Health-related quality of life in adults with irritable bowel syndrome in a Mexican specialist hospital. A cross-sectional study

Jaime Alberto Sánchez-Cuén1,2, Ana Bertha Irineo-Cabrales1,2, Gregorio Bernal-Magaña1 and Felipe de Jesús Peraza-Garay3


ABSTRACT

Background: Evidence shows the negative impact of irritable bowel syndrome on the quality of life of patients who suffer from the condition as compared to the general population.

Objective: The objective of this study was to determine the health-related quality of life in adults with irritable bowel syndrome who are receiving treatment at a specialist hospital.

Material and methods: The study had a cross-sectional prospective design. The study included consecutive patients diagnosed with irritable bowel syndrome under the Rome III criteria and attending outpatient appointments. The SF-36 questionnaire was applied in its standard Spanish version and the results were compared with population reference scores in Mexico. Statistical analysis was performed with the Student’s t test, analysis of variance and the Chi-squared test, considering a significance of 0.05%.

Results: One hundred and fifty-four patients were included in the study. 137 (89%) women and 17 (11%) men, with an average age of 52.8 (SD 12.6). The constipation, diarrhea and mixed subtypes comprised 85 (55.2%), 27 (17.5%) and 42 (27.3%) patients, respectively. The quality of life of patients with irritable bowel syndrome vs the population reference scores in Mexico were 50 vs 79 for the physical health sub-scale and 59.1 vs 76.7 for the mental health sub-scale, respectively (p = 0.000). No significant difference was found in quality of life among the irritable bowel syndrome subtypes (p > 0.05).

Conclusions: Health-related quality of life is lower in patients with irritable bowel syndrome in a population in the North East of Mexico compared to the data taken from a population reference study undertaken in the same country, enabling an inference in those patients living with the condition (9,10).

Key words: Quality of life. Irritable bowel syndrome.

INTRODUCTION

According to the Rome III criteria, irritable bowel syndrome (IBS) is a functional disorder in which abdominal pain or discomfort is associated with changes in digestive habits or alterations in defecation. IBS is a benign recurring chronic disorder with episodes of exacerbation and remission that affect quality of life (QL) to a variable degree. Four subtypes are identified: diarrhea-predominant irritable bowel syndrome (IBS-D), constipation-predominant irritable bowel syndrome (IBS-C), mixed irritable bowel syndrome (IBS-M) and un-subtyped irritable bowel syndrome (IBS-U) (1,2).

While the high level of prevalence of IBS on a global level has been recognized, approaches to its integrated treatment, epidemiology and psychosocial dimensions remain complicated by the great diversity of population subgroups with distinct cultural and ethnic origins (3).

IBS presents a global prevalence of between 10 and 20%. This prevalence depends on the type of study undertaken (either population-based or not) and the diagnostic criteria used. Various surveys have been undertaken in Mexico, finding different prevalence levels of IBS in the population base, ranging from 4.4% to 35.5% (4,5), with the most frequent subtype being IBS-C (50%), followed by IBS-D (28.2%), IBS-M (21.8%), and IBS-U with values lower than 1% (6). Similarly, IBS presents at a greater frequency in women in the different subtypes, with 81.7% for IBS-C, 56.3% for IBS-D, 74.7% for IBS-M, and 77% for IBS-U (7).

One recent retrospective study, conducted on outpatients at a private hospital, shows that IBS affects almost one out of every seven North Americans. Difficulties in receiving medical attention were identified due to the current lack of diagnostic algorithms and standardized treatment, causing a substantial additional economic burden (8). Taken together, these factors mean that IBS has a negative impact on the QL, physically, mentally and socially, of those patients living with the condition (9,10).

By definition, health-related quality of life (HRQL) takes into account the perception held by individuals of the level of their subjective wellbeing, considering various...
aspects of their life and the impact of these on their state of health. However, the measurement of HRQL continues to be a complex matter, as it uses diverse measurement instruments to quantify it, with one of these being the generic SF-36 health questionnaire. There are six versions of this questionnaire, mainly used due to its ease and comfort of use and validity, which have been adapted and applied in Mexico, Argentina, Colombia, Spain, and Honduras, as well as in the Mexican-American population of the USA (11-13).

