

## Life Style Awareness of Medical students having parents /elderlies comorbid With Non communicable Disease

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### ABSTRACT

**Background:** Medical students often follow unhealthy lifestyles due to academic stress, irregular sleep schedule increasing their risk of non-communicable diseases. Noncommunicable diseases- such as cardiovascular disease, cancer, diabetes are long term conditions having a multifactorial origin. **Aim & Objective:** To assess awareness and lifestyle practices among medical students with parents or elders suffering from noncommunicable diseases. **Settings and Design:** A cross-sectional survey conducted among 185 medical students. **Methods and Material:** Sociodemographic variables, body mass index (BMI), eating habits, physical activity, sleep patterns, and substance use were recorded. The comorbidities assessed among parents and elders were hypertension, Type-II diabetes, coronary artery disease/stroke, osteoarthritis, liver/gall bladder diseases, and cancer/others **Statistical analysis used:** Crosstabulation and chi-square tests were used to identify associations, with  $p < 0.05$  considered significant. **Results:** The majority of participants were female (62.7%) and aged 21–23 years. Most (71.9%) had a normal BMI. The most commonly reported comorbidities among parents/elders were hypertension (29.2%) and liver/gall bladder disease(21.1%). Statistically significant associations were found between comorbidities and midnight snacking( $p=0.043$ ) and sleep quality ( $p=0.018$ ). There were no significant associations between parental comorbidity and dietary and physical activity variables. **Conclusions:** Despite being medical students, the students showed low lifestyle adherence, and parental noncommunicable disease status had limited influence on healthy behaviours. This highlights the need for targeted interventions for medical students, regardless of family history, to bridge the gap between knowledge and practice.

### KEYWORDS

Non-communicable diseases (NCDs), Medical students, Family history, Health behaviour

### INTRODUCTION

Medical students, trained to promote healthy living, often lead some of the unhealthiest lifestyles among young adults. Despite their medical knowledge, factors such as academic stress, irregular routines, and limited self-care contribute to behaviours that increase the risk of chronic illness — the very diseases they study to prevent. Noncommunicable diseases (NCDs), also known as chronic diseases, tend to be of long duration and are the result of a combination of genetic, physiological, environmental and behavioural factors. The main types of NCDs are cardiovascular diseases (such as heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructive pulmonary disease and asthma) and diabetes. [1]

Noncommunicable diseases (NCDs), including heart disease, stroke, cancer, diabetes and chronic lung disease, are collectively responsible for 74% of all deaths

worldwide. More than three-quarters of all deaths due to noncommunicable diseases occur globally, with 86% of the 17 million premature deaths happening before the age of 70. [2] An estimated 19.8 million people died from CVDs in 2022, representing approximately 32% of all global deaths. Of these deaths, 85% were due to heart attack and stroke. [3] In 2023, it was estimated that 55.8% (95% uncertainty interval: 49.3–62.3) of individuals aged 15 years and above living with diabetes had been diagnosed worldwide. [4]

According to the ICMR-INDIAB national study, the weighted prevalence among adults was reported as 11.4% for diabetes, 15.3% for prediabetes, 35.5% for hypertension, 28.6% for generalized obesity, 39.5% for abdominal obesity, and 81.2% for dyslipidemia (5). Studies in India have reported high prevalence of poor sleep quality, low physical activity, inadequate consumption of fruits and vegetables, excessive salt

intake, and elevated rates of overweight and obesity among medical students. [6] This raises the issue of possible familial influences because parental histories of NCDs may influence lifestyle pattern. Therefore, this study aimed to assess whether having parents or elderly family members with comorbidities is associated with lifestyle awareness among medical students

#### **Aim & Objective(s)**

**Aim:** To assess lifestyle awareness and behavioral practices among medical students with parental non-communicable disease (NCD) comorbidities.

#### **Objectives**

- To determine the lifestyle behaviours (diet, physical activity, sleep, and addictive habits) of medical students.
- To assess the prevalence of parental NCD comorbidities among the participants.
- To evaluate the association between parental NCD comorbidities and lifestyle awareness of medical students.

#### **MATERIAL & METHODS**

**Study design and study population:** A cross-sectional survey was conducted among a sample of 185 undergraduate medical students from Government Doon Medical College, Dehradun, India, over a period of six months. The sample included 62.7% males and 37.3% females, aged 18-25 years. Participants were selected through convenience sampling. Students completed a self-administered questionnaire. Students who provided informed consent and were willing to participate by completing the questionnaire.

#### **Inclusion and exclusion criteria**

**Inclusion Criteria:** Male and female MBBS students aged 18 years and above, enrolled in any academic year (first to fifth year) at Government Doon Medical College. Students with at least one parent having a diagnosed comorbid condition.

**Exclusion Criteria:** Students with pre-existing psychiatric disorders, medical illnesses, or disabilities were excluded from the study.

