

Research Article

Health Protective Behaviour among Medical Students in a Tertiary Care Centre: A Cross-Sectional Study

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ABSTRACT

Background: The well-being of medical students is essential in shaping their future professional performance. As future healthcare providers, they are expected to have model health protective behaviour and have a significant impact on health practices of the general public. Hence it is essential to determine health protective behaviour among medical students.

Objective: To assess the health protective behaviour among medical students.

Materials and Methods: A Cross - sectional study was conducted for two months from October 2024 to November 2024 among 220 Medical students of first- and second-year students of aged above 18 years. A pre-designed, semi-structured questionnaire and Health Promoting and Protective Behaviors Scale (HPPBS) used for collection of data. Ethical clearance was obtained from the Institutional Ethical Committee, and informed consent was taken from the study participant. Collected data was entered into a Microsoft excel and analysed using EPI- info version 7.23 (CDC). Descriptive variables are represented with frequency, percentage, mean and standard deviation. T- test used for comparing means and p value of <0.05 is considered as statistically significant.

Results: out of 220 medical students 61% were female. The mean age of the students is 19.88±1.09 years. overall health protective behaviour scores show as good (25%), average (69%), poor (6%). Only 34% had adequate physical activity. 60% students were in normal range of Body mass index. Mean scores of Physical, psychosocial and protection dimensions were determined as 27.15 ± 3.95, 17.94 ± 2.22, and 44.35 ± 5.61 respectively.

Conclusions: Majority were demonstrated have average overall Health Protective Behaviour. It represented that students have suboptimal engagement in practices, which are essential for physical and mental well-being. It emphasizes the importance of integrating health-promoting strategies within the medical education environment focusing on physical activity, nutrition, stress management, and sleep hygiene.

Keywords: Medical Students, Health-Promoting and Protective Behaviours, Physical Dimension, Psychosocial Dimension.

INTRODUCTION

Health Protective Behaviour is defined as any behaviour performed by a person, regardless of his or her perceived or actual health status, to protect, promote, or maintain his or her health, whether or not such behaviour is objectively effective towards health ^[1]. Health protective behaviour encompasses multiple dimensions, which may include the four aspects of environmental, behaviour and lifestyle, genetic factors, and health care ^[2], or maybe expressed by eight factors as safety, social security, education, food security, income, ecological environment, sustainable resources, and social justice ^[3].

According to WHO, at least 60% of the burden of the diseases around the world is due to unhealthy lifestyles ^[4]. Unhealthy lifestyle behaviours like tobacco and alcohol consumption, physical inactivity, excess fat consumption, lack of stress management, exposure to environmental pollution, etc are the foremost causes of chronic health conditions leading to increase in morbidity and mortality levels.

College students are more likely to participate in these unhealthy practices that could have a long-term negative impact on their health. Most of the students may experience changes in the pattern of their lifestyle during their college

years^[5], as they confront several demands when they enrol in college that include adjusting to new environment, new types of food, making new friends and still trying to be self-reliant, coping with higher level studies and academic stresses^[6]. Adopting the healthy lifestyle habits during college has an impact on their future well-being." An unhealthy lifestyle leads to unfavourable physiological consequences. Health protective behaviour can improve individuals' health condition and prevent many diseases.

Medical students are expected to have ideal health behaviours. They will play a pivotal role in the health care delivery as future physicians. Though Medical students have adequate knowledge, there is often a gap in practice due to academic pressure, lack of time, and inadequate institutional support. It is important to protect, maintain and promote the health of the medical students. In order to facilitate the adoption of healthy behaviour we want to know the current status of the health protective behaviour of the medical students. Understanding the determinants, patterns and barriers to HPBs in medical students can help for interventions and reforms. Hence, the present study is formulated with the aim to know the Health protective behaviour among medical students.

OBJECTIVES

1. To describe the socio-demographic variables of the study participants.
2. To assess the health protective behaviour among Medical students.

METHODOLOGY

A. Study Design: It is a Cross-sectional Study,

B. Study Area: Sri Venkateswara Medical College, Tirupati

C. Study Duration: Study conducted for a period of 2 months from October 2024 to November 2024, after getting approval from the Institutional Ethics Committee.

