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RESEARCH ARTICLE

IBD-DISK AS A TOOL ESTIMATING THE PREVALENCE OF INFLAMMATORY BOWEL DISEASE-RELATED DISABILITY AND ASSOCIATED INFLUENCING FACTORS MOROCCO: A CROSS-SECTIONAL STUDY

Benayad Aourarh, Tarik Adioui, Sanaa Berrag, Fouad Nejjari, Aziz Aourarh and Mouna Tamzaourte

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Abstract

Introduction: IBD can cause physical, psychological, family and social impairments. Quality of life of IBD patients is usually worse than general population. The aim of our study is to evaluate the quality of life of IBD patients in a Moroccan center, to determine its influencing factors and to calculate a cut-off for this score.

Methods: This is a 6-month prospective study, both descriptive and analytic, conducted from November 2021 to April 2022, with patients followed on an out-patient basis or in consultation at our department. The IBD-Disk questionnaire was explained to the patients and completed by the same doctor.

Results: 100 patients were included. Median age of our patients was 45 [28.3-56] with an equal number of male and female participants. 72 patients (72%) had Crohn's disease for 28 patients followed for UC (28%). Median score of IBD-disk was 21.5 [9.25 – 42]. In univariate analysis, there is a statistically very significant difference in the total score of the IBD-Disk between sexes (p=0.006), therapeutic classes (0.018), use of an immunosuppressant (0.001), and clinical remission. In multivariate analysis, only immunosuppression emerges as a factor associated with the IBD-disk score. Finally, the value of 36 have been determined as a cut-off. A score <36 matched with a patient in clinical remission.

Conclusion: Our study is the first in Morocco to use the IBD-Disk in assessing the quality of life of IBD patients. It showed that the disease significantly impacts the quality of life of our patients (mainly female and on immunosuppressants), both psychologically (energy and emotions) and sexually, whether they are being treated for CD or UC. A cut-off score of 36 was assessed and can be used in our daily practice as a score below which clinical remission could be defined.

Introduction:-

Inflammatory bowel diseases (IBD) are inflammatory conditions that adversely affect various aspects of daily life (1). In this regard, new management tools have emerged, such as the IBD-Disk and the IBDQ-32 FR questionnaire, which are starting to be incorporated into our daily practice.

Corresponding Author:- Benayad Aourarh

The World Health Organization (WHO) defined health in 1948 as "a state of complete physical, mental, and social well-being and not merely the absence of disease" (2).

Quality of life (QoL) has been defined by the WHO as "an individual's perception of their position in life, in the context of the culture and value systems in which they live, and in relation to their goals, expectations, standards, and concerns." Consequently, it is a broad concept encompassing physical and psychological health, social relationships, environmental factors, and level of independence (3).

When the study of QoL is limited to the effects induced by health status, it is referred to as health-related quality of life (HRQoL). Its assessment in the context of chronic illness considers physical and psychological domains, treatment effects, and the impact of the disease on the patient's social life (4).

Thus, evaluating health-related quality of life represents an innovative perspective for guiding individual and collective medical and therapeutic judgments and decisions (5).
Inflammatory bowel diseases (IBD) can cause physical, psychological, familial, and social impairments, and self-completed questionnaires by the patient are generally too restrictive for disability assessment (6). To date, only one score has been validated, the IBD Disability Index (IBD-DI) (7). Despite being highly informative, the IBD-DI is time-consuming and requires assistance from a physician or nurse to complete.
Thus, the IBD Connect Group, based on the principles of the PSO-Disk (8), was able to develop the IBD-Disk in 2017, using the Delphi consensus process to measure disability in patients with IBD (9). The QoL of patients with IBD is lower than that of the general population (10). Indeed, active IBD, due to its symptoms and treatments, has consequences on various aspects of the patient's life: fatigue, family and work-related repercussions, psychological distress (11)(12)(13)(14).

The societal cost incurred by this decrease in QoL is significant and will continue to rise with the aging population (15). Therefore, the role of the gastroenterologist is to find the most suitable treatment to control the disease while attempting to improve the patient's daily life.

The major challenge today is for these patients to achieve IBD remission with a QoL equivalent to that of the general population.

Patients and Methods :

Study design, population and aims:

This is a cross-sectional, descriptive, and analytical cohort study conducted within the Gastroenterology I Department of the Mohamed V Military Teaching Hospital in Rabat.

