Open Access

ISSN: 2663-9491 e-ISSN: 2789-6897

ORIGINAL ARTICLE

Lifestyle and Psychological Determinants of Academic Performance Among Medical Students

Meherunnesa Mukta[1*], Professor Sanjoy Kumar Saha[2], Sajalendu Biswas[3], Probir Kumar Banarjee[4], Eva Saha[5], Suparna Pramanik[6]

Received: 17 October 2026
Accepted: 06 November 2026
Published Online: 16 November 2026

Published by:
Gopalganj Medical College, Gopalganj, Bangladesh

*Corresponding Author

DOI: 10.5281/zenodo.24269517

Copyright © 2026 The Insight

This article is licensed under a Creative Commons Attribution 4.0 International License.s

ABSTRACT

Background: *Academic performance among medical students may be influenced by multiple lifestyle, psychological, family, and educational factors. Identifying potentially modifiable factors is important for improving students' academic outcomes.* ***Objective:*** *To assess the lifestyle, psychological, family, and teacher-related factors associated with academic performance among medical students in Bangladesh.* ***Methods & Materials:*** *A descriptive multicenter cross-sectional study was conducted among 514 undergraduate medical students from January to December 2025. Data were collected using a structured questionnaire covering sociodemographic, lifestyle, psychological, family, and teacher-related factors. Academic performance was categorized as good or poor. Associations were assessed using Pearson's chi-square test or Fisher's exact test, as appropriate. A p-value <0.05 was considered statistically significant.* ***Results:*** *Among the 514 participants, 348 (67.7%) had good academic performance and 166 (32.3%) had poor performance. Significant associations were observed between academic performance and screen time ≥3 hours/day (χ^2=14.478, p<0.001), sleep <6 hours/night (χ^2=13.932, p<0.001), lack of interest in class (χ^2=7.798, p=0.005), family problems (χ^2=8.134, p=0.004), unhealthy diet (χ^2=10.092, p=0.001), and inadequate depth of teachers' topic knowledge (χ^2=17.760, p<0.001). High teacher-related risk showed a strong, significant association with academic performance (χ^2=34.838, p<0.001).* ***Conclusion:*** *Academic performance was associated with several modifiable lifestyle, family, classroom-engagement, and teacher-related factors. Promoting adequate sleep, responsible screen use, healthy dietary practices, academic engagement, and improved teaching quality may help support better academic outcomes.*

Keywords: *Academic performance, medical students, Lifestyle, Psychological factors, Teaching quality.*

(The Insight 2026; 9(3): 1023-1029)

1. *Associate Professor, Department of Medicine, Ad-din Sakina Women's Medical College, Jashore, Bangladesh (ORCID: 0000-0003-0211-7678)*
2. *Professor and Head, Department of Medicine, Ad-din Momin Medical College, Dhaka, Bangladesh*
3. *Assistant Professor, Department of Gastroenterology, Gopalganj Medical College, Gopalganj, Bangladesh*
4. *Associate Professor, Department of Gastroenterology, Gopalganj Medical College, Gopalganj, Bangladesh*
5. *Assistant Professor, Department of Ophthalmology, Ad-din Momin Medical College, Bangladesh*
6. *Medical Officer, Mainkganj Medical College Hospital, Mainkganj, Bangladesh*

INTRODUCTION

Academic performance is a fundamental indicator of educational achievement among medical students and has important implications for clinical training, professional development, and future healthcare delivery. Medical education is characterized by a demanding curriculum, extensive theoretical and practical learning, frequent examinations, and progressive clinical responsibilities. Consequently, academic achievement may be influenced not only by intellectual ability but also by a complex interaction of lifestyle, behavioral, and psychological factors [1]. Lifestyle behaviors influence cognitive functioning, concentration, emotional regulation, and sustained academic engagement. Sleep is among the most extensively investigated factors. Medical students frequently experience irregular sleep schedules due to intensive workloads, late-night study, clinical duties, and prolonged electronic device use. A systematic review and meta-analysis reported that impaired sleep is associated with poorer academic performance [2]. Similarly, a review of university students concluded that poor sleep regularity, quantity, and quality may adversely affect academic performance [3]. Physical activity is another potentially modifiable lifestyle factor. Regular activity may improve cognition, psychological well-being, stress regulation, and overall health, although evidence for its direct relationship with academic achievement remains inconsistent [4,5]. Diet also matters; adequate nutritional intake is essential for energy availability and cognitive performance. Breakfast consumption has received particular attention because prolonged overnight fasting may affect energy metabolism and subsequent cognitive functioning [6,7]. Smartphone and digital-media use has introduced another behavioral dimension. Digital technologies can facilitate medical education by providing rapid access to textbooks, literature, educational videos, and learning resources. However, excessive or problematic use may interfere with concentration, time management, sleep,