D. Study Population: Undergraduate students of Sri Venkateswara Medical College

E. Inclusion Criteria:

- Medical students of aged 18 years and above, residing in the study area.
- Undergraduate students who were willing to participate and have given written informed consent for participation in the study.

F. Exclusion Criteria:

Subjects who submitted incomplete questionnaire.

Students who were absent at the time of data collection.

G. Study Tool:

A Pre-designed, semi-structured questionnaire used for collection of data with the help of Google Form. The questionnaire is divided into 4 Sections.

Section 1: contains the socio-demographic information of the participants.

Section 2: had questions regarding their lifestyle behaviours like tobacco, alcohol consumption, dietary habits, physical activity, stress, usage of electronic device and hours of sleeping.

Section 3: about family history of any disease, Hand Hygiene, Health seeking behaviour, usage of Personal Protective Equipment (PPE), H/o intake of medication and Vaccines

Section 4: Measurements: Height, Weight.

H. Sampling Method

Random Sampling method was used to select the student.

I. Sampling Size

The sample size was determined by taking the frequency of unhealthy behaviour among the students as 47%^[7,8] to the estimated proportion of students, (z value of 1.96 as the degree of accuracy at 95% confidence interval, P=47%, relative error of 15% of P). Based on this, the sample size was calculated to be 200 with 10% non-response rate of (20). Adjusted sample size was 220.

J. Data Collection Procedure

Data was collected using the Health Promoting and Protective Behaviours Scale (HPPBS) developed by Bostan, Örsal & Montenegro (2016)^[9] The HPPBS is a five-point Likert-type scale consisting of 3 subdimensions (physical, psychosocial and protection) and 24 items. The Cronbach's alpha of the scale was 0.83.

Physical dimension: the person's regular exercise behaviour and behaviour related to meeting physiological needs such as eating, dietary habits, drinking safe water and adequate sleep; In terms of Psychosocial dimension, behaviour of the individual such as devoting time to himself and his environment like habit of smoking, alcohol consumption, duration of usage of electronic gadgets, coping strategies for Stress, Time spent for selfcare and family etc.

Protection dimension is the behaviour that the person had to protect their health in the current

situation i.e., Regular health checkups, vaccination, weight management (maintaining BMI), following safety measures as wearing Helmet& seat belt, Hand hygiene, using glove, PPE during OT, Measures to prevent sunstroke, regarding using mobile while driving and Self-Medication etc.

The scale, designed in a 5-point Likert type, was scored as "Never:1", "Veryrarely:2," "Sometimes: 3," "Mostly: 4" and "Always: 5". The minimum score that can be obtained from the scale is 24, and the maximum score is 120. On the scale one (1) indicates low and negative behaviour, scale five (5) indicates high and positive behaviour, which denoted better Health protective behaviour. Negatively worded items were scored in reverse order. The higher the score, the more health promoting (regular exercise, eating regularly and drinking safe and adequate water, making time for oneself and family etc.) and protective behaviours and low score on the scale does not display health promoting behaviours and protective behaviours. Overall Health protective behaviour is denoted as Good (score \geq 80%), Average (60%-80%) and Poor with score <60%.

K. Data Analysis

1. Data was entered into Microsoft office Excel sheet, and analysis was performed using EPI- info version 7.23 (CDC).
2. Descriptive statistics were used to tabulate baseline characteristics of the study population, represented by frequencies, proportions, mean with standard deviation.
3. HPPB Overall and sub dimensional scale scores are represented with mean and standard deviation, T- test used to compare means and the P value < 0.05 level was accepted as statistically significant.

L. Ethical Considerations

Ethical clearance was obtained from Institutional ethical committee of Sri Venkateswara Medical College (IEC number Lr.No.374/2024) before starting the study proper (03.10.2024).

During the study, the purpose of the study was explained to all the study participants and informed written consent was obtained from the individual participants.

Participation will be voluntary. No incentives were given for the participation. Confidentiality of the data was maintained.