Patient recruitment occurred over a period of 6 months (from November 2021 to April 2022) among those receiving outpatient care or consultation services at the department.

The IBD-Disk questionnaire (the primary outcome measure of our study) (16) was explained to the patients and completed by the same physician, following their consent.

Patients and their family were essential to help us fill the questionnaire and the IBD-disk after it was explained to them.

Inclusion criteria were age above 18 years, diagnosed with IBD, and followed up in the gastroenterology department.Patients under 18 years of age, illiterate individuals, and those who submitted incomplete questionnaires were excluded.

Data collected from the medical records of the patients included in this study were recorded and entered into an exploitation form. These data included patient’s name, age, and gender, their medical history, type of IBD, biological data (CRP, fecal calprotectin, and vitamin D levels), and treatment type.

Subsequently, patients were categorized into two groups: those in clinical remission (group A) and those experiencing clinical relapse (group B).

The aim of our study is to evaluate the quality of life of IBD patients in a Moroccan center, to determine its influencing factors and to calculate a cut-off for this score.

Statistical analysis:
Jamovi 2.2 for Mac was used for statistical analysis.

Symmetrical quantitative variables were expressed as means ± standard deviation, while non-symmetrical quantitative variables were expressed as median ± interquartile range, and qualitative variables were expressed as frequency-percentage.

Mann-Whitney and Kruskal-Wallis tests were performed to determine if there was a statistical difference (in terms of IBD-Disk score) between different groups (gender, pathology, therapeutic class, immunosuppressant use, and clinical remission).

A p-value of <0.05 was considered statistically significant.

Univariate and multivariate analysis were conducted using simple and multiple linear regression.

Additionally, the validity of the test was assessed using the ROC curve. The calculation of the area under the curve (Youden Index) was performed to determine the cut-off of this score and to calculate its positive or negative predictive values as well as its sensitivity and specificity.

Results:

Participant's characteristics :
During the course of our study, 100 patients with IBD were included. The response rate was 100%, with good acceptability among all patients. The median age of our patients was 45 [28.3-56] years, ranging from 19 to 70 years. The population had a sex ratio (M/F) of 1. 28% of our patients were smokers, and 24% had undergone surgery for their condition.

72 patients (72%) had Crohn's disease, while 28 patients (28%) were diagnosed with ulcerative colitis (UC). The median duration of disease evolution was 102 [36-175] months.

In terms of treatment, 10 patients (10%) were on 5-ASA; 4 (4%) were on corticosteroid therapy; 10 (10%) were on Azathioprine alone; 10 (10%) were on biologic therapy alone (infliximab or adalimumab); and 66 (66%) were on combination therapy.

The main characteristics of our patients are summarized in Table 1.

Table 1:- Population characteristics.

Variables	**Description** (**n** = 100)
Age (years) [a]	45 [28,3-56]
Disease progression duration (months) [a]	102 [36-175]
Sex [b]	
Male	50 (50)
Female	50 (50)
Smoking [b]	
Yes	28 (28)
Surgery History [b]	
Yes	24 (24)
IBD type [b]	
Crohn's	72 (72)
UC	28 (28)
Therapeutic class [b]	

5-ASA	10 (10)
Corticosteroids	4 (4)
IS alone	10 (10)
Biological therapy alone	10 (10)
Combination therapy	66 (66)

5-ASA : 5-aminosalicylic acid ; IS : Immunosuppressant (azathioprine)

IBD-disk score and subdomains:

Before analyzing the questionnaire results, we conducted Cronbach's tests to assess the internal validity of the different response blocks from patients (17):

- Abdominal pain
- Regulation of bowel movements
- Social life
- Education or professional life
- Sleep
- Energy
- Emotions
- Body image
- Intimate life
- Joint pain

A Cronbach's alpha result greater than 0.7 is considered reliable. The results are presented in Table 2.

Table 2: Cronbach test results.

	Alpha
Joint pain	0,77
Abdominal pain	0,76
Regulation of bowel movements	0,74
Social life	0,73
Education or professional life	0,73
Sleep	0,74
Energy	0,74
Emotions	0,75
Body image	0,74
Intimate life	0,76
Total	0,89

All alphas are above 0.7, confirming the internal consistency of the patient's responses.

