

## Association between Irritable Bowel Syndrome and sleep quality

Viqar Basharat, MD\* Anas Ali Hadi Asiri, MBBS\*\* Ahmed Hussain Almutlaq, MBBS\*\* Khalid Hussein Almutairi, MBBS\*\* Mohammed Abdullah Alshehri, MBBS\*\* Abdussalam Mohammed A Alqhtani, MBBS\*\* Ahmed Saad Thabet, MBBS\*\* Aeyd Jobran Aeyd ALHashim, MBBS\*\* Raghad Saeed Mohammed Almuidh, MBBS\*\* Abdullah Ali Alshehri, MBBS\*\*\* Mazen Ahmad Hadi Jali, MBBS\*\*\* Bushra Saeed Saad Alshahrani, MBBS\*\*\* Bushra Ali Alqahtani, Pharma.D\*\*\*\* Hanan Mohamed S Alkhuwaylidi, Pharma.D\*\*\*\*

### ABSTRACT

**Introduction:** Self-report questionnaires, polysomnography (PSG), or actigraphy are used to diagnose sleep disorders in the general population. In different countries, the prevalence of sleep disorders varies. In 2006, a meta-analysis discovered a feminine tendency to sleeplessness. Sleep difficulties may also have a role in a variety of health issues. A link has been shown between sleep disruptions and functional gastrointestinal disorders.

**Methodology:** A purposefully developed questionnaire was used to collect data in this cross-sectional investigation. After a series of conversations with the panel of experts (which included a subject specialist, a researcher, and a language expert), a questionnaire was created. The questionnaire's Cronbach alpha was computed. The research was carried out in Saudi Arabia's Aseer region. The questionnaire contained questions about IBS, demographic characteristics. Data were collected, coded, and entered in the SPSS ver.20 software for descriptive statistics (mean standard deviation, frequencies, and % s were computed) and to determine the significance of differences.

**Results:** Strong correlation between IBS and sleep quality was observed.

**Conclusion:** We discovered that there was a positive relationship between the severity of IBS symptoms and sleep disruptions, and specific patient characteristics were significant predictors of IBS and sleep disturbance severity using IRT analysis. These findings are in line with those of previous research. However, the pathophysiological mechanism that underpins this link is only partially known.

**Keywords:** Quality, Sleep, Patients, Irritable Bowel Syndrome

### INTRODUCTION

Self-report questionnaires, polysomnography (PSG), or actigraphy are used to diagnose sleep disorders in the general population<sup>1</sup>. In different countries, the prevalence of sleep disorders varies. In 2006, a meta-analysis discovered a feminine tendency to sleeplessness<sup>2-4</sup>. Sleep difficulties may also have a role in a variety of health issues<sup>5</sup>. A link has been shown between sleep disruptions and functional gastrointestinal disorders<sup>6</sup>.

Irritable bowel syndrome (IBS) is a type of functional bowel condition characterized by recurring stomach pain during defecation or a change in stool frequency or appearance<sup>7</sup>. The prevalence differed by geographic area and was higher in women than in males<sup>8</sup>. The cause of IBS is yet unknown. Genetic and environmental variables, visceral hypersensitivity, gut microbiota, gut-brain axis dysfunction, and psychological aspects were all suspected to be implicated<sup>9</sup>. Sleep disturbances were found to be frequent among IBS patients in some research. According to our research, the prevalence of sleep disturbances in people with IBS ranges from 7.1 % to 73.9 %. Furthermore, sleep disturbances may be linked to a higher severity of gastrointestinal symptoms<sup>10</sup>.