It has been documented that patients with IBS use the healthcare system to a greater degree than patients without an IBS diagnosis (14), and who, furthermore, present higher levels of anxiety and a lower HRQL (15,16). Studies undertaken in the United States of America and Chile have demonstrated that young adults with IBS have a worse HRQL than older adults with this condition, with female patients the most affected (17,18). IBS has a great economic impact in terms of health and work, as its symptoms can interfere with social and work life, affecting the HRQL of sufferers (19,20), with even the families of IBS patients presenting higher levels of stress which are comparable to those of caregivers of people with dementia (21).

While, based on the foregoing, the effect of IBS on HRQL is well-known, it would be of interest to conduct studies on the distinct and greatly varying dimensions of QL, and in specific geographical areas, in order to evaluate its impact and orient appropriate and more individualized measurements in these areas.

The working hypothesis was that IBS patients present a lower HRQL. The objective of this study was to determine HRQL in adults with IBS attending a specialty hospital in a province in the North East of Mexico.

MATERIAL AND METHODS

A descriptive cross-sectional study was undertaken with prospective data collection. Approved by the Commission for Research and Ethics at the Regional Hospital of the Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado, or ISSSTE, in Culiacán, Sinaloa, this study did not violate concepts of authorship, plagiarism, conflict of interests, or informed consent.

This study featured patients newly diagnosed with IBS in accordance with the Rome III criteria, without warning signs, who attended the Gastroenterology service at the ISSSTE Hospital Regional in the city of Culiacan, Sinaloa, in the North East of Mexico, from January to June 2016. The patients selected complied with the inclusion criteria of being male or female, aged from 18 to 80, and native to the state of Sinaloa, and had provided their signed informed consent. The exclusion criteria were as follows: a history of abdominal or other neoplasm, inflammatory bowel disease, celiac disease, lactose intolerance, diverticular disease of the colon, a history of bowel resection, endometriosis, and pelvic inflammatory disease. The elimination criteria included any patient experiencing difficulty in responding to the SF-36 questionnaire, as well as data collection error.

The diagnostic algorithm for IBS was used for all patients included in the study.

The following clinical assessments were undertaken with patients under 50 without warning signs: a clinical history; a physical examination; a complete hematology and blood chemistry analysis; stool analysis for parasites, leucocytes, and occult blood; erythrocyte sedimentation rate; C-reactive protein; thyroid profile; and serology for celiac disease in the case of persistent diarrhea. In patients younger than 50 and presenting warning signs or risk factors, a lower gastrointestinal series and a colonoscopy were undertaken. In all patients over 50, a lower gastrointestinal series and a colonoscopy were also conducted.

Definition of the variables

The Rome III criteria (22) define IBS as recurring abdominal pain or discomfort for at least three days per month in the last three months which is associated with two or more of the following: improved defecation, an initial change in the frequency of feces, and an initial change in the shape (appearance) of the feces. These criteria must be fulfilled in the preceding three months, with the discomfort beginning at least six months before diagnosis without presenting warning signs. Using the Bristol scale, IBS-C was defined as when one or more of 1, 3, or 5 were present, and none of 2, 4 or 6, while IBS-D was considered when one or more of 2, 4 or 6 and none of 1, 3 or 5 were present. IBS-M was defined as when changes in diarrhea/constipation presented without the occurrence of any of the above combinations (22).

HRQL was defined as the perception held by individuals on their subjective wellbeing, taking into account various aspects of their life and the impact on their state of health, applying questionnaire SF-36 in its standard Spanish version (12) as the generic instrument enabling the evaluation of QL in adult populations.

In the general population, the questionnaire SF-36 determined HRQL with average scores of 50 and a standard deviation of 10. It was scored on a scale of 0 to 100, where the higher the score, the better the QL. The average population reference scores for the categories and sub-scales of the SF-36 questionnaire were taken from a study undertaken in Mexico (23), which used a cross-sectional design in its population base. The objective was to obtain representative HRQL results in the Mexican population, studying a total of 4,200 households and 5,961 people, using random sampling with a 95% response level in the application of the SF-36 questionnaire in its Spanish version.

