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"TO STUDY THE PREVALENCE AND ASSOCIATED RISK FACTORS OF NON COMMUNICABLE DISEASES AMONGST MEDICAL STUDENTS IN RAMA MEDICAL COLLEGE, KANPUR, UTTAR PRADESH".

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Abstract

Introduction: Non-Communicable Diseases (NCDs) in India have increased from 37.9% in 1990 to 61.8% in 2016**.** They are slowly progressive and are of long duration and are responsible for more than 50% of the global burden of disease. There are very few studies conducted which studied the prevalence of risk factors in the non-communicable diseases among medical students.

In the present study authors observed that most of the students are at risk to develop NCDs, and the cumulative effect of risk factors bundles-up and eventually leads to disease as students advance through their life.

Aim and objective: To estimate the prevalence and associated risk factors of NCD amongst medical students.

Material and Methods: This was a cross sectional analytical study involving 362 undergraduate students of Rama Medical College Hospital and Research Centre, Mandhana, Kanpur, Uttar Pradesh using simple random sampling.

The study used a pretested structured questionnaire which was conducted by using the WHONCDSTEPS approach. A suitable statistical analysis was carried out where data analysis was done by using MSExcel and software SPSS version 26.

Results: Our study results showed that there was a prevalence of physical activity in female students with 51% and in male students 48.9%, which was almost equal. Junk food consumption had overall prevalence of 69.34% in females out number males in junk food consumption. Association of BMI with NCD as a risk factor was statistically significant in current 75 smoker only.

Conclusion: There is a huge opportunity to reduce modifiable risk factors and NCD among our future doctors by encouraging them to change their behaviour-related lifestyles such as smoking habits, alcohol use and junk food.

Keywords: Noncommunicable disease, risk factors, prevalence

INTRODUCTION:

Non-communicable diseases (NCDs), also known as chronic diseases, including heart disease, stroke, cancer, diabetes and chronic lung disease, are collectively responsible for almost 70% of all deaths worldwide [1]. Non- communicable diseases (NCDs) and their associated risk factors have emerged rapidly and have become a major public health threat globally. The impact of NCDs is devastating in terms of premature morbidity, mortality and economic loss [2]

The rise of NCDs has been driven by primarily four major risk factors:

Tobacco use, physical in activity, the harmful use of alcohol and unhealthy diets. There are few studies to date that have examined the prevalence of tobacco and alcohol use among UGs and PGs. Out of the available studies, tobacco and alcohol use prevalence was 9.0% in UGs and 7.1 in PGs [2-4]. Very few studies have been conducted which studied the prevalence of risk factors in the non-communicable diseases among medical students. It is observed that most of the students are at risk to develop NCDs, and the cumulative effect of risk factors bundles-up and eventually leads to disease as students advance through their life. High prevalence of modifiable NCDs risk factors among medical students, there is an urgent need to bring change in students' lifestyle by health education and interventions.

As the major NCDs risk factors are well documented, exposure to modifiable risk factors start in younger ages hence screening medical college students is definitely justified who will also be our future medical experts. Moreover, any study regarding prevalence of risk factors of NCDs among this age-group would surely help in establishing baseline data to monitor trends in health behavior and planning prevention strategies.

Therefore the present study was undertaken to study the prevalence and associated risk factors of non communicable diseases amongst medical students in Rama Medical College Hospital and Research Centre, Mandhana, Kanpur.

Aim and objectives:

1. To Identify the Risk factors associated with development of NCD.
2. To Estimate the Prevalence of Risk factors of NCD.

MATERIAL AND METHODS:

Study Type: Cross sectional study.

Study Population: Undergraduate Medical Students of Rama Medical College Hospital and Research Centre, Mandhana, Kanpur.

Study Area: Rama Medical College Hospital and Research Centre, Mandhana, Kanpur (RMCH&RC)

Study Duration: January 2021 to September 2022

Sample Size: Prevalence of daily smoking men between ages 15-25 in a study conducted in year 2012 by Dhanawat *et al* [5] was taken to be 31.2%. An allowable error of 5% was taken at 95% confidence interval. By putting formula $n=z^2Pq/d^2$, sample size came out to be 329 after adding 10% non response it came up to 362.

Inclusion Criteria: Medical students from first year to final year MBBS were included for the study.

Exclusion criteria: Those who were unwilling for the study and Non co-operative students.

Sampling: The sampling method used in this study was simple random sampling, prepared by using the total MBBS student's list of four batches.

