young women, the impact of incontinence on their quality of life is substantial [5,6]. As many gastroenterologist and/or proctologist note, women who have obstetric injury related fecal incontinence do not seek medical attention immediately and continue on with their life suffering, which results in a deteriorating quality of life over time as they age[7]. Interestingly the relationship between anal sphincter defect and severity of fecal incontinence is unclear[8]. Dysfunction of the puborectalis muscle can result in complete incontinence; dysfunction of the external sphincter can lead to weakened voluntary control and thus to the so-called urgent incontinence, and a disorder of the internal sphincter is associated with a weakening of discrete fecal control, which leads to passive incontinence[1]. More pronounced propulsive axial forces in the rectal area can contribute to the development of fecal incontinence; *i.e.*, chronic diarrhea can be manifested not only by unwanted stool consistency, but due to its association with a stronger propulsive wave placing increased demands on the sphincters, it can also lead to unwanted stool leakage[1].

Based on international population studies, the prevalence of fecal incontinence ranges from 0.4%-18% [9-11]. This wide interval could be due to the specific semantic issues regarding its definition in different socio-geographical areas and from wide variety of not particularly consistent symptom questionnaires[12]. The prevalence increases with age[13]. A high prevalence occurs primarily within the elderly population; according to one study, approximately 50%-70% of patients in nursing homes suffer from incontinence[2]. Fecal incontinence can be present in both sexes and no financial or social status can be considered as a protective factor[14]. It is assumed that the incidence and prevalence of fecal incontinence is higher than the reported data due to certain social taboos associated with fecal leakage[15]. Forty-five to fifty percent (45%-50%) of patients with fecal incontinence have a severe physical or psychological disability[1]. When patients experience only mild incontinence symptoms they tend to withhold this information from their physician, and the majority of them do not consult a medical professional at all[16]. Overall, only 5% to 27% of patients seeks professional help[17]. On the other hand, studies focused on primary medical care providers report that a very low number of them screen patients for the presence of incontinence, and when they do, it is more frequently urinary than fecal[18]. An appropriate and sensitive, yet professional and precise approach when conducting a medical interview is crucial for identifying patients with fecal incontinence[18]. This is paramount for further evaluation of the disease severity and its impact on quality of life[19,20].

The impact of fecal incontinence on quality of life can range from mild social or personal discomfort to severe disruption that paralyzes almost all aspects of a patient's life[21-24]. Quality of life in patients with fecal incontinence can be measured by several different self-reporting questionnaires[25]. The most frequently used are the general Short Form (SF-36)[26], the gut-focused Gastrointestinal Quality of Life Index (GIQLI)[27], and the more specific Fecal Quality of Life Index[28].

When taking the medical history, it is necessary to distinguish isolated discharge of mucus from fecal incontinence. The soiling of underwear can also be caused by factors other than fecal incontinence, primarily lower hygiene standards, prolapsed hemorrhoids or rectal prolapse; however, for practical reasons, soiling is considered by some authors to be a manifestation of incontinence[2]. As the symptoms may vary individually over the time and there are different incontinence phenotypes, it is very important to choose the right and thorough approach during the medical interview. The need for a comprehensive scoring system suitable for clinical application in fecal incontinence has been known for a long time[29]. It is important to keep in mind that the severity scoring system does not have to inherently correlate with quality of life measurements[30].

Anorectal manometry is the method of first choice in the verification of a disturbed functional state of the sphincters. With an anorectal manometer, it is possible to measure the resting pressure of the sphincters as well as the pressure during a forceful voluntary contraction. Based on the London criteria, it is subsequently possible to classify the finding as anal hypotonia and normal contractility or anal hypotonia with hypocontractility[31]. Another complementary examination is rectal endosonography, which can be used to visualize and verify the presence of morphological changes in the internal and external sphincter or part of the puborectalis muscle and surrounding structures. In specific cases, it is possible to consider the implementation of magnetic resonance defecography or neurophysiological examination.

Fecal incontinence therapy is difficult and requires a strictly individual approach. It almost always starts conservatively, and in case of its inefficiency, an operative solution can be considered. The goal of initial conservative therapy is to optimize the stool structure, slow down intestinal motility, and minimize the average amount of stool in the rectum[1]. Conservative (pharmacological and regimen) therapy can be partially effective in patients with mild fecal incontinence [32]. In the case of failure of conservative treatment or clinically more serious fecal incontinence, it is recommended to initiate at home biofeedback training and/or professional physiotherapy[33]. As another modality, it is possible to use sacral nerve stimulation[34,35]. This is indicated in patients with incontinence caused by weakened sphincter function, without structural defects[36]. Another option is application of so-called bulking agents into the sphincters to artificially increasing their volume[33].

