INSIGHTS-JOURNAL OF
HEALTH AND REHABILITATION

INSIGHTS-JHR
INSIGHTS-JOURNAL OF HEALTH AND REHABILITATION

LEVEL OF PHYSICAL ACTIVITY AMONG UNIVERSITY GOING MEDICAL STUDENTS WITH CONSTIPATION

Original Research

Maham Majeed[1], Maleeha Fuad[2*], Shoaib Waqas[3], Muhammad Tariq[3], Maham Ahmed[4], Zarnab Asif[4], Tayyba Yasin[5]
[1]Rehabilitation House Officer, Ghurki Trust Teaching Hospital, Lahore, Pakistan.
[2]Assistant Professor, PSRD College of Rehabilitation Sciences, Lahore, Pakistan.
[3]Assistant Professor, University of Biological and Applied Sciences, Lahore, Pakistan.
[4]House officer at Ghurki trust teaching hospital, Lahore, Pakistan.
[5]Physiotherapist, National Hospital and Medical Centre, Lahore, Pakistan.
Corresponding Author: Maleeha Fuad, Assistant Professor, PSRD College of Rehabilitation Sciences, Lahore, Pakistan, maleehafuad2@gmail.com
Acknowledgement: The authors thank all participating students for their time and cooperation in this research.

Conflict of Interest: None
Grant Support & Financial Support: None

ABSTRACT

Background: Constipation is a common gastrointestinal condition affecting approximately 16.2% of the population and significantly impairing quality of life. It is multifactorial in origin, with female gender, poor diet, psychological stress, and physical inactivity identified as key contributors. Among university students—particularly those in demanding academic environments—sedentary behavior has been increasingly linked to constipation, yet remains an underexplored factor in clinical prevention strategies.

Objective: To determine the level of physical activity among university-going medical students with constipation.

Methods: A descriptive cross-sectional study was conducted over six months (June to December 2023) involving 313 medical students aged 17–25 years from three medical colleges in Lahore. Participants clinically diagnosed with constipation were selected using non-probability convenience sampling. Physical activity levels were assessed using the International Physical Activity Questionnaire – Short Form (IPAQ-SF), reporting activity in MET-minutes/week. Constipation severity was evaluated through the Constipation Scoring System (CSS), with scores ranging from 0 (normal) to 30 (severe constipation). Data were analyzed using SPSS version 16. Descriptive statistics, including frequency and percentages, were used to report the findings.

Results: Of the 313 students, 162 (51.8%) were physically inactive, 107 (34.2%) were minimally active, and only 44 (14.1%) were active. Among 82 students with mild constipation, 23 were inactive, 34 minimally active, and 25 active. In moderate cases (n = 106), 47 were inactive, 45 minimally active, and 14 active. For severe constipation (n = 108), 81 were inactive, 23 minimally active, and 4 active. Among 17 students with very severe constipation, 11 were inactive, 5 minimally active, and 1 was active.

Conclusion: The study found that most medical students suffering from constipation had low levels of physical activity, highlighting physical inactivity as a contributing factor in constipation severity.

Keywords: Constipation, Cross-Sectional Studies, Medical Students, Physical Activity, Sedentary Behavior, Surveys and Questionnaires, Young Adults.

INTRODUCTION

Constipation is a prevalent gastrointestinal disorder that significantly affects individuals' daily functioning and overall quality of life. Characterized by infrequent bowel movements, hard stools, or a sensation of incomplete evacuation, it is clinically defined as having fewer than three bowel movements per week, with severe cases involving fewer than one (1). The condition, though often underestimated, can cause persistent symptoms comparable in impact to chronic illnesses such as musculoskeletal disorders, allergies, and inflammatory bowel diseases (2). Its prolonged nature can lead to considerable physical discomfort, psychological distress, and a reduction in productivity and well-being (3). Among university populations, constipation is increasingly reported, with prevalence rates reaching up to 16.2% (4). This reflects a growing health concern, particularly given the sedentary lifestyles commonly observed in this demographic. Epidemiological data consistently show a higher prevalence in females than males, attributed in part to hormonal and anatomical differences (5). While various risk factors have been identified, including advanced age, low socio-economic status, poor dietary habits, psychological stress, and inadequate fluid intake, a lack of physical activity has emerged as a particularly modifiable and underexplored contributor (6). Despite its known health benefits, the relationship between physical activity and constipation has not been sufficiently emphasized in the literature, especially in the context of young adults and university students (7). Physical activity, defined as any skeletal muscle movement resulting in energy expenditure, has been shown to promote gastrointestinal motility and improve colonic transit time through various mechanisms such as enhanced gut blood flow, increased secretion of gastrointestinal hormones, and mechanical stimulation of the intestinal wall (8,9). These physiological responses, coupled with higher dietary fiber intake associated with greater energy demands, suggest that regular physical exercise may serve as an effective, low-cost intervention for alleviating constipation (10).

Instruments like the International Physical Activity Questionnaire (IPAQ) have been utilized to objectively quantify levels of physical activity across different life domains—including work, transport, household, and leisure—while simultaneously capturing sedentary behaviors, such as daily sitting time (11). Constipation severity, on the other hand, has been reliably measured using the Constipation Scoring System (CSS), which evaluates eight critical components and has demonstrated good internal consistency and excellent inter-rater reliability (12,13). Despite the growing body of evidence supporting the health benefits of physical activity, current research among university students largely focuses on dietary habits, with limited attention given to exercise as a preventive or therapeutic measure for constipation (14). This gap highlights the need for further investigation into the role of physical activity in improving bowel health among young adults. Therefore, the present study aims to explore the association between physical activity and constipation severity in medical students, and to advocate for the integration of regular physical exercise into daily routines as a means of enhancing gastrointestinal health and overall well-being.

METHODS

This descriptive cross-sectional study was carried out over a six-month period, from June to December 2023, at three medical institutions in Lahore: Lahore Medical and Dental College, Rashid Latif Medical College, and Central Park Medical College. The target population comprised medical students aged between 17 and 25 years who were clinically diagnosed with constipation. A total of 313 participants were recruited using non-probability convenience sampling. The sample size was estimated using the Taro Yamane formula, which, although widely used in social sciences, has limitations when applied to clinical populations without considering response rate or prevalence-based adjustments. Inclusion was limited to students within the specified age range who had a clinical diagnosis of constipation. Exclusion criteria were clearly defined to avoid confounding factors and included individuals with known gastrointestinal diseases such as irritable bowel syndrome or inflammatory bowel disease, those with neurological or genetic conditions, pregnant women, and individuals with diabetes mellitus, chronic kidney disease, or pelvic floor dysfunction (3,4). This helped ensure the homogeneity of the sample by focusing solely on cases of functional constipation.

To assess physical activity levels, the International Physical Activity Questionnaire Short Form (IPAQ-SF) was employed. This validated instrument captures the frequency and duration of physical activities, including walking, moderate-intensity, and vigorous-intensity exercises over the past seven days, and reports activity levels in terms of Metabolic Equivalent of Task (MET) minutes per week.

INSIGHTS-JHR
INSIGHTS-JOURNAL OF HEALTH AND REHABILITATION

Constipation severity was evaluated using the Constipation Scoring System (CSS), a widely accepted tool that assesses eight clinical parameters related to bowel function. Scores range from 0 to 30, with higher scores indicating more severe constipation. Data were analyzed using Statistical Package for the Social Sciences (SPSS) version 16. Continuous variables such as age and constipation scores were presented as means with standard deviations, while categorical variables like gender and physical activity levels were summarized using frequencies and percentages. Ethical approval for the study was obtained from the Institutional Review Board of Lahore College of Physical Therapy, and written informed consent was obtained from all participants. To maintain participant confidentiality, all data were securely stored on a password-protected laptop.

RESULTS

The study included a total of 313 medical students aged between 17 and 25 years, with a mean age of 21.05 years (SD = 2.06). The majority of the participants were female, comprising 90.1% (n = 282), while males represented 9.9% (n = 31), indicating a highly gender-skewed sample. Regarding physical activity levels, over half of the participants (51.8%, n = 162) were classified as inactive. Minimally active individuals accounted for 34.2% (n = 107), whereas only 14.1% (n = 44) were categorized as active, highlighting a predominantly sedentary lifestyle among the student population. Constipation severity assessment revealed that 26.2% (n = 82) of participants experienced mild constipation. Moderate and severe constipation were reported by 33.9% (n = 106) and 34.5% (n = 108) of students, respectively, while 5.4% (n = 17) were categorized as having very severe constipation. This suggests that a substantial proportion of the study group suffered from moderate to severe forms of constipation.

Cross-tabulation of physical activity and constipation severity demonstrated a trend toward reduced constipation severity with increased physical activity. Among those categorized as active, 56.8% (n = 25) had mild constipation, while only 2.3% (n = 1) experienced very severe constipation. In contrast, the inactive group showed a higher prevalence of severe and very severe constipation, with 47 participants reporting moderate constipation, 81 reporting severe, and 11 experiencing very severe symptoms. The minimally active group also displayed a mixed pattern, but with lower counts in the severe and very severe categories compared to inactive individuals. To assess the association between levels of physical activity and severity of constipation, a Chi-square test was conducted using the categorized data. The analysis revealed a statistically significant association between physical activity and constipation severity (χ^2 = 35.3, df = 4, $p < 0.0001$), indicating that variations in physical activity were meaningfully related to differences in constipation severity. Among those with mild constipation, a higher proportion were physically active (30.5%, n = 25), compared to the inactive group (14.2%, n = 23). Conversely, the inactive group had the highest proportion of participants with moderate to severe constipation (79.0%, n = 128), compared to 63.6% (n = 68) in the minimally active and only 40.9% (n = 18) in the active group. Very severe constipation was also most prevalent among inactive individuals (6.8%, n = 11), with substantially fewer cases in the minimally active (4.7%, n = 5) and active (2.3%, n = 1) participants. These findings strongly support the hypothesis that lower levels of physical activity are associated with greater constipation severity in medical students.

Table 1: Descriptive statistics of age

	Minimum	Maximum	Mean	St. Deviation
Age	17	25	21.05	2.058

Table 2: Frequency and percentage of gender of medical students.

Gender	Frequency	Percentage
Male	31	9.9
Female	282	90.1

Table 3: Level of physical activity

Physical activity	Frequency	Percentage
Inactive	162	51.8
Minimally active	107	34.2
Active	44	14.1
Total	313	100

INSIGHTS-JHR
INSIGHTS-JOURNAL OF HEALTH AND REHABILITATION

Table 4: Severity of constipation

Constipation	Frequency	Percentage
Mild	82	26.19808
Moderate	106	33.86581
Severe	108	34.50479
Very severe	17	5.43131

Table 5: Level of Physical Activity And Severity of Constipation

Constipation	Physical activity			Total
	Inactive	Minimally active	Active	
Mild	23	34	25	82
Moderate	47	45	14	106
severe	81	23	4	108
Very severe	11	5	1	17
Total	162	107	44	313

Table 6: Statistical Association Table: Physical Activity vs. Constipation Severity

Constipation Severity	Inactive	Minimally Active	Active	Total
Mild	23	34	25	82
Moderate to Severe	128	68	18	214
Very Severe	11	5	1	17
Total	162	107	44	313