**Data collection:** Data were collected using a structured, self-administered questionnaire adapted from the study by Syed et al. (2022) done on dietary behaviors and lifestyle association risk factors among Saudi university students. [7]. The survey was carried out using the SurveyMonkey electronic platform, and the questionnaire was further customized to assess lifestyle among medical students having parents or the elderly with non-communicable diseases. The final, approved version of the questionnaire consisted of 26 items, spread over 3 sections. Section 1 contained questions regarding the demographic and anthropometric measurements i.e., age, gender, height, weight, and family history of non-communicable diseases (Hypertension, Type-II Diabetes, Coronary Artery Disease and Stroke, Osteoarthritis, Liver and Gall Bladder Diseases, Cancer). Section 2 was regarding the personal habits in nutrition, physical activity, smoking, and alcohol consumption. Dietary practices were assessed by asking questions on dietary preferences, fast food intake, and fruit consumption. Physical activity was assessed by asking about daily physical activity, which included

walking, running, swimming, and workout (yoga/ gym) for at least 30 min per day. Section 3 included questions regarding sleep habits, like having adequate hours of sleep at night, and trouble in falling asleep. Participants were required to indicate whether they had the experience with each item rated on a point scale: "never", "rarely", "sometimes", "often", "always". Written informed consent was obtained from all the participants. This study was conducted after obtaining approval from the Institutional Ethical Committee.

#### **RESULTS**

This cross-sectional study examined the association between lifestyle awareness and behavioral practices in medical students with the presence of non-communicable disease in their parents. A total of 185 participants were enrolled. The majority were between 21-23 years of age, comprising 56.8 % of the study population. Females represented 37.3% of participants. Maximum responses were reported from the fourth or fifth year (38.3%), followed by the third (25.4%), first (19.5%), and lastly the second year (16.8%). According to BMI, nearly two-thirds of the population fall under the normal category, and one-third are overweight. The findings indicate that most of the medical students demonstrate suboptimal dietary behavior, inadequate physical activity, and increased smoking and alcohol use. Among reported parental comorbidities, hypertension (29.2%) was the most common, followed by liver/ gall bladder disorders (21.1%), cancers (17.9%), type II diabetes (15.7%), coronary artery disease (10.3%), and osteoarthritis (5.9%).

**DIETARY BEHAVIOUR:** Table 2 & 3 presents the distribution of dietary behaviors across participants with various NCDs. Overall, dietary practices were suboptimal among all comorbidity groups. In co-morbidities with hypertension and diabetes, participants showed irregular fruit and vegetable intake, with most consuming them sometimes or rarely. Less than one-third consistently limited their intake of salt and sugar. Similar response was observed for osteoarthritis, liver/gall bladder disorder, and cancer category. However, Participants with coronary artery disease and stroke have better consumption of fruits and vegetables and better sugar and salt restrictions. Across all comorbidities, the association between dietary behavior and comorbidities was statistically insignificant ( $p > 0.05$ ).

**LIFE STYLE PATTERNS:** Most participants reported consuming a homemade meal rarely or sometimes, and nearly half of the participants consume fatty foods frequently. Skipping meals and eating snacks in between, apart from three meals per day, was also commonly observed, indicating an erratic meal pattern. A noteworthy observation was that the participants with coronary artery disease and stroke appeared comparatively more cautious with lifestyle choices. Even while they frequently indulged in midnight snacking and drank carbonated energy drinks with fast food, they frequently went for walks after meals and mostly engaged in exercise that balanced their intake of fatty foods. Interestingly, midnight snacking showed a statistically significant association with comorbidities ( $p = 0.048$ ), indicating that students with a family history of

non-communicable diseases(Hypertension, Type-II Diabetes, Coronary Artery Disease and Stroke, Osteoarthritis, Liver and Gall Bladder Diseases, Cancer) were more likely to indulge in late-night eating. However, other parameters such as meal frequency, skipping meals, or exercising did not show a significant association ( $p > 0.05$ ). Regarding sleep behavior, most participants reported irregular sleep duration, with less than one-tenth of participants sleeping for adequate hours easily each night. However, sleep quality, measured by the ability to fall asleep easily and maintain the sleep throughout the night, showed a significant association with the comorbidities ( $p= 0.018$ ).

**ADDICTIVE BEHAVIORS:** A high prevalence of smoking and alcohol use was observed among all groups. The majority of participants reported smoking or using tobacco products “often” or “always”, with the highest seen in hypertension, followed by liver/ gall bladder disorders. Similarly, alcohol and substances were widely consumed, with most participants reporting frequent use. Those with coronary artery disease and stroke, and hypertension demonstrated particularly high usage patterns. Although no statistically significant association ( $p > 0.05$ ) was found between addictive behaviors and comorbidity status. This reflects persistent substance use irrespective of disease awareness.

**Table1: Socio-demographic and Clinical Characteristics of Respondents**

| Variables                          | Frequency | Percentage |
|------------------------------------|-----------|------------|
| <b>Gender</b>                      |           |            |
| Male                               | 116       | 62.7       |
| Female                             | 69        | 37.3       |
| <b>Age- Group</b>                  |           |            |
| 18-20                              | 55        | 29.7       |
| 21-23                              | 105       | 56.8       |
| 23+                                | 25        | 13.5       |
| <b>Professional Year</b>           |           |            |
| I                                  | 36        | 19.5       |
| II                                 | 31        | 16.8       |
| III                                | 47        | 25.4       |
| IV/V                               | 71        | 38.3       |
| <b>Body Mass Index</b>             |           |            |
| Underweight                        | 18        | 9.7        |
| Normal                             | 133       | 71.9       |
| Overweight                         | 27        | 14.6       |
| Obese                              | 7         | 3.8        |
| <b>Parents having Comorbidity</b>  |           |            |
| Hypertension                       | 54        | 29.2       |
| Type-II Diabetes                   | 29        | 15.7       |
| Coronary Artery Disease and Stroke | 19        | 10.3       |
| Osteoarthritis                     | 11        | 5.9        |
| Liver And Gall Bladder Diseases    | 39        | 21.1       |
| Cancer/ Others                     | 33        | 17.9       |