In patients with morphological defects of the sphincter a surgical solution is indicated, depending on the nature of the damage. This includes, for example, sphincteroplasty, or resolution of the underlying cause, such as rectovaginal fistula, rectal prolapse, and anal fistula[37]. In the case of failure of all the previously mentioned options, colostomy is indicated [33]. It is important to note that, based on the recent expert consensus[38] and the older Cochrane analysis[39], it is not possible to clearly prefer any of the above-mentioned surgical methods, and it is therefore appropriate to individually combine conservative and interventional approaches. Therefore, a properly evaluated phenotype of incontinence and medical history is crucial when tailoring the therapy for each patient individually. The cornerstone for this first step is a practical and usable scoring system. The aim of this editorial is to comment on an article recently published by Garg *et al* [40] in the *World Journal of Gastroenterology* and to compare it with previously used scoring systems, predominantly with the most commonly used Wexner and St. Mark's scores (Table 1)[41].

## SCORING SYSTEMS

### **Pescatori Incontinence Score[42]**

It is based on three degrees of incontinence severity and three types of frequency. Letters are used for the type of leakage (A for flatus/mucus, B for liquid stool, and C for solid stool) and numbers for frequency (1 for an occasional incontinence event, 2 for weekly, and 3 for daily unwished leakage); the final score range varies from 0 for full continence to 6 for daily incontinence of solid stool. It includes mucus as a type of leakage but lacks factors such as hygiene pad usage, lifestyle alteration, or urgency.

### **Wexner/Cleveland Clinic Florida Incontinence Score[24]**

One of the most used scoring system in clinical setting[25]. It consists of 5 items regarding types of leakage (solid, liquid, gas), the necessity to wear hygiene pads, and lifestyle alterations. Every item has points assessed based on frequency (never, rarely, sometimes, usually, always). The final score ranges from 0 for full continence to 20 representing complete incontinence. It is easy to use for patients' self-reference but it does not consider leakage of mucus or urgency for the evaluation.

### **Vaizey/St. Mark's Incontinence Score[43]**

The main points of the Vaizey/St. Mark's Incontinence Score are quite similar to the Wexner/Cleveland Clinic Incontinence score[24,43]. It is also widely used, and both Wexner and Vaizey scores provide very good inter- and intra-observer reliability[43,44]. It correlates moderately well with the patient's perception of fecal incontinence[45]. The St. Mark's Incontinence Score evaluates three main types of leakage (solid, liquid, gas) and alterations in lifestyle. All these items are graded according to the frequency of occurrence (never, rarely, sometimes, weekly, daily). Items such as need to wear a pad or plug, taking constipating medicines and urgency (lack of ability to defer defecation for 15 min) involve binary answers (yes/no). Urgency is valued two-times more than medications and/or the need to wear pad or plug (4 points *vs* 2 points). The total range varies from 0 for full continence to 24 for complete incontinence.

### **Fecal Incontinence Severity Index[46]**

Not as widely used as the previously mentioned Wexner and St. Mark's scores, it has its strong points, namely in the

**Table 1 Comparison of different fecal severity scoring systems**

Scoring system	Structure	Weighted	Score range
Pescatori Incontinence Score	3 items of type, 3 items of frequency	Yes	0: Full continence; 6: Daily incontinence of solid stool
Wexner/Cleveland Clinic Florida Incontinence Score	3 items of type, 2 additional items, 5 items of frequency	No	0: Full continence; 20: Complete incontinence
St. Mark's/Vaizey Incontinence Score	3 items of type, 3 additional items, 5 items of frequency	Yes	0: Perfect continence; 24: Complete incontinence
Fecal Incontinence Severity Score	4 items of type, 6 types of frequency	Yes	Patient range: 0: least severe; 61: most severe. Surgeon range: 0: Least severe; 59: Most severe
Rapid Assessment Fecal Incontinence Score	6 items for perception, 6 items for frequency	No	Leaks: 0: For none; 10: for daily. Perception: 0: For excellent, 10: For very bad
Garg's New Severity Scale	6 items for type, 3 items for frequency	Yes	0: No incontinence; 80: Total incontinence

consideration of mucus in the score evaluation. On the other hand, this could lead to a misleading false sensation of liquid stool, as patients often are unable to differentiate between these two substances[47]. This factor could be correlated by other possible scoring items, but the Fecal Incontinence Severity Index score does not include other factors for consideration, *e.g.*, lifestyle alterations, medication usage, or urgency. Thus, its practical adoption has been limited. It could be evaluated by patients and/or by medical professionals with different point ranges. The final score ranges from 0 for least severe to 61 for most severe symptoms of fecal incontinence.

