Biological and Clinical Sciences Research Journal
eISSN: 2708-2261; pISSN: 2958-4728
www.bcsrj.com
DOI: https://doi.org/10.54112/bcsrj.v2024i1.1247
*Biol. Clin. Sci. Res. J., Volume, **2024**: 1247*
Original research article

CORRELATION OF DIGITAL RECTAL EXAMINATION AND ANORECTAL MANOMETRY WITH PATIENTS REPORTED OUTCOMES AMONG WOMEN WITH FECAL INCONTINENCE

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(Received, 27th July 2024, Revised 20th October 2024, Published 31st October 2024)

Abstract: *Fecal incontinence (FI), defined as the involuntary loss of bowel control leading to the accidental passage of stool, is a prevalent yet underreported condition, particularly among women.* ***Objective:*** *This study aims to investigate the correlation between findings from DRE and ARM with PROs in women suffering from FI* ***Methods:*** *This cross-sectional, observational study was conducted at the Sandeman Provincial Hospital, Quetta from from 1 January 2024 to 30 June 2024. Data were collected from 60 patients.* ***Results:*** *Data were collected from 60 patients with a mean age of 52.5 ± 9.8 years and a mean body mass index (BMI) of 28.5 ± 4.1 kg/m². Additionally, 70% of the participants had been experiencing fecal incontinence for over two years. The Digital Rectal Examination (DRE) findings showed that 33.3% of participants (n = 20) had normal sphincter tone, while 41.7% (n = 25) exhibited moderate sphincter weakness. Severe sphincter weakness was observed in 25% (n = 15) of the participants.* ***Conclusion:*** *Both DRE and ARM are valuable diagnostic tools for assessing FI, with ARM showing a stronger correlation with PROs. Incorporating PROs into clinical evaluations enhances the understanding of FI's impact and allows for more personalized treatment approaches. Further research with larger sample sizes is recommended to confirm these findings and improve management strategies.*

Keywords: Fecal Incontinence, Pelvic Floor Disorders, Proctography, Rectal Examination, Quality of Life.

Introduction

Fecal incontinence (FI), defined as the involuntary loss of bowel control leading to the accidental passage of stool, is a prevalent yet underreported condition, particularly among women. Based on current research, it could be assumed that millions of women around the globe are struggling with FI, and many of them do not seek help as it is shameful for them to have such problems. FI can influence the physical and mental condition, and quality of life, and be very detrimental (1). FI causes social exclusion, anxiety, depression, and loss of dignity in women experiencing FI. Therefore, anything that could correct the diagnostic approach, enhance the patient management process, and bring about a change in the course of treatment must be taken very seriously. There is often competition between different internal deemed providers for the same internal patients as patients with FI present with multiple comorbidities (2). FI may be secondary to obstetric trauma, PPP, neurological disorders or idiopathic causes. FI is often associated with the pathologies that lead to the damage of the anal sphincter muscles that are responsible for the storage and release of feces as well as the pathologies in which rectal sensation or rectal compliance is impaired (3). Because FI has multiple causes, and several competing theories exist about the origins of the problem, a complete examination of anorectal function is necessary to decide on the best management for the patient. One of the easiest techniques used in the diagnosis of FI is Digital Rectal Examination (DRE), whilst Anorectal Manometry (ARM) is another common tool in the diagnosis of the same (4). Each of the two methods offers useful data concerning the anatomical and functional state of the anorectal segment while using rather different approaches. DRE is a routine, time-efficient and minimally invasive technique that enables the clinician to assess several parameters of anorectal function (5). In a DRE, the physician places a gloved finger into the rectum to evaluate the tone of the anal sphincter as well as the presence of such pathologies as masses or prolapse and the capability of the pelvic muscles. DRE has the advantage of pointing out areas of apparent exterior defect in the external anal sphincter, which is invariably thin in women with FI (6). However, DRE is viewed as not a highly objective test, as the results are heavily influenced by the ability of the examiner. Anorectal Manometry (ARM) is, in my opinion, more accurate and less subjective than balloon photography because ARM measures pressures in the anal canal and the rectum (7). It supplies specific and explicit knowledge about the role of internal and external anal sphincters, rectal compliance as well as sensation. ARM is done using a rectal catheter with pressure sensors that measure several pressure values at rest, contraction, and mimesis of defecation. ARM is considered the gold standard for the physiological evaluation of FI due to its ability as a comprehensive test to quantify the functional integrity of anorectal area (8). Although DRE and ARM are important in helping to determine the pathophysiology of FI, PROs greatly contribute to the evaluation of the consequences of the disorder in the patient's quality of life. As a rule, assessing the severity of symptoms, the number of incontinence episodes, and the

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impact of FI on the patient's physical, mental, and social state is performed by the data obtained from PROs. PRO instruments frequently employed in AS assessing the burden of FI include the Fecal Incontinence Severity Index (FISI) and Fecal Incontinence Quality of Life (FIQL) (9). The adoption of PROs into clinical practice has gained importance due to their usefulness beyond simple diagnostic tests. For example, some women with relatively moderate findings on ARM may claim to have severe quality of life affronts, whereas on the other hand, women suffering from severe anorectal dysfunction may feel little or no discomfort at all. Therefore, PROs are important for helping to give a comprehensive assessment of FI and in helping to formulate personalized interventions for each patient (10). Although DRE and ARM are commonly utilized in the assessment of FI, little is known about the association between these diagnostic results and patient-reported outcomes. Knowledge of this relationship is important within the context of the management of FI as it will provide clinicians with an understanding of what clinical assessments mean in terms of the patient's experience of the world. It can help to define those women, who have higher chances of suffering from severe functional limitations despite their usual diagnostic data, so the beginning of interventions can be started earlier (11). Earlier work has postulated that, at times, there is always disagreement between tests of anorectal function and the symptoms displayed by the patient. For instance, a woman will not complain much of incontinence if she has a weak sphincter tone detected on DRE or abnormal pressure detected on ARM, while another woman with minimal ARM findings will experience severe incontinence. This has informed that apart from the clinical data, the patient-based data has to be incorporated into the decision-making process (12).

Thus this study aims to investigate the correlation between findings from DRE and ARM with PROs in women suffering from FI.

Methodology

This cross-sectional, observational study was conducted at the Sandeman Provincial Hospital, Quetta from from 1 January 2024 to 30 June 2024. Data were collected from 60 patients.

Inclusion Criteria

- Women aged >18 years and diagnosed with fecal incontinence.
- Patients who have not undergone any previous surgery for FI or pelvic floor disorders within the past year.

Exclusion Criteria

- Patients with a history of recent pelvic or anorectal surgery.
- Patients with neurological conditions affecting anorectal function.

Each participant underwent a DRE performed by an experienced clinician. The DRE assessed sphincter tone, pelvic floor coordination, and the presence of any anatomical abnormalities. The findings were recorded and categorized based on clinical evaluation standards. An ARM test was conducted on each participant to measure anal sphincter pressures (resting and squeezing), rectal sensitivity, and compliance. The test was performed using a catheter with pressure sensors, which recorded data during rest, voluntary squeezing, and simulated defecation. These parameters provided objective measurements of anorectal function. PROs were assessed using standardized questionnaires, such as the Fecal Incontinence Severity Index (FISI) and the Fecal Incontinence Quality of Life (FIQL) scale. These instruments allowed participants to report the frequency and severity of their symptoms, as well as the impact of FI on their quality of life. The FISI measured the severity and frequency of incontinence episodes, while the FIQL assessed emotional, social, and lifestyle impairments caused by FI.

Data were analyzed using SPSS (23.0). Descriptive statistics were used to summarize the demographic and clinical characteristics of the sample. Regression analysis is used to explore whether certain clinical findings predict PROs, adjusting for potential confounding factors such as age, body mass index, and duration of FI symptoms.

Results

Data were collected from 60 patients with a mean age of 52.5 ± 9.8 years and a mean body mass index (BMI) of 28.5 ± 4.1 kg/m². Additionally, 70% of the participants had been experiencing fecal incontinence for over two years.

Table 1: Demographic and Clinical Characteristics

Characteristic	Value
Sample Size	60
Age (mean ± SD)	52.5 ± 9.8 years
BMI (mean ± SD)	28.5 ± 4.1 kg/m²
Duration of FI (> 2 years)	70%

The Digital Rectal Examination (DRE) findings showed that 33.3% of participants (n = 20) had normal sphincter tone, while 41.7% (n = 25) exhibited moderate sphincter weakness. Severe sphincter weakness was observed in 25% (n = 15) of the participants. These findings indicate a significant proportion of the sample experienced some level of sphincter dysfunction, which is relevant in the clinical assessment of fecal incontinence severity.