Sample

The following equation was used for the calculations to estimate an average for an infinite population.

\[ n = \left( \frac{Z \sigma}{\varepsilon} \right)^2 \]

The Z value was 1.96 (confidence interval of 95%), with a value for \( \sigma \) of 19, taken from a review of a study conducted in Mexico (10), and a sampling \( \varepsilon \) of 3.
n = (\frac{1.96(19)}{3})^2 n = \frac{1.386.81}{9} n = 154 \text{ patients.}

Due to convenience and the number of consecutive patients, the type of sampling was not probabilistic.

**Collection of the data and instrument**

The data was collected by means of an interview undertaken by two doctors, specialists in gastroenterology, who applied the SF-36 health questionnaire in its standard Spanish version. It contained 36 items encompassing eight categories of health: physical function (PF), including items 3-12; limitation due to physical problems (PR), including items 13-16; body pain (BP), including items 21 and 22; general health (GH), including items 1, 33-36; vitality (VT) including items 23, 27, 29 and 31; social function (SF), including items 20 and 32; limitation due to emotional problems (ER), including items 17-19; and mental health (MH), including items 24-26, 28 and 30 (Table I). In turn, these categories are grouped in two general sub-scales: physical health (S-S PH), which includes categories PF, PR, BP and GH; and mental health (S-S MH), which includes categories VT, PH, ER and MH. The responses to each item are coded, with the items receiving three response options scored with the values 0-50-100, while the items receiving five response options were scored with 0-25-50-75-100, and the items with six response options were scored with 0-20-40-60-80-100. The scores for the items were averaged according to their category, and the categories were averaged according to the general sub-scales. While item number 2 is a transition question that refers to the change in state of health in the previous year, this was not considered in this study as it did not use any of the eight principal dimensions for the calculation and did not propose to identify factors or variables that could have influenced HRQL over the previous year. This instrument has a reported reliability of between 0.73 and 0.96 (12), and could be completed in ten minutes.

**Statistical analysis**

The data were entered into the SPSS version 16 software package (SPSS, Inc., Chicago IL, USA), using the asymmetry coefficient and a P-P plot to verify normal distribution. Average and standard deviation were used for the quantitative variables, while the categorical variables were presented as frequencies and percentages. The Student’s t test and analysis of variance were used for the comparison of averages. The data were presented in tables and figures, while a statistical significance of 0.05 was considered with a reliability of 95%.

**RESULTS**

Of the 172 patients analyzed in order to be included in the study, 17 patients were excluded and 155 were deemed eligible for inclusion. With one patient eliminated due to a data collection error, a total of 154 patients were studied (Fig. 1), of whom 137 (89%) were women and 17 (11%) men, with an average age of 52.8 (SD 12.6) (Table II).

The frequency of IBS subtypes was as follows: IBS-C in 85 (55.2%) patients, IBS-D in 27 (17.5%) patients, and IBS-M in 42 (27.3%) patients.

IBS-C presented in 75/85 (88.2%) women and in 10/75 (11.8%) men, while IBS-D presented in 25/27 (92.6%) women and in 2/27 (7.4%) men, and IBS-M presented in 37/42 (88.1%) women and in 5/42 (11.9%) men (p = 0.537 analysis of variance).

The average age was 52.5 (SD 12.6), 52.7 (SD 14.1), and 53.4 (SD 11.7) in IBS-C, IBS-D and IBS-M, respectively (p = 0.930 analysis of variance).

Regarding HRQL, the average scores were lower in the categories physical function (PF), limitation due to phys-
ical problems (PR), body pain (BP), general health (GH), vitality (VT), social function (SF), limitation due to emo-
tional problems (ER) and mental health (MH) compared to the scores for the population reference in Mexico \( (p = 0.000 \text{ Student’s } t\text{ test}) \). Similarly, the average scores for the general sub-scale in physical health (S-S PH) were 50 (SD 7.7) vs 79 (SD 0.2) in the population studied and the population reference, respectively, while for the mental health sub-scale (S-S MH) the average scores were 59.1 (SD 7.2) vs 76.7 (SD 0.2) in the population studied and the population reference, respectively \( (p = 0.000 \text{ Student’s } t\text{ test}) \) (Fig. 2).