and sustained academic engagement [8,9]. Evidence from Bangladesh further highlights problematic digital-media use in medical education [10]. Psychological well-being is central to successful medical education. Medical students face academic competition, examination pressure, heavy workloads, financial concerns, and difficulty balancing academic and personal responsibilities. Depression can impair motivation, concentration, energy, and academic engagement [11,12]. Burnout affects approximately 37% of undergraduate medical students globally [13]. Psychological factors show complex relationships: perceived stress is generally linked to poorer performance, whereas resilience and grit predict better outcomes [14,15]. In Bangladesh, medical education is academically demanding and highly competitive, with additional social, financial, family, and institutional pressures. Recent Bangladeshi research has documented substantial depression, anxiety, and stress among medical students [16,17]. Many studies have examined individual factors rather than multiple lifestyle and psychological domains simultaneously. Integrated, context-specific research is therefore needed to identify potentially modifiable factors associated with academic performance among Bangladeshi medical students. Accordingly, this study aimed to examine relationships between lifestyle factors, psychological factors, and academic performance among medical students in Bangladesh. It considered demographic and academic characteristics; modifiable lifestyle factors including sleep duration and quality, physical activity, dietary habits, screen time, study duration, and substance use; and psychological factors such as stress, anxiety, and depression. By examining these factors within a single analytical framework, the study seeks to identify potentially important and modifiable correlates of academic performance and to provide evidence for student-support programs, health-promotion strategies, psychological counseling, and educational policies in Bangladeshi medical colleges.

METHODS & MATERIALS

A descriptive multicenter cross-sectional study was conducted among undergraduate medical students from January to December 2025.

Study Population

The study was conducted at three medical institutions in Bangladesh: Ad-din Momin Medical College Hospital (ADMMCH), South Keraniganj, Dhaka, Ad-din Sakina Women's Medical College, Pulerhat, Jashore and Gopalganj Medical College Hospital, Gopalganj. A total of 514 medical students from different academic years participated in the study.

Inclusion Criteria

Students were eligible if they were enrolled in the selected medical colleges, willing to participate, and able to complete the questionnaire.

Exclusion Criteria

Students who declined participation or submitted substantially incomplete or inconsistent questionnaires were excluded.

Study Procedure

Eligible students participated voluntarily with informed consent. A questionnaire collected sociodemographic, academic, lifestyle, and psychological data. Lifestyle variables included sleep, activity, diet, screen time, study duration, and substance use; psychological factors included stress, anxiety, and depression. Academic performance was assessed by GPA/examination results.

Statistical Analysis

Data were analyzed using IBM SPSS. Categorical variables as frequencies/percentages; continuous as central tendency and dispersion. Associations were assessed using Pearson chi-square or Fisher's exact test. Two-sided $p<0.05$ was significant.

Ethical Clearance

The study followed standard ethical principles for research involving human participants. Written informed consent was obtained from all participants, and participation was voluntary. Confidentiality and anonymity were maintained throughout data collection, analysis, and reporting.