Chi-square value = 35.3, Degrees of freedom = 4, P-value < 0.0001

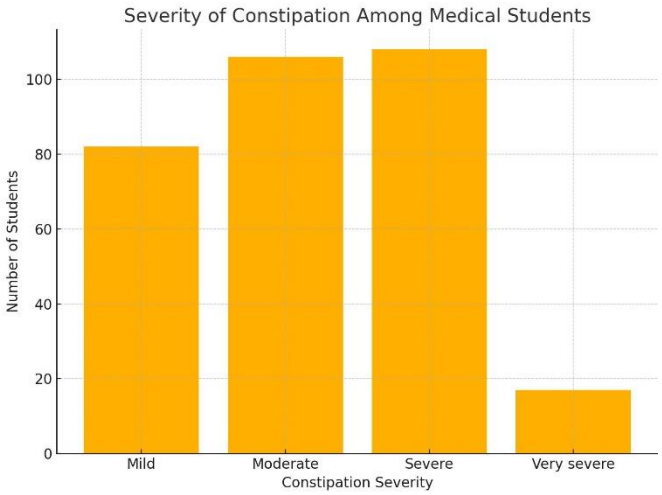

Figure 1 Severity of Constipation Among Medical Students

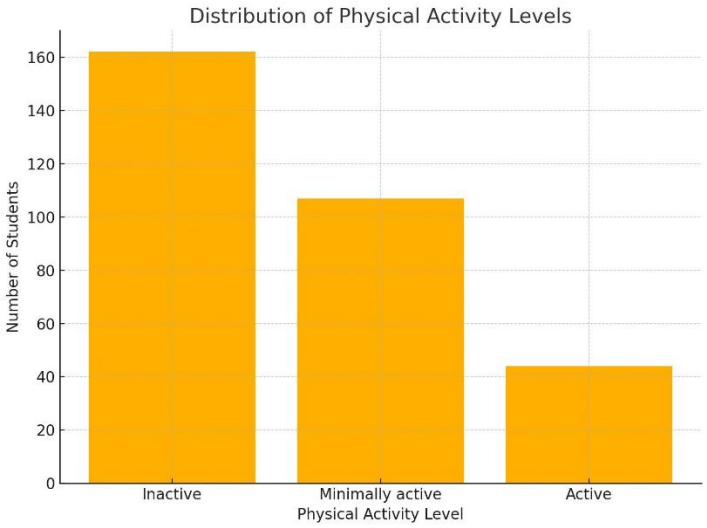

Figure 2 Distribution of Physical Activity Levels

DISCUSSION

This descriptive cross-sectional study provides valuable insights into the relationship between physical activity and constipation among medical students. The findings align with previous literature indicating that functional constipation is a common concern among university populations, with reported prevalence rates ranging from 16.2% to 34% in different academic and clinical settings (15). The

INSIGHTS-JHR
INSIGHTS-JOURNAL OF HEALTH AND REHABILITATION

current study reaffirmed that constipation disproportionately affects females more than males, a trend consistently documented in earlier epidemiological data (16). This gender difference is likely influenced by a combination of physiological, hormonal, and behavioral factors that warrant further exploration in gender-specific interventions. The study also confirmed a significant inverse relationship between physical activity levels and the severity of constipation. Students who were physically active exhibited notably lower rates of moderate to severe constipation compared to their inactive counterparts. This supports previous research that identified immobility and low activity levels as major risk factors for constipation, especially in both adult and elderly populations (17,18). Additionally, the significant association observed between physical inactivity and elevated constipation severity scores aligns with findings from validated scoring systems, reinforcing the credibility of this relationship (19).

While some studies have failed to establish a direct correlation between physical activity and constipation risk, particularly in employed or healthy adult populations (20), these inconsistencies may stem from varying definitions of constipation, different physical activity measurement tools, and unaccounted confounding factors such as fiber intake, hydration status, and psychological stress (19,20). This study, focusing specifically on medical students—a population often characterized by sedentary academic routines, irregular dietary habits, and psychological stress—highlighted that low physical activity is indeed an influential contributor to gastrointestinal dysfunction within this demographic. A major strength of this study lies in its use of validated tools such as the International Physical Activity Questionnaire and the Constipation Scoring System, enhancing the objectivity and comparability of the findings. The large sample size and gender-inclusive participant pool also lend statistical power and demographic relevance to the results. However, the use of non-probability convenience sampling may limit generalizability, and the lack of dietary, psychological, and hydration data introduces potential confounding. Moreover, reliance on self-reported measures could have led to response bias, particularly in recalling physical activity patterns or bowel habits.

Future research should consider employing longitudinal or interventional study designs to better establish causality between physical activity and constipation outcomes. Incorporating comprehensive dietary assessments, psychological profiling, and objective physical activity monitoring tools such as accelerometers could further enrich the validity of findings. Additionally, stratifying data by gender, academic workload, and year of study might provide deeper insights into subgroups at heightened risk. Overall, this study contributes meaningful evidence to the growing body of literature emphasizing the protective role of physical activity against constipation in young adults. Promoting regular exercise within medical student populations may not only enhance gastrointestinal health but also support broader physical and mental well-being.

CONCLUSION

The findings of this study highlight a clear association between low physical activity levels and the presence of constipation among medical students. The results emphasize the importance of incorporating regular physical activity into daily routines as a preventive and supportive strategy for managing functional constipation. By identifying physical inactivity as a modifiable risk factor, this research underscores the need for targeted health promotion initiatives within academic institutions to foster more active lifestyles and improve overall student well-being.

