

Quality of Life in Irritable Bowel Syndrome: A Narrative Overview

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Abstract

Context: Health-related quality of life (HRQoL) is increasingly important in the assessment of chronic conditions, especially for irritable bowel syndrome (IBS), which has no associated mortality, but is prevalent and significantly impacts patient's lives. Disease-specific instruments such as the irritable bowel syndrome quality of life instrument (IBS-QOL), in addition to generic instruments such as the short form (SF)-36, are useful in measuring health-related quality of life, and have been shown to be reliable in assessing disease severity and as an endpoint to monitor treatment response. We reviewed the impact of IBS on patients' HRQoL, the factors causing HRQoL impairments, and the utility of HRQoL instruments in the assessment of IBS.

Evidence Acquisition: We performed electronic literature searches in Medline, the Cochrane library, and digestive disease week (DDW) meeting abstracts. Across all databases searched, common keywords included "Irritable bowel syndrome", "Quality of life" and "Health related quality of life". For databases that accommodated Boolean searches, terms specifically related to QOL and military were added.

Results: We summarized the data available in the literature to show that HRQoL is poorer in patients with IBS compared to healthy controls, and compared to most serious chronic conditions. There are several factors that contribute to HRQoL impairments in IBS, of which gastrointestinal symptoms, physical co-morbidities, psychosocial factors and demographics all play significant roles.

Conclusions: It is crucial for clinicians to be aware of the importance of measuring HRQoL. Understanding the factors causing impairment of HRQoL is also important for clinicians seeing these patients as it helps to individualise treatment and treat the patient more holistically, to achieve greater patient satisfaction.

Keywords: Irritable Bowel Syndrome, Health-Related Quality of Life

1. Context

Irritable bowel syndrome (IBS) is a chronic and prevalent condition defined by the presence of chronic and bothersome gastrointestinal (GI) symptoms such as abdominal pain and altered bowel movement, in patients with no physical or biochemical cause that explains the symptoms (1). While nonfatal, there is no effective standardized treatment for IBS. Current management relies on symptom management and efficacy is highly variable (1), therefore often dissatisfaction, resulting in psychological distress and disruption of work and sleep. Consequently, the evaluation of health-related quality of life (HRQoL) that provides a holistic assessment of patient's emotional, social and physical function is an important outcome measure for patients with IBS (2).

Military personnel are a unique population in that they are exposed to extreme levels of anxiety and stress and are also prone to development of infectious diarrhoea, which is a known association of IBS (3-5). The joint effect of these risk factors has recently been shown to result in an increased IBS risk compared to either of these expo-

sures alone (6). A study showed that around 48% of the US military personnel deployed to Turkey or Egypt developed a functional GI disorder (IBS or functional dyspepsia), of which 84% were preceded by at least one episode of infectious diarrhoea (7). The HRQoL burden of these post-deployment-related functional GI disorders was comparable to post-traumatic stress disorders (PTSD) (8) and IBS was found to be three times more likely to be present in those with PTSD than those without (9), thus highlighting the importance of awareness of managing IBS in this population.

We reviewed the impact of IBS on the patients' HRQoL, the factors causing HRQoL impairments, and the utility of HRQoL instruments in the assessment of IBS.

2. Evidence Acquisition

We performed electronic literature searches in Medline, the Cochrane library, and digestive disease week (DDW) meeting abstracts. There were no date restrictions. Across all the databases searched, common keywords in-

cluded “Irritable bowel syndrome”, “Quality of life” and “Health related quality of life”. For databases that accommodated Boolean searches, terms specifically related to QOL and military were added. The Medline search limited the results to English articles. All the searches were performed in December 2015. The studies were not evaluated for quality.

3. Results

3.1. Health-Related Quality of Life Definition

According to the classic world health organization (WHO) definition, health is a state of complete physical, mental and social well-being and not merely the absence of disease (10). Correspondingly, HRQoL is a multi-domain metric which incorporates patient's perceptions, illness experience, and functional status (11) allowing the clinician to quantify each domain and derive a composite score that represents the patient's health status. Healthcare administrators and policy makers have also utilized HRQoL as a tool to compare the impact of different chronic diseases for allocation of health resources (12).

