Original Article

Frequency and Factors of Gastro-Esophageal Reflux Disease in Medical College Students in Multan

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ABSTRACT

Objective: To determine the frequency of gastro-esophageal reflux disease and associated factors in medical college students

Study Design: Cross-sectional study.

Place and Duration of Study: This study was conducted at the Nishtar Medical and Dental College, Multan in Medicine Department, for 06 months from February 2024 to July 2024.

Methods: Total 301 medical students were enrolled. Consent and demographic detail was taken. The students after meeting selection criteria were enrolled by using non-probability convenient sampling method. A validated FSSG assessment tool was used to diagnose the presence of GERD in students. Life style factors, medical factors and eating habits of students were taken of predesigned questionnaire. All the data was entered and analyzed on SPSS version 26.

Results: The mean age of the students was 20.15±1.95 years, and the average FSSG score was 8.10±5.37. Based on the FSSG score, GERD was present in 84 students (27.91%). Among students with inadequate sleep, 44% had GERD, while 31.8% did not (p-value = 0.046). Regarding eating habits, frequent consumption of soft drinks, fried foods, and spicy meals significantly affected the presence of GERD (p-value < 0.05). Among students with associated dyspepsia, 17.9% had GERD, while 9.6% did not (p-value = 0.003). Similarly, among students using over-the-counter analgesics, 36.9% had GERD compared to 24.9% without it (p-value = 0.038).

Conclusion: This study concluded that one-fourth of medical students experience gastroesophageal reflux disease. Factors such as inadequate sleep, certain eating habits, family history of peptic or duodenal ulcers, associated dyspepsia, and the use of over-the-counter drugs are significantly associated with the presence of GERD in medical students

Key Words: Gastroesophageal Reflux disease, Medical Students, Factors.

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INTRODUCTION

Gastroesophageal reflux disease (GERD) is a disorder where stomach contents flow back into the esophagus, leading to symptoms such as heartburn and acid regurgitation, as well as potential complications[1]. GERD is a condition that impacts individuals across various age groups and is particularly prevalent in the United States and Europe.

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Recent studies from the Asian subcontinent indicate a rising prevalence of GERD, highlighting the need for further investigation to draw more conclusive findings[2-3]. Several studies conducted among the general population in India have reported a prevalence of GERD ranging from 7% to 18%[4]. GERD prevalence in western countries ranges from 10 to 30%. Meanwhile, two studies from Asia have reported GERD prevalence among university students ranging from 14.8% to 25%[5-6]. Studies conducted in the last decade have reported an increased incidence of GERD symptoms and complications[7-9]. Several risk factors have been associated with GERD, including alcohol consumption, smoking, high BMI, poor nutritional habits, and lack of physical exercise[10-11]. GERD among students is also prevalent[1]. Students from different disciplines often face a combination of psychological challenges and lifestyle changes that can impact their overall well-being.

Studies indicate that medical undergraduate students, in particular, experience high levels of stress and perceived stress[12-14]. Many medical students who

experience GERD and/or dyspeptic symptoms do not seek medical help, often dismissing these symptoms as insignificant or opting for self-medication. However, GERD can negatively impact routine daily activities of medical students, their attendance, quality of life and overall well-being[9]. Limited research has been done previously on the frequency and consequences of GERD among medical students. There is scarcity of literature on magnitude of this disease in medical students in our population. Therefore, our aim is to investigate the prevalence of GERD and identify associated risk factors among medical students in our local population.

METHODS

This was cross sectional study carried out at Nishtar Medical and Dental College, Multan, in Medicine Department for 06 months from February 2024 to July 2024. In this study total 301 medical students were enrolled. The sample size was calculated using WHO sample size calculator taking 26.6% medical students with symptomatic GERD in Punjab[15]. To get this sample completed, non-probability convenient sampling technique was used. MBBS students who were willing to participate included in this study. Postgraduate students and students with any chronic illness were excluded. Consent from the entire included student was taken along with demographic details. The data was collected by using "Frequency Scale for the Symptoms of GERD (FSSG) questionnaire"[16]. This tool was consisted of 12 questions which include questions of GERD symptoms having responses as never, occasionally, sometimes, often oral ways. If student gets a score ≥8 then presence of GERD was labeled. Additional question regarding medical history and life style factors were also noted on predesigned structured questionnaire. All the collected data was entered and analyzed on SPSS version 26.