Regarding HRQL, across all age ranges, a significant difference was found between the average scores for the

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**Table II. Characteristics of the population with irritable bowel syndrome studied in the ISSSTE Hospital Regional Culiacan, Sinaloa, Mexico in the period January to June 2016**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Count (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>137 (89%)</td>
</tr>
<tr>
<td>Male</td>
<td>17 (11%)</td>
</tr>
<tr>
<td>Average age</td>
<td>52.8 (SD 12.6)</td>
</tr>
<tr>
<td>Associated digestive disease</td>
<td></td>
</tr>
<tr>
<td>Dyspepsia</td>
<td>56 (36.4%)</td>
</tr>
<tr>
<td>Gastroesophageal reflux disease</td>
<td>65 (42.2%)</td>
</tr>
<tr>
<td>Associated extra-digestive disease</td>
<td></td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>27 (17.5%)</td>
</tr>
<tr>
<td>Arterial hypertension</td>
<td>39 (25.3%)</td>
</tr>
<tr>
<td>Obesity</td>
<td>74 (48.1%)</td>
</tr>
<tr>
<td>Fibromyalgia</td>
<td>33 (21.4%)</td>
</tr>
<tr>
<td>Pelvic pain</td>
<td>5 (3.2%)</td>
</tr>
<tr>
<td>Average number of appointments at the gastroenterology service</td>
<td>3.3 (SD 2.2)</td>
</tr>
</tbody>
</table>

Source: Gastroenterology service at the ISSSTE Hospital regional Culiacán, Sinaloa, Mexico.
physical health sub-scale (S-S PH) and the mental health sub-scale (S-S MH) in IBS patients when compared to the population reference score (p > 0.05 Student’s t test). The over-65 age ranges presented lower average HRQL scores. Regarding the age ranges in the population studied, the average scores for each of the age ranges, both in the physical health sub-scale (SS-PH) and the mental health sub-scale (SS-MH), presented a significant difference (p < 0.05 Student’s t test) (Table III).

With regard to the HRQL among the IBS-C, IBS-D and IBS-M subtypes, no significant difference was found among the average scores for the categories physical function (PF), limitation due to physical problems (PR), physical pain (BP), general health (GH), vitality (VT), social function (PH), limitation due to emotional problems (ER) and mental health (MH), as well as for the physical health (S-S PH) and mental health (S-S MH) sub-scales (p > 0.05 Student’s t test) (Fig. 3).

**DISCUSSION**

IBS is a recurring functional gastrointestinal disorder, currently defined by symptom-based diagnostic criteria (Rome III criteria) in the absence of detectable organic causes. The etiology of IBS and functional gastrointestinal disorders feature significantly in research, with IBS being one of the most frequently detected gastrointestinal disorders in clinical practice. Patients with IBS not only experience physical, emotional and social symptoms that have a significant impact on QL, but also tend to negatively value their own state of health, thus provoking an interest in evaluating QL in these patients. One of the specific proposals for measuring HRQL in patients with IBS is to evaluate the impact of the condition on daily life and monitor health in this type of patient in the population, in order to propose health policies aimed at improving both HRQL and the approach to treating IBS itself.

The patients with IBS in this study presented a lower average HRQL compared to the population reference scores in Mexico (23). Although the scores were low across all categories of the SF-36 questionnaire, the GH, PR, BP and VT categories were identified as the most affected, with IBS patients tending to evaluate their own health as poor and envisaging that it could worsen. They describe problems in their work lives and other daily activities caused by their health condition, and the intense and restricting body pain and constant tiredness and exhaustion that they experience. With regard to the general sub-scales, the IBS patients studied presented a lower HRQL in the areas of physical and mental health than the levels noted in the population reference. No difference was found for HRQL among the IBS subtypes in the patients studied, results which are similar to a recent study conducted in patients attending the Gastroenterology service at a specialty hospital in Mexico (10).

