Original Article

Assessment of Lifestyle Behaviours among Undergraduate Medical Students of a Private Medical College: A Cross-Sectional Study

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ABSTRACT

Background: A healthy lifestyle is key to preventing non-communicable diseases (NCDs) like diabetes mellitus and cardiovascular diseases, responsible for 74% of deaths worldwide. In Pakistan, 3.87 million deaths related to NCDs are projected in 2025. Reducing risk factors could lower mortality by 20%. This study aimed to assess the lifestyle behaviours of undergraduate students across multiple dimensions, including diet, physical activity, substance use, stress management, sleep, social support, and environmental exposure.

Methods: This analytic cross-sectional study was conducted at CMH Lahore Medical College (CMHLMC), a private institute in Lahore, Pakistan, from August to December 2023. A sample size of 377 was calculated using the WHO sample size calculator, with an estimated prevalence of 50%, a 5% margin of error, and a 95% confidence level. Data was collected via convenience sampling from MBBS, Nursing, and Allied Health Sciences students. The Malay version of the Multidimensional Inventory of Lifestyle Evaluation Confinement (SMILE-C) scale was used for data collection.

Results: The majority (n= 295, 78.3%) had a good, healthy lifestyle, and another 13.9% had an excellent lifestyle. There was a borderline significant difference in lifestyle between genders (p-value = 0.05). Almost 70% students ate processed food, 56.7% ate junk food, and less than half (41.75%) exercised regularly. Sleep habits were compromised as well, with only 53.8% getting adequate sleep and 88.8% using a smartphone within an hour of going to sleep.

Conclusions: While the majority showed a healthy overall lifestyle, a high prevalence of unhealthy habits, such as poor diet and lack of exercise, indicates a need for improvement.

Keywords: Lifestyle; Health Behavior; Students; Medical

INTRODUCTION

Lifestyle is a multidimensional construct that encompasses personal behaviours such as diet, physical activity (PA), stress management, sleep habits, substance use, and social support, as well as environmental influences such as screen time.[1] It is defined as the 'typical way of life or manner of living that is characteristic of an individual or group.[2] A healthy lifestyle strongly influences health, particularly as a determinant of non-communicable diseases (NCDs) like diabetes mellitus, cardiovascular disease, metabolic syndrome, stroke, and cancers.[3,4]

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The World Health Organization (WHO) mentions five major risk factors for NCDs: sedentary behaviour, poor diet, tobacco use, alcohol intake, and air pollution.[3] The link between NCDs and risk factors related to lifestyle is well established, and interestingly, most people with NCDs share one or more of these lifestyle characteristics.[5] Interventions based on a healthy lifestyle are the key to prevention and treatment of NCDs, and low adherence has been linked to worsening progression of disease.[6,7] Maintaining a healthy lifestyle is important throughout life, but studies indicate that early life exposures to unhealthy environments and risky habits like smoking and physical inactivity increase the risk of molecular ageing and non-communicable diseases over succeeding decades. It has also been noted that lifestyle habits developed during adolescence tend to persist in later years.[8]

A majority of the public lacks awareness regarding healthy lifestyle behaviours. Various educational tools support health professionals in helping the public to adopt lifestyle medicine concepts, modulating behaviours, preventing and reversing NCDs, if applied intensively.[9] Lifestyle medicine (LM) is a "medical specialty that uses therapeutic lifestyle interventions as a modality to treat chronic conditions".[10]

Table 1: Prevalence of lifestyle behaviors among undergraduate students (n= 377)

