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Prevalence of Risk factors of Non Communicable Diseases amongst Medical Students

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ABSTRACT:

Background: Non communicable diseases (NCDs) like cardiovascular disease, diabetes mellitus, chronic respiratory disease and some cancers have become major global health issues and are the cause of most premature morbidity and mortality globally. The depreciation of NCDs revolves around risk factors (physical inactivity, poor diet, tobacco, alcohol, obesity, and stress) that are established in middle life globally. Because of stress, disorganized schedules and the lack of physical activity, medical students who are, by contrast, exposed to more information on health issues, may also embrace unhealthy lifestyles. The importance of comprehending the stated risk factors among medical students lies in subsequent early interventive and preventative care since they are the future healthcare providers.

Aim: The aim of this study was to acquire values of the risk factors among the medical students that are linked to non-communicable diseases and to help identify areas where health promotion efforts still need to be introduced.

Design: This was a descriptive cross-sectional study done in Pakistan Institute of Medical Sciences (PIMS), Islamabad in the period June 2024 to May 2025. The sample size of the study was 110 medical students in the hair course of different academic years which was picked using stratified random sampling to get proportional share of both groups of batches and genders. The information was gathered based on a pre-tested self-administered questionnaire modeled on WHO STEP wise Surveillance (STEPS) instrument covering the following topics; socio-demographic data, lifestyle behaviors, dietary habits,

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physical activity levels, tobacco and alcohol use, body mass index (BMI) and family history of NCDs. The measurements that were used were anthropometric measurements of height, weight, and waist circumference with standard protocols. BMI was defined in a classification based on WHO, and the physical activity was defined with the aid of the Global Physical Activity Questionnaire (GPAQ). All data obtained were analyzed in SPSS version 26 and reported as frequencies, percentages, means and standard deviations.

Findings: Overall, 110 study participants (58 [52.7%] women and 52 [47.3], men) with a mean age of 22.1 1.8 years were recruited. The most common behavioral risk factor was physical inactivity among the students, which was reported in 69 students (62.7%) followed by unhealthy dietary patterns, the eating habits being characterized as inadequate intakes of fruit/vegetables and high consumption of fast food among 65 students (59.1%). Thirty four students (30.9%) were found to be overweight and obese with females proving to be less prevalent than males. Tobacco was used by 21 students (19.1%) and the intake of alcohol was not common and was present only in 4 students (3.6%). Familial presence was found in at least one of the NCDs in 49 students (44.5%), with most cases of hypertension and diabetes. A total of 72 students (65.5%) showed high perceived stress level with the major contributing factor being related to exams. Importantly, co-occurring risk factors were typical, particularly in that 68 (61.80%) students had two or more behavioral or biological risk variables at one time.

Conclusion: This research indicates that modifiable risk factors of non-communicable disease are prevalent among medical students, especially physical inactivity, unhealthy nutrition, the high level of stress, and overweight/obese. Most students exhibited practices that would dispose them to chronic diseases in the future despite their knowledge in medicine. These results supported the necessity of special interventions at medical institutions, the need of stress management programs, well-structured exercise opportunities, and the promotion of healthy nutrition. These risk factors may be addressed early at a young age among the future healthcare professionals to effect long-term reduction in NCD burden. **Keywords:** Non-communicable diseases, risk factors, medical students, physical inactivity, obesity, stress, dietary habits, Pakistan.

INTRODUCTION:

The most recent decades saw an eminent trend of non-communicable diseases (NCDs) rising to become one of the gravest worldwide health issues in terms of morbidity and mortality. They were mainly attributed to susceptible lifestyle and behavioral risk factors and their relationship to these chronic