Crohn's disease (CD) and ulcerative colitis (UC) are multifactorial chronic diseases caused by the body's improper immunological inflammatory response to intestinal microorganisms in genetically predisposed persons<sup>11,12</sup>. In UC, the morphological changes and immunological responses are restricted to the colon, and the inflammation is limited to the mucosa. Inflammation in CD can affect any portion of the gastrointestinal system, and its lesions can even penetrate through the intestinal wall. Diarrhea, abdominal discomfort, gastrointestinal bleeding, weight loss, malnutrition, and fatigability are the most common symptoms associated with IBD, all of which can impact patients' psychological well-being and limit their lifestyle<sup>13</sup>. UC has a global frequency of 0.5–5.21 per 100,000 persons, while CD has a prevalence of 0.1–16 per 100,000 people<sup>14</sup>. IBDs are gastrointestinal inflammatory disorders that afflict more than 1 million people in the United States and 7 million people globally<sup>15</sup>. In comparison to the general population, patients with IBD are more likely to experience psychological problems such as depression and anxiety<sup>16</sup>. Despite this, other environmental factors that may play a role in the aetiology of IBD, such as sleep disorders, are less well understood<sup>17,18</sup>.

\* Assistant Professor of Gastroenterology ,  
King Khalid University  
Saudi Arabia. E-mail: Ans1245@yahoo.com

\*\* Medical Intern

\*\*\* Medical Student , College of Medicine,  
King Khalid University.

\*\*\*\* Pharma D intern, College of pharmacy,  
King Khalid University.

This study aimed to know the association of quality of sleep-in patients with Irritable Bowel Syndrome (IBS) compared to general population in Saudi Arabia.

### METHODS

A purposefully developed questionnaire was used to collect data in this cross-sectional investigation. After a series of conversations with the panel of experts (which included a subject specialist, a researcher, and a language expert), a questionnaire was created. The questionnaire's Cronbach alpha was computed. The research was carried out in Saudi Arabia's Aseer region. The questionnaire contained questions about IBS, demographic characteristics.

Data were collected, coded and entered into the SPSS ver.20 software for descriptive statistics (mean standard deviation, frequencies, and % s were computed) and to determine the significance of differences. At a 5% level of significance, the t-test and chi-square test were performed. An electronic version of the questionnaire was used to collect data from health care centers in the Aseer region of Saudi Arabia. King Khalid University in Saudi Arabia provided ethical approval. The study duration was from November 2021 to February 2022.

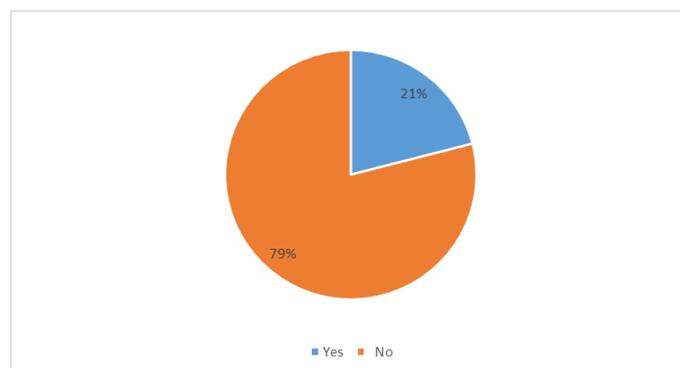
### RESULTS

Out of 6300 forms distributed we have received 6000 correctly filled questionnaires. The mean (SD) of age was 39.6 (20.3). 58% were males while 42% were females 25% were in medical profession, 23% in education profession 15%, 10% 8% were students, house wife's and unemployed, 35% respondents were from Aseer, 23% from Riyadh, 12% from Qassim rest province less than 10%. 63% respondents living in cities while rest in villages. 73% were married while 27% were un married, 50% have income range 5000 to 15000 SAR. Regarding chronic diseases Diabetes Mellitus 1400 23%, Hypertension 3500 58%, I don't have any chronic disease 600 10% Asthma 300 5%, others 200 3%. Cronbach alpha was 0.84.