Lifestyle Behaviours		Frequency (%) (always + often)
Nutrition		
1.	Eating processed food (frozen pizza, puff pastry, deep-fried, or canned)	263 (69.8)
2.	Eating junk food/fast food (high-calorie, sweet, or fatty)	214 (56.7)
3.	Eating healthy food (fruit, vegetables, legumes, or nuts)	238 (63.1)
4.	Having regular meals	211 (56.0)
5.	Sharing meals	257 (68.2)
Substance use		
6.	Tobacco (cigarette, e-cig, cigar, pipe, smokeless tobacco)	52 (13.7)
7.	Marijuana/hashish)	16 (4.2)
8.	Other drugs (cocaine, amphetamine, crack, opioids without a prescription)	28 (7.4)
Physical activity		
9.	Exercising regularly (>150 minutes of moderate activity weekly)	158 (41.9)
Stress management		
10.	Making time to relax	262 (69.5)
11.	Psychological strategy	135 (35.8)
12.	Physical strategy	142 (37.7)
13.	Using faith or religion	304 (80.6)
14.	Feeling that life has meaning	302 (80.1)
15.	Being grateful for your life	321 (85.1)
Restorative sleep		
16.	Sleeping 7-9 hours per night	203 (53.8)
17.	Feeling rested	199 (52.8)
18.	Maintaining a regular sleep schedule	159 (42.2)
19.	Using sleeping pills	69 (18.3)
Social support		
20.	Interacting with friends/relatives	302 (80.1)
21.	Being part of a group of friends/community	282 (74.2)
22.	Having someone you can trust	297 (78.7)
23.	Having someone to help with chores	257 (68.2)
24.	Enjoying leisure time	315 (83.5)
25.	Supporting significant others	325 (86.2)
Environmental exposure		
26.	Using a computer/smartphone within 1 hour of going to sleep	332 (88.8)

Globally, NCDs account for 74% of all deaths. More than three-quarters of all NCD deaths, and 86% of premature deaths, occur in low-and middle-income countries.[3] In Pakistan, NCDs, along with injuries, have overtaken communicable diseases to become the leading cause of death and disease.[11] Diabetes prevalence in Pakistan is the sixth largest in the world, and every fourth adult is overweight. In Pakistan, it was estimated that there will be 3.87 million deaths from CVD, cancers, and CRD by 2025 in those aged 30-69 years. Addressing major risk factors could reduce these figures by 20%.[11]

Global estimates depict that NCD risk factors among adolescents have risen from 15% to 44% in the last decade.[12] This highlights the need for targeting younger individuals who often acquire bad habits during college life. The degree of adherence to the six pillars of lifestyle medicine (nutrition, physical activity, stress management, restorative sleep, social connection, and avoidance of risky substances) in Pakistani youth is currently unknown. Therefore, the aim of the study was to analyze lifestyle behaviours in undergraduate students from a multidimensional perspective, the six pillars of lifestyle medicine.

SUBJECTS AND METHODS

This analytic cross-sectional study was conducted at CMH Lahore Medical College (CMHLMC), a private institute in Lahore, Pakistan, between August and December 2023. A sample size of 377 was calculated using the WHO sample size calculator, with an estimated prevalence of 50%, a 5% margin of error, and a 95% confidence level. Data were collected via Convenience sampling from MBBS, Nursing, and Allied Health Sciences students of both genders who agreed to participate after providing informed consent. Complete anonymity & confidentiality were assured. The study was approved by the Ethical Review Committee of CMHLMC (752/ERC/CMH/LMC).

Data was collected with the Malay version of the Multidimensional Inventory Lifestyle Evaluation Confinement (SMILE-C), a 26-item shortened version of the original SMILE, a 43-item questionnaire. SMILE-C analyses

the past month's lifestyle using a 4-point Likert scale, having questions grouped in seven domains: nutrition, substance use, physical activity, stress management, restorative sleep, social support, and environmental exposure. Questions carrying a score ranging from 1 = never to 4 = always pertained to nutrition (having healthy food, regular meals, shared meals), regular physical activity (exercising regularly (equal to or more than 150 minutes weekly), stress management (making time to relax, using stress management strategies, feelings of meaningful life and gratefulness), restorative sleep (sleeping 7-9 hours/night, feeling rested, having a regular sleep schedule), social support (interacting with friends or relatives, feeling part of a group, having someone trustworthy and helpful, enjoying leisure time and helping others), environmental exposure (using computers/ smart phones within 1 hour of going to sleep). However, some questions had reverse-scored items (1=always, 4=never) on eating processed or junk food, substance use, using sleeping pills, and using a computer/smartphone within an hour of bed. The total score of all the questions was the main outcome. With a possible range of 26-104, the higher the score, the healthier the lifestyle (46-65 = fair healthy lifestyle, 66-85 = good healthy lifestyle, and 86-104 = excellent healthy lifestyle).[13-15]