OBSERVATIONS AND RESULTS

Table 1. Socio-Demographic Characteristics of the Study Participants (n=220)

Socio-demographic details	Frequency	Percentage
Age group		
18- 20 Yrs	154	70%
21-23Yrs	66	30%
Gender		
Male	86	39.09%
Female	134	60.9%
Year of study		
FIRST YEAR	110	50%
SECOND YEAR	110	50%
Place of residence		
Hostel	153	69.54%
Day scholar	67	30.45%
Academic grade		
Distinction	9	4.09%
First Class	145	65.9%
Second Class	65	29.54%
Pass	1	0.45%
Religion		
Hindu	201	91.36%
Christian	9	4.09%
Muslim	10	4.54%
Diagnosed with any health problem		
YES	15	6.8%
NO	198	90%

A total of 220 medical students were enrolled in the study. Table 1 shows socio-demographic characteristics of the study participants; 61% (134) were females and 39% (86) were males. The participants were in the age group of 18-23 years, with mean \pm SD (19.88 \pm 1.094). Majority 70% (154) of the participants were in

the age group of 18 to 20y. Most of the participants were Hindus 91.4 % (201). Half of the (50%) students were studying first year and half were second year. Nearly 70% (153) of the students stay in Hostel. 6.8% were having health Problems.

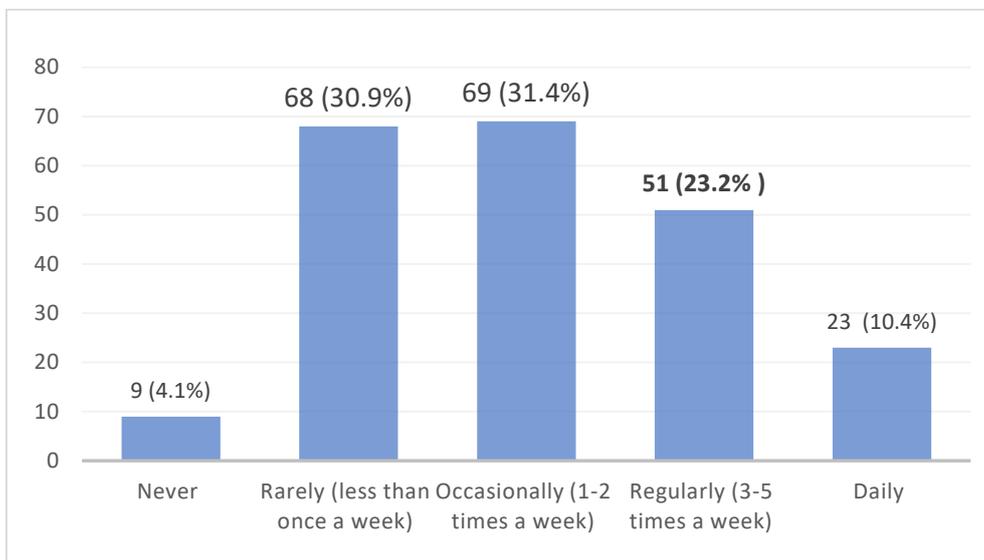


Figure 1. Distribution of Study Participants Based on their Physical Activity

Figure 1 shows how often the study participants engage in physical activity. 4.1% of the study participants never engage in physical activity, while 30.9% and 31.4% engage in physical activity rarely and occasionally respectively. Whereas 23.2% of the study participants engage in physical activity regularly 10.4% (n=23) of the participants engage in physical activity daily,

Figure 2 shows some of the dietary habits in the study participants. It shows the frequency of consumption of various food items by the study participants. 70.5% of the students consume processed food rarely or occasionally. 62.3% of the students consume fruits and vegetables daily or regularly. Nearly 75% of the students consume sugary beverages rarely or occasionally. Nearly 80% of students consume pickles rarely or occasionally.