**Table 2: Association Between Comorbidity and Dietary Behaviours and Eating Practices**

|  | Hypertension | Type-II Diabetes | Coronary Artery Disease and Stroke | Osteoarthritis | Liver & Gall Bladder Diseases | Cancer/ Others | P - value |
|--|--------------|------------------|------------------------------------|----------------|-------------------------------|----------------|-----------|
| <b>Do you have fruits daily?</b>   |              |                  |                                    |                |                               |                |           |
| Never  | 8(36.4)      | 3(13.6)          | 2(9.1)                             | 0(0.0)         | 4(18.2)                       | 5(22.7)        | 0.575     |
| Rarely   | 15(30.6)     | 4(8.2)           | 8(16.3)                            | 1(2.0)         | 12(24.5)                      | 9(18.4)        |           |
| Sometimes  | 23(29.1)     | 17(21.5)         | 5(6.3)                             | 8(10.1)        | 12(15.2)                      | 14(17.7)       |           |
| Often  | 6(24.0)      | 4(16.0)          | 2(8.0)                             | 1(4.0)         | 8(32.0)                       | 4(16.0)        |           |
| Always   | 2(20.0)      | 1(10.0)          | 2(20.0)                            | 1(10.0)        | 3(30.0)                       | 1(10.0)        |           |
| <b>Do you have vegetables daily?</b>                                       |              |                  |                                    |                |                               |                |           |
| Never  | 30(29.1)     | 19(18.4)         | 9(8.7)                             | 4(3.9)         | 23(22.3)                      | 18(17.5)       | 0.206*    |
| Rarely   | 18(37.5)     | 4(8.3)           | 4(8.3)                             | 5(10.4)        | 9(18.8)                       | 8(16.7)        |           |
| Sometimes  | 4(20.0)      | 5(25.0)          | 4(20.0)                            | 1(5.0)         | 3(15.0)                       | 3(15.0)        |           |
| Often  | 1(11.1)      | 1(11.1)          | 0(0.0)                             | 0(0.0)         | 3(33.3)                       | 4(44.4)        |           |
| Always   | 1(20.0)      | 0(0.0)           | 2(40.0)                            | 1(20.0)        | 1(20.0)                       | 0(0.0)         |           |
| <b>Do you limit the amount of your salt intake?</b>                        |              |                  |                                    |                |                               |                |           |
| Never  | 8(32.0)      | 4(16.0)          | 2(8.0)                             | 0(0.0)         | 5(20.0)                       | 6(24.0)        | 0.593     |
| Rarely   | 10(31.3)     | 5(15.6)          | 2(6.3)                             | 1(3.1)         | 10(31.3)                      | 4(12.5)        |           |
| Sometimes  | 19(32.2)     | 6(10.2)          | 7(11.9)                            | 6(10.2)        | 8(13.6)                       | 13(22.0)       |           |
| Often  | 9(20.9)      | 11(25.6)         | 5(11.6)                            | 1(2.3)         | 10(23.3)                      | 7(16.3)        |           |
| Always   | 8(30.8)      | 3(11.5)          | 3(11.5)                            | 3(11.5)        | 6(23.1)                       | 3(11.5)        |           |
| <b>Do you limit the amount of your sugar intake?</b>                       |              |                  |                                    |                |                               |                |           |
| Never  | 9(36.0)      | 3(12.0)          | 2(8.0)                             | 0(0.0)         | 4(16.0)                       | 7(28.0)        | 0.736     |
| Rarely   | 11(30.6)     | 4(11.1)          | 5(13.9)                            | 2(5.6)         | 10(27.8)                      | 4(11.1)        |           |
| Sometimes  | 14(25.9)     | 9(16.7)          | 7(13.0)                            | 3(5.6)         | 8(14.8)                       | 13(24.1)       |           |
| Often  | 13(28.3)     | 9(19.6)          | 2(4.3)                             | 3(6.5)         | 13(28.3)                      | 6(13.0)        |           |
| Always   | 7(29.2)      | 4(16.7)          | 3(12.5)                            | 3(12.5)        | 4(16.7)                       | 3(12.5)        |           |
| <b>How often do you eat food/take snacks along with carbonated drinks?</b> |              |                  |                                    |                |                               |                |           |
| Never  | 1(16.7)      | 1(16.7)          | 0(0.0)                             | 1(3.0)         | 1(9.1)                        | 2(5.1)         | 0.608     |
| Rarely   | 9(31.0)      | 7(24.1)          | 3(10.3)                            | 5(15.2)        | 1(9.1)                        | 4(10.3)        |           |
| Sometimes  | 20(25.6)     | 11(14.1)         | 6(7.7)                             | 13(39.4)       | 6(54.5)                       | 22(56.4)       |           |