RESULTS

In this study total 301 medical MBBS; 1st year to 4th years students were enrolled. The mean age of the students was 20.15±1.95 years. Most of 30.6% students were from 3rd year. 82.7% students were male. As per results of this study 47.8% students were living in hostel and 16.3% were smokers. In terms of life style factors inadequate sleep was observed in 35.25 students, students who do physical exercise were 48.8%. As per eating habits 24.6% students frequently missed breakfast, frequent use of soft drinks, fried food and spicy meal was observed in 45.5%, 48.2% & 37.2% students respectively. In terms of medical factors; use of over the counter analgesic, associated dyspepsia and FH of peptic/duodenal ulcer was found in 28.2%, 9.6% & 14.3% students respectively. The mean FSSG score of the students was 8.10±5.37 (Table 1). On the basis of FSSG score GERD disease was present in 84(27.91%) students (Fig 1).

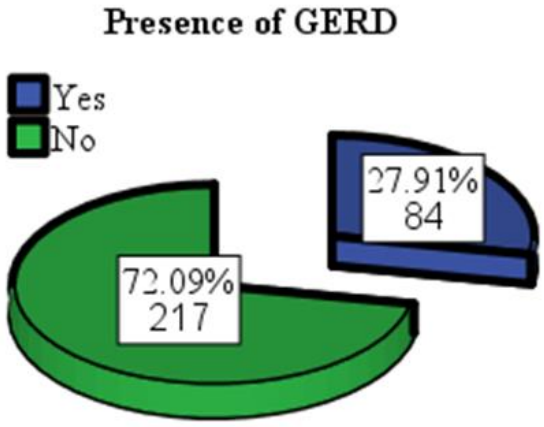

Figure No. 1: Frequency distribution of presence of GERD as per FSSG tool

Table No. 1: Descriptive statistics of demographics, life style, eating habits and medical factors

Variables		Frequency	Percent
Year of MBBS	I	60	19.9
	II	70	23.3
	III	92	30.6
	IV	79	26.2
Gender	Male	249	82.7
	Female	52	17.3
Living in Hostel	Yes	144	47.8
	No	157	52.2
Age in years (Mean±SD)		20.15±1.95 years	
FSSG score (Mean±SD)		8.10±5.37	
Different Factors			
Smoking Status	Yes	49	16.3
Alcohol Consumption	Yes	4	1.3
Inadequate Sleep	Yes	106	35.2
Physical Exercise	Yes	147	48.8
Frequently missed Breakfast	Yes	74	24.6
Frequent use of soft drinks	Yes	137	45.5
Frequent use of fried food	Yes	145	48.2
Frequently eat spicy meal	Yes	112	37.2
Use of over the counter analgesic	Yes	85	28.2
Associated Dyspepsia	Yes	29	9.6
FH of peptic/duodenal ulcer	Yes	43	14.3

Table No. 2: Comparison life style factors, eating habits and medical factors among GERD status of medical students

Factors		GERD		Total	p-value
		Present	Absent		
Life style	Smoking	13(15.5%)	36(16.6%)	49(16.3%)	0.814 NS
	Alcohol Consumption	2(2.4%)	2(0.9%)	4(1.3%)	>0.999
	Living in Hostel	45(53.6%)	99(45.6%)	144(47.8%)	0.216
	Inadequate sleep	37(44.0%)	69(31.8%)	106(35.2%)	0.046*
	Physical Exercise	45(53.6%)	102(47%)	147(48.8%)	0.307
Eating habits	Frequently missed breakfast	26(31.0%)	48(22.1%)	74(24.6%)	0.110
	Frequently used soft drinks	46(54.8%)	91(41.9%)	137(45.5%)	0.045
	Frequently used fried food	49(58.3%)	96(44.2%)	145(48.2%)	0.028*
	Frequently eat spicy meal	41(48.8%)	71(32.7%)	112(37.2%)	0.010*
Medical	FH of peptic/duodenal ulcer	19(22.6%)	24(11.1%)	43(14.3%)	0.010*
	Associated Dyspepsia	15(17.9%)	14(6.5%)	29(9.6%)	0.003
	Use of over counter analgesic	31(36.9%)	54(24.9%)	85(28.2%)	0.038*

*=Significant NS= Not significant.

As far as life style factors like smoking, alcohol consumption, living in hostel and physical exercise shows statistically insignificant difference between the presence of GERD disease in students. However GERD was present in 44% students with inadequate sleep and it was absent in 31.8% students with inadequate sleep. This difference was statistically significant (p-value=0.046). In factors related to eating habits frequent use of soft drinks (GERD student=54.8% VS No GERD students=41.9%), fried food (GERD student=58.3% VS No GERD students=44.2%) and having spicy meal (GERD student=48.8% VS No GERD students=32.7%) showed significant effect on presence of GERD (p-value<0.05). However frequently missed breakfast showed no association with presence of GERD. Medical factors showed significant effect on presence of GERD in medical students. In students presented with FH of peptic/ duodenal ulcer; GERD was present in 22.6% students and it was absent in 14.3% (p-value=0.010). In students presented with associated dyspepsia GERD was present in 17.9% students and it was absent in 9.6% students (p-value=0.003). Similarly in students with use of over the counter analgesic GERD was present in 36.9%) students as compared to it was absent in 24.9% students (p-value=0.038) (Table 2).