Cronbach's Alpha 0.77 confirmed the internal consistency, and public health specialists validated the study. Demographic information included age, gender, and discipline. Statistical Package for Social Sciences (SPSS) version 27.0 was used for data analysis. Descriptive statistics, i.e., frequencies, percentages, and means ± SD, were calculated. The chi-square test of significance was used to assess the association between the SMILE-C score and gender and discipline. An independent sample t-test was used to compare the mean score between genders and between different disciplines. A p-value of <0.05 was considered statistically significant.

RESULTS

The total sample consisted of 377 students, with a preponderance of females (n = 273, 72.4%) compared to males (n = 104, 27.6%). Students from MBBS (n = 250, 66.3%), nursing 48 (12.7%), and Allied Health Sciences 79 (21%). The mean age of study participants was 19.82 ± 1.64 years (range 17-23 years). Table 1 shows the prevalence of lifestyle behaviours among undergraduate students. Regarding the mean scores for seven lifestyle habits, males and females differed significantly only in diet and nutrition (p-value = 0.037) and social support (p-value = 0.009) (Table 2).

Most students scored in the good, healthy lifestyle category, followed by the excellent lifestyle category. Only a few had a fair lifestyle, and none had an unhealthy lifestyle. There was no significant difference in lifestyle scores among students in MBBS, Nursing, and Allied Health Sciences (p-value = 0.488). A borderline significant difference (p-value = 0.05) in lifestyle was observed between males and females. More females fell in the excellent lifestyle (38 or 13.9%) than males (8 or 7.7%) (Table 3).

DISCUSSION

The present study investigated the prevalence of lifestyle behaviors across six pillars of lifestyle medicine (nutrition, substance use, physical activity, stress management, restorative sleep, and social support) and environmental exposures. The overall lifestyle of the students, measured by the SMILE-C scale, was towards the healthy side. The majority had a good (78%) lifestyle, followed by excellent (12%) and fair (<10%), while none had an unhealthy lifestyle. Similar results were observed at the University of Mississippi, where the majority reported a good (51%), very good (35.7%), or excellent (4.6%) lifestyle, and only 0.5% reported an unhealthy lifestyle.[14] This result is also supported by a review of adolescents from 32 countries showing a slight trend towards an improved healthy lifestyle. For boys, the highest values regarding healthy lifestyle behaviour scores were observed in Ireland (5.2%, 95% CI: 3.9, 6.4), and for girls, in Iceland (4.2%, 95% CI: 3.6, 4.7).[16]

When each lifestyle habit was compared between males and females, statistically significant differences arose only in nutrition (p-value = 0.037) and social support (p-value = 0.009). The overall mean score of healthy life-

Table 2: Association between lifestyle SMILE-C scores and gender (n = 377)

Lifestyle Domains	Male (Mean ± SD)	Female (Mean ± SD)	Confidence Interval	p-value
Diet and nutrition	12.32 ± 2.56	12.92 ± 2.50	-1.18 to -0.037	0.037*
Substance use	11.07 ± 1.72	11.30 ± 1.07	-0.63 to 0.17	0.263
Physical activity	2.53 ± 1.07	2.43 ± 0.95	-0.12 to 0.33	0.353
Stress management	16.75 ± 3.67	17.41 ± 3.14	-1.40 to 0.09	0.086
Restorative sleep	10.91 ± 2.41	10.78 ± 2.47	-0.43 to 0.69	0.647
Social support	18.00 ± 3.77	19.06 ± 3.34	-1.84 to -0.267	0.009*
Environmental exposure	1.73 ± 0.83	1.64 ± 0.74	-0.09 to 0.26	0.335
Total Score	73.35 ± 8.99	75.57 ± 8.53	-4.18 to -0.26	0.027*

*p-value < 0.05 indicates statistical significance.