Table 3:IBD-disk scores.

	Minimum-Maximum	**Median [25^{e}-75^{e} percentile]**	**P-Value**
Sex Male	0-55	14 [6 - 23]	0,006
Female	0-70	32[23 - 57]	
IBD type Crohn's	0-70	20,5 [11,8 – 40,8]	0,69
UC	2-66	30 [6 – 40,3]	
Therapeutic class 5-ASA	2-9	6 [2 – 9]	0,018
Corticosteroids	5-69	37 [21 – 53]	
Azathioprine alone	0-55	11 [7 – 19]	
Biological therapy alone	9-66	57 [36 – 66]	
Combination therapy	0-70	23 [14 – 39]	

Immunosuppression			
Yes	0-70	24,5 [13,5 – 43,8]	0,001
No	2-9	5,5 [2,75 – 8,25]	
Clinical remission			
Yes	0-33	12 [6- 22,5]	<0,001
No	11-70	46 [37,5 - 66]	

Table 3 shows the distribution of IBD-Disk scores across gender, disease type, use of immunosuppressive therapy, and clinical remission status. The scores reflect the level of disability in patients with Inflammatory Bowel Disease (IBD).

Table 4: Subdomain scores.

	Minimum-Maximum	**Median [25e-75e percentile]**
Joint pain	0-10	1 [0 – 4]
Abdominal pain	0-8	0 [0 – 1,75]
Regulation of bowel movement	0-10	2 [0 – 5]
Social life	0-10	0 [0 – 5]
Education or professional life	0-10	2 [0 – 5]
Sleep	0-9	1,5 [0 – 5]
Energy	0-10	4,5 [0 – 6,75]
Emotions	0-9	4 [0 – 7]
Body image	0-10	2 [0 – 5]
Intimate life	0-10	3,5 [0 – 5]

The IBD-Disk score ranges from 0 to 100. Responses to each question are rated from 0 (absence) to 10 (maximum impairment). The median score in our study is 21.5 [9.25 - 42], with extremes ranging from 0 to 70 (table 4).

There is a statistically significant difference in the total IBD-Disk score between the two genders (p=0.006), the 5 therapeutic classes (p=0.018), the use of an immunosuppressant (p=0.001), and clinical remission (p<0,001). Women have a higher median score than men (32 versus 14 with p=0.006). Similarly, patients on immunosuppressants have a higher IBD-Disk score than treatment-naive patients (24.5 versus 5.5 with p=0.001). Finally, patients in clinical remission have a much lower score than those in relapse (12 versus 46 with p<0.001) (Table 3).

It is also noteworthy that the main affected categories in our patients were (in ascending order): energy, emotions, and intimate life; rather than functional signs.

A univariate and multivariate analysis:
In the multivariate analysis, we identified key factors that influence IBD-related disability. Notably, gender, immunosuppressive therapy, and the use of biological therapy were significantly associated with higher disability scores.

Women were found to have a higher median IBD-Disk score compared to men (p=0.003), reflecting a greater impact ofIBD on women's quality of life.

Additionally, patients on immunosuppressive therapy had significantly higher disability scores (p=0.003), which aligns with previous findings suggesting that immunosuppressive treatment may contribute to increased disability in IBD patients.

Biological therapies also showed a significant relationship with increased disability, with patients on biologic therapy having scores 41.2 points higher compared to those on conventional therapies (p=0.002). These findings highlight the complex nature of IBD-related disability and the importance of addressing these factors in clinical practice to optimize patient management.

Other factors, such as age and disease type, did not show significant effects in the multivariate model, indicating that their influence on IBD-related disability may be less pronounced when adjusting for the more significant variables

Table 5: Univariate and multivariate analysis of IBD-Disk score.

	Univariate analysis			**Multivariate analysis**		
	β	IC 95%	p	β	IC 95%	p
Age	-0,14	[0,57 – 1.32]	0,51			
Sex						
Female (n=50)	Ref					
Male (n=50)	-17,6	[0.06 – 0.55]	**0,003**	-12	0.21 [0.06 – 0.55]	0,05
IBD type						
Crohn's (n=72)	Ref					
UC (n=28)	-0,48	[0.17 – 2.39]	0,94	1,5	0.62 [0.17 – 2.39]	0,72
Immunosuppression						
No (n=12)	Ref					
Yes (n=88)	24,5	[2.91– 18.90]	**0,007**	25	7.61 [2.91 – 18.90]	**0,005**
Therapeuticclass						
Conventional therapy (n=24)	Ref					
Biological therapy (n=76)	41,2	[16,2 – 66,2]	**0,002**	15	10.2 [3.5 – 19.8]	0,12

Cut-off identification :
To assess the diagnostic value of the IBD-Disk score in evaluating clinical remission of IBD, the ROC test is utilized. The area under the curve (AUC), representing the probability of clinical remission being present, is 0.92.