In this study, while HRQL was recorded as being lower, the age range presented by the patients was greater, with those patients older than 65 being those that presented a worse HRQL in both the physical (S-S PH) and mental health (SE-MH) sub-scales. These results are different to other studies, which demonstrate that young adults with IBS have a worse HRQL than older adults with this condition (17,18).

Previous studies on HRQL in patients with IBS have found similar results to this study. As in this study, Fosado-Gayosso M et al. (10), Si JM et al. (24) and Gralnek IM et al. (25) conducted studies on HRQL in patients with IBS using the SF-36 questionnaire. In the IBS patients they studied, Fosado-Gayosso M et al. (10) found a lower HRQL regarding the physical and mental health sub-scales, with an average score of 57 (SD 19) and 56 (SD 20), respectively. In their multi-centric study, Si JM et al. (24) found a lower HRQL in patients with IBS, obtaining average respective scores of 57.1 (SD 17) and 52.6 (SD 12.3) for the sub-scales of mental and physical health. Gralnek IM et al. (24) identified a worse HRQL in both sub-scales for mental and physical health, recording average scores of 42.7 (SD 10.5) and 43.4 (SD 11.4) (Table IV). Similarly, Fosado-Gayosso M et al. (10), Si JM et al. (24) and Gralnek IM et al. (25) observed that the most affected categories in terms of HRQL were GH, PR, BP and VT, similar to the results reported in this study. The difference with the results reported by Si MJ et al. (24) was observed in the MH category, which presented a very low average score (47.4, SD 22.4).

One of the limitations of this study was its comparison of HRQL values from a study of a general population in Mexico with gastroenterology outpatients, which could lead to selection biases. It would thus have been interesting to undertake a comparison with other diseases or with non-hospital IBS patients. The male sample studied was small, leading to a need for caution in making inferences from the HRQL results for this gender. On the other hand, with 89% of the women in the sample studied applicable for comparison with similar populations of the same gender, analysis was not undertaken by the age subgroups which would have added more information to this study. Occasional problems occurred in the application of the SF-36 questionnaire, mainly in patients over 75, due to a difficulty to understand certain questions, which thus caused the interview to be prolonged by more than ten minutes. However, the study was prospective, with the data collection method facilitating the control of the variables through the use of the validated SF-36 questionnaire, while the results obtained could be generalized to populations with similar characteristics.

This study, undertaken in a province in the North East of Mexico, found that HRQL is lower in IBS patients compared to the data obtained in a study of a population reference in the same country, an inference that can be clearly taken from the female sample population and cautiously taken from the results obtained from the small male sample.
### Table III. Health-related quality of life (SF-36 questionnaire) by age range, in patients studied with irritable bowel syndrome in the ISSSTE Hospital Regional Culiacan, Sinaloa, Mexico compared to a study of a population reference in Mexico (23).