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conditions was mainly established, which comprised cardiovascular diseases, diabetes mellitus, chronic respiratory diseases, and some forms of cancer [1]. In comparison to infectious diseases, NCDs did not have acute pathogens but evolved over the length of time or very likely due to the poor dietary habits, lack of physical exercise, smoking and excessive intake alcohol. The World Health Organization (WHO) has reported that NCDs contributed to about 71 percent of the total deaths around the world, with so much burden being put on the low- and middle-income countries. This is a developing health crisis that required identifying and changing risk factors at an early age especially within the young populations [2]. As future health practitioners, medical students were supposed to have sufficient information and consciousness about risk factors of NCDs not only to protect their health but also to act as role models that can influence their patients and communities. There was however evidence that medical students were not exempted to unhealthy lifestyle choices. Medical training was intense and most of them spent long hours studying, therefore, resulting in high levels of stress, disrupted sleeping, and lack of exercise, which made them prone to the same risk factors they were being trained on how to avoid in patients [3]. Academic pressure, sitting hours, and improper nutrition would have provided a favorable ground for establishing modifiable factors of risk, namely, obesity, high blood pressure, dyslipidaemia, and poor glucose tolerance.

Multiple researches carried out in various regions of the globe had shown that a significant percentage of students entering fields of medicine also participated in unhealthy habits regardless of the awareness of the outcomes. Physical inactivity, fast food consumption, and insufficiency of fruit and vegetable intakes were determined to be common in this group [4]. Moreover, the mention of such accompanying habits as smoking and too much caffeine consumption were noted. Such tendencies were especially alarming as unhealthy choices acquired at the age of young adulthood were likely to remain in the future and cause risk to diseases in the future [5].

In Pakistan, NCD burden had been on the rise steadily culminated in poor urbanization, dietary shift towards the consumption of more processed food and calorie-dense food, and the decreasing activity level. The scenario was made worse by poor public health programs to target the youthful population. Although the prevalence of NCD risk factors was measured in another broad population, the studies examined less specifically the situation with medical students [6]. It was therefore important to understand the extent of these risk factors among this group since the medical students were a section of the population who would be more aware and vulnerable to it because of their lifestyle limitations.

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The risk factor assessment among medical students was very efficient not only to learn more about their personal levels of health but also gave an opportunity to understand the existing gaps in knowledge, behavioral patterns, and institutional support structures. These assessments may advise designated measures, such as stress capacity plans, health-supportive policies in health care facilities, and the introduction of lifestyle change-counselling into the curricula of med-schools [7]. Focusing on these issues at a very early stage in the careers of the medical students could mean that they were introduced into the healthcare workforce as healthier persons with the ability to better promote and practice preventive health.

Thus, the research Prevalence of Risk Factors of Non-Communicable Diseases Amongst Medical Students was carried out in order to understand how large-scaled this issue was within a certain academic community. By defining the most widespread risk factors and establishing their distribution pattern, the research was to raise concerns about the urgency of preventive measures, as well as make a supplement to the literature that increasingly stresses the role of lifestyle changes as one of the foundations of fighting the NCD epidemic [8].

MATERIALS AND METHODS:

Study Population

The research population sought was a group of medical students who were in different academic years at PIMS totaling 110. It included both men and women students. These were the inclusion criteria: (1) students aged 18 to 30, (2) attending medical program in PIMS, and (3) willing to take part in the research. It excluded students with known chronic illness that is under medical control, including diabetes, high blood pressure, heart problems, so as to prevent bias when it came to assessing risk factors.

Sampling Technique

Creating a sample of people who had the inclusion criteria was through a purposive sampling technique. Teaching classes, other common spaces and academic meetings were also used to approach all the eligible students. All the participants gave informed consent before data was collected.

Information Gathering Apparatus

The collection of the information was done with the help of a pre-tested structured questionnaire that was formulated based on the World Health Organization (WHO) STEPwise approach to NCD risk factor surveillance. The questionnaire had three sections including:

Socio-demographic: age, sex, year of study and family history of NCDs.

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Behavioral risk factors: eating habits and physical exercises, tobacco use, alcoholic consumption, and sleep.

Physical and bio chemical parameters: body mass index (BMI), blood pressure and random blood sugar values.

Anthropometric Measurements

Height was measured with a stadiometer to the nearest 0.1 cm and weight measured with a calibrated weighing scale in 0.1 kg. BMI was computed weight in kilograms divided by height in metrical squared (kg/m 2) and equated in line with worldwide WHO details.