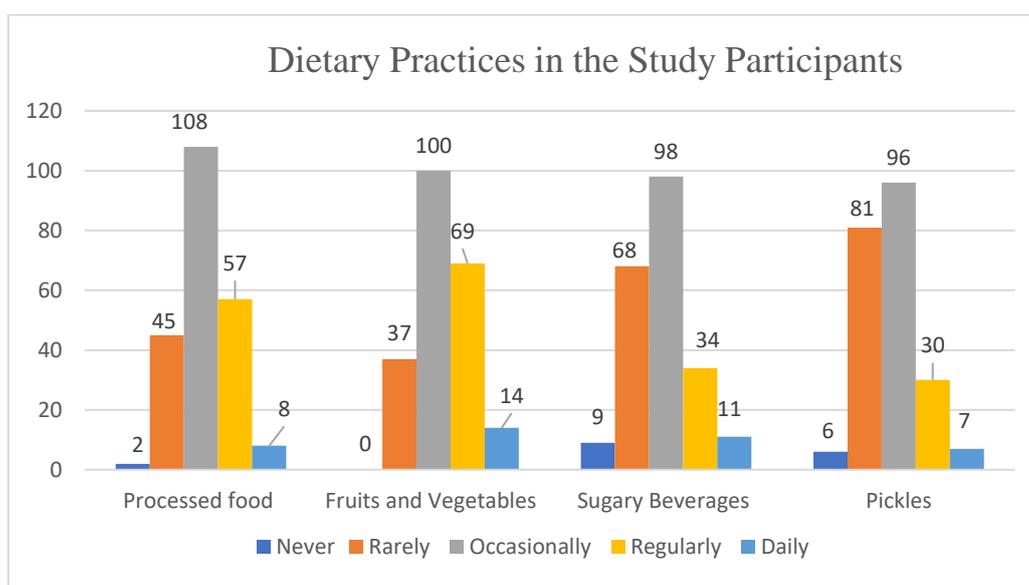


Figure 2. Dietary Practices in the Study participants

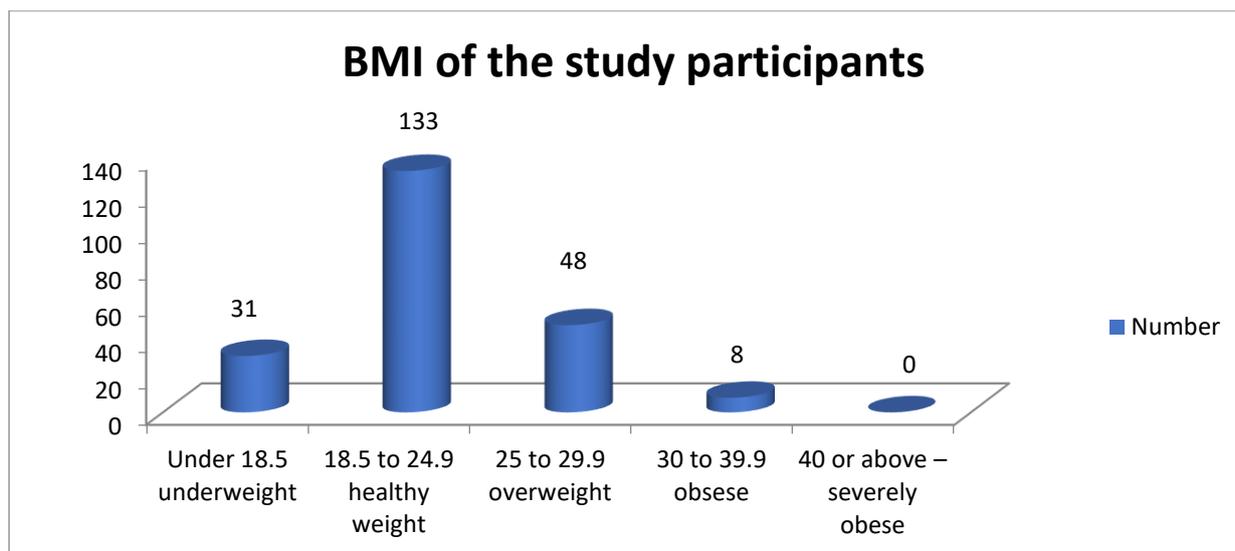


Figure 3. BMI of the Study Participants

Figure 3 shows the BMI of the study participants. A Majority of the study participants, 60% (n=133) have a healthy weight. 14.1% (n=31) of the study participants

are underweight. 21.8% (n=48) of the study participants are overweight, while 3.6% (n=8) of the study participants are obese.