Data Collection: The study used a pretested structured questionnaire which was conducted by

using the WHO NCD STEPS approach. The data was collected in 3 steps (step 1, step 2, step 3). Demographic information, behavioral risk factor profile and family history of hypertension, obesity, cardiovascular disease, dyslipidemia, COPD, Cancer, Mental health disorder and diabetes were obtained using interview technique STEP 1 questionnaire. Physical measurements height, weight, waist circumference, hip circumference ,blood pressure and pulse rate was measured as per the guidelines given by WHOSTEPS instrument [6] for chronic disease risk factor surveillance in STEP2 . As recommended by STEPS Manual, measurements of Step 2 were taken immediately after the Step 1, as the participants were already seated for at least 15 minutes while collecting Step1. The blood samples for blood sugar and serum Cholesterol was drawn by trained lab assistant having a graduate / postgraduate degree in Medical Laboratory in STEP3 . Written instructions regarding fasting and appointment date for blood test were given to the participants if selected based on three or more than three risk factors and agreed for the same in STEP 3. Blood pressure was measured by a semi-automated BP measuring electronic device that has been recommended by WHO for community-based studies. It was measured on right arm and in sitting position. Two readings with five minutes rest in between were recorded. The average of two readings was taken. But if there was >5 mm Hg variation in diastolic BP and/or >10 mm Hg in systolic BP, then third reading was also taken and then the average of three readings was taken into consideration. Weight was recorded by using weighing machine without footwear, light clothing, standstill, face forward and both the arms on the side. It was recorded in kilograms with the accuracy of 100gm. Height was measured using stadiometer with the accuracy of 1mm. Participants were asked to remove footwear, stand straight with feet together, knees straight and looking straight and do not tilt their head up or down. Waist circumference was measured by using non-stretchable measuring tape with light clothing at the end of normal expiration with the arms relaxed at the sides and at the midpoint between the lower margin of the last palpable rib and the top of the iliac crest (hip bone). Hip circumference was measured by non-stretchable measuring tape, at the maximum circumference over the buttocks.

Ethical Approval: Ethical approval of the study was obtained from the Institutional Ethical Committee of Rama Medical College Hospital and Research Centre, Mandhana, Kanpur (RMCH&RC/12052-11) (dated22/02/2021).

Data Analysis: Data collected was entered into Microsoft Excel. Data analysis was done by using software SPSS version 26. Prevalence of NCD risk factors was presented in the form of frequencies and percentages. Most of the variables in this study were categorical so statistical significance tested using Chi-square test and pvalue (pvalue≤0.05 is statistically significant, and >0.05 not significant) ,and also strength of association was tested between risk factors using independent t test.

RESULTS:

In the Present study among study subjects (n=362) female students were more than male students. Majority of the students i.e. 58.83% were from 21-23 year age group, with minimum 18 years and maximum age of 26years. Out of total 90.33% were Hindu and7.73% were Muslims (Table1)

Table1: Demographic profile of the study subjects (n=362)

Gender	**Frequency(No.)**	**Percentage(%)**
Male	163	45.02%
Female	199	54.97%
Total	362	100%
Age(inyears)		
18–20years	126	34.80%

21–23years	213	58.83%
24–26years	23	6.35%
Total	362	100%
Religion		
Hindu	327	90.33%
Muslim	28	7.73%
Other	07	1.93%
Total	362	100%
Type of Family		
Nuclear family	258	71.27%
Joint family	104	28.73%
Total	362	100%

In the present study the family history was positive for diabetes in 46.13% followed by hypertension in 41.71%. Obesity was next in line with 32.32% which was observed in (table 2).

Table2: Family history in study subjects (n=362)

Family history in study subjects	Frequency(No.)	Percentage(%)
Diabetes	167	46.13%
Hypertension	151	41.71%
Obesity	117	32.32%
Mental health disorder	34	9.39%
Rheumatic heart disease	04	6.35%
COPD	17	4.70%
Stroke	14	3.87%
Dyslipidemia	13	3.59%
Coronary artery diseases	12	3.31%
Cancer	23	1.10%

Table3 :Distribution of status of physical exercise (n=362)

Variable		Frequency(No.)	Percentage(%)
Physical exercise (n=362)	yes	284	78.5%
	no	78	21.5%
Time spent for exercise (n=284)	<150mins/week	181	64.06%
	>150mins/week	103	35.94%

Table 4: Distribution of Current daily smokers in study subjects & number of cigarette packet used per week by them.