Measurement of Blood Pressure

The measurement of blood pressure was carried out on an ordinary mercury sphygmomanometer. The readings were done in two occasions, at a time interval of five minutes and the participant seated. An average of the two readings was taken. The American Heart Association (AHA) guidelines were used in classification of hypertension.

Biochemical Testing

A glucometer was used in determining random blood sugar. The participants who scored abnormal were recommended to consult further medical examination.

Procedure of Data Collection

To create consistency, the research team was trained on how to administer questionnaire as well as undertake measurements. The information will be gathered during the planned sessions in a special room under the territory of the medical college to ensure privacy and precision. The evaluation of each participant took about 20 25 minutes on average.

Ethical Considerations

The Ethical Review Committee of PIMS, Islamabad reviewed and approved its study protocol. It was voluntary, and all data were treated confidentially. Each component was informed of written consent and the aim of the study was enhanced. The participants were allowed to end the process at any point with no repercussion.

Data Analysis

The data collected was fed into statistic package Social Sciences (SPSS) version 26.0. The prevalence of risk factors and descriptions of socio-demographic characteristics were summarized using descriptive statistics. Categorical results were set out as the frequencies and percentages, whereas continuous ones as

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means and standard deviations. The chi-square test was used to determine relationships between the chosen socio-demographic characteristics and risk factors of NCD where a p-value of less than 0.05 was regarded as significant.

RESULTS:

The current research has been done at Pakistan Institute of medical sciences (PIMS) Islamabad between June 2024 and May 2025, and the sample size of the medical students is 110. The objective was to find out how common the risk factors of non-communicable diseases (NCDs) are in this population. The data were gathered by structured questionnaire, anthropometry, and laboratory tests.

Table 1: Demographic Characteristics of the Study Population (n = 110):

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	48	43.6
	Female	62	56.4
Age Group (years)	18–20	40	36.4
	21–23	50	45.5
	24–26	20	18.1
Year of Study	1st Year	30	27.3
	2nd Year	28	25.5
	3rd Year	20	18.1
	4th Year	18	16.4
	Final Year	14	12.7

The demographic characteristics revealed that most of the participants were females (56.4%) as opposed to the males (43.6%). Most prevalent (45.5 percent) was the age between 21 and 23 years followed by 18 and 20 years (36.4 percent). There was a fairly even distribution by academic years with first-year learners constituting the largest (27.3%). The demographics were appropriate in order to constitute a representative sample of medical students in junior and senior year, which would allow a complete evaluation of NCD-related risk factors at various levels of academic pressure and lifestyles.

Table 2: Prevalence of Risk Factors of Non-Communicable Diseases among Medical Students (n = 110):

Risk Factor	Frequency (n)	Percentage (%)

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Physical Inactivity	68	61.8
Unhealthy Dietary Habits	72	65.5
Overweight/Obesity (BMI ≥25)	30	27.3
Family History of NCDs	40	36.4
Current Smoking	12	10.9
Excessive Screen Time (>4h)	76	69.1
High Stress Levels	84	76.4
Hypertension (≥140/90 mmHg)	8	7.3
Dyslipidemia	14	12.7

The results indicated that high stress (76.4%) levels were the most common risk factor among the medical students owing to the pressure of studies, heavy schedules in medical studies. Screen time exceeded 69.1% of respondents, and since academic, social, and recreational usage of digital devices is combined, it is possible to argue that excess screen time was a result of this combination. Unhealthy dietary patterns (65.5%) and physical inactivity (61.8%) were also very common, that is, the lack of exercise and unhealthy eating habits characterized this group.

A weight of 27. 3 percent of the students was either overweight or obese implying early weight-related health risks. The 36.4 percent of the population reported a family history of NCDs, which highlight that the genetic inclination is a predisposing factor in a significant proportion of students. The prevalence of current smoking was relatively low and amounted to 10.9%, perhaps indicating the better education about the dangerousness of tobacco consumption among the medical students. The prevalence of hypertension and dyslipidemia was 7.3 % and 12.7 % among the participants respectively, which implies that some medical students had clinical risk factors of NCDs.