<table>
<thead>
<tr>
<th>Age range</th>
<th>Physical function (PF)</th>
<th>Physical role (PR)</th>
<th>Body pain (BP)</th>
<th>General health (GH)</th>
<th>Vitality (V)</th>
<th>Social function (SF)</th>
<th>Emotional role (ER)</th>
<th>Mental health (MH)</th>
<th>Physical health (S-S PH)</th>
<th>Mental health (S-S MH)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Average</td>
<td>Average</td>
<td>Average</td>
<td>Average</td>
<td>Average</td>
<td>Average</td>
<td>Average</td>
<td>Average</td>
<td>Average</td>
<td>Average</td>
</tr>
<tr>
<td>25-34</td>
<td>Population reference</td>
<td>(96.3 (SD 0.3))</td>
<td>(93.5 (SD 0.6))</td>
<td>(89.4 (SD 0.6))</td>
<td>(54.9 (SD 0.4)</td>
<td>(74.1 (SD 0.5))</td>
<td>(77.1 (SD 0.5))</td>
<td>(93.2 (SD 0.6))</td>
<td>(74.1 (SD 0.5))</td>
<td>(83.5 (SD 0.3))</td>
</tr>
<tr>
<td>This study</td>
<td>(80 (SD 2.5))</td>
<td>(80.1 (SD 3.5))</td>
<td>(56.3 (SD 3.8))</td>
<td>(42.5 (SD 2.2))</td>
<td>(58 (SD 3.8))</td>
<td>(89.4 (SD 2.2))</td>
<td>(64 (SD 3.5))</td>
<td>(60.5 (SD 2.6))</td>
<td>(64.7 (SD 2.8))</td>
<td>(68 (SD 3.2))</td>
</tr>
<tr>
<td>35-44</td>
<td>Population reference</td>
<td>(96.3 (SD 0.3))</td>
<td>(96.3 (SD 0.3))</td>
<td>(96.3 (SD 0.3))</td>
<td>(96.3 (SD 0.3)</td>
<td>(96.3 (SD 0.3))</td>
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<td>(96.3 (SD 0.3))</td>
<td>(96.3 (SD 0.3))</td>
</tr>
<tr>
<td>This study</td>
<td>(76.7 (SD 3.6))</td>
<td>(55.3 (SD 2.5))</td>
<td>(52.4 (SD 3.6))</td>
<td>(44.1 (SD 4.2))</td>
<td>(53.5 (SD 2))</td>
<td>(74.4 (SD 3.6))</td>
<td>(66 (SD 2.5))</td>
<td>(67.8 (SD 3.9))</td>
<td>(57.1 (SD 3.2))</td>
<td>(65.4 (SD 2.6))</td>
</tr>
<tr>
<td>45-54</td>
<td>Population reference</td>
<td>(96.3 (SD 0.3))</td>
<td>(96.3 (SD 0.3))</td>
<td>(96.3 (SD 0.3))</td>
<td>(96.3 (SD 0.3)</td>
<td>(96.3 (SD 0.3))</td>
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<td>(96.3 (SD 0.3))</td>
<td>(96.3 (SD 0.3))</td>
<td>(96.3 (SD 0.3))</td>
</tr>
<tr>
<td>This study</td>
<td>(60.4 (SD 2.2))</td>
<td>(48.2 (SD 3.6))</td>
<td>(53.2 (SD 2.8))</td>
<td>(45 (SD 3.2))</td>
<td>(50.5 (SD 2.6)</td>
<td>(64.2 (SD 4.4))</td>
<td>(65 (SD 2.9))</td>
<td>(62.6 (SD 2.6))</td>
<td>(51.7 (SD 2.8))</td>
<td>(60.6 (SD 3.2))</td>
</tr>
<tr>
<td>55-64</td>
<td>Population reference</td>
<td>(84.9 (SD 0.7))</td>
<td>(84.7 (SD 1))</td>
<td>(82.2 (SD 0.8))</td>
<td>(49.9 (SD 0.4)</td>
<td>(69.1 (SD 0.6))</td>
<td>(74.5 (SD 0.6))</td>
<td>(86.6 (SD 1))</td>
<td>(71.2 (SD 0.6))</td>
<td>(75.4 (SD 0.6))</td>
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<tr>
<td>This study</td>
<td>(56.5 (SD 2.2))</td>
<td>(45 (SD 3.5))</td>
<td>(50.1 (SD 3.6))</td>
<td>(45.2 (SD 3))</td>
<td>(50 (SD 4.2))</td>
<td>(66 (SD 2.8))</td>
<td>(60.2 (SD 3.9))</td>
<td>(56.6 (SD 2.5))</td>
<td>(49.2 (SD 3.6))</td>
<td>(58.2 (SD 3.2))</td>
</tr>
<tr>
<td>65-74</td>
<td>Population reference</td>
<td>(70.2 (SD 1.3))</td>
<td>(72.1 (SD 1.8))</td>
<td>(73.1 (SD 1.4))</td>
<td>(47.6 (SD 0.6)</td>
<td>(65.3 (SD 0.9))</td>
<td>(69.9 (SD 0.9))</td>
<td>(74.8 (SD 1.8))</td>
<td>(70.3 (SD 0.9))</td>
<td>(65.8 (SD 1))</td>
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<tr>
<td>This study</td>
<td>(45.9 (SD 3.4))</td>
<td>(40.1 (SD 2.8))</td>
<td>(52 (SD 4.3))</td>
<td>(36 (SD 3.6))</td>
<td>(46.5 (SD 4.8)</td>
<td>(63.5 (SD 2.2))</td>
<td>(56.2 (SD 3.1))</td>
<td>(59 (SD 2.6))</td>
<td>(43.5 (SD 2.8))</td>
<td>(56.3 (SD 3.8))</td>
</tr>
<tr>
<td>&gt; 75</td>
<td>Population reference</td>
<td>(56 (SD 2.1))</td>
<td>(58.5 (SD 3.1))</td>
<td>(69 (SD 2.1))</td>
<td>(45.4 (SD 1))</td>
<td>(59.4 (SD 1.4))</td>
<td>(62.6 (SD 1.5))</td>
<td>(61.1 (SD 3.1))</td>
<td>(66.3 (SD 1.4))</td>
<td>(57.2 (SD 1.6))</td>
</tr>
<tr>
<td>This study</td>
<td>(35.7 (SD 2.2))</td>
<td>(30.5 (SD 3.4))</td>
<td>(41.1 (SD 2.8))</td>
<td>(28.5 (SD 2))</td>
<td>(40 (SD 3.2))</td>
<td>(47.8 (SD 2.2))</td>
<td>(44.7 (SD 2.9))</td>
<td>(52 (SD 3.4))</td>
<td>(34 (SD 2.8))</td>
<td>(46.1 (SD 3.4))</td>
</tr>
</tbody>
</table>
Health-related quality of life in adults with irritable bowel syndrome in a Mexican specialist hospital. A cross-sectional study