Table 3: Association between gender and healthy lifestyles (n=377)

Lifestyle Categories	Males n (%)	Females n (%)	Total n (%)	p-value
Fair healthy lifestyle	15 (14.4%)	21 (7.6%)	36 (9.5%)	0.051
Good healthy lifestyle	81 (77.9%)	214 (78.3%)	295 (78.2%)	
Excellent healthy lifestyle	8 (7.6%)	38 (13.9%)	46 (12.2%)	

-styles of females (75.56 ± 8.53) was significantly greater than for males (73.34 ± 8.99). These results contrast with studies showing females having less healthy lifestyles than males.[14,17] A Spanish study found no significant gender difference among undergraduate students in overall life-style.[1] The difference between the findings might be attributed to the differences in demographic and dietary habits.

The current smoking prevalence of our sample was 13.7%, a figure similar to a survey in America with 17.9% current smokers aged 20-38 years.[18] Similar figures (13.9%) were also observed at the University of Sarajevo, but much higher figures were observed at the University of Belgrade (32.3%).[19] Our results regarding sleep and physical activity were worrisome. Almost half of our participants got the recommended 7-9 hours' sleep daily, with obvious repercussions: 53% did not feel rested, and 18% youngsters were using sleeping pills. This contrasts with Alothman, who found average sleep hours within the recommended range.[20] This is a lower figure than the US data, which showed 84.4% achieving the recommended minimum sleep of 7 hours.[18] Also alarming, 88% students used a computer or smartphone within one hour of going to sleep. Fewer than 50% of participants achieved the minimum physical activity target. This is slightly less than the US data, where 51.17% in the younger age group met the minimum physical activity goals.[18] Our data contrasts with a University of Mississippi study where 54% students did not meet PA goals and exercised only twice a week.[14] Alothman also found sedentary behaviour prevalent among students.[20] Of extreme concern in our study was the results regarding nutrition, showing a high prevalence of eating unhealthy foods, i.e., processed foods (70%) and junk/fast food (67%), with low intake of fruit, vegetables, and legumes (63%). These results are comparable to those found in the United States Survey 2015-2016, which found hardly anyone aged 20-38 years eating a whole-food plant-based diet (PBD), only 0.42%, with almost all participants (99.58%) not using it.[18] A University of Mississippi study also found 85% students had unhealthy eating habits; Junk food intake was 89%.[14]

The use of selected variables to assess each pillar of LM, the non-inclusion of disease-specific outcomes, and the lack of detailed analysis in some areas, e.g., smoking pack-years or type of exercise, are among the limitations of this study. Self-reported perception of lifestyle behaviours is subject to memory bias and social desirability. The 4-point Likert scale does not give a neutral option. Convenience sampling constrains external validity and makes the results non-representative. However, this study has attempted to evaluate the lifestyle of Pakistani medical students from a multidimensional perspective, which, to the best of our knowledge, has not been done previously. In addition, one quarter reported feeling that they do not fit into a friend group and lack someone they can trust. Considering the students are from privileged backgrounds and do not make themselves available to help others underscores the need for counselling.

CONCLUSION

While the majority showed a healthy overall lifestyle, a high prevalence of unhealthy habits, such as poor diet and lack of exercise, indicates a need for improvement. The findings reiterate the importance of awareness among youth towards a healthy lifestyle, and a critical rethink to shift towards prevention rather than lifelong treatment of chronic disease. Very few healthcare practitioners focus on advising patients on lifestyle modification in sufficient detail to enable successful adoption of the practice. For this shift to occur in the medical community, large-scale awareness campaigns are needed.

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