HRQoL is also effective for the assessment of disease severity and treatment response. Even for organic diseases such as inflammatory bowel disease, where clinicians have the option to use tangible biological markers like laboratory, radiological and histological results to assess disease severity, it is increasingly recognized that such markers do not allow the clinician to appreciate the patients' perceptions of their illness and thus underrepresent the true severity of the disease impact on patients. This concept is further magnified in IBS, where psychosocial factors have a strong effect on patient morbidity (13). As such, measuring only patient's symptoms would present an incomplete measure of the patient's overall disease severity, whereas HRQoL would reflect a more holistic measurement of disease severity. A systematic review has shown that therapy response in IBS-related pain had a corresponding HRQoL improvement (9), supporting its role in treatment outcome assessment. This has led the American college of Gastroenterology to recommend the routine screening of HRQoL in patients with IBS (14), to holistically assess the severity and impact of the disease, and to initiate treatment when such HRQoL is diminished.

3.2. Health-Related Quality of Life Measurement

In broad terms, a HRQoL instrument may be classified as generic or disease-specific. Examples of generic instruments available to measure HRQoL are short form (SF)-36 (15) and EuroQoL (EQ)-5D (16) (Table 1). Such instruments

can be used across all health conditions and hence are often used to compare healthy controls and patients, or to compare patients across different diseases. However, there may be some facets of a patient's life that may be uniquely affected by certain diseases, such as the need to be near washroom at all times in patients with IBS. These impairments in QOL will not be picked up by such generic instruments.

Table 1. Examples of Generic and Irritable Bowel Syndrome-Specific Instruments to Measure Quality of Life

Instrument	Number of Items/Domains	Domain	Scoring Method
SF-36 (generic)	36 items, 8 domains	Physical functioning (e.g. walking), Physical role limitations (e.g. inability to perform a usual activity); bodily pain, general health (e.g. perception of current health), vitality (e.g. energy level), social functioning, emotional role limitations (e.g. impact of emotional problems on usual activities), mental health	Each domain was scored 0 (poor) to 100 (best). Overall scores were either expressed as total value or percentage of maximum attainable score.
EQ-5D (generic)	5 items, 5 domains, 1 visual analogue scale for general health	Mobility, self-care, usual activities, pain, anxiety/depression	Each domain was graded 1-5 and the total score ranged from 60 to 100 with higher scores reflecting better QOL.
IBS-QOL (disease-specific)	34 items, 8 domains	Dysphoria, interference with activity, body image, health worry, food avoidance, social reaction, sexual, relationships	Item responses were graded on a 5-point scale. Total scores ranged from 0-100 with higher scores reflecting poorer QOL

Disease-specific instruments are thus designed to target certain manifestations of specific conditions. An example for IBS includes the well-validated IBS-QOL (17, 18), which has been recommended by experts to be the instrument of choice when assessing IBS-related QOL, as it is the most extensively validated measure and has also shown both accurate psychometric and methodological properties (19). It was also validated for the assessment of IBS

treatment response where a change of 10 to 14 points from baseline was clinically meaningful (20).

3.3. Health-Related Quality of Life in Irritable Bowel Syndrome

Several studies have shown that patients with IBS have had poorer HRQoL than non-consulting patients with IBS, and both groups were significantly worse than healthy controls (9, 21). This suggests that patients with IBS overall have a worse HRQoL than healthy controls and that HRQoL is especially lower in patients seen in a referral setting as compared to non-consulting patients with IBS. HRQoL impairment in IBS is comparable and sometimes more severe than many other severe chronic organic diseases such as inflammatory bowel disease, gastro-esophageal reflux disease, end-stage renal failure, diabetes and hypertension (22-24), but has had higher scores than patients with depression (16) (Table 2). Qualitative studies evaluating IBS "through the patients' eyes" have shown that IBS has caused multiple aspects of their life to be disrupted; hence, not surprisingly, these patients have had lower HRQoL. Many patients feel stigmatized and misunderstood for having a condition without an organic cause and their symptoms are often a big cause for embarrassment (25, 26).

However, it is worth noting that the literature on HRQoL in patients with IBS is limited by several factors, which may exaggerate its impact. First, most of the available data are collected from tertiary centers, hence do not reflect the bigger outpatient community. Second, the data often excludes IBS patients with mild symptoms. Third, many of these studies have not considered the fact that many patients with IBS may also have co-existing physical or psychological illnesses and these illnesses may further exacerbate the overall HRQoL status of the patient independent of IBS.