DISCUSSION

GERD is widely recognized as a significant health concern among the adult population in Western countries. However, limited research has been conducted on GERD within the student community, particularly among medical students, who often experience constant academic pressure and exam-related stress[9]. Aligning with our study findings, one study reported that GERD was present in 25% of medical students. Among these, the majority experienced either mild symptoms (58.6%) or moderate symptoms (38.6%), while severe symptoms were observed in only 2.7% of the GERD cases[9]. Study done in Souhthern Punjab by Muhammad Fawad Rasool documented the prevalence of GERD in 26.6%in medical students[15]. One review based study which presented 102 studies results and showed global prevalence of GERD as 13.98% in which Turkey takes the lead with 22.40% prevalence and lowest was noted in China which was 4.16%[17]. Similar prevalence was observed in western countries which range between 10-30%[18]. Some community-based epidemiological studies from Europe have reported a significantly higher prevalence of GERD, reaching up to 70%. This high variation may be due to the cultural and life style changes of students. Environmental factors and academic pressure may be other reasons. A previous study conducted in India, involving government hospital employees, reported a GERD prevalence of 16.2%[19]. One more study done in Ladakh presented the prevalence of GERD as 18.7% but this study was done at high altitude[20]. The lower frequency of GERD observed in the aforementioned studies could be attributed to differences in study populations. While our research focused on medical students, the referenced studies were conducted among government hospital employees. GERD is classified as a gastrointestinal

disorder in which symptom perception and severity are influenced by stress and stress-related personality traits[21]. Similar to our study Ramachandran Arivan[22] in India showed that frequently usage of carbonated drinks leads to GERD disease. Few previous studies reported that certain beverages and foods relax the lower esophageal sphincter due to which esophageal PH drops[23-24]. Irregular timing of taking meals also one of the reason of presence of GERD reported by one study. Life style pattern plays a vital role development of GERD reported by different studies[16, 25]. Dyspepsia was also found a significant factor in GERD students as compared to no GERD students. Healthcare providers, including physicians and educators, should emphasize the importance of GERD awareness and implement prevention strategies among medical students to ensure early recognition and effective management of symptoms. Early diagnosis and management of GERD in medical students are crucial for their academic and social well-being. Factors such as insufficient sleep, frequent consumption of soft drinks, fried foods, spicy meals, and over-the-counter analgesics should be controlled. Additionally, raising awareness about these factors can help improve overall health and prevent further complications.

CONCLUSION

Based on this study, we can conclude that approximately one-fourth of medical students experience gastroesophageal reflux disease (GERD). Factors such as inadequate sleep, certain eating habits (excluding frequently missing breakfast), a family history of peptic or duodenal ulcers, associated dyspepsia, and the use of over-the-counter drugs are significantly associated with the presence of GERD in medical students.

Author's Contribution:

Concept & Design or acquisition of analysis or interpretation of data:	Muhammad Farooq, Muhammad Tahir, Gohar Ali
Drafting or Revising Critically:	Zara Anwar, Ghulam Hussain, Mahnoor Zainab
Final Approval of version:	All the above authors
Agreement to accountable for all aspects of work:	All the above authors