**Table 1:** Demographics and health related items

	Frequency	Percentage
<b>Gender</b>		
Male	3500	58%
Female	2500	42%
<b>Profession</b>		
Medical sector	1500	25%
Military sector	700	12%
Education sector	1400	23%
Student	900	15%
Civil servant	300	5%
House wife	600	10%
Unemployed	500	8%
Retired	100	2%
<b>In which province do you reside?</b>		
Riyadh	1400	23%
Makkah	400	7%
Aseer	2100	35%
Al-baha	250	4%
Jazan	160	3%
Medina	189	3%
Eastren province	128	2%
Hail	138	2%
Tabuk	125	2%
Qassim	700	12%

Al-jouf	100	2%
Northern borders province	190	3%
Najran	120	2%
<b>Where do you live ?</b>		
City	3800	63%
Village	2200	37%
<b>Marital status :</b>		
Married	4398	73%
Unmarried	1602	27%
<b>Monthly Income :</b>		
Less than 5000 SR	1400	23%
5000-15000 SR	3000	50%
More than 15000 SR	1600	27%
<b>Smoking status :</b>		
Non-smoker	4000	67%
Ex-smoker	1400	23%
Current smoker	600	10%
<b>Do you have any chronic disease?</b>		
Diabetes Mellitus	1400	23%
Hypertension	3500	58%
I don't have any chronic disease	600	10%
Asthma	300	5%
others	200	3%



**Figure 1:** Have you ever been labelled as Irritable Bowel Syndrome?

Figure 1 depicted that in response of the question Have you ever been labelled as Irritable Bowel Syndrome? 21% opted yes.

**Table 2:** Association between quality of sleep and Irritable Bowel Syndrome

Quality of Sleep	Bad	Fair	Good	Superb
<b>Have you ever been labelled as Irritable Bowel Syndrome?</b>				
Yes	200	300	500	100
No	2400	2000	700	900

p=0.001

We observed a significant difference between quality of sleep and Irritable Bowel Syndrome.

### DISCUSSION

In previous studies The explanation for the link between sleep disturbances and IBS is unknown. In the aetiology of IBS, the gut-brain axis plays a critical role.

The prevalence of sleep disturbances among IBS patients differed little among geographical locales, we also discovered that female IBS

patients had a higher prevalence of sleep disturbances than male IBS patients, but the difference was not significant. Many studies have found that females have a higher risk of sleep disorders and IBS than guys.

The impact of IBS on sleep quality and quality of life in IBD patients in clinical remission was investigated in this study. Our findings revealed that IBS and sleep quality have significant relationship.

In another Saudi Arabian based study physicians and surgeons, the total prevalence of IBS is (16.3 %). Subjects who worked longer hours and were younger were more likely to have IBS. Which is inline with our findings (21%) The prevalence of IBS in other study was 19 %, which is similar to our findings. It would be interesting to explore if these set of patients, who also happen to have knowledge of the disease, might benefit from a single reassurance session. This has been demonstrated to reduce patients' self-perceptions of disability, regardless of their educational level, in patients with IBS<sup>19</sup>.

The approach employed to survey respondents appears to have an impact on the prevalence of IBS. When compared to surveys completed during phone interviews or face-to-face meetings, self-completed questionnaires, such as the ones employed in our study, reveal a higher prevalence of IBS<sup>20</sup>. In our group, female gender was linked to a higher risk of IBS. Because of the potentially stressful nature of a physician's job, one may assume that it has a bad impact on one's health or social life. This study, as well as others that looked at functional gastrointestinal diseases, found no evidence of its impact on health. There has also been no evidence of a negative impact on social life<sup>20</sup>.

Caring for IBS patients is very expensive. IBS was shown to be the most expensive functional bowel condition in a population-based study from Iran, a country with a comparable cultural and ethnic background to Saudi Arabia. This was connected to a high number of doctor visits and decreased workplace productivity.

There are certain limitations to our research. The survey was optional, which could have resulted in selection bias. It was difficult to quantify the overall response rate due to the nature of the questionnaire and the method by which it was distributed. We had little information about the subject's past medical and surgical history aside from exclusion criteria. The study's cross-sectional nature makes determining causal linkages problematic. There could have been undetected confounders, as with most observational research.