RESULTS

Among the 514 medical students, 310 (60.3%) were female, and 204 (39.7%) were male. The largest proportion were from the 1st year (33.5%), followed by the 2nd year (28.0%) and 3rd year (24.5%). Most participants were from the regular batch (73.5%), and 59.5% lived at home, while 40.5% resided in hostels (*Table I*). Overall, most students disagreed or strongly disagreed with the listed teacher-related problems. Agreement was highest for teaching speed being too fast/too slow (43.5%), followed by inappropriate PowerPoint use (41.6%) and poor teaching time management (40.8%). Agreement regarding inadequate depth of topic knowledge was reported by 38.1% of students (*Table II*). Daily screen time was 1-2 hours for 33.9% of students, while 45.1% reported ≥3 hours/day. Most students (43.6%) slept 6-8 hours per night, whereas 21.0% slept <6 hours. Class interest was reported by 55.3%. Psychological illness was reported by 16.7%, while family and financial problems were reported by 19.8% and 14.4%, respectively (*Table III*). A balanced diet was reported by 65.0% of participants, while 46.3% regularly consumed street food. Regular exercise was reported by 41.6%. The majority studied 2-4 hours/day (43.2%). Regarding class duration, 58.7% agreed or strongly agreed that it affected their attention (*Table IV*). Most participants did not consider marriage or children important for academic performance. Family member illness was considered influential by 42.1%, and 72.4% had no idea about spouse being a medical professional (*Table V*). Among the 514 students, 348 (67.7%) had good academic performance, whereas 166 (32.3%) had poor academic performance (*Figure 1*) A pie chart showing: Good Performance - 67.7% (348 students); Poor Performance - 32.3% (166 students). Academic performance was significantly associated with screen time ≥3h/day, sleep <6h/night, lack of class interest, family problems, and unhealthy diet ($p<0.05$). Gaming, social media, physical/psychological illness, financial problems, and irregular exercise were not significant ($p>0.05$) (*Table VI*). Inadequate topic knowledge depth was significantly associated with academic performance ($p<0.001$). Other individual teacher factors were not significant ($p>0.05$). However, high teacher-related risk (≥5 items) showed a strong association ($p<0.001$) (*Table VII*).

ISSN: 2663-9491 e-ISSN: 2789-6897

Table I: Sociodemographic and Academic Characteristics of the Study Participants (*n*=514)

Variable	Category	n	%
Sex	Male	204	39.7
	Female	310	60.3
Year of study	1st	172	33.5
	2nd	144	28.0
	3rd	126	24.5
	4th/Final	72	14.0
Batch	Regular	378	73.5
	Irregular	136	26.5
Accommodation	Hostel	208	40.5
	Home	306	59.5

Table II: Teacher-Related Factors Perceived by Medical Students (*n*=514)

Teacher-related factor	Strongly Agree n (%)	Agree n (%)	Disagree n (%)	Strongly Disagree n (%)
Lack of motivational skills	64 (12.5)	142 (27.6)	196 (38.1)	112 (21.8)
Poor teaching time management	66 (12.8)	144 (28.0)	192 (37.4)	112 (21.8)
Inappropriate PowerPoint use	68 (13.2)	146 (28.4)	198 (38.5)	102 (19.8)
Large volume of content/session	72 (14.0)	138 (26.8)	182 (35.4)	122 (23.7)
Teaching speed too fast/too slow	84 (16.3)	140 (27.2)	182 (35.4)	108 (21.0)
Monotonous teaching	74 (14.4)	118 (23.0)	210 (40.9)	112 (21.8)
Unethical teacher behavior	52 (10.1)	136 (26.5)	210 (40.9)	116 (22.6)
Unattractive classroom teaching	64 (12.5)	148 (28.8)	198 (38.5)	104 (20.2)
Inadequate depth of topic knowledge	72 (14.0)	124 (24.1)	192 (37.4)	126 (24.5)

Table III: Lifestyle and Psychological Characteristics of the Participants (*n*=514)

Variable	Category	n	%
Screen time	<1 h	108	21.0
	1-2 h	174	33.9
	3-4 h	148	28.8
	>4 h	84	16.3
Gaming hours	<1 h	238	46.3
	1-2 h	172	33.5
	>2 h	104	20.2
Social media hours	<1 h	140	27.2
	1-2 h	198	38.5
	3-4 h	114	22.2
	>4 h	62	12.1
Class interest	Yes	284	55.3
	No	94	18.3
	Sometimes	136	26.5
Night sleep	<6 h	108	21.0
	6-8 h	224	43.6
	>8 h	182	35.4
Physical illness	Yes	136	26.5
	No	274	53.3
	Sometimes	104	20.2
Psychological illness	Yes	86	16.7
	No	356	69.3
	Sometimes	72	14.0
Family problem	Yes	102	19.8
	No	348	67.7
	Sometimes	64	12.5
Financial problem	Yes	74	14.4
	No	372	72.4
	Sometimes	68	13.2

ISSN: 2663-9491 e-ISSN: 2789-6897

Table IV: Dietary, Study-Habit and Other Academic Factors (*n*=514)

Variable	Category	n	%
Balanced diet	Yes	334	65.0
	No	132	25.7
	Sometimes	48	9.3
Street food regularly	Yes	238	46.3
	No	168	32.7
	Sometimes	108	21.0
Regular exercise	Yes	214	41.6
	No	182	35.4
	Sometimes	118	23.0
Unhealthy diet as a factor	Strongly Agree	108	21.0
	Agree	128	24.9
	Disagree	168	32.7
	Strongly Disagree	110	21.4
Class duration affects attention	Strongly Agree	160	31.1
	Agree	142	27.6
	Disagree	150	29.2
	Strongly Disagree	62	12.1

Table V: Family-Related Factors and Perceptions (*n*=514)

Variable	Response	n	%
Marriage as a factor	Strongly Agree	50	9.7
	Agree	76	14.8
	Disagree	246	47.9
	Strongly Disagree	142	27.6
Having children as a factor	Strongly Agree	12	2.3
	Agree	40	7.8
	Disagree	304	59.1
	Strongly Disagree	158	30.7
Family member illness	Strongly Agree	98	19.1
	Agree	118	23.0
	Disagree	192	37.4
	Strongly Disagree	106	20.6
Spouse being a medical professional	Strongly Agree	14	2.7
	Agree	18	3.5
	Disagree	50	9.7
	Strongly Disagree	60	11.7
	Have no idea	372	72.4

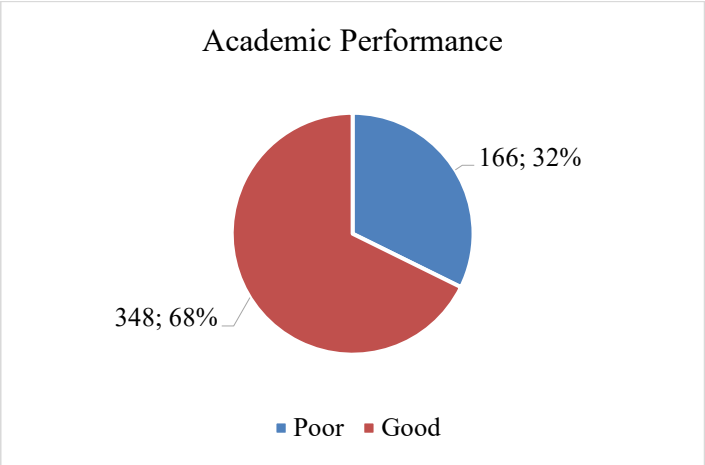


Figure 1: Academic Performance of the Study Participants (*n*=514)

ISSN: 2663-9491 e-ISSN: 2789-6897

Table VI: Association of Lifestyle and Psychological Factors with Academic Performance (*n*=514)

Factor	Good, Reference n	Poor, Reference n	Good, Exposed n	Poor, Exposed n	χ^2	p-value
Screen time ≥3 h/day	212	70	136	96	14.478	<0.001
Gaming >2 h/day	282	128	66	38	0.642	0.423
Social media >2 h/day	280	120	68	46	3.452	0.063
Sleep <6 h/night	292	114	56	52	13.932	<0.001
Lack of interest in class	140	90	208	76	7.798	0.005
Physical illness	254	124	94	42	0.038	0.845
Psychological illness	296	132	52	34	1.744	0.187
Family problems	292	120	56	46	8.134	0.004
Financial problems	300	140	48	26	0.088	0.767
Unhealthy diet (Agree/Strongly Agree)	206	72	142	94	10.092	0.001
Irregular exercise	232	100	116	66	1.506	0.220

Table VII: Association of Teacher-Related Factors with Academic Performance (*n*=514)

Teacher-related factor	Good, Reference n	Poor, Reference n	Good, Exposed n	Poor, Exposed n	χ^2	p-value
Lack of motivational skills	208	100	140	66	0.000	1.000
Poor teaching time management	212	92	136	74	0.988	0.320
Inappropriate PowerPoint use	210	90	138	76	1.270	0.260
Large volume of content/session	216	88	132	78	3.102	0.078
Teaching speed too fast/too slow	192	98	156	68	0.404	0.525
Monotonous teaching	218	104	130	62	0.000	1.000
Unethical teacher behavior	222	104	126	62	0.004	0.949
Unattractive classroom teaching	218	84	130	82	5.768	0.016
Inadequate depth of topic knowledge	238	80	110	86	17.760	<0.001
High teacher-related risk (≥5 Agree/Strongly Agree items)	292	98	56	68	34.838	<0.001

DISCUSSION

In this study, 67.7% of medical students demonstrated good academic performance, while 32.3% had poor performance. These findings indicate that academic achievement is influenced by a combination of lifestyle, psychological, family, and educational factors rather than a single determinant, consistent with recent evidence [18]. Screen time was significantly associated with academic performance. Students reporting ≥3 hours of daily screen time had poorer outcomes (χ^2=14.478, p<0.001), consistent with evidence that excessive device use interferes with focused learning and sleep, although the relationship may depend on type and timing of use [19,20]. Sleep duration was also significant: students sleeping <6 hours per night showed poorer performance (χ^2=13.932, p<0.001). Inadequate sleep may impair attention, memory consolidation, and daytime alertness, supporting broader evidence linking sleep quality to academic grades [21]. Lack of interest in classroom learning was significantly associated with academic performance (χ^2=7.798, p=0.005), reflecting the importance of motivation and engagement. Less interested students may participate less actively and devote less attention to lectures [18,22]. Family problems were also significant (χ^2=8.134, p=0.004). Although financial problems alone were not significant (p=0.767), family-related difficulties may create emotional distraction and reduce concentration. This should be interpreted as an association, not causation [18,23]. Unhealthy dietary practices were significantly associated with academic performance (χ^2=10.092, p=0.001). Although most participants reported a balanced diet, nearly half regularly consumed street food. Dietary quality may influence academic functioning through energy availability, metabolic health, and concentration [24,25]. Gaming, social-media use, physical illness, psychological illness, financial problems, and irregular exercise were not significantly associated with academic performance (p>0.05). These null findings highlight the multifactorial nature of academic achievement. Total social-media or gaming duration may not capture problematic use, timing, or self-regulation differences. Previous literature also reports heterogeneous findings regarding physical activity and academic outcomes [26,27]. Teacher-related factors produced important findings. Inadequate depth of topic knowledge was significantly associated with academic performance (χ^2=17.760, p<0.001). Students may perceive insufficient subject knowledge as limiting clarity, depth, and clinical relevance of teaching. However, most individual teacher-related factors were not significant. In contrast, the composite indicator of high teacher-related risk (≥5 agree/strongly agree items) showed a strong association (χ^2=34.838, p<0.001). Teaching quality is multidimensional; several moderate deficiencies may collectively create a less effective learning environment. Within the Bangladeshi context, medical students experience substantial academic workload and psychological pressure, with documented burdens of poor sleep and distress. Excessive screen exposure has also been linked to poor sleep [28]. These contextual factors may interact with academic routines. Overall, interventions should extend beyond conventional academic support. Strategies promoting healthy sleep, responsible screen use, healthy diet, classroom engagement, family and psychosocial support, and improved teaching quality may provide a more comprehensive approach. Because this was a cross-sectional study, temporal relationships and causality cannot be established; longitudinal and multicenter studies are warranted.

CONCLUSION

This study found academic performance was associated with lifestyle, family, engagement, and teacher factors. Screen time, inadequate sleep, lack of class interest, family problems, unhealthy diet, and poor teacher subject depth were significant. Combined teacher problems showed a strong association. Improving performance requires multidimensional approaches including healthy lifestyles, supportive environments, engagement, and teaching quality. Longitudinal multicenter studies in Bangladesh are recommended.

LIMITATIONS

This study has several limitations: cross-sectional design prevents causality; three private institutions limit generalizability; self-reported data may cause bias; good/poor categorization may not capture variations; confounding was not fully controlled. Larger multicenter longitudinal studies are needed to validate findings.

AI DECLARATION

AI tools contributed marginally to manuscript preparation and development. All core scientific content was human-verified.

REFERENCES

1. *Ríos Andrade R, Peralta Ramírez AA, Trujillo López S. Psychosocial factors associated with academic performance in medical students: a systematic review. BMC Medical Education. 2026 Feb 13;26(1):451. https://doi.org/10.1186/s12909-026-08742-6*
2. *Seoane HA, Moschetto L, Orliacq F, Orliacq J, Serrano E, Cazenave MI, Vigo DE, Perez-Lloret S. Sleep disruption in medicine students and its relationship with impaired academic performance: A systematic review and meta-analysis. Sleep medicine reviews. 2020 Oct 1; 53:101333. https://doi.org/10.1016/j.smrv.2020.101333*
3. *Suardiaz-Muro M, Morante-Ruiz M, Ortega-Moreno M, Ruiz MA, Martín-Plasencia P, Vela-Bueno A. Sueño y rendimiento académico en estudiantes universitarios: revisión sistemática. Rev Neurol. 2020 Jul 16;71(2):43-53. https://doi.org/10.33588/rn.7102.2020015*
4. *Babaeer L, Stylianou M, Leveritt M, Gomersall S. Physical activity, sedentary behavior and educational outcomes in university students: A systematic review. Journal of American College Health. 2022 Oct 3;70(7):2184-209. https://doi.org/10.1080/07448481.2020.1846047*
5. *Trott M, Kentzer N, Horne J, Langdown B, Smith L. Associations between total physical activity levels and academic performance in adults: A systematic review and meta-analysis. Journal of Education and Health Promotion. 2024 Jul 29; 13:273. https://doi.org/10.4103/jehp.jehp_1618_23*
6. *Edefonti V, Rosato V, Parpinel M, Nebbia G, Fiorica L, Fossali E, Ferraroni M, Decarli A, Agostoni C. The effect of breakfast composition and energy contribution on cognitive and academic performance: a systematic review. The American journal of clinical nutrition. 2014 Aug 1;100(2):626-56. https://doi.org/10.3945/ajcn.114.083683*
7. *Burrows T, Goldman S, Pursey K, Lim R. Is there an association between dietary intake and academic achievement: a systematic review. Journal of Human Nutrition and Dietetics. 2017 Apr;30(2):117-40. https://doi.org/10.1111/jhn.12407*
8. *Hsieh CY. The impact of smartphone usage frequency on university students' academic performance: A meta-analysis of moderating factors. Acta Psychologica. 2025 Sep 1;259:105374. https://doi.org/10.1016/j.actpsy.2025.105374*
9. *Paterna A, Alcaraz-Ibáñez M, Aguilar-Parra JM, Salavera C, Demetrovics Z, Griffiths MD. Problematic smartphone uses and academic achievement: A systematic review and meta-analysis. Journal of Behavioral Addictions. 2024 Jun 26;13(2):313-26. https://doi.org/10.1556/2006.2024.00014*
10. *Abdullah F, Rahman MI, Simu SH, Kumar L, Noor K, Vishal FN, Podder V. The Impact of Internet Addiction on Academic Performance Among Medical Students in Bangladesh: A Cross-Sectional Study and the Potential Role of Yoga. Pharmacognosy Magazine. 2024; 1:8. https://doi.org/10.1177/09727531241235999*
11. *Rotenstein LS, Ramos MA, Torre M, Segal JB, Peluso MJ, Guille C, Sen S, Mata DA. Prevalence of depression, depressive symptoms, and suicidal ideation among medical students: a systematic review and meta-analysis. Jama. 2016 Dec 6;316(21):2214-36. Rotenstein LS, Ramos MA, Torre M, Segal JB, Peluso MJ, Guille C, Sen S, Mata DA. Prevalence of depression, depressive symptoms, and suicidal ideation among medical students: a systematic review and meta-analysis. Jama. 2016 Dec 6;316(21):2214-36. https://doi.org/10.1001/jama.2016.17324*
12. *Agyapong-Opoku N, Agyapong-Opoku F, Agyapong B, Greenshaw AJ. Anxiety and depressive symptoms among medical students—A scoping review of systematic reviews and meta-analyses. Frontiers in Public Health. 2025; 13:1710333. https://doi.org/10.3389/fpubh.2025.1710333*
13. *Almutairi H, Alsubaiei A, Abduljawad S, Alshatti A, Fekih-Romdhane F, Husni M, Jahrami H. Prevalence of burnout in medical students: A systematic review and meta-analysis. International Journal of Social Psychiatry. 2022 Sep;68(6):1157-70. https://doi.org/10.1177/00207640221106691*
14. *Chisholm-Burns MA, Berg-Poppe P, Spivey CA, Karges-Brown J, Pithan A. Systematic review of noncognitive factors influences on health professions students' academic performance: MA Chisholm-Burns et al. Advances in Health Sciences Education. 2021 Oct;26(4):1373-445. https://doi.org/10.1007/s10459-021-10042-1*
15. *Amin R, Kibria MG, Sharna TI, Nahar S, Arafat SY. Rate and sociodemographic correlates of depression, anxiety, and stress among domestic and overseas medical students: A cross-sectional observation from a private medical college in Bangladesh. https://doi.org/10.1002/hsr2.70024*
16. *Muyeed A, Rahman R, Suchi SI, Ahmed K, Tithi TA. Sleep quality and psychological distress among Bangladeshi medical students: Prevalence, predictors, and sex-institutional differences. Global Epidemiology. 2026 Jan 6:100243. https://doi.org/10.1016/j.gloepi.2026.100243*
17. *Karim MR, Akter S, Zannat T, Sajid T, Afnan S, Zeba SA. Depression among medical students and the role of academic stress and coping strategies: a cross-sectional study in Bangladesh. International Journal of Adolescent Medicine and Health. 2026 Feb 1;38(1):47-60. https://doi.org/10.1515/ijamh-2025-0092*
18. *Yeluri K, Hs K, Gowdappa B, Bj SC. Electronic gadget screen-time, perceived sleep quality & quantity and academic performance in medical students. The Journal of the Association of Physicians of India. 2021 Nov;69(11):11-2.*
19. *Leow MQ, Chiang J, Chua TJ, Wang S, Tan NC. The relationship between smartphone addiction and sleep among medical students: A systematic review and meta-analysis. Plos one. 2023 Sep 15;18(9):e0290724. https://doi.org/10.1371/journal.pone.0290724*
20. *BaHammam AS, Alaseem AM, Alzakri AA, Almeneessier AS, Sharif MM. The relationship between sleep and wake habits and academic performance in medical students: a cross-sectional study. BMC medical education. 2012 Aug 1;12(1):61. https://doi.org/10.1186/1472-6920-12-61*
21. *Yassin A, Al-Mistarehi AH, Yonis OB, Aleshawi AJ, Momany SM, Khassawneh BY. Prevalence of sleep disorders among medical students and their association with poor academic performance: A cross-sectional study. Annals of medicine and Surgery. 2020 Oct 1; 58:124-9. https://doi.org/10.1016/j.amsu.2020.08.046*
22. *Karunamoorthy V, Rajaraman N, Saravanan A, Arunagirinathan K. Sleep Patterns and Academic Performance among Undergraduate Medical Students: A Cross-sectional Study at a Tertiary Care Teaching Hospital in Chennai, South India. Annals of African Medicine. 2026 Apr 17:10-4103. https://doi.org/10.4103/aam.aam_195_26*
23. *Chattu VK, Manzar MD, Kumary S, Burman D, Spence DW, Pandi-Perumal SR. The global problem of insufficient sleep and its serious public health implications. InHealthcare 2018 Dec 20 (Vol. 7, No. 1, p. 1). MDPI. https://doi.org/10.3390/healthcare7010001*
24. *Hershner SD, Chervin RD. Causes and consequences of sleepiness among college students. Nature and science of sleep. 2014 Jun 23:73-84. https://doi.org/10.2147/nss.s62907*

25. *Wolfson AR, Carskadon MA. Understanding adolescent's sleep patterns and school performance: a critical appraisal. Sleep medicine reviews. 2003 Jan 1;7(6):491-506. https://doi.org/10.1016/s1087-0792(03)90003-7*
26. *Boergers J, Gable CJ, Owens JA. Later school start time is associated with improved sleep and daytime functioning in adolescents. Journal of Developmental & Behavioral Pediatrics. 2014 Jan 1;35(1):11-7. https://doi.org/10.1097/dbp.0000000000000018*
27. *Almojali AI, Almalki SA, Alothman AS, Masuadi EM, Alaqeel MK. The prevalence and association of stress with sleep quality among medical students. Journal of epidemiology and global health. 2017 Jan;7(3):169-74. https://doi.org/10.1016/j.jegh.2017.04.005*
28. *Pagnin D, de Queiroz V, Carvalho YT, Dutra AS, Amaral MB, Queiroz TT. The relation between burnout and sleep disorders in medical students. Academic Psychiatry. 2014 Aug;38(4):438-44. https://doi.org/10.1007/s40596-014-0093-z*