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ORIGINAL ARTICLE

Sleep quality in functional dyspepsia patients: A cross-sectional study from a tertiary care hospital in Karachi.

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ABSTRACT... Objective: To determine sleep quality among functional dyspepsia (FD) patients presenting to gastroenterology out-patient clinic in a tertiary care hospital. **Study Design:** Cross-sectional study. **Setting:** Department of Gastroenterology, Liaquat National Hospital, Karachi, Pakistan. **Period:** March 2022 to December 2023. **Methods:** FD diagnosis was established in view of ROME-IV criteria. Sleep quality was evaluated using Pittsburgh Sleep Quality Index PSQI scoring tool. A global score of 5 or more indicates poor sleep quality. Binary logistic regression was applied and odds ratio with 95% confidence level were figured out to assess relationship of patients' profile with FD. **Results:** In a total of 240 patients, the mean age was 37.3±6.5 years. There were 122 (50.8%) male patients. The most common dyspeptic feature was postprandial fullness (60.4%) followed by early satiety epigastric pain (50%) and epigastric burning (39.6%). Mean PSQI score was 14.7±3.5. Frequency of poor sleep quality among FD patients was 79.2%. None of the parameter was significantly associated with sleep quality except urban residence (p=0.005). **Conclusion:** Very high burden of poor sleep quality was found among FD patients. While most dyspeptic symptoms did not show a significant association with sleep quality, urban residence emerged as a notable factor.

Key words: Epigastric, Functional Dyspepsia, Pain, ROME-IV Criteria, Sleep Quality.

INTRODUCTION

Dyspepsia accounts for 40% of visits to gastrointestinal clinics, making it one of the most common causes for referrals.[1] Quite possibly of the most common functional gastrointestinal problem (FGIDs), functional dyspepsia (FD), is described by upper stomach distress and/or distress without organic abnormalities. The epigastric pain syndrome and postprandial distress syndrome subsets of FD were separated by the Rome IV Consensus.[2] Because of its heightened visceral sensitivity, compromised motor function, Helicobacter pylori infection, central nervous system disruption, and poor lifestyle, FD is currently regarded as a bio-psychosocial disorder.[3]

People must get enough sleep in order to function. This is a physiological process that is essential to human development and energy replenishment for both survival and overall health.[4] Worldwide, sleep deprivation is a widespread medical problem among the general public, and research that has been published in the past has shown a clear link between sleep disturbances and functional gastrointestinal diseases, including FD and irritable bowel syndrome.[5] For instance, 68% of FD patients in one study reported having poor sleep quality.[6]

A key role in the pathophysiology of FGIDS is probably played by psychological discomfort, which is highly related with them. It's unknown how sleep disturbances relate to FGIDs and whether they have any bearing on psychological variables.[7] A study was conducted in Korea which revealed that poor socio-demographic status i,e literacy, low income, smoking and obesity were all associate with poor sleep quality.[8] Modifications in sleep patterns can impact food consumption,

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body composition, and increased adiposity, among other parameters linked to nutritional balance. In addition, sleep deprivation are linked to other metabolic dysfunctions.[9]

A 19-item self-rated questionnaire called "Pittsburgh Sleep Quality Index (PSQI)" is used to gauge how well people feel their sleep. Seven factors are taken into account by the PSQI to distinguish between excellent and bad sleep quality including sleep latency, use of sleeping medicine, subjective sleep quality, habitual sleep efficiency, length, sleep disruptions, and dysfunction throughout the day over a one-month period. Responses were evaluated on a Likert scale from 1 to 4, with a total score of ≥5 indicating inadequate quality of sleep.[10]

This study's purpose was to determine sleep quality among FD patients presenting to gastroenterology out-patient clinic in a tertiary care hospital. Due to the lack of medical facilities and budgetary constraints, compared to other industrialized nations, a big proportion of patients in Pakistan reported very late. This is because Pakistan has a low socioeconomic position and a huge population that lives in rural regions.

METHODS

The present cross-sectional study was performed in out-patient clinics of gastroenterology department in Liaquat National Hospital, Karachi Pakistan. The study was commenced during March to December, 2022 following the approval from hospital ethics committee bearing letter number 725-2022 LNH-ERC. The study enlisted patients based on written informed consent through the use of non-probability consecutive sampling. Sample size of 232 patients was taking 68% poor sleep quality prevalence in dyspepsia patients[6] at 95% confidence interval and 6% margin of error.

Patients of age 18-60 years of any gender, diagnosed with functional dyspepsia for past 3 months were included into the study. Patients having alarming features i-e anemia (Hemoglobin <12 in male and <11 g/dl in females), significant weight loss (>5 kg over last 6 months), dysphasia (difficulty in swallowing), vomiting (for more than 1 months), patients requiring Helicobacter pylori stool antigen, end stage renal disease, chronic liver disease and any metastatic disease were excluded from this study.