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REFERENCES

1. Sree MR, Kolli H, Periyasamy B, Praveen V. A cross-sectional study to evaluate the prevalence and risk factors of gastroesophageal reflux disease among undergraduate medical students of a tertiary care Indian setting. APIK J Int Med 2023; 20(20):1-4.
2. Jung HK. Epidemiology of gastroesophageal reflux disease in Asia: a systematic review. J Neurogastroenterol Motility 2011;17(1):14.
3. Ebrahimi SA, Mostafavian Z, Karazhian E, Najafi F, Mashoufi R, Zandbaf T, et al. Validity and reliability of the Persian version of the Gastroesophageal Reflux Disease Health-Related Quality of Life questionnaire. BMJ Open Gastroenterol 2024;11(1):e001298.
4. Palo SK, Patel K, Singh S, Priyadarshini S, Pati S. Intrapartum monitoring using partograph at secondary level public health facilities—A cross-sectional study in Odisha, India. J Family Med Primary Care 2019;8(8):2685-90.
5. Al Saadi T, Idris A, Turk T, Alkhatib M. Epidemiology and risk factors of uninvestigated dyspepsia, irritable bowel syndrome, and gastroesophageal reflux disease among students of Damascus University, Syria. J Epidemiol Global Health 2016;6(4):285-93.
6. Bordbar G, Bolandnazar N. Gastroesophageal reflux disease (GERD): prevalence and association with Psychological Disorders among medical sciences students. Int J Pharmtech Res 2015; 8(7):120-30.
7. Kutikuppala LVS, Vadugu S, Salaam MA, Kiran ASS, Sathvika M. A cross-sectional study on the preponderance of stress and depression among medical students and their association with various recent factors. J Health Res 2020;7(3):219-22.
8. Kariri AM, Darraj MA, Wassly A, Arishi HA, Lughbi M, Kariri A, et al. Prevalence and risk factors of gastroesophageal reflux disease in Southwestern Saudi Arabia. Cureus 2020; 12(1):e6626.
9. Sharma A, Sharma PK, Puri P. Prevalence and the risk factors of gastro-esophageal reflux disease in medical students. Med J Armed Forces Ind 2018;74(3):250-4.
10. Alsulobi AM, El-Fetoh NMA, Alenezi SGE, Alanazi RA, Alenazy RHS, Alenzy FAL, et al. Gastroesophageal reflux disease among population of Arar City, Northern Saudi Arabia. Electronic Physician 2017;9(10):5499.
11. El-Serag HB, Sweet S, Winchester CC, Dent J. Update on the epidemiology of gastro-oesophageal reflux disease: a systematic review. Gut 2014; 63(6):871-80.
12. Wang F, Rong L, Luo L, Mu F, Qian L, Qian Y, et al. Associations between psychological stress and the risk of first onset of major depression disorder: results from a longitudinal study in 6,985 Chinese

first-year students. Psychol Res Behav Manag 2024; 17:3585-93.
13. James BO, Thomas IF, Omoaregba JO, Okogbenin EO, Okonoda KM, Ibrahim AW, et al. Psychosocial correlates of perceived stress among undergraduate medical students in Nigeria. Int J Med Educat 2017;8:382.
14. Gupta S, Basak P. Depression and type D personality among undergraduate medical students. Ind J Psychiatr 2013;55(3):287-9.
15. Rasool MF, Sarwar R, Arshad MS, Imran I, Saeed H, Majeed A, et al. Assessing the frequency and risk factors associated with Gastroesophageal Reflux Disease (GERD) in Southern Punjab, Pakistan. Risk Manag Health Policy 2021;14: 4619-25.
16. Kusano M, Shimoyama Y, Sugimoto S, Kawamura O, Maeda M, Minashi K, et al. Development and evaluation of FSSG: frequency scale for the symptoms of GERD. J Gastroenterol 2004;39: 888-91.
17. Nirwan JS, Hasan SS, Babar Z-U-D, Conway BR, Ghori MU. Global prevalence and risk factors of gastro-oesophageal reflux disease (GORD): systematic review with meta-analysis. Scientific Reports 2020;10(1):5814.
18. Holtmann G. Reflux disease: the disorder of the third millennium. Eur J Gastroenterol Hepatol 2001;13:S5-11.
19. Sharma PK, Ahuja V, Madan K, Gupta S, Raizada A, Sharma MP. Prevalence, severity, and risk factors of symptomatic gastroesophageal reflux disease among employees of a large hospital in northern India. Ind J Gastroenterol 2011;30: 128-34.
20. Kumar S, Sharma S, Norboo T, Dolma D, Norboo A, Stobdan T, et al. Population based study to assess prevalence and risk factors of gastroesophageal reflux disease in a high altitude area. Ind J Gastroenterol 2011;30:135-43.
21. Menon V, Sarkar S, Kumar S. Barriers to healthcare seeking among medical students: a cross sectional study from South India. Postgrad Med J 2015;91(1079):477-82.
22. Arivan R, Deepanjali S. Prevalence and risk factors of gastro-esophageal reflux disease among undergraduate medical students from a southern Indian medical school: a cross-sectional study. BMC Res Notes 2018;11:1-5.
23. Agrawal A, Tutuian R, Hila A, Freeman J, Castell DO. Ingestion of acidic foods mimics gastroesophageal reflux during pH monitoring. Digest Dis Sci 2005;50:1916-20.
24. Hamoui N, Lord RV, Hagen JA, Theisen J, DeMeester TR, Crookes PF. Response of the lower esophageal sphincter to gastric distention by carbonated beverages. J Gastrointest Surg 2006;10:870-7.
25. Song JH, Chung SJ, Lee JH, Kim YH, Chang DK, Son HJ, et al. Relationship between gastroesophageal reflux symptoms and dietary factors in Korea. J Neurogastroenterol Motility 2011;17(1):54.