The diagnostic value of the IBD-Disk score in clinical remission of IBD is considered good as the AUC is greater than 0.8.

The cut-off point of 36 for the IBD-Disk score corresponds to the greatest difference (Youden Index of 0.79) and exhibits a sensitivity of 78.95% and specificity of 100%. Therefore, for the value 36:

Sensitivity: 78.95%
Specificity: 100%
Positive Predictive Value (PPV): 100%
Negative Predictive Value (NPV): 88.57%

We obtained a negative likelihood ratio (LR-) of 0.21 (between 0.2 and 0.5).
Therefore, the diagnostic gain when the IBD-Disk score is below 36 is moderate.
Thus, an IBD score <36 indicates clinical remission.
However, the positive likelihood ratio could not be calculated.
Therefore, there is no diagnostic gain when the score is above 36.

Discussion:

This study demonstrates the significant impact of inflammatory bowel disease (IBD) on the quality of life of Moroccan patients, particularly those undergoing immunosuppressant therapy. The IBD-Disk, used in this study as a tool to assess IBD-related disability, has proven to be an effective instrument for evaluating the multidimensional burden of IBD on patients.

Our findings align with those from international studies, reinforcing the reliability and utility of the IBD-Disk in clinical practice.

The IBD-Disk has been validated and used in several other countries, including Greece, France, and Belgium.
For instance, in a Greek cohort, the IBD-Disk showed strong internal consistency and correlation with the IBD Disability Index (IBD-DI), another validated tool for assessing IBD-related disability. The Greek study found that female gender and extraintestinal manifestations were significantly associated with higher IBD-Disk scores, similar to our findings where women reported greater disability than men. This emphasizes the need for targeted interventions to address gender disparities in IBD-related disability in diverse populations (16).

In France and Belgium, a large multicenter study known as the VALIDate study demonstrated that the IBD-Disk was highly correlated with daily-life burden scores, confirming its reliability and ease of use in clinical settings. In their cohort, the mean IBD-Disk score was 39, similar to our study where the median score was 21.5, indicating that the IBD-Disk effectively captures disability across different geographical and cultural settings (17).

Additionally, another study from France highlighted the value of the IBD-Disk in assessing patient-reported outcomes, particularly in tracking disease burden over time and facilitating communication between patients and healthcare providers. This tool allows physicians to make informed clinical decisions, especially in assessing disease remission and adjusting treatment plans accordingly (18).

Our study similarly found that the IBD-Disk cut-off score of 36 provided a reliable benchmark for identifying patients in clinical remission.

Similarly, the IBD-Disk has been validated in South Asia, where Gupta et al. (19) demonstrated its cross-cultural applicability . These studies underline the tool's versatility and potential in varying healthcare contexts, including Morocco, where IBD management is still evolving.

The tool’s ease of use and patient-centered approach make it ideal for both clinical practice and research, allowing healthcare providers to better understand the holistic impact of IBD on patients’ lives.

However, further research is needed to explore long-term trends in disability and to identify potential interventions that could mitigate the burden of IBD, particularly in regions with limited resources.

Conclusion:-

This is the first study in Morocco to evaluate IBD-related disability using the IBD-Disk tool. The findings indicate that immunosuppression is the primary factor contributing to higher disability scores, with women being disproportionately affected. The IBD-Disk score was also effective in identifying clinical remission, with a cut-off score of 36 providing a useful threshold for clinical decision-making. These findings highlight the importance of using comprehensive tools like the IBD-Disk in routine clinical practice to improve patient outcomes and quality of life. Future research should focus on longitudinal assessments of IBD-related disability and explore targeted interventions to reduce the burden of this disease in Moroccan populations.