|   | Hypertension | Type-II Diabetes | Coronary Artery Disease and Stroke | Osteoarthritis | Liver & Gall Bladder Diseases | Cancer/ Others | P - value |
|---|--------------|------------------|------------------------------------|----------------|-------------------------------|----------------|-----------|
| <b>Often</b>  | 21(38.9)     | 6(11.1)          | 7(13.0)                            | 12(36.4)       | 2(18.2)                       | 6(15.4)        |           |
| <b>Always</b>   | 3(16.7)      | 4(22.2)          | 3(16.7)                            | 2(6.1)         | 1(9.1)                        | 5(12.8)        |           |
| <b>How often do you eat fast food?</b>  |              |                  |                                    |                |                               |                |           |
| <b>Never</b>  | 2 (3.7)      | 2(6.9)           | 1(5.3)                             | 0(0.0)         | 2(18.2)                       | 2(5.1)         |           |
| <b>Rarely</b>   | 10(18.5)     | 8(27.6)          | 6(31.6)                            | 11(33.3)       | 3(27.3)                       | 12(30.8)       | 0.525*    |
| <b>Sometimes</b>  | 30(55.6)     | 12(41.4)         | 5(26.3)                            | 16(48.5)       | 4(36.4)                       | 16(41.0)       |           |
| <b>Often</b>  | 9(16.7)      | 7(24.1)          | 5(26.3)                            | 6(18.2)        | 1(9.1)                        | 6(15.4)        |           |
| <b>Always</b>   | 3(5.6)       | 0(0)             | 2(10.5)                            | 0(0)           | 1(9.1)                        | 3(7.7)         |           |
| <b>How often do you take snacks separately from taking meals 3 times a day?</b> |              |                  |                                    |                |                               |                |           |
| <b>Never</b>  | 3(5.6)       | 6(20.7)          | 4(21.1)                            | 5(15.2)        | 2(18.2)                       | 5(12.8)        |           |
| <b>Rarely</b>   | 15(27.8)     | 8(27.6)          | 1(5.3)                             | 6(18.2)        | 4(36.4)                       | 7(17.9)        | 0.558*    |
| <b>Sometimes</b>  | 25(46.3)     | 11(37.9)         | 9(47.4)                            | 14(4.2)        | 3(27.3)                       | 16(41.0)       |           |
| <b>Often</b>  | 6(11.1)      | 3(10.3)          | 3(15.8)                            | 8(24.2)        | 1(9.1)                        | 8(20.5)        |           |
| <b>Always</b>   | 5(9.3)       | 1(3.4)           | 2(10.5)                            | 0(0.0)         | 1(9.1)                        | 3(7.7)         |           |
| <b>How often do you take energy drinks?</b>                                     |              |                  |                                    |                |                               |                |           |
| <b>Never</b>  | 0(0.0)       | 0(0.0)           | 0(0.0)                             | 2(6.1)         | 1(9.1)                        | 2(5.1)         |           |
| <b>Rarely</b>   | 3(5.6)       | 4(13.8)          | 0(0.0)                             | 3(9.1)         | 1(9.1)                        | 2(5.1)         | 0.365*    |
| <b>Sometimes</b>  | 11(20.4)     | 9(31.0)          | 7(36.8)                            | 5(15.2)        | 4(36.4)                       | 6(15.4)        |           |
| <b>Often</b>  | 23(42.6)     | 10(34.5)         | 4(21.1)                            | 10(30.3)       | 3(27.3)                       | 14(35.9)       |           |
| <b>Always</b>   | 17(31.5)     | 6(20.7)          | 8(42.1)                            | 13(39.4)       | 2(18.2)                       | 15(38.5)       |           |
| <b>Do you indulge in midnight snacking?</b>                                     |              |                  |                                    |                |                               |                |           |
| <b>Never</b>  | 1(1.9)       | 1(3.4)           | 0(0.0)                             | 1(3.0)         | 3(27.3)                       | 1(2.6)         |           |
| <b>Rarely</b>   | 8(14.8)      | 5(17.2)          | 3(15.8)                            | 2(6.1)         | 0(0.0)                        | 4(10.3)        | 0.043*    |
| <b>Sometimes</b>  | 16(29.6)     | 9(31.0)          | 6(31.6)                            | 5(15.2)        | 5(45.5)                       | 9(23.1)        |           |
| <b>Often</b>  | 15(27.8)     | 7(24.1)          | 3(15.8)                            | 9(27.3)        | 1(9.1)                        | 10(25.6)       |           |
| <b>Always</b>   | 14(25.9)     | 7(24.1)          | 7(36.8)                            | 16(48.5)       | 2(18.2)                       | 15(38.5)       |           |
| <b>Do you walk for a while after having dinner?</b>                             |              |                  |                                    |                |                               |                |           |
| <b>Never</b>  | 5(9.3)       | 5(17.2)          | 2(10.5)                            | 3(9.1)         | 0(0.0)                        | 2(5.1)         |           |
| <b>Rarely</b>   | 9(16.7)      | 3(10.3)          | 2(10.5)                            | 5(15.2)        | 1(9.1)                        | 3(7.7)         | 0.448*    |
| <b>Sometimes</b>  | 20(37.0)     | 9(31.0)          | 5(26.3)                            | 4(12.1)        | 4(36.4)                       | 12(30.8)       |           |
| <b>Often</b>  | 10(18.5)     | 9(31.0)          | 6(31.6)                            | 17(51.5)       | 3(27.3)                       | 15(38.5)       |           |
| <b>Always</b>   | 10(18.5)     | 3(10.3)          | 4(21.1)                            | 4(21.1)        | 3(27.3)                       | 7(17.9)        |           |
| <b>Do you sleep immediately after dinner?</b>                                   |              |                  |                                    |                |                               |                |           |
| <b>Never</b>  | 1(1.9)       | 1(3.4)           | 0(0.0)                             | 0(0.0)         | 0(0.0)                        | 0(0.0)         |           |
| <b>Rarely</b>   | 4(7.4)       | 2(6.9)           | 0(0.0)                             | 2(6.1)         | 1(9.1)                        | 6(15.4)        | 0.476*    |
| <b>Sometimes</b>  | 10(8.5)      | 9(31.0)          | 2(10.5)                            | 7(21.2)        | 4(36.4)                       | 9(23.1)        |           |
| <b>Often</b>  | 15(27.8)     | 8(27.4)          | 5(26.3)                            | 15(45.5)       | 2(18.2)                       | 9(23.1)        |           |
| <b>Always</b>   | 22(44.4)     | 9(31.0)          | 12(63.2)                           | 9(27.3)        | 4(36.4)                       | 15(38.5)       |           |
| <b>How often do you exercise?</b>   |              |                  |                                    |                |                               |                |           |
| <b>Never</b>  | 5(9.3)       | 2(6.9)           | 2(6.1)                             | 2(6.1)         | 0(0.0)                        | 6(15.4)        |           |
| <b>Rarely</b>   | 8(14.8)      | 5(17.2)          | 4(21.1)                            | 8(24.2)        | 2(18.2)                       | 3(7.7)         | 0.314*    |
| <b>Sometimes</b>  | 20(37.0)     | 14(48.3)         | 7(36.)                             | 11(33.3)       | 5(45.5)                       | 11(28.2)       |           |
| <b>Often</b>  | 16(29.6)     | 7(24.1)          | 3(15.8)                            | 12(36.4)       | 3(27.3)                       | 10(25.6)       |           |
| <b>Always</b>   | 5(9.3)       | 1(3.4)           | 3(15.8)                            | 0(0.0)         | 1(9.1)                        | 9(23.1)        |           |
| <b>What kind of exercises do you do?</b>  |              |                  |                                    |                |                               |                |           |
| <b>Walking</b>  | 31(57.4)     | 13(44.8)         | 7(36.8)                            | 16(48.5)       | 3(27.3)                       | 17(43.6)       |           |
| <b>Running</b>  | 6(11.1)      | 5(17.2)          | 2(10.5)                            | 3(9.1)         | 1(9.1)                        | 6(15.4)        | 0.648*    |
| <b>Swimming</b>   | 2(3.7)       | 1(3.4)           | 0(0.0)                             | 0(0.0)         | 0(0.0)                        | 0(0.0)         |           |
| <b>Workout (Gym/ yoga)</b>  | 15(27.8)     | 10(34.5)         | 10(52.7)                           | 14(42.4)       | 7(63.7)                       | 16(41)         |           |
| <b>Do you sleep for adequate hours per night?</b>                               |              |                  |                                    |                |                               |                |           |
| <b>Never</b>  | 15(27.8)     | 5(17.2)          | 5(26.3)                            | 13(39.4)       | 1(9.1)                        | 7(17.9)        |           |
| <b>Rarely</b>   | 22(40.7)     | 7(24.1)          | 5(26.3)                            | 13(39.4)       | 3(27.3)                       | 11(28.2)       | 0.351*    |
| <b>Sometimes</b>  | 10(18.5)     | 10(18.5)         | 4(21.1)                            | 5(15.2)        | 5(45.5)                       | 12(30.8)       |           |
| <b>Often</b>  | 5(9.3)       | 6(20.7)          | 3(15.8)                            | 2(6.1)         | 1(9.1)                        | 6(15.4)        |           |
| <b>Always</b>   | 2(3.7)       | 1(3.4)           | 2(10.5)                            | 0(0.0)         | 1(9.1)                        | 3(7.7)         |           |
| <b>Do you go to sleep easily and sleep through the night?</b>                   |              |                  |                                    |                |                               |                |           |
| <b>Never</b>  | 15(27.8)     | 7(24.1)          | 7(36.8)                            | 15(45.5)       | 2(18.2)                       | 12(30.8)       | 0.018*    |
| <b>Rarely</b>   | 23(42.6)     | 5(17.2)          | 8(42.1)                            | 14(42.4)       | 3(27.3)                       | 12(30.8)       |           |