Variable		Frequency(No.)	Percentage(%)
Current daily smoker (n=362)	Smoker	32	8.83%
	Nonsmoker	330	91.16%
Number of cigarettes packet per week (n=32)	1 packet	11	33.33%
	2 packets	17	51.52%
	3 packets	04	15.15%

A large segment of students was non-smokers (91.16%). Among students who were smoking i.e. 15.15% were smoking more than 3 packets per week (table4).

Table5: Distribution of consumption of alcohol per week.

Variable		Frequency (No.)	Percentage (%)
Consume alcohol (n=362)	Yes	14	3.87%
	No	348	96.13%
Consume how many pegs per week (n=14)	<2 Pegs per week	10	71.43%
	<3 Pegs per week	4	28.57%

Only 3.87% students agreed of consuming alcohol. Out of which 71.43% were taking<2 pegs /week (table5).

It is quite evident that male student need more attention. Significant association of NCD risk factors like smoking, alcohol intake and physical activity with gender (table 6,7,8).

Table6: Association of daily smoking with gender.

Ncd Risk factor		total	**Male**		**Female**		χ^2	***P*value**
Current daily smokers	yes	32	30	93.75%	2	0.06%	33.665	0.000
	no	330	133	40.30%	197	59.69%		

Table7: Association of physical activity with gender.

NCD Risk factors		Total	Male		Female		χ^2	***P*value**
			No.	Percentage	No.	Percentage	8.166	0.004
Physical activity	yes	284	139	48.9%	145	51.0%		
	no	78	24	30.76	54	69.23%		

Majority of the students(78.5%) were physically active out of which 35.94% were doing it for>150mins/week. Prevalence of physical activity in female students was 51.05% and in male students it was 48.94%. This association was statistically significant (p value = 0.004) (table 7).

Table8: Association of current alcohol use with gender.

NCD Risk factors		total	Male		Female		χ^2	***p* value**
			No.	percentage	No.	percentage		
Currental coholuse	Yes	16	14	87.5%	02	12.5%	12.199	0.000
	no	346	149	43.06%	197	56.93%		

Table9: Association of risk factors with age.

NCD Risk factors		total	18-20years		21-26years		χ^2	***p* value**
			No.	percentage	No.	percentage		
Current daily smokers	Yes	32	9	28.125%	23	71.875%	0.746	0.388
	no	330	118	35.75%	212	64.24%		
Current alcohol use	Yes	16	05	31.25%	11	68.75%	0.108	0.742
	no	346	122	35.2%	224	64.73%		
Physical activity	Yes	284	139	48.94%	145	51.05%	8.166	0.004
	no	78	24	30.76%	54	69.23%		

Prevalance in male students consuming alcohol was 87.5.% and the prevalence was highest among 21-26 years which was 64.24% and this was a statistically significant association (table9).
From the Table 9 it was observed the prevalence of smoking was highest among male students

(93.75%), with most common age group being 21-26 years. This was a statistically significant association (pvalue = 0.000) (table 9).

DISCUSSION:

Non communicable diseases (NCDS) also referred to as "lifestyle diseases" are the leading cause of death globally. Most of the NCD risk factors are behaviorally acquired which are due to change in lifestyle during adolescent age groups .

Evidence indicates that the pathophysiological process of major Non communicable diseases (NCDs) begins at early age, though the manifestations of the disease do not appear until middle age. The prevalence of each risk factor for NCDs might differ among different age-groups, which will affect the implementation of intervention programs. Seeing the role of medical students as future physicians and role models in public health intervention programs, research related to the risk factors for NCDs among them is need of hour.

Various studies have shown that Indian population is more prone to develop CVD and develops at younger age. The medical students seem to be at higher risk of developing NCDs owing to stressful inner and outer environment [3].

In the present study the demographic profile of study subjects showed that out of total 362 study subjects ,163 (45.02%) were male and 199 (54.97%) were female (table-01)

Among total study subjects those having a positive family history of various NCDs are, 167 (46.13%) were Diabetics,151 (41.71%) were having history of Hypertension,117 (32.3%) were Obese, 12(3.31%) were having a history of Coronary artery disease, 04 (6.3%) were having a history of Rheumatic heart disease, 14 (3.87%) were having history of Stroke, 13 (3.59%) were having history of Dyslipidemia, 17(4.70%) were having history of COPD, 34 (9.39%) were having history of Mental health disorder and 23(1.10%) were having history of Cancer . This study was parallel to the study performed by the other research investigator by Reddy and Prabhu (2005) where they reported a positive association between family history and hypertension [7].