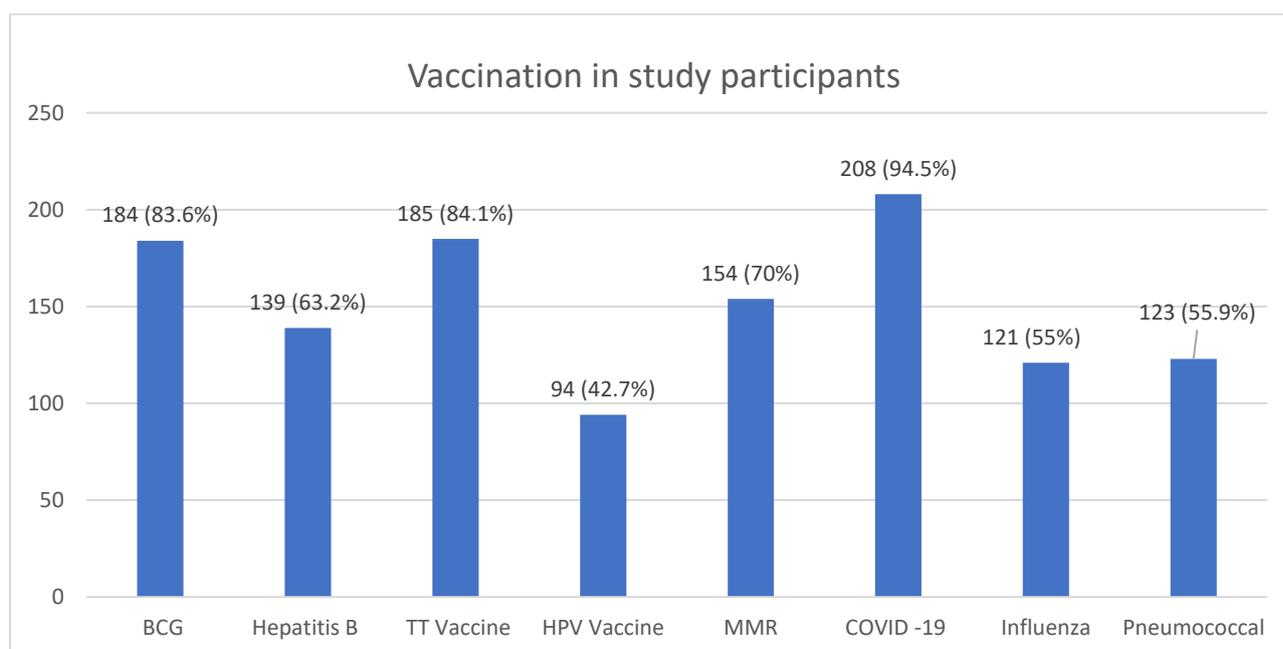


Figure 4. Vaccination in Study Participants

Figure 4 shows the vaccination in study participants. Majority of the study participants 94.5% (n=208) are vaccinated for COVID-19. HPV Vaccine has the lowest rate of vaccination

among all the vaccines. Only 42.7% (94) of the study participants are vaccinated for HPV

Vaccine. Nearly 55% of the study participants are vaccinated for influenza and pneumococcal vaccines. 83.6% (n=184), 84.1% (n=185), and 70% (n=154) of the study participants are vaccinated for BCG, TT, and MMR vaccines. Nearly 63% (n=139) of the study participants are vaccinated for Hepatitis B.

Table 2. Distribution of Students based on Health Promoting and Protective Behaviour Scale Sub dimensions and Scale Total Mean Scores.

Scale Name	Mean ± Standard Deviation	Median (Min- Max)
HPPB Total score	89.44 ± 8.406	90 (65 - 117)
HPPB Sub Dimensions		
Physical sub dimension	27.15 ± 3.95	27 (16 - 38)
Psychosocial dimensions	17.94 ± 2.22	18 (10 - 25)
Protection sub dimension	44.35 ± 5.61	45 (27 - 55)

HPPB(Health Promotion and Protective Behaviors Scale) Median *Min-Max values that can be taken from the scale.

Health promotive and protective behaviour scale Mean score of the students was found to

be 89.44 ± 8.406. Mean scores of Physical, psychosocial and protection dimensions were determined as 27.15 ± 3.95, 17.94 ± 2.22, and 44.35 ± 5.61 respectively.

Table 3. The Health Protective Behaviour and its Sub-Dimensions of the Medical Students.

Dimension	Good (≥80%)	Average (60-79.9%)	Poor (<60%)
Physical Dimension	31 (14.1%)	135 (61.4%)	54 (24.5%)
Psychosocial dimension	45 (20.5%)	165 (75.0%)	10 (4.5%)
Protective dimension	118 (53.7%)	94 (42.7%)	8 (3.6%)
Overall Health Protective Behaviour	54 (24.6%)	153 (69.5%)	13 (5.9%)

Among 220 medical students, nearly 25% had good (≥80) followed by 69% (153) had Average (60-79.9%) and 6% (13) had poor (<60%) overall health protective behaviour.

Sub-dimensions like 14% (31) had good ,61% (135) average, nearly 25% (54) had poor

Physical dimension. Good, average and poor 21% (45), 75% (165), 4.5% (10) psychosocial scores respectively. Good, average and poor 54% (118), 43% (94) ,3% (8) protection subscale scores.

Table 4. Socio-Demographic Characteristics of the Students with the HPPBS and its sub Dimensions Mean Scores.

Variables	Physical Dimension Mean ± SD	Psychosocial Dimension Mean ± SD	Protective Dimension Mean ± SD	Overall HPB Mean ± SD
Age group 18 - 20 Y 21 - 23 Y	24.7 ± 4.2 26.5 ± 3.2 t - value: 1.52 P - value: 0.12	18.1 ± 2.1 17.6 ± 2.4 t - value: 1.45 P - value: 0.14	44.1 ± 5.7 44.9 ± 5.3 t - value: 1.06 P - value: 0.28	89.6 ± 8.7 89.1 ± 7.7 t - value: 0.38 P - value: 0.7
Gender Male Female	27.9 ± 3.8 26.6 ± 3.9 t - value: 2.48 P - value: 0.01*	18.3 ± 2.5 17.2 ± 2.0 t - value: 1.72 P - value: 0.08	44.7 ± 6.3 44.1 ± 5.1 t - value: 0.82 P - value: 0.41	90.9 ± 9.5 88.4 ± 7.5 t - value: 2.17 P - value: 0.03*
Year of Study First year Second year	27.5 ± 4.3 26.7 ± 3.4 t - value: 1.52 P - value: 0.12	18.3 ± 2.3 17.5 ± 1.9 t - value: 2.46 P - value: 0.01*	44.1 ± 6.1 44.5 ± 5.0 t - value: 0.55 P - value: 0.58	90 ± 9.1 88.9 ± 7.6 t - value: 0.98 P - value: 0.32
Residence Day scholars	27.8 ± 3.5	17.8 ± 2.2	44.5 ± 4.6	90.2 ± 8.2

Hostel	26.84 ± 4.1 t – value: 1.78 P – value: 0.07	17.9 ± 2.2 t – value: 0.44 P – value: 0.6	44.2 ± 5.9 t – value: 0.32 P – value: 0.74	89.1 ± 8.5 t – value: 0.93 P – value: 0.35
Regular Health checkups Yes No	27.1 ± 3.9 27.8 ± 4.1 t – value: 0.82 P – value: 0.4	17.9 ± 2.2 17.6 ± 2.2 t – value: 0.64 P – value: 0.51	44.6 ± 5.6 40.6 ± 4.8 t – value: 3.01 P – value: 0.00*	89.7 ± 8.5 86.1 ± 5.5 t – value: 1.76 P – value: 0.07

t: T -test P value*: Significance

Table 4 shows the distribution of sub scores and total mean score of Health protective behaviour according to the socio-demographic characteristics of the students. Overall HPB and Physical domain scores significantly high in Males. First year students have significantly high mean scores for psychosocial domain. Who ever having regular checkups they have significantly high mean scores in Protective domain. (P < .05).

DISCUSSION

The present study assessed health-protective behaviours among medical students using the HPPBS. The findings of this study showed that among 220 medical students, females constituted 61%. The mean age of participants (19.88 ± 1.09 years) corresponds to early adulthood, a period during which health promotive and protective behaviours are strongly shaped.