FD diagnosis was established in view of ROME-IV criteria. A positive case for FD is established by the ROME-IV criteria if any one of the four symptoms—postprandial fullness, early satiation, epigastric discomfort, or epigastric burning—is present for longer than two weeks. All these symptoms are assessed on clinical history.[2] Sleep quality was evaluated using PSQI scoring tool which comprises of 19 items with seven components and score range of 0-21. The higher score shows poor sleep quality whereas threshold for poor sleep quality is at least score of 5 points.[11]

Data was placed in IBM-SPSS Statistics version 26 to perform data analysis. Frequencies and rates were processed for categorical factors. Numerical factors were communicated as mean ± standard deviation. Binary logistic regression was applied and odds ratio with 95% confidence level were figured out to assess relationship of patients' profile with FD. P-value was statistically considered at 5% significance level.

RESULTS

Total 240 patients were enrolled into the study with mean age of 37.3±6.5 years. There were 122 (50.8%) male patients. The mean BMI was 24.6±4.3 Kg/m^2. Nearly half of the patients were smokers (46.7%) and about one-fifth were having history of alcoholic use (21.7%). Table-1 displays summary of socio-demographic features.

The most common dyspeptic feature was postprandial fullness (60.4%) followed by early satiety epigastric pain (50%) and epigastric burning (39.6%). Mean PSQI score was 14.7±3.5. Frequency of poor sleep quality among FD patients was 79.2% Table-II shows association of patients' features and dyspeptic symptoms with sleep quality. None of the parameter was significantly associated with sleep quality except urban residence (p=0.005).

Variables	Frequency (%)
Age groups	
21-30 years	48(20.0)
31-40 years	102(42.5)
41-50 years	90(37.5)
Education	
Illiterate	1(0.4)
Primary	13(5.4)
Intermediate	82(34.2)
Graduation	144(60)
Monthly income	
<50,000 PKR	24(10.0)
≥50,000 PKR	216(90.0)
Residence	
Rural	79(32.9)
Urban	161(67.1)

Table-I. Summary of socio-demographic features (n=240)

DISCUSSION

Dyspepsia is a gastrointestinal problem portrayed by the shortfall of organic alterations. The basic component of FD stays obscure, yet it is an extremely considered normal illness in the worldwide populace.[12,13] The rate of sleeping issues, like sleep deprivation, is expanding in current culture. Sleeping disturbance has been related with an assortment of medical issues, including diminished mental capability, slow reflexes, cardiovascular illness, decreased work efficiency, and hindered life quality.[14,15] Dyspepsia is likewise much of the time comorbid with sleeping issues. Sleep deprivation influence physical and mental well-being as well as it might impact the seriousness of dyspepsia related symptoms.[16,17] Accordingly, it becomes critical to uncover sleep quality in dyspepsia patients.

Variables	Groups	Sleep Quality		OR (95% CI)	P-Value
		Good N (%)	Poor N (%)		
Age	21-30 years	9(18.8)	39(81.3)	1.01 (0.41-2.47)	0.984
	31-40 years	24(23.5)	78(76.5)	0.75 (0.37-1.52)	0.434
	41-50 years	17(18.9)	73(81.1)	Reference category	
Gender	Male	26(21.3)	96(78.7)	0.94 (0.51-1.75)	0.853
	Female	24(20.3)	94(79.7)	Reference category	
Residency	Urban	25(15.5)	136(84.5)	2.52 (1.33-4.76)	*0.005
	Rural	25(31.6)	54(68.4)	Reference category	
Monthly income	<50,000 PKR	3(12.5)	21(87.5)	1.94 (0.55-6.81)	0.297
	≥50,000 PKR	47(21.8)	169(78.2)	Reference category	
Education	Illiterate to primary	4(28.6)	10(71.4)	0.65 (0.19-2.24	0.504
	Intermediate	16(19.5)	66(80.5)	1.08 (0.55-2.13)	0.813
	Graduation	30(20.8)	114(79.2)	Reference category	
Smoker	Yes	27(24.1)	85(75.9)	0.69 (0.36-1.28)	0.244
	No	23(18)	105(82)	Reference category	
Alcohol	Yes	13(25)	39(75)	0.73 (0.35-1.51)	0.404
	No	37(19.7)	151(80.3)	Reference category	
Pain	Yes	24(20)	96(80)	1.11 (0.59-2.06)	0.751
	No	26(21.7)	94(78.3)	Reference category	
Burning	Yes	21(22.1)	74(77.9)	0.88 (0.46-1.65)	0.695
	No	29(20)	116(80)	Reference category	
Postprandial fullness	Yes	28(19.3)	117(80.7)	1.25 (0.67-2.36)	0.473
	No	22(23.2)	73(76.8)	Reference category	
Early satiety	Yes	31(22.5)	107(77.5)	0.79 (0.42-1.49)	0.470
	No	19(18.6)	83(81.4)	Reference category	