AUTHOR CONTRIBUTION

Author	Contribution
Maham Majeed	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Maleeha Fuad*	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published

Shoaib Waqas	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published
Muhammad Tariq	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Maham Ahmed	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Zarnab Asif	Substantial Contribution to study design and Data Analysis Has given Final Approval of the version to be published
Tayyba Yasin	Contributed to study concept and Data collection Has given Final Approval of the version to be published

REFERENCES

1. Yang X, Ding S, Guo J, Peng S, Duan Z, Liu S. The Associations Between Life's Essential 8 and Diarrhea and Constipation: Results From the 2005-2010 National Health and Nutrition Examination Survey. Clin Transl Gastroenterol. 2025;16(2):e00801.
2. Wang B, Xu H. Comment on "Overweight status, abdominal circumference, physical activity, and functional constipation in children". Rev Assoc Med Bras (1992). 2024;70(8):e20240603.
3. Pontes-Silva A, Zharikov Y. Comments on "Overweight status, abdominal circumference, physical activity, and functional constipation in children". Rev Assoc Med Bras (1992). 2023;69(6):e20230284.
4. Kayaoglu SA, Sert OZ. Constipation in the period of limited isolation during COVID-19 pandemic. Rev Assoc Med Bras (1992). 2022;68(2):196-201.
5. Nygaard IE, Wolpern A, Bardsley T, Egger MJ, Shaw JM. Early postpartum physical activity and pelvic floor support and symptoms 1 year postpartum. Am J Obstet Gynecol. 2021;224(2):193.e1-.e19.
6. Heinzel S, Aho VTE, Suenkel U, von Thaler AK, Schulte C, Deuschle C, et al. Gut Microbiome Signatures of Risk and Prodromal Markers of Parkinson Disease. Ann Neurol. 2020;88(2):320-31.
7. Dias FC, Melli L, Boilesen SN, Tahan S, Morais MB. Hypohydration, Functional Constipation, and Physical Activity in Elementary School Students. J Pediatr Gastroenterol Nutr. 2023;77(2):203-6.
8. Adil S, Gordon M, Hathagoda W, Kuruppu C, Benninga MA, Rajindrajith S. Impact of physical inactivity and sedentary behaviour on functional constipation in children and adolescents: a systematic review. BMJ Paediatr Open. 2024;8(1).
9. Daniali M, Nikfar S, Abdollahi M. An overview of interventions for constipation in adults. Expert Rev Gastroenterol Hepatol. 2020;14(8):721-32.
10. Dias FC, Boilesen SN, Tahan S, Melli L, Morais MB. Overweight status, abdominal circumference, physical activity, and functional constipation in children. Rev Assoc Med Bras (1992). 2023;69(3):386-91.
11. Luo X, Xue C, Pan Y, Wei W, Hao Z, Liu Z, et al. Physical Activities and Parkinson's Disease Progression: A Two-Sample Mendelian Randomization Study. CNS Neurosci Ther. 2025;31(2):e70296.
12. Cui J, Xie F, Yue H, Xie C, Ma J, Han H, et al. Physical activity and constipation: A systematic review of cohort studies. J Glob Health. 2024;14:04197.
13. Huang KY, Yu ZZ, Tu JJ, Tang XY, Huang JM, Lu TM, et al. Positive association between constipation and mild cognitive impairment in elders: A cross-sectional study. Medicine (Baltimore). 2024;103(40):e39943.
14. Werth BL, Christopher SA. Potential risk factors for constipation in the community. World J Gastroenterol. 2021;27(21):2795-817.
15. Yurtdaş G, Acar-Tek N, Akbulut G, Cemali Ö, Arslan N, Beyaz Coşkun A, et al. Risk Factors for Constipation in Adults: A Cross-Sectional Study. J Am Coll Nutr. 2020;39(8):713-9.

16. Macêdo MIP, Albuquerque MdFM, Tahan S, Morais MBd. Is there any association between overweight, physical activity, fat and fiber intake with functional constipation in adolescents? Scandinavian journal of gastroenterology. 2020;55(4):414-20.
17. Wilson PB. Associations between physical activity and constipation in adult Americans: Results from the National Health and Nutrition Examination Survey. Neurogastroenterology & Motility. 2020;32(5):e13789.
18. Shiba S, Masunaga T, Tamamura Y, Matsuura M, Nishikimi T. The Relationship between the Severity of Constipation and Exercise Status in the Japanese Population according to Questionnaire Survey. GastroHep. 2022;2022(1):2378353.
19. Ilyas J, Shahid S, Jafri A, Saeed M, Rizwan A, Khan U, et al. Functional constipation and its association with lifestyle habits of medical students using Rome IV Diagnostic Criteria. Middle East J Fam Med. 2021;7:62-9.
20. Mirbehresi P, Nikjooy A, Sarrafzadeh J, Mohsenifar H. Cultural Adaptation, Validity, and Reliability of the Persian Version of Wexner Constipation Scoring System. Function and Disability Journal. 2020; 3: 17-26. 2020.