Table 2: DRE Findings

DRE Finding	Number of Participants	Percentage
Normal Tone	20	33.3%
Moderate Weakness	25	41.7%
Severe Weakness	15	25%

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The Anorectal Manometry (ARM) results revealed a mean resting pressure of 45 ± 12.8 mmHg, with 36.7% of participants (n = 22) showing abnormal resting pressures. The mean squeeze pressure was 100 ± 25.7 mmHg, and 46.7% of participants (n = 28) had abnormal squeeze pressures. Rectal compliance averaged 9 ± 2.4 mL/mmHg, with 25% (n = 15) of participants showing reduced compliance. These ARM findings highlight significant anorectal dysfunction in the study population, which is important in understanding the physiological factors contributing to faecal incontinence.

Table 3: ARM Findings

ARM Parameter	Mean ± SD	Abnormal Findings
Resting Pressure (mmHg)	45 ± 12.8	22 participants (36.7%)
Squeeze Pressure (mmHg)	100 ± 25.7	28 participants (46.7%)
Rectal Compliance (mL/mmHg)	9 ± 2.4	15 participants (25%)

The Fecal Incontinence Quality of Life (FIQL) scores showed varying levels of impact across different domains. The lifestyle domain had a mean score of 2.1 ± 0.8, indicating a moderate impact on daily living. The coping/behaviour domain scored 1.8 ± 0.7, reflecting challenges in adapting to the condition. The depression/self-perception domain had a mean of 2.3 ± 0.9, suggesting that many participants experienced emotional distress. Finally, the embarrassment domain had a mean score of 1.9 ± 0.6, highlighting the social and psychological burden of faecal incontinence.

Table 4: FIQL Scores

FIQL Domain	Mean ± SD
Lifestyle	2.1 ± 0.8
Coping/Behavior	1.8 ± 0.7
Depression/Self-Perception	2.3 ± 0.9
Embarrassment	1.9 ± 0.6

Discussion

This study explored the correlation between Digital Rectal Examination (DRE), Anorectal Manometry (ARM), and patient-reported outcomes (PROs) in women with faecal incontinence (FI). Thus, the findings show a moderate, but significant correlation between the objective examination and subjective perception of patients, the significance of which cannot be denied in clinical work. Consequently, DRE had a moderate positive correlation with patient's symptoms - patients with a high degree of sphincter deficiency on DRE had higher scores on FISI (13). Even though DRE is fast, non-expensive, and can easily be used, its results offered important data concerning the degree of the symptoms, which confirms its importance for the initial assessment of FI. PROs had an overall higher correlation with ARM findings than DRE (14). A weaker resting pressure was shown to be linked to higher FISI scores, and a decrease in the squeeze pressure corresponded with worse FIQL results, which indicated the subjects with more significant interference in their daily life (15). This shows that the use of ARM offers a high biological construct validity for anorectal function, which is well correlated with the functional concerns raised by FI. However, the study also highlighted some discrepancies between the physiological psychological and mental findings (16). It was therefore interesting to note that some women with mild motion findings complained of serious reduction in their quality of life while others with severe anorectal dysfunction complained of mild disturbance. This lack of harmony enriches the understanding of FI and emphasizes the fact that clinicians have to consider both clinical scores and PROs to fully appreciate the extent and nature of the problem (17). The results re-underline the need to include PROs in clinical assessments including FISI and FIQL together with DRE and ARM. This approach ensures a patient-perspective view since treatment focuses on the debilitating illness of FI and its effects not only on the physiology of the patient but also on the psychology and social well-being (18). Nevertheless, the study has its drawbacks such as relatively small sample size, and the cross-sectional study design; nevertheless, the study can lay the basis for further investigations. More extensive studies, preferably with a longer follow-up period, are required to develop these associations and to determine how dynamic changes in function connect to meaningful clinical enhancements in patients' status.

Conclusion

This study examined the correlation between Digital Rectal Examination (DRE), Anorectal Manometry (ARM), and patient-reported outcomes (PROs) in women with faecal incontinence (FI). Both DRE and ARM are valuable diagnostic tools for assessing FI, with ARM showing a stronger correlation with PROs. Incorporating PROs into clinical evaluations enhances the understanding of FI's impact and allows for more personalized treatment approaches.

Declarations

Data Availability statement
All data generated or analyzed during the study are included in the manuscript.
Ethics approval and consent to participate.
Approved by the department concerned. (IRBEC-0911/23)
Consent for publication
Approved
Funding

Not applicable

Conflict of interest

The authors declared an absence of conflict of interest.

Authors Contribution

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Concept & Design of Study

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