Table-II. Comparison of patients' profile among those with good and poor sleep quality and its association with sleep quality

In this study we estimated sleep quality utilizing PSQI scale. PSQI is the most broadly involved scoring instrument in determination of sleep deprivation and its quality for various populations.[18,19] The sub-scores are pooled directly for obtaining the worldwide PSQI score. The tool is straightforward, patient agreeable and expects around 5 min to be finished. The legitimacy of the PSQI is deep rooted in different clinical and non-clinical populaces, individuals of various locales and ethnicities.[18,20] In addition, studies investigating self-reported sleep issues and its impact on stomach symptoms frequently quantify sleep quality utilizing PSQ.[16-18]

The results of the current study showed that FD patients experienced poor sleep quality more frequently (79.2%). A comparative study acted in 2000 revealed that 68% of patients with FD had poor sleep quality.[6] However, a recent French study found that 81% of FD patients reporting altered sleep quality based on subjective evaluation.[21] A likewise study was acted in a Korean populace for assessing sleep quality in dyspepsia patients found that probability of unnacceptable sleep quality in FD patients was more than three-folds than controls (OR= 95% CI: 3.38, 1.87-6.13) with 25.8% frequency of poor sleep quality in FD dyspepsia patients than controls.[17] A study from France reported that frequency of poor sleep quality was significantly higher among patients with stomach problems than those without such issues (27.1% versus 7.5%).[22] The pooled incidence of sleep disturbances in patients with FD was 53.23%, as reported in a rcent time meta-analysis.[23] It is the fact that other than gastrointestinal problems, sleep quality depends on multiple factors such as intensity of daily working routine and life style. We assume that a higher variation in prevalence of poor sleep quality among dyspepsia patients could be because differences in different population and their life style.

Digestive problems and sleep deprivation are frequently associated. Nonetheless, there is a complicated link between dyspepsia and poor sleep quality. Dyspeptic symptoms may make it difficult to fall asleep, since pain in the abdomen can prevent or postpone the onset of sleep.[16,24] On the other hand, insufficient sleep may result in a heightened manifestation of dyspepsia symptoms.[16] Sleep problems have been shown in numerous prior research to be both an independent disease and a risk factor for a wide range of other conditions, including gastrointestinal disorders like IBS, gastric ulcers, duodenal ulcers, and gastroesophageal reflux disease. Additionally, a few research have looked into the reason for the link between various diseases and sleep problems.[25-27]

In present study, the symptoms were generally not viewed as related with sleep quality. Wuestenberghs F et al[21] evaluated dyspeptic symptoms severity using total symptoms score (TSS) and found that risk of poor sleep quality was increasing with increasing TSS score (OR=1.13, 95% CI: 1.04-1.22). A similar community based study from Korea studied 5792 subjects and evaluated digestive symptoms using Gastrointestinal Symptom Rating Scale (GSRS) and sleep quality was assessed with PSQI. It was analyzed that sleep disturbance was positively associated with digestive symptoms (OR= 1.29, 95% CI = 1.22–1.36).[28] A recent meta-analysis showed that individuals with postprandial distress (51.28%) and epigastric pains (40.6%) had a greater generalized incidence of sleep disruption.[23] In our view, all of the patients had dyspepsia and prevalence of poor sleep quality was higher in this study due to which association of dyspeptic symptoms was not significant. However, it might be possible that increasing the sample size may influence study findings.

There are certain shortcomings with this study. First off, there is no way to determine a temporal relationship between dyspepsia and sleep disturbance because the study is cross-sectional in nature. Second, only a variety of dyspeptic symptoms that meet ROME-IV criteria were included in the study. Third, a small sample size and a single university are the basis of the study. As a result, it is not possible to extrapolate the results of this study to the full population of dyspeptic patients in Pakistan. Future research with a bigger sample size should be done to close

this gap and validate the findings of this study.

CONCLUSION

Very high burden of poor sleep quality was found among FD patients. While most dyspeptic symptoms did not show a significant association with sleep quality, urban residence emerged as a notable factor. Further exploration is warranted to understand and address the complex interplay between sleep quality, dyspeptic symptoms, and environmental factors in this patient population.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

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2	Shahid Karim	Designed the study protocol, Critically revised the initial manuscript draft.	
3	Rajesh Kumar	Data collection, Initial manuscript writing.	
4	Vishal Kumar	Performed data analysis and involved in result writing.	
5	Afsheen Faryal	Performed data analysis and involved in result writing.	