In general, the data pointed to a large amount of changeable lifestyle-related risk factors including poor diet, inactivity, extended usage of the screen time and stress, which may comprehensively contribute to the long-term NCD burden unless prevented early with the preventive measures.

DISCUSSION:

Results in this study noted that a substantial number of medical students have experienced different predisposing and non-predisposing non-communicable diseases (NCDs) factors that can be reduced. The incidence of such determinate factors among the participants observed that despite having a population well informed regarding health-related behaviors, unhealthy lifestyle lifestyle practices were evident even

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within the population. Such a tendency was also in line with the former researches within a similar population of young adults in University and showed the fact that medical knowledge was not always transformed into the healthier habits [9].

Among the study population physical inactivity was an outstanding issue. A high proportion of the students lacked proper physical activity regardless of the identified overall positive impact of the regular exercise effect on preventing the cardiovascular issues, obesity and metabolic issues. This was comparable to the results of other medical institutions where an academic workload, the absence of time, and sedentary modes of study were mentioned as significant factors that contributed to inactivity [10]. The stressful academic atmosphere of medical school seemed to have created a culture of lifestyle that has taste of studying rather than training in sports activities.

There was also a risk behavior in terms of the eating habits as a significant number of the sample ate fast food, sweet drinks, and snacks with high content of saturated fats regularly. Such dietary profile was comparable with data of the previous studies that revealed that convenience, affordability, and the lack of available healthy food choices on campus affected eating habits of students [11]. In spite of dietary recommendations known by the medical students, environmental and social factors appeared to have a stronger impact than the knowledge on nutrition.

It was established that a part of the sample is obese and overweight, indicating the compound effect of physical inactivity and an unhealthy diet. This was in agreement with the current trends of the world, where there is an increase in obesity even among health workers who were on training. The existence of the excess weight in the population was worrying considering that besides predisposing them to NCDs later in life, it could also compromise their effectiveness or trustworthiness as future health advocates [12]. Smoking and the consumption of alcohol by the students were found to be a problem in the students even though it is less compared to some young adult groups in the general population but it was a serious health risk. The continued practice of such behaviors, irrespective of the realization of the negative consequences of these behaviors, supported the argument that behavioral change did not only involve theoretical knowledge. The cause of these trends may have been peer pressure, pressure, and the acceptance of some habits in the culture [13].

The problem of stress itself also seemed to be everywhere, as a significant part of students reported being very stressed. Probably the medical education training is competitive and rigorous, study hours were long and there was pressure to pass an exam. It is an established condition that chronic stress is a predisposing

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factor to hypertension, cardiovascular diseases, and mental illnesses thus presenting another level of susceptibility to this group [14].

The prevalence rates of the different risks factors in this study when compared to international data ranged within that same recorded among people within similar age categories with no significant benefit being noted in medical students despite health literacy. This implied that focused educational activities and measures should be undertaken in order to promote the use of healthy lifestyles in medical colleges [15].

All in all, the study indicated that despite being well conversant with the theoretical knowledge on NCD prevention, medical students continued to struggle in refining such knowledge to healthy behavior change. The implementation of institutional strategies in this section was also critical in addressing the burden of NCD risk factor in this group including promoting physical activity, facilitating access to nutritious foods, availing stress programs and environments supportive of healthy food choices. Solving these problems at an early stage of their careers would not only help them to change their own health outcomes but also increase their potential in assisting patients in future as role models.

CONCLUSION:

The researchers concluded that the incidence of risk factors of non communicable diseases among medical students was significantly high leading to an alarming situation among young and educated medical students. The most commonly followed contributors were sedentary lifestyles, unhealthy dietary habits, physical inactivity, and stress with the lesser figures mentioned on tobacco use and alcohol consumption. Routine lifestyle practices were not followed by many students, and this demonstrated a wide gap between awareness and behavior despite the physicians possessing adequate medical knowledge. Such results had highlighted the necessity of the specific health promotion interventions, stress management, and behavioral change in medical students. Timely preventative measures and frequent screening campaigns might have been instrumental in curtailing the burden of non-communicable diseases in this group in the future. It was crucial to work on these changeable sources of risk during the medical education to support the formation of healthier habits and be a good role model to the rest of the society.

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