## CONCLUSION

**We discovered that there was a positive relationship between the severity of IBS symptoms and sleep disruptions, and specific patient characteristics were significant predictors of IBS and sleep disturbance severity using IRT analysis. These findings are in line with those of previous research However, the pathophysiological mechanism that underpins this link is only partially known. One theory is that sleep disturbances cause visceral hyperalgesia, which heightens the impression of gastrointestinal symptoms in patients. Endophenotypic features related with stress vulnerability, for example, could play a role.**

**Authorship Contribution:** All authors share equal effort contribution towards (1) substantial contributions to conception and design, analysis and interpretation of data; (2) drafting the article and revising it critically for important intellectual content; and (3) final approval of the manuscript version to be published. Yes.

**Potential Conflict of Interest:** None

**Competing Interest:** None

**Acceptance Date:** 16 March 2022

## REFERENCES

- Ott JJ, Stevens GA, Groeger J, et al. Global epidemiology of hepatitis B virus infection: New estimates of age-specific HBsAg seroprevalence and endemicity. *Vaccine* 2012;30(12):2212-9.
- Liaw YF. Antiviral therapy of chronic hepatitis B: Opportunities and challenges in Asia. *J Hepatol* 2009;51(2):403-10.
- London WT, McGlynn KA. Liver cancer. In: Scottenfeld D, Fraumeni JF, editors. *Cancer Epidemiology and Prevention*. United Kingdom: Oxford University Press 2006.
- Lok AS, McMahon BJ. Chronic hepatitis B. *Hepatology* 2007;45:507-39.
- de Franchis R, Hadengue A, Lau G, et al. EASL International Consensus Conference on hepatitis B 13-14 September 2002 Geneva, Switzerland. Consensus statement (long version). *J Hepatol* 2003;39(1):23-25.
- National Foundation for Infectious Diseases. Facts about Hepatitis-B. January. 2012.
- Liaw YF, Leung N, Guan R, et al. Asian-Pacific consensus statement on the management of chronic hepatitis B: A 2005 update. *Liver Int* 2005;25(3):472-89.
- Ray SK. Vaccine preventable diseases. In: Chaturvedi S, Jena TK, editors. *Epidemiology in Maternal and Child Health, Preventive Medicine*. MME-101. New Delhi: IGNOU 2003;40-66.
- Van Damme P, Kane M, Meheus A. Integration of hepatitis B vaccination into national immunisation programmes. *Viral Hepatitis Prevention Board*. *BMJ* 1997;314(7086):1033-6.
- Singh SP. Hepatitis B Eradication Day: It's never too late!! *Hepat B Annu* 2006;3:11-3.
- Razi A, Rehman R, Naz S, et al. Knowledge attitude and practices of university students regarding hepatitis B and C. *ARPN J Agric Biol Sci* 2010;5:38-43.
- Misra B, Panda C, Das HS, et al. Study on awareness about hepatitis B viral infection in coastal Eastern India. *Hepat B Annu* 2009;6:19-28.
- Rao MB. The Prevalence of Hepatitis B in India and its Prevention. 2012.
- National Centre for Disease Control (NCDC). Hepatitis in India: Burden, Strategies and Plans. *NCDC Newsl* 2014;3:1-3.
- Batham A, Narula D, Toteja T, et al. Sytematic review and meta-analysis of prevalence of hepatitis B in India. *Indian Pediatr* 2007;44(9):663-74.
- Gandhi SJ. Hepatitis B outbreak investigation report in Sabarkantha District, Gujarat State, February 2009. *Int J Med Med Sci* 2011;3:109-21.
- Seetharam S. Hepatitis B outbreak in Gujarat: A wake-up call. *Indian J Med Ethics* 2009;6(3):120-1.
- Patel DA, Gupta PA, Kinariwala DM, et al. An investigation of an outbreak of viral hepatitis B in Modasa town, Gujarat, India. *J Glob Infect Dis* 2012;4(1):55-9.
- Cheung J, Lee TK, Teh CZ, et al. Cross-sectional study of hepatitis B awareness among Chinese and Southeast Asian Canadians in the Vancouver-Richmond community. *Can J Gastroenterol* 2005;19(4):245-9.
- Taylor VM, Jackson JC, Chan N, et al. Hepatitis B knowledge and practices among Cambodian American women in Seattle, Washington. *J Community Health* 2002;27(3):151-63.