3.4. Factors Contributing to Health-Related Quality of Life Impairments

The etiology of reduced HRQoL is complex and may vary between disorders. Patients with inflammatory bowel disease cite pain severity as the most important factor for reduced HRQoL, while patients with IBS cite illness perception as the most important factor (29). GI symptoms, comorbidities, extra-intestinal functional disorders, psychiatric disorders and illness perceptions all affect HRQoL to different extents and will be discussed below (Box 1).

3.5. Gastrointestinal Symptoms

There has been conflicting evidence with regards to whether IBS subtypes differ in HRQoL impairments. Most studies have shown no differences in HRQoL scores between IBS subtypes (9, 20, 30-33), while others have suggested that diarrhea-predominant IBS (IBS-D) may have

lower QoL than constipation-predominant IBS (IBS-C) or mixed type IBS (IBS-M) (34), or that patients with IBS-C have lower QoL than those with IBS-D (35); however, such studies may be difficult to interpret, as patients with IBS commonly transit between the different subtypes if they are followed up for long periods (36).

It was also shown that mental and physical scores reduced in most patients with moderate to severe symptoms, while no reduction was found in patients with mild symptoms (9). These results suggest that increasing severity of bowel symptoms correspond to increasing impairments of HRQoL, with pain severity having a greater adverse impact than pain frequency (37). Different symptoms also appear to impair HRQoL to different extents, with pain and discomfort causing the most impairment, followed by alteration of bowel habits, bloating, and then nausea (38-41). The integrated severity of intestinal symptoms is more significantly associated with reduced HRQoL than individual symptom severity (35).

3.6. Co-Morbidities

There is prevailing assumption that GI symptoms reduce HRQoL in patients with IBS. However, organic comorbidities are not taken into account in many of the studies looking at HRQoL in patients with IBS, and these comorbidities may be more bothersome to the patient than the GI symptoms themselves (42). Co-morbidities are independent predictors of HRQoL regardless of the severity of GI complaints and are often significant drivers of reduced HRQoL rather than IBS itself (43). Increasing number of organic diseases present in an individual is also associated with reduced HRQoL (42).

In addition to bowel symptoms, it is well known that somatization and extra-intestinal functional disorders (EIFD) such as low energy and muscular pain are also prevalent in patients with IBS (44). EIFD and somatization lead to greater health care resource utilization (45), and patients with these disorders are less likely to respond and be compliant to pharmacotherapies (46). EIFD and mood disorders exert an effect on HRQoL independent of GI symptom severity, and may also impact the GI symptom severity and frequency itself, with anxiety causing the most dramatic influence. IBS patients without mood and EIFD comorbidities were comparable to healthy controls, suggesting that these psychiatric comorbidities drive the HRQoL impairments. Furthermore, the effects of mood and EIFD appear to be additive and associated with incremental decline of HRQoL (47, 48).

3.7. Psychiatric Disorders

Psychiatric disorders are common in patients with IBS, with reported incidence of 50 - 90% primary anxiety and

Table 2. Mean (Standard Deviation) of SF-36 Scores in Patients With Irritable Bowel Syndrome Compared to Healthy Controls as Well as Other Chronic Conditions^a