### **Rapid Assessment Fecal Incontinence Score[48]**

This simple score was developed for the purpose of a quick assessment of fecal incontinence which can be easily used in primary care settings. Although not as comprehensive as the above-mentioned scores, we believe it is worth noticing for its simplicity and ease of use. It is oriented on patient self-evaluation and consists of 2 items. The first is patients' perceptions of their well-being according to leakage, which is evaluated by visual analog scale of 6 Levels (from very bad to excellent). Six levels are also used for the second item, which is frequency of leakage. A validation was done comparing it to the Wexner score[41] and the FIQL[30], and it shows high correlations with these two questionnaires.

### **The new scoring system for fecal incontinence by Garg *et al*[40]**

The previously mentioned scoring systems have their various pitfalls, from a lack of consideration of the stress factor in all of them to not considering mucus and/or urgency in some of them. Moreover, the different leakages are weighed by the same factor in most of them.

This is why Garg and colleagues decided to develop a new questionnaire to reflect the most important issues, which would be following: proper numeric assessment of different types and severity of fecal incontinence, based primarily on patient perception of the disease along with simple usage and comprehensive accuracy.

For this evaluation patients, laypersons, and colorectal surgeons were included in the study.

In the first phase they evaluated the symptom perception in patients and laypersons. Interestingly, the exclusion criterion for patients was current presence of fecal incontinence because of the biased perception of incontinence (in terms of over quantifying symptoms). In contrast, patients who could experience incontinence due to their acute or chronic disease were included. To balance the possible extreme responses of patients, so-called laypersons were also included in the study. These were the relatives of the patients. As they closely observe but do not suffer from the condition, they could provide precise, yet emotionally unbiased answers.

In the second phase, experienced colorectal surgeons were included to provide the professional side of the evaluation of fecal incontinence and to compare this to scoring based on the responses of the patients and laypersons.

Fecal incontinence in the questionnaire is presented by 6 types or rather symptoms: urgent, stress, liquid, mucus, solid and gas. Four dimensions of quality-of-life impact (usual routine activity, anxiety/depression, self-esteem, social life) with 3 levels of severity were used. Comparing the severity perception by patients and laypersons and thereafter confronted by results from the colorectal surgeons, different weights for the types are assigned. For example, solid and liquid incontinence have assigned a weight of 8 and stress incontinence a weight of 5. This is used for multiplying the severity points, which are assessed according to three levels of frequency of leakage incident: Never, occasional (once a week or less), or common (more than once a week). Altogether, maximum points for complete incontinence are 80 and for complete bowel control (total continence) 0.

An agreement between surgeon and patient assessment of incontinence was not met. It is possible to agree with the authors' statement that patient perception and not medical professional opinion is the single most important factor, because fecal incontinence is tightly connected with individual perception of the disease.

A disputable point could be considering the type of incontinence (urge, stress) on the same level as a symptom in this questionnaire. Although it provides high added value for the evaluation of incontinence, it is possible to argue that liquid incontinence could be more connected with the stress phenotype rather than the urge phenotype and thus asymmetrically provide higher severity numbers in these cases. The type of leakage and phenotype of incontinence influence the overall quality of life in patients differently[49]. Also, this scoring system, as all previously mentioned scoring systems, does not

evaluate so-called overflow incontinence, which could be paradoxically present in some patients with constipation[1]. The overall time to fill-in the questionnaire is also not known. However, for general practice this is more of a peculiarity, and this problem could be more pronounced when performing methodically strict clinical studies. Therefore, we could say that more clinical studies are needed to comprehensively evaluate all the possible shortcomings of this new scoring system. Also, as the authors stated, the study limitation is that this new scoring system was not tested for inter- and intra-observer variability and test-retest reliability. However, they stated that this will be an objective for further study by their study group. We encourage this plan, as this will provide more relevant data for reliability and could significantly prove system's clinical application.

On the other hand, the different weighing of different symptoms/types of incontinence is a high added value and an important approach within the current problems of scoring systems.

## CONCLUSION

The search for a comprehensive yet easy to use fecal incontinence severity scoring system has long been an ongoing problem. The patient perception and reporting of symptoms is the cornerstone for the correct diagnosis of this debilitating disorder. Several scoring questionnaires have been implemented thus far in clinical practice, with the Wexner and Vaizey scoring systems being the most often used. Although widely used, they, too, have their own commonly known pitfalls. The scoring system developed by Garg *et al*[40] aims to provide a more precise diagnostic tool than the forementioned ones. Although it presents a promising result, the system needs more high-quality epidemiological studies to fully evaluate its reliability and clinical utility compared to established systems.

## FOOTNOTES

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