|  | Hypertension | Type-II Diabetes | Coronary Artery Disease and Stroke | Osteoarthritis | Liver & Gall Bladder Diseases | Cancer/ Others | P - value |
|--|--------------|------------------|------------------------------------|----------------|-------------------------------|----------------|-----------|
| Sometimes  | 12(22.2)     | 11(37.9)         | 1(5.3)                             | 3(9.1)         | 4(36.4)                       | 10(25.6)       |           |
| Often  | 1(1.9)       | 5(17.2)          | 1(5.3)                             | 1(3.0)         | 0(0.0)                        | 1(2.6)         |           |
| Always   | 3(5.6)       | 1(3.4)           | 2(10.5)                            | 0(0.0)         | 2(18.2)                       | 4(10.3)        |           |
| <b>Do you smoke or consume any other tobacco products?</b> |              |                  |                                    |                |                               |                |           |
| Yes  | 52(96.2)     | 29(100.0)        | 17(89.5)                           | 33(100.0)      | 10(90.9)                      | 37(94.8)       | 0.320*    |
| No   | 2(3.8)       | 0(0.0)           | 2(10.5)                            | 0(0.0)         | 1(9.1)                        | 2(5.2)         |           |
| <b>If yes, how often do you smoke?</b>                     |              |                  |                                    |                |                               |                |           |
| Rarely   | 9(16.7)      | 3(10.3)          | 3(15.8)                            | 1(3.0)         | 2(18.2)                       | 3(7.7)         |           |
| Sometimes  | 0(0.0)       | 3(10.3)          | 0(0.0)                             | 4(12.1)        | 1(9.1)                        | 1(2.6)         | 0.349*    |
| Often  | 6(11.1)      | 3(10.3)          | 3(15.8)                            | 4(12.1)        | 0(0.0)                        | 6(15.4)        |           |
| Always   | 39(72.2)     | 20(69.0)         | 13(68.4)                           | 24(72.7)       | 8(72.7)                       | 29(74.4)       |           |
| <b>Do you consume alcohol and drugs?</b>                   |              |                  |                                    |                |                               |                |           |
| Yes  | 52(96.3)     | 29(100.0)        | 17(86.5)                           | 32(97.0)       | 10(90.9)                      | 38(97.4)       | 0.470*    |
| No   | 2(3.7)       | 0(0.0)           | 2(10.5)                            | 1(3.0)         | 1(9.1)                        | 1(2.6)         |           |
| <b>If yes, how often?</b>                                  |              |                  |                                    |                |                               |                |           |
| Rarely   | 1(1.9)       | 3(10.3)          | 0(0.0)                             | 1(3.0)         | 0(0.0)                        | 0(0.0)         | 0.123*    |
| Sometimes  | 2(3.7)       | 2(6.9)           | 0(0.0)                             | 1(3.0)         | 2(18.2)                       | 2(5.1)         |           |
| Often  | 3(5.6)       | 4(13.8)          | 1(5.3)                             | 0(0.0)         | 1(9.1)                        | 5(12.8)        |           |
| Always   | 48(88.9)     | 20(69.0)         | 18(94.7)                           | 31(93.9)       | 8(72.7)                       | 32(82.1)       |           |