Lifestyle has long been associated with the development of many chronic diseases. Major NCDs share common lifestyle related risk factors like physical in activity, unhealthy diet, tobacco use and harmful use of alcohol. Consumption of alcohol among female students can be anxiety of academic performance.

With the advancement in the society along with scientific and technological progress, there has been a dramatic shift in the way today humans beings are leading their lives which is sometimes referred as modern way of living. Findings in present study showed that majority of students who were doing exercise was 284(78.5%), out of this i.e. 103(35.94%) were doing >150 minutes/week and 181(64.06%) were doing<150 mins/week, one of the reasons for this behaviour is because of institutional recreational activity like indoor & outdoor games and establishment of gymnasiums, yoga training are arranged in the institution campus. Alcohol consumption among students is phenomenally more than 18-24 age general population . It can be explained by the fact that majority of medical students stay in campus hostels without any check on their behavior [7].

We have found that more proportion of students were non-smoker i.e. 330(91.16%) and non-alcohol user 348(96.13%). Out of 14(3.87%) students who consumed alcohol only 10 students have taken less than 2 pegs per weeki.e(71.43%)(table-05). Two female students agreed that they drink occasionally.

There was significant association with consumption of alcohol with gender, with pvalue{p<0.0001}(table-08).

Studies among medical students done in other states of India show lesser prevalence of tobacco consumption i.e.8.7% in Odisha,4 5% in Tamilnadu [8] and 6.4% in Uttar Pradesh [9]. A national survey on tobacco use found that Kolkata is in top ranking of Indian cities with respect to cigarette consumption. A total of 49% of sample surveyed in Kolkata smoked tobacco compared to 43%

nationally [10].

CONCLUSION:

The current study found a significant prevalence of risk factors for Non-Communicable diseases, emphasising the importance of interventions to reduce these risk factors. There is a huge opportunity to reduce modifiable risk factors among our future doctors by encouraging them to change their behaviour-related lifestyles such as smoking habits, alcohol use, junk food etc.

RECOMMENDATION:

Outdoor activities should be encouraged. There should be ban on smoking in public places, public transport and indoor work places to reduce such harmful exposure to non-smokers.
Physical activity should be, atleast 30 min per day on most of the days of week. High risk subjects in families should be detected.

AUTHORS CONTRIBUTION:

All the authors have contributed in planning, and designing the study, data analysis, writing, and reviewing of the manuscript. LS Interviewed the study participants and collected the data.

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REFERENCES:

1. Non communicable disease and their risk factors. Availableat:https://www.who.int/ncds/en/.Accessedon31May2019
2. Rama Krishna GS, Sankara Sarma P, Thankappan KR.Tobacco use among medical students in Orissa. Natl Med J India.2005; 18(6):285-9.
3. Seshadri S. Substance abuse among medical students and doctors: A call for action.N atl MedJ India.2008; 21(2):57 59
4. British Medical Association. The Mis use of Alcohol and Other Drugs by Doctors. London: British Medical Association;1998
5. Jain A, Dhanawat J, Kotian M S, Angeline R. Assessment of risk factors of non-communicable diseases among high school students in Mangalore, India. Int J Health Allied Sci 2012; 1:249-54
6. https://www.who.int/teams/noncommunicable-diseases/surveillance/systems-tools/steps/instrument.
7. Reddy, S.S. and Prabhu, G.R. Prevalence and Risk Factors of Hypertension in Adults in an Urban Slum, Tirupati, A.P. Indian Journal of Community Medicine. 2005; 30, 84-86.
8. Biswajit Paul, Vidya Nayaki, Mousumi Sen et al. Prevalence of Cardiovascular disease risk among Medical Students in South India. Indian J comm Health Apr-June 2015; 27 (2):211-215.
9. Anurag Shrivastva, Mukesh Sharma, Saumya Gupta et al. Epidemiological investigation of lifestyle associated modifiable risk factors among medical students. Nat J Med Res 2013; 3 (3)210-215.
10. The Hindu – Kolkata reports highest no. of cigarette smokers. www.thehindu.com/news/cities/Kolkata/Kolkata-reports-highest-no.-of-cigarette-smokers/article6/10806.ece (accessed on September 9th 2017)