IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 17, Issue 6 Ver. 14 (June. 2018), PP 16-21
www.iosrjournals.org

Prevalence Of Risk Factors Of Non- Communicable Diseases Among Undergraduate Medical Students: Study From A District Of West Bengal, India.

Dr Jhuma Sarkar[1] ,Dr Abantika Bhattacharya[2] ,Dr Shamima Yasmin[3] , Dr Baijayanti Baur[4]

[1]*Associate Prof.,Department of Community Medicine,Midnapore Medical College,Paschim Medinipur,WB.India.*
[2] *Assistant Prof., Department of Community Medicine,Midnapore Medical College, Paschim Medinipur WB,India.*
[3]*Assistant Prof., Department of Community Medicine,Midnapore Medical College, Paschim Medinipur ,WB,India.*
[4]*Professor & Head of the departmrnt, Department of Community Medicine, Midnapore Medical College, Paschim Medinipur, WB,India.*
Corresponding Author: Dr Jhuma Sarkar[1]

Abstract: *Prevalence of risk factors of non communicable diseases among undergraduate medical students is essential to intervene modifiable risk factors and make them future healthy physicians. A cross-sectional study was carried out among 196 undergraduate medical students of two different batches to find out NCD risk factors prevalence among them. Data were collected by predesigned, pretested, semistructured study proforma, anthropometric measurements and blood biochemistry. Data were analysed by percentages, χ^2 test.Positive Family history of non communicable diseases were quite prevalent among the students. Majority of the students were not doing any exercises or < 150 minutes /week(73.4%-86%). Significantly more proportion of Fourth year students were current smoker and alcohol user. Adverse food enriched with saturated fat, extra salt, empty calorie and inadequate intake of fruits and vegetables were prevalent among the students ,more among fourth year students.BMI of more than half of the students (52.5 %) were above acceptable range. More proportion of females had higher high BMI, abnormal waist circumference and W:H ratio. Blood pressure measurement showed more males had Prehypertension and increased BP. Blood biochemistry of those students who had 3 or more risk factors showed more fourth year students had blood sugar, cholesterol value not in the desirable range. Our study highlighted to the fact that there is huge scope to intervene the modifiable risk factors among the future doctors to make them healthy.*

Key words: *Anthropometry, Non communicable diseases, Risk factors, Undergraduate medical student.*

Date of Submission: 12-06-2018 Date Of Acceptance: 27-06-2018

I. Introduction

Non-communicable diseases (NCDs)—mainly cardiovascular diseases, chronic respiratory diseases, cancers, and diabetes—are the world's biggest killers and major public health challenges worldwide including India .Based on the current trends, by the year 2020 non-communicable diseases are expected to account for 73% of deaths and 60% of the global disease burden. Low- and middle-income countries already bear 86% of the burden of these premature deaths, resulting in cumulative economic losses of US$7 trillion over the next 15 years and millions of people trapped in poverty. The combined effects of rapid economic & social change, urbanization and globalization are leading to shifts away from healthy traditional diets to those high in empty calories, sugar, salt, saturated fat.[1]

Epidemiology of these major NCDs are driven by four common preventable life style associated risk factors—namely tobacco use, unhealthy diet, physical inactivity, and the harmful use of alcohol. The key to control the global epidemics of NCDs is primary prevention based on comprehensive population-wide programmes. The aim is to avert these epidemics wherever possible and to control them as quickly as possible where they are entrenched. Most of these premature deaths from NCDs are largely preventable by enabling health systems to respond more effectively and equitably to the health-care needs of people with NCDs and influencing public policies in sectors outside health that tackle those shared behavioural risk factors. WHO has set the global targets of 25% relative reduction in risk of premature mortality from these NCDs,10% relative

reduction each of alcohol use and insufficient physical activity,30% reduction of current tobacco use etc by 2020.[1,2]

Medical students are the valuable future human resource. Early identification of these risk factors among medical students are essential considering their role as future physicians and role models in public health intervention with the aim of feasible and effective intervention to curb NCD risk behaviors among them. With this background current study was undertaken to find out the prevalence of NCD risk factors among medical undergraduates of a district of West Bengal, Paschim Medinipur.