No significant difference was found for HRQL according to the clinical IBS subtype.

ACKNOWLEDGEMENTS

Our thanks go to the personnel at the Gastroenterology outpatient service in the ISSSTE Hospital Regional Culiacan.

REFERENCES


Table IV. Comparison of average health-related quality of life scores (SF-36 questionnaire) in patients with irritable bowel syndrome

<table>
<thead>
<tr>
<th>Country</th>
<th>n</th>
<th>Type of health center</th>
<th>Service</th>
<th>Healthcare system</th>
<th>Type of population</th>
<th>Selection of patients</th>
<th>Sub-escapes</th>
</tr>
</thead>
<tbody>
<tr>
<td>This study</td>
<td>México 154</td>
<td>Hospital</td>
<td>Gastroenterology appointment</td>
<td>Public</td>
<td>Urban</td>
<td>Consecutive outpatient</td>
<td>50 (7.7)</td>
</tr>
<tr>
<td>Fosado-Gayosso M (10)</td>
<td>México 192</td>
<td>Hospital</td>
<td>Gastroenterology appointment</td>
<td>Public</td>
<td>Urban</td>
<td>Consecutive outpatient</td>
<td>57 (19)</td>
</tr>
<tr>
<td>Si JM (24)</td>
<td>China 662</td>
<td>Hospital</td>
<td>Gastroenterology appointment</td>
<td>Public</td>
<td>Urban and rural</td>
<td>Consecutive outpatient</td>
<td>57.1 (17)</td>
</tr>
<tr>
<td>Gralnek IM (25)</td>
<td>USA 877</td>
<td>Hospital/University Hospital</td>
<td>Gastroenterology appointment</td>
<td>Public</td>
<td>Urban</td>
<td>Consecutive outpatient</td>
<td>42.7 (10.5)</td>
</tr>
</tbody>
</table>

Fig. 3. Health-related quality of life (SF-36 questionnaire) in the patients studied with irritable bowel syndrome by subtypes in the ISSSTE Hospital Regional Culiacan, Sinaloa, Mexico in the period January to June 2016.
19. Peppas G, Alexiou VG, Mourtzoukou E, et al. Epidemiology of constipation in Europe and Oceania: A systematic review. BMC Gastroenterol 2008;8:5. DOI: 10.1186/1471-230X-8-5