SF-36 Domain	US Population (27) (n = 2474)	IBS (27) (n = 877)	GERD (27) (n = 516)	Diabetes Mellitus (27) (n = 541)	Depression (27) (n = 502)	ESRD (27) (n = 165)	Asthma (28) (n = 246)	Migraine (28) (n = 303)	Rheumatoidarthritis (28) (n = 693)	Panic Disorder (28) (n = 73)	IBD (23) (n = 80)
Physical functioning	84 (9) ^b	79 (22)	80 (23)	68 (29) ^b	72 (27) ^b	52 (30) ^b	71 (23) ^b	89 (15) ^b	42 (24) ^b	70 (22) ^b	80 (22)
Role-physical	81 (9) ^b	50 (42)	72 (38) ^b	57 (42) ^b	44 (40)	33 (40) ^b	61 (41)	56 (43) ^b	28 (37) ^b	39 (43) ^b	53 (46)
Bodily pain	74 (5) ^b	54 (25)	58 (21) ^b	69 (27) ^b	59 (27) ^b	59 (30)	63 (27) ^b	50 (23) ^b	38 (18) ^b	61 (25) ^b	55 (28)
General health	72 (5) ^b	55 (23)	68 (21) ^b	56 (21)	53 (23)	44 (25) ^b	60 (22)	72 (18) ^b	55 (21)	63 (24)	44 (20)
Vitality	75 (2) ^b	65 (20)	71 (19) ^b	77 (18) ^b	46 (21) ^b	70 (20) ^b	51 (22)	57 (20) ^b	39 (22) ^b	41 (24) ^b	51 (21)
Social functioning	81 (3) ^b	65 (41)	78 (35) ^b	76 (37) ^b	39 (40) ^b	60 (44)	73 (21) ^b	74 (21) ^b	65 (27) ^b	55 (26) ^b	58 (26)
Role-emotional	61 (3) ^b	44 (23)	57 (20) ^b	56 (22) ^b	40 (21) ^c	46 (24)	75 (37) ^b	82 (33) ^b	57 (44) ^b	38 (43) ^b	52 (43)
Mental health	83 (3) ^b	63 (28)	79 (23) ^b	82 (25) ^b	57 (28) ^b	64 (30)	74 (18)	74 (16) ^b	71 (19) ^b	46 (20) ^b	57 (22)

Abbreviations: ESRD, end stage renal disease; GERD, gastroesophageal reflux disease; IBD, inflammatory bowel disease; IBS, irritable bowel syndrome.

^aLower scores signify poorer QOL in that domain.^bp < 0.003.^cP values reflect comparisons with IBS patients in their respective studies.**Box 1.** Factors Contributing to Health-Related Quality of Life Impairments**Gastrointestinal Symptoms**

Type (pain > altered bowel habit > bloating > nausea)

Severity

Frequency

Co-Morbidities

Organic

Extra-intestinal functional disorders

Psychological factors

Affective disorders (e.g. depression, anxiety)

Somatization

Illness perceptions (e.g. GI-specific anxiety)

Demographics

Gender

Culture

Abbreviation: GI, gastrointestinal.

depression (13, 49, 50). It has also been shown that IBS patients with co-existing anxiety or depression, evaluated using the hospital anxiety and depression scale, showed lower HRQoL scores (50-52). However, most of these studies are cross-sectional and cannot establish a causal relationship (53).

Psychological factors may have a stronger direct effect on HRQoL than bowel symptoms (54). Furthermore, there is also suggestion that it may not be the bowel symptom severity that results in the HRQoL impairment, but rather

the patient's perception of the severity and the limitations imposed by the disease (37). These perceptions are important in determining those who perceive their illness as severe, suffer most from it, and present to health care centers. The relationship between HRQoL and health care seeking behavior has shown that patients with IBS seeking health care for colonic symptoms have lower QOL scores on SF-36 compared to people not seeking care (55). Likewise, patients who at baseline perceive their disease to be impacting their life and functioning significantly are more likely to have psychiatric disorders such as anxiety, and also have reduced HRQoL (56).

GI-specific anxiety (GSA), which is an anxiety about specific GI symptoms rather than general anxiety or depression, has been suggested to be more relevant in IBS and potentially mediate much of the effects of GI symptoms on HRQoL (57). GSA refers to a specific fear of GI symptoms such as abdominal pain and patients with GSA may become hypervigilant and fearful due to beliefs that GI symptoms may have aversive consequences. This results in increased frequency and severity of GI symptoms (58). Visceral sensitivity index (VSI) (59), a validated GSA assessment instrument, was found to be the strongest predictor for GI symptom severity in a group of patients with IBS and was independently associated with poorer HRQoL, likely due to excessive avoidance of activities or situations where they expected GI symptoms to occur (60). GSA also accounted for 14% of variation in patients' IBS-QOL, which was independent of symptom severity and mental illness, suggesting that impaired HRQoL was not due to their mental state alone, but rather their perception and fear of their illnesses (58).

Coping styles of patients with IBS have significant impacts on their HRQoL (61) and it is known that patients with IBS differ from healthy controls on the severity of irrational cognitions (62). Early adverse life events have been well established to be important in causing vulnerability in the development of IBS, and these likely contribute to maladaptive coping styles (63). A positive coping style (e.g. active coping and planning and use of support instruments) is associated with better psychological adjustment and better physical functioning, whereas an avoidant coping style (e.g. denial and self-blame) seems related to lower HRQoL. The perception that IBS symptoms were controllable was positively related to psychological, social functioning, and vitality domains of HRQoL, whereas the perceived adverse consequences of and negative identity associated with IBS were linked to impaired psychological domains of HRQoL (64).

In the evaluation of HRQoL in IBS treatment response, psychosocial improvement was found to be the most important contributing factor, as evidenced by the more responsive psychosocial domain scores (33, 54). In addition, the effects that bowel symptoms exerted on HRQoL were found to be mediated by psychological factors and illness perceptions (54, 64). This dominant effect that psychosocial factors exert on IBS patients' HRQoL highlights the importance of its diagnosis and IBS management. To this end, our group has recently shown that adopting a comprehensive psychological intervention approach has been effective to improve HRQoL and make it feasible in a high volume tertiary center (50).

3.8. Demographic Factors

Epidemiological studies in western populations have shown that IBS has been more prevalent in females than males, and it was also noted that females reported poorer IBS-QOL scores than males (32, 56, 65). However, in most Asian studies, IBS-QOL scores were similar in males and females, although food avoidance and social reaction scores were lower in females (66, 67).

Studies on the impact of age, occupation, education, marriage and socio-economic status have yielded differing results on QOL in patients with IBS (67-71). A study from Egypt revealed that patients with lower education and socio-economic status had lower QOLs (72), while others (33, 35) concluded that these factors did not affect QOL.

Since socio-cultural factors are likely to impact how individuals interpret health, investigators are often mindful to validate a questionnaire before applying it to a different population. Despite the prevalence and importance of IBS in many western communities, there is a perception that IBS is less of a problem and epidemiologically different in Asian communities (73). However, most features of

HRQoL impairments in Asian patients with IBS are similar to those of western studies, in that poorer HRQoL is seen in patients with IBS for both physical and mental domains (69, 74). Similarly, symptom severity and psychiatric morbidity were important determinants for poorer QOL in Asian studies (74).

Socio-cultural influences contribute to unique differences in HRQoL impairments in Asian societies, as compared to western societies. It was interesting to note that studies in Korean (67) and Chinese (75) patients with IBS showed that the score for social functioning domain in the SF-36 and that for the sexual and relationship domain of the IBQ-QOL were higher than those of western studies.

3.9. Clinical Utility of Health-Related Quality of Life Measurements

Appreciating the value of HRQoL has important clinical implications. Patient with IBS consultations are typically focused on addressing GI-specific issues (e.g. abdominal pain and bowel pattern); but what matters more to the patient is perhaps the overall well-being and ability to function in society, which is better addressed by improvement in their HRQoL.

By understanding the factors behind HRQoL impairments, the treatment may be individualized and directed against these "Culprit" factors. For example, identifying that maladaptive illness perception is the major factor of HRQoL impairment in a patient with IBS would direct the clinician towards psycho-behavioral management (e.g. cognitive behavioral therapy) to correct his maladaptive illness perception rather than isolated GI symptom management (76).

HRQoL may be used as a holistic research outcome assessment tool for IBS research. Many IBS HRQoL instruments have been validated and shown to correspond with symptom improvement (20). However, investigators should be cognizant of the factors that confound HRQoL such as co-morbidities and mood disorders.

A limitation of this review was that it was not performed as a systematic review, and hence abstracts may be excluded, resulting in the potential of missing relevant information. We attempted to overcome this by performing extensive searches for all relevant published papers. Another limitation was the nature of literature in patients with IBS, as most data are retrospective and compare patients to historical controls seen at different institutions. Future studies are needed to prospectively compare such patients to validate these data.

4. Conclusions

Patients with IBS experience significant HRQoL impairment of a magnitude comparable to other serious organic chronic diseases. These data, combined with the prevalence of IBS in the general population, emphasize the magnitude of humanistic and economic cost of IBS. Clinicians need to appreciate and address the different factors that cause HRQoL impairments to treat patients holistically. HRQoL measures such as IBS-QOL are important research outcomes in evaluating the severity of a patient's illness and their response to treatment.

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