\*P value was calculated using yates Correction chi square

**Table 3: Association Between Comorbidity and Health-Related Risk Factors**

|   | Hypertension | Type-II Diabetes | Coronary Artery Disease and Stroke | Osteoarthritis | Liver & Gall Bladder Diseases | Cancer/ Others | P - value |
|---|--------------|------------------|------------------------------------|----------------|-------------------------------|----------------|-----------|
| <b>Do you walk for a while after having dinner?</b>           |              |                  |                                    |                |                               |                |           |
| Never   | 5(9.3)       | 5(17.2)          | 2(10.5)                            | 3(9.1)         | 0(0.0)                        | 2(5.1)         |           |
| Rarely  | 9(16.7)      | 3(10.3)          | 2(10.5)                            | 5(15.2)        | 1(9.1)                        | 3(7.7)         | 0.448     |
| Sometimes   | 20(37.0)     | 9(31.0)          | 5(26.3)                            | 4(12.1)        | 4(36.4)                       | 12(30.8)       |           |
| Often   | 10(18.5)     | 9(31.0)          | 6(31.6)                            | 17(51.5)       | 3(27.3)                       | 15(38.5)       |           |
| Always  | 10(18.5)     | 3(10.3)          | 4(21.1)                            | 4(21.1)        | 3(27.3)                       | 7(17.9)        |           |
| <b>Do you sleep immediately after dinner?</b>                 |              |                  |                                    |                |                               |                |           |
| Never   | 1(1.9)       | 1(3.4)           | 0(0.0)                             | 0(0.0)         | 0(0.0)                        | 0(0.0)         |           |
| Rarely  | 4(7.4)       | 2(6.9)           | 0(0.0)                             | 2(6.1)         | 1(9.1)                        | 6(15.4)        | 0.476*    |
| Sometimes   | 10(8.5)      | 9(31.0)          | 2(10.5)                            | 7(21.2)        | 4(36.4)                       | 9(23.1)        |           |
| Often   | 15(27.8)     | 8(27.4)          | 5(26.3)                            | 15(45.5)       | 2(18.2)                       | 9(23.1)        |           |
| Always  | 224(44.4)    | 9(31.0)          | 12(63.2)                           | 9(27.3)        | 4(36.4)                       | 15(38.5)       |           |
| <b>How often do you exercise?</b>                             |              |                  |                                    |                |                               |                |           |
| Never   | 5(9.3)       | 2(6.9)           | 2(6.1)                             | 2(6.1)         | 0(0.0)                        | 6(15.4)        |           |
| Rarely  | 8(14.8)      | 5(17.2)          | 4(21.1)                            | 8(24.2)        | 2(18.2)                       | 3(7.7)         | 0.314*    |
| Sometimes   | 20(37.0)     | 14(48.3)         | 7(36.)                             | 11(33.3)       | 5(45.5)                       | 11(28.2)       |           |
| Often   | 16(29.6)     | 7(24.1)          | 3(15.8)                            | 12(36.4)       | 3(27.3)                       | 10(25.6)       |           |
| Always  | 5(9.3)       | 1(3.4)           | 3(15.8)                            | 0(0.0)         | 1(9.1)                        | 9(23.1)        |           |
| <b>What kind of exercises do you do?</b>                      |              |                  |                                    |                |                               |                |           |
| Walking   | 31(57.4)     | 13(44.8)         | 7(36.8)                            | 16(48.5)       | 3(27.3)                       | 17(43.6)       |           |
| Running   | 6(11.1)      | 5(17.2)          | 2(10.5)                            | 3(9.1)         | 1(9.1)                        | 6(15.4)        | 0.648*    |
| Swimming  | 2(3.7)       | 1(3.4)           | 0(0.0)                             | 0(0.0)         | 0(0.0)                        | 0(0.0)         |           |
| Workout (Gym/ yoga)   | 15(27.8)     | 10(34.5)         | 10(52.7)                           | 14(42.4)       | 7(63.7)                       | 16(41)         |           |
| <b>Do you sleep for adequate hours per night?</b>             |              |                  |                                    |                |                               |                |           |
| Never   | 15(27.8)     | 5(17.2)          | 5(26.3)                            | 13(39.4)       | 1(9.1)                        | 7(17.9)        |           |
| Rarely  | 22(40.7)     | 7(24.1)          | 5(26.3)                            | 13(39.4)       | 3(27.3)                       | 11(28.2)       | 0.351*    |
| Sometimes   | 10(18.5)     | 10(18.5)         | 4(21.1)                            | 5(15.2)        | 5(45.5)                       | 12(30.8)       |           |
| Often   | 5(9.3)       | 6(20.7)          | 3(15.8)                            | 2(6.1)         | 1(9.1)                        | 6(15.4)        |           |
| Always  | 2(3.7)       | 1(3.4)           | 2(10.5)                            | 0(0.0)         | 1(9.1)                        | 3(7.7)         |           |
| <b>Do you go to sleep easily and sleep through the night?</b> |              |                  |                                    |                |                               |                |           |
| Never   | 15(27.8)     | 7(24.1)          | 7(36.8)                            | 15(45.5)       | 2(18.2)                       | 12(30.8)       | 0.018*    |
| Rarely  | 23(42.6)     | 5(17.2)          | 8(42.1)                            | 14(42.4)       | 3(27.3)                       | 12(30.8)       |           |

|  | Hypertension | Type-II Diabetes | Coronary Artery Disease and Stroke | Osteoarthritis | Liver & Gall Bladder Diseases | Cancer/ Others | P value |
|--|--------------|------------------|------------------------------------|----------------|-------------------------------|----------------|---------|
| <b>Sometimes</b>   | 12(22.2)     | 11(37.9)         | 1(5.3)                             | 3(9.1)         | 4(36.4)                       | 10(25.6)       |         |
| <b>Often</b>   | 1(1.9)       | 5(17.2)          | 1(5.3)                             | 1(3.0)         | 0(0.0)                        | 1(2.6)         |         |
| <b>Always</b>  | 3(5.6)       | 1(3.4)           | 2(10.5)                            | 0(0.0)         | 2(18.2)                       | 4(10.3)        |         |
| <b>Do you smoke or consume any other tobacco products?</b> |              |                  |                                    |                |                               |                |         |
| <b>Yes</b>   | 52(96.2)     | 29(100.0)        | 17(89.5)                           | 33(100.0)      | 10(90.9)                      | 37(94.8)       | 0.320*  |
| <b>No</b>  | 2(3.8)       | 0(0.0)           | 2(10.5)                            | 0(0.0)         | 1(9.1)                        | 2(5.2)         |         |
| <b>If yes, how often do you smoke?</b>                     |              |                  |                                    |                |                               |                |         |
| <b>Rarely</b>  | 9(16.7)      | 3(10.3)          | 3(15.8)                            | 1(3.0)         | 2(18.2)                       | 3(7.7)         |         |
| <b>Sometimes</b>   | 0(0.0)       | 3(10.3)          | 0(0.0)                             | 4(12.1)        | 1(9.1)                        | 1(2.6)         | 0.349*  |
| <b>Often</b>   | 6(11.1)      | 3(10.3)          | 3(15.8)                            | 4(12.1)        | 0(0.0)                        | 6(15.4)        |         |
| <b>Always</b>  | 39(72.2)     | 20(69.0)         | 13(68.4)                           | 24(72.7)       | 8(72.7)                       | 29(74.4)       |         |
| <b>Do you consume alcohol and drugs?</b>                   |              |                  |                                    |                |                               |                |         |
| <b>Yes</b>   | 52(96.3)     | 29(100.0)        | 17(86.5)                           | 32(97.0)       | 10(90.9)                      | 38(97.4)       | 0.470   |
| <b>No</b>  | 2(3.7)       | 0(0.0)           | 2(10.5)                            | 1(3.0)         | 1(9.1)                        | 1(2.6)         |         |
| <b>If yes, how often?</b>                                  |              |                  |                                    |                |                               |                |         |
| <b>Rarely</b>  | 1(1.9)       | 3(10.3)          | 0(0.0)                             | 1(3.0)         | 0(0.0)                        | 0(0.0)         | 0.123*  |
| <b>Sometimes</b>   | 2(3.7)       | 2(6.9)           | 0(0.0)                             | 1(3.0)         | 2(18.2)                       | 2(5.1)         |         |
| <b>Often</b>   | 3(5.6)       | 4(13.8)          | 1(5.3)                             | 0(0.0)         | 1(9.1)                        | 5(12.8)        |         |
| <b>Always</b>  | 48(88.9)     | 20(69.0)         | 18(94.7)                           | 31(93.9)       | 8(72.7)                       | 32(82.1)       |         |

\*P value was calculated using Yates Correction chi square

## DISCUSSION

This cross-sectional study examined lifestyle awareness and behavioral practice among medical students with parental non-communicable disease comorbidities. Overall, the study highlighted the unhealthy meal patterns and dietary habits with poor management of sleep quality and increased substance abuse. Except for midnight snacking and sleep quality, most of the lifestyle variables did not significantly correlate with the comorbidities. Further research revealed that although medical students who had parents with coronary artery disease and stroke consumed more fruits and vegetables, they frequently snacked and consumed carbonated drinks late at night. Regular physical activities like exercise or walking after meals may have partially balanced out these dietary habits. The behavioral risk factors found in our study are similar to the findings from another study conducted in Gujarat, where medical students demonstrated patterns, like inadequate physical activity, unhealthy dietary patterns, high stress levels, and substance abuse. The study emphasized that, despite having medical knowledge, students failed to apply it in their real lives, resembling the pattern observed in our study. (1) Our findings match existing literature, which shows that nighttime snacking disrupts metabolic homeostasis, reducing fat oxidation and altering postprandial glucose metabolism. Studies in the Asian population have reported higher nighttime calorie intake contributing to weight gain, increased fat storage, and elevated risk of hyperglycemia, which aligns with behavior seen among medical students. (2) The significant association between sleep quality and parental NCD comorbidities observed in our study is supported by existing evidence showing that alterations in circadian rhythm affect the metabolic, endocrine, and immune function of the body. The literature showed that inadequate sleep disrupts the natural light-dark cycle and leads to hormonal imbalance, including ghrelin and

leptin, leading to increased fatigue, dysregulated appetite, and chronic disease risk. (3) Our findings of tobacco and alcohol use among medical students align with previous research showing that alcohol is the most abused substance, followed by tobacco. A previous multicentric study reported that substance use among seniors and those residing in hostels was most common, facilitated by stress, academic pressure, and peer pressure. (4) There was no significant association between substance abuse and parental comorbidities in our study, indicating that knowledge about health risks has no effect on alcohol or tobacco use in this population. Finally, the findings of this study highlight that the lifestyle behavior among medical students remains poor despite theoretical understanding and parental comorbidities. While comorbidities did not significantly affect most of the variables, the association between sleep quality and midnight snacking points to the circadian-related behavioral changes in medical training. Addressing these issues within medical institutions is crucial in preventing future NCD burden and for ensuring medical students serve as reliable representatives of healthy living. Institutional action, incorporating structured lifestyle support and a health-promoting academic environment, may help in bridging the gap between awareness and practice.

## CONCLUSION

This study assessed lifestyle awareness and behavioral practices among undergraduate medical students with parental non-communicable disease (NCD) comorbidities. The findings reveal that despite having medical knowledge and exposure to chronic illness within the family, students continue to exhibit unhealthy lifestyle behaviors, including irregular dietary habits, inadequate physical activity, poor sleep patterns, and high prevalence of substance use. Most lifestyle behaviors did not show a significant association with

parental comorbidities, indicating that family disease history alone does not motivate healthier choices. However, midnight snacking and sleep quality demonstrated significant associations with parental NCDs, suggesting that circadian-related behaviors may be more sensitive to the influence of living with chronically ill parents. Students with parental coronary artery disease or stroke showed relatively better dietary choices and engagement in physical activity, though inconsistent patterns persisted.

#### CONCLUSION

Overall, the study highlights a concerning gap between awareness and actual practice among medical students—individuals who are expected to model healthy behavior in the healthcare system. These findings emphasize the need for structured institutional interventions to promote healthier lifestyles during medical training.

#### RECOMMENDATION

Medical colleges should incorporate structured wellness programs focusing on nutrition, physical activity, sleep hygiene, stress management, and substance-use prevention. Institutional support systems, including mental health services and regular health screenings, are essential to promote healthy lifestyle practices during medical training.

#### LIMITATION OF THE STUDY

The cross-sectional design limits causal inference. Self-reported data may be affected by recall and social desirability bias. Convenience sampling and the single-centre setting reduce generalizability, and the lack of objective lifestyle measurements may limit precision.

#### RELEVANCE OF THE STUDY

This study highlights the gap between health knowledge and personal lifestyle practices among medical students. It underscores the need for early, institution-based interventions to promote healthy behaviours in future healthcare professionals.

#### AUTHORS CONTRIBUTION

All authors have contributed equally.

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Nil

#### CONFLICT OF INTEREST

There are no conflicts of interest.

#### DECLARATION OF GENERATIVE AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

The authors haven't used any generative AI/AI assisted technologies in the writing process.

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