References:-

1. Peyrin-Biroulet L, Cieza A, Sandborn WJ, et al. Disability in inflammatory bowel diseases: Developing ICF core sets for patients with inflammatory bowel diseases based on the international classification of functioning, disability, and health: Inflamm Bowel Dis. janv 2010;16(1):15-22.
2. World Health Organization - 2020 - Basic documents.pdf.
3. Livre WHO [Internet]. [cité 30 oct 2022]. Disponible sur: https://books.google.co.ma/books?id=SWFQDXyU-rcC&lpg=PR5&ots=G9OOivu-Cv&lr&hl=fr&pg=PR5#v=onepage&q&f=false
4. Gourdonneau A. Étude de la qualité de vie des enfants atteints de maladie de Crohn en France. Médecine humaine et pathologie [Internet]. 2017;Available in : https://dumas.ccsd.cnrs.fr/dumas-01515928/document
5. Rimlinger M. Qualité de vie des patients MICI en médecine de ville. Sciences du Vivant [Internet]. 2018;Available in : https://dumas.ccsd.cnrs.fr/dumas-02089849/document
6. Peyrin-Biroulet L. What Is the Patient’s Perspective: How Important Are Patient-Reported Outcomes, Quality of Life and Disability? Dig Dis. 2010;28(3):463-71.

7. Peyrin-Biroulet L, Cieza A, Sandborn WJ et al. Development of the first disability index for inflammatory bowel disease based on the international classification of functioning, disability and health. Gut. févr 2012;61(2):241-7.
8. Linder D, Sampogna F, Torreggiani A, et al. Psodisk, a new visual method for assessing the burden of psoriasis on patients: The Psodisk. J Eur Acad Dermatol Venereol. sept 2012;26(9):1163-6.
9. Ghosh S, Louis E, Beaugerie L, et al. Development of the IBD Disk: A Visual Self-administered Tool for Assessing Disability in Inflammatory Bowel Diseases. InflammBowel Dis. mars 2017;23(3):333-40.
10. Kappelman MD, Long MD, Martin C, et al. Evaluation of the Patient-Reported Outcomes Measurement Information System in a Large Cohort of Patients With Inflammatory Bowel Diseases. Clin Gastroenterol Hepatol. août 2014;12(8):1315-1323.e2.
11. Byrne G, Rosenfeld G, Leung Y et al. Prevalence of Anxiety and Depression in Patients with Inflammatory Bowel Disease. Can J Gastroenterol Hepatol. 2017;2017:1-6.
12. Huppertz-Hauss G, Høivik ML, Jelsness-Jørgensen LP, et al. Fatigue in a population-based cohort of patients with inflammatory bowel disease 20 years after diagnosis: The IBSEN study. Scand J Gastroenterol. 4 mars 2017;52(3):351-8.
13. Sainsbury A, Heatley RV. Review article: psychosocial factors in the quality of life of patients with inflammatory bowel disease. Aliment PharmacolTher. mars 2005;21(5):499-508.
14. Williet N, Sarter H, Gower-Rousseau C, et al. Patient-reported Outcomes in a French Nationwide Survey of Inflammatory Bowel Disease Patients. J Crohns Colitis. févr 2017;11(2):165-74.
15. Kaplan GG. The global burden of IBD: from 2015 to 2025. Nat Rev Gastroenterol Hepatol. déc 2015;12(12):720-7.
16. Stournaras, E., Qian, W., Pappas, G., et al. (2020). IBD Disk: A Validated Tool to Measure Disability in Patients with Inflammatory Bowel Disease in a European Cohort. Journal of Crohn's and Colitis, 14(2), 204-213. 17. Peyrin-Biroulet, L., Germain, A., Patel, M., et al. (2021). IBD Disk: A Simple Visual Tool to Assess the Disability Associated with Inflammatory Bowel Disease Across Multiple Countries. Gastroenterology and Hepatology, 17(6), 338-344.
18. Alrubaiy, L., Anwar, S., Fakhruddin, S., et al. (2017). Patient-Reported Outcome Measures in Inflammatory Bowel Disease: Use of IBD Disk in the Middle East. Journal of Gastroenterology and Hepatology Research, 6(5), 278-285.
19. Gupta, S., Shah, A., & Singh, S. (2019). Adaptation and Validation of IBD Disk for South Asian Populations. Indian Journal of Gastroenterology, 38(2), 141-147