The overall mean score of Health promotive and protective behaviour was relatively high (89.44 ± 8.4), but only one-quarter achieved "good" levels. Most of the medical students have average health protective behaviour category. Study done by Ezgi Yıldız , Çevik BE et.al (2022)^[10], reported that the mean score of Health Promotive and Protective Behaviors Scale among Students was 80.91 ± 10.36 which is nearly similar to the findings of the present study. Study conducted by Tambag (2011)^[11], Yılmazel, Çetinkaya, & Naçar (2013) ^[12], revealed that students' health promotion behavior scale scores were moderate. This represents students are not adequately engaging in essential health-protective behaviour.

In the present study, only **34%** of students achieved the recommended level of physical activity. According to the findings of Khan D, Rizwan K et al. (2022) ^[13] noticed that nearly 34% of medical students were physically inactive. Research done by Anandabaskar

Nishanthi, Packirisamy Agilan et al.(2024)^[14] reported that 63% of medical students were physically inactive, majority were females and first academic year students.

Even though medical students understand the significance of staying active, many struggle to put this knowledge into practice. This suggests that heavy academic demands, prolonged sedentary study hours and limited leisure time commonly reduce their ability to engage in regular exercise.

Present study revealed that nearly sixty percent were in the normal range of BMI, more than one fourth were overweight or obese, and 14% underweight suggests a dual burden of malnutrition Study done by C Rekha, N Lalitha et.al.^[15](2022) observed that more than half (53.2%) of the medical students were overweight and obese. Research conducted by M. Swathi, G. Rachel Raveena Paul^[16] reported that nearly 18% were underweight and 37% were overweight and obese.

The coexistence of under- and over-nutrition among health science students underscores the importance of structured institutional strategies to promote balanced nutrition and physical wellbeing.

Present study reported the Mean scores of Physical; psychosocial and protection dimensions were determined as 27.15 ± 3.95, 17.94 ± 2.22, and 44.35 ± 5.61 respectively. Study done by Ezgi Yıldız⁹, reported that the mean score of sub-dimensions like Physical, psychosocial, and protection were 3.13 ± 0.47, 3.47 ± 0.55, and 3.47 ± 0.55, respectively.

Distribution of sub scores and total mean score of Health protective behaviour according to the socio-demographic characteristics of the students revealed that Overall HPB and Physical domain scores significantly high in Males. First year students have significantly high mean scores for psychosocial domain. Who ever having regular checkups they have significantly high mean scores in Protective domain. (P < .0

Study done by Tambağ (2011)^[11], Vural & Bakır (2015)^[17] found that female students' scale scores were significantly higher than those of male students. Kostak, Kurt, Süt, Akarsu, & Ergül (2014)^[18] showed that gender had an effect on healthy lifestyle behaviour. However, study done by Çağdaş Caz1,* & Mehmet Yıldırım1 (2019)^[19] revealed that Participants' mean scale scores did not differ significantly by gender. studies suggest this pattern may not be universal and it may vary by context and specific health behaviour. In our study, the stronger male performance in the physical domain likely influenced their overall score.

CONCLUSIONS

Study reveals that although mean scores of medical students were high, one-fourth had good overall health-protective behaviour, highlighting a significant gap in the consistent adoption of healthy practices. Physical activity levels are low, psychosocial wellbeing is moderate, and nutrition-related issues persist despite medical awareness. Protective behaviour, particularly vaccination and health checkups, are comparatively stronger. Overall HPB and Physical domain scores significantly high in Males. Who ever having regular checkups they have significantly high mean scores in Protective domain.

A. Recommendations

1. It is important to integrate health - promoting strategies within the medical education in the first year itself focusing on physical activity, stress management, Nutrition, sleep and hygiene.
2. It is essential to incorporate PET period in Medical college curriculum for the holistic development of students.
3. Provide individual counselling for students who are overweight/obese or underweight.
4. Conduct annual assessments of students' health behaviours to measure progress by screening for BMI, blood pressure, stress, and lifestyle factors.
5. Encourage student-led health-promotion projects to foster personal and professional responsibility.

B. Acknowledgment:

The authors acknowledge the participants for their cooperation; we are ever grateful for the support given by NTRUHS for the completion of the study.

C. Strengths:

1. Use of a validated instrument (HPPBS)

2. Identifies of double burden of malnutrition among medical students.
3. Findings provide actionable insights for medical students, curriculum planners.

D. Limitations

It is a Cross-sectional study, Done in one institute only, and Self-reported data.

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