II. Materials & Methods

Using the WHO Steps approach a cross-sectional descriptive study was carried out upon two batches of undergraduate medical students of Midnapore Medical College, situated in the Paschim Medinipur district of West Bengal,India. After briefing the purpose of the study the students were encouraged to participate in the study. After IEC clearance and informed verbal consent the volunteered students were provided with predesigned, self administered, semi-structured questionnaire followed by anthropometric measurements. The first part of the questionnaire consisted of socio-demographic information like age, gender, religion, family history of NCDs etc. ` The second part contained the measurement of Blood Pressure and different anthropometric parameters. The third part had the results of biochemical reports of those students had 3 or more risk factors and willing to go for biochemical tests .This study was in accordance with Helsinki declaration. Data were analyzed using EpiInfo version 3.5.1 by descriptive statistics and x^2 when needed.

Work definitions used[3,4,5,6,7]

● Weight was measured by standing on a bathroom scale placed on a hard,smooth horizontal surface(removing footwear & wearing light clothes),seeing zero and recorded in nearest .5 kg. Height was measured by height measuring rod asking the participant to stand on a firm surface(removing footwear) with feet together, heels, calves, buttocks, dorsal spine and head touching the wall and was recorded in nearest 0.5cm. BMI was calculated from height and weight measurements (weight in kg/height in metres^2). For analysis of BMI,South Asia Pacific guidelines were followed.

● Waist and Hip circumference were measured in cm using non- stretchable measuring tape. Waist circumference was measured at the level of mid point between the inferior margin of the 12 th rib and ileac crest in midaxillary plane and Hip circumference at the maximum bulge of the Gluteus Maximus and measurement were recorded to the nearest 0.1 cm. According to South Asia Pacific guidelines for males > 90 cms and for females > 85 cms were taken as abnormal to calculate central obesity. Waist Hip ratio >1.0 for men and >0.85 for women were taken as abnormal.

● BP was measured using a standard OMRON Digital Automatic Blood Pressure Monitor by a trained health personnel. Two readings were taken at interval of 5 minutes in sitting position for every student and average of these 2 readings were noted and classified as provided in JNC VII.

Current Tobacco user: Someone who at the time of survey used tobacco either daily or occasionally.

Current Alcohol user: Those who consumed 1 or more drinks with a standard measurement(30 ml) of any type of alcohol in the year preceeding the survey.

For Fruits & vegetables intake a measuring cup of 100 gm was considered as one serving. WHO recommends consumption of at least 400 grams of vegetables and fruits per day as **adequate.**

Adequate physical activity: Students were asked to recall all physical activity they had performed during previous week. Physical activity of moderate intensity at least 30 minutes per day in any sphere of their daily routine activity (working hours, travelling, leisure time) for 5 days in a week i.e.,≥150 minutes/week was considered as adequate.

Students who had 3 or more risk factors were considered as at risk and advised for biochemical investigation. For biochemical investigations fasting blood sugar and serum cholesterol were taken.

III. Results

Among the studied students mean age of the first year was 19.3 years and it was 21.5 years for Fourth year students. Male students were more in both the batches (1st. year-55.2%; 4th year -59%).More students came from urban area and were boarder. Hindu students were more and maximum number of students came from Nuclear type of family set up. Most of the students belonged to the class I category of B.G.Prosad socio-economic scale. More than half (1st year-54.2%; 4 th year-57%) of the students gave positive family history of Hypertension. Among the first year students 40.6% gave family history of DM, 53% fourth year students gave H/O obesity and 24% had H/O dyslipidaemia.(Table 1)

Table 2 described life style related findings. We found that most of the students (First year-83.3%;Fourth year-73%) were not doing any exercise or spending mild –moderate activity <150 minutes per week. Regarding smoking habits, more proportion of the fourth year students (32%) were current smoker than

first year students(12.5%) which was also statistically significant.(p-.001) Similar findings were seen in alcohol use also. Significantly (p-.000) more proportion of Forth year students(46%) were current alcohol user than First year students(8.3%).Interviewed students were mostly vegetarian and habituated in skipping meals. When the students were asked about the frequency of taking adverse food like foods rich in saturated fat ,extra salt, empty calories, significantly (p.000) more students of Fourth year (70%) were consuming than first year (33.3%).The students were also regularly taking snacks in between meals (Fourth year-26%, First year-13.5%, p-.03).On the other hand only 9%, fourth year students were consuming adequate fruits while 82.3% first year students had taken fruits preceeding one week of the survey(p .00).Though no significant differences were found in vegetable intake among the studied two batches of students.

Table 3 showed different physical measurements of the students. We followed South Asian standard for classifying BMI. Among the studied students 16 students were underweight. Of them female were more(Female-11.9% vs Male 5.4%).We have found that BMI of more than half of the students (103/196-52.5%) were higher than acceptable range In the first year students, 37.7% male and 46.5% female students were in the mild-moderate risk category which were 54.2% male and 39% female in fourth year batch. Female in the higher-high category were more compared to their male counterpart (F-10.8% vs M-5.4%).Abnormal waist circumference was also found among nearly half of the studied females (48.8%) compared to male students (11.6%).Though more proportion of fourth year male students(18.6%) also had abnormal waist circumference (First year-01.8%). Waist Hip ratio were found to be abnormal among 44.1% female students and all the male students of both the batches had normal W:H ratio. In the pre hypertension category ,Male students were more (Male-49.1%,Female-34.5%) and fourth year students were more (4^{th} year-61%,1^{st} year-35.8%). Four students(7.5%) of first year and 2 students(3.4) of fourth year were suffering from increased hypertension and they were only male. Students who had 3 or more risk factors were advised to go for blood biochemistry. Three students(1^{st} year-1,4th year-2) had early diabetes. Estimated blood cholesterol showed 13.6% first year and 20.6% fourth year students had borderline value. Three students had high risk blood cholesterol level. Borderline serum triglyceride level were found among 23.6% fourth year and 4.5% first year students. Two first year (9.1%) and one(2.9%) fourth year students also had serum triglyceride level in high risk category.

IV. Discussion

Well being of our future health protector is essential for the society. This study presents the report of 196 medical undergraduates of a Rural Medical College of West Bengal,India where this type of study was not done in the recent past.The current study was done among young future doctors to assess the prevalence of common risk factors for NCDs alongwith physical measurements and also biochemical measurements in some cases for baseline information so that they can be made aware of their health status and encouraged them to adopt healthy lifestyles. We have collected information from two different batches of students-First year(n=96) and fourth year(n=100) to find out the prevalence of NCD risk factors and whether there is any difference exists between the batches to take necessary action to control them.

Mean age of the first year students was 19.3 years and fourth year was 21.5 years age. Male students were more in both the batches. Most students belonged to upper socio economic category. More than half of the students had family history of hypertension and Diabetes similarly found in other studies also.[8,9]

Findings of the life style related risk factors showed that majority of students of both the batches were doing no exercise or <150 minutes/week,.which is a worrying factor and needs to be intervened at the earliest opportunity. Institutional recreational activity like indoor & outdoor games and establishment of gymnasiums, yoga training should be arranged in the institution campus or near by. Students should be encouraged to involved in those activities regularly. We have found that more proportion of Fourth year students were current smoker (p.001) and alcohol user (p.000). Current Medical training exposes their students several type of stresses like adaptation to medical curriculum, hostel environment etc.Whether the increased proportion of senior students were current smoker due to academic stress could not be explained. But as medical training is a stressful period, teachers must come forward with friendly attitude, interact with them and counsel them how to tackle the stress. While assessing dietary habits, again more proportion of fourth year were taking adverse food more frequently (p.0000),snacks in between meals (p.03), inadequate fruits (p.00) intake. The students should be encouraged to have healthy dietary habits and to increase intake of fruits instead of unhealthy diets. Study done by Imaad Md Ismail & others in Kerala among different type of College students like Medical, Dental, Engineering ,also found that quite a large number of students were not having exercises daily, eating junk food frequently. Though current smoker and alcohol user were less compared to our study.[10]

In our study we have found that BMI of more than half of the students (103/196-52.5%) were higher than acceptable range and abnormal central obesity were found among more than half of the female students. Waist Hip ratio also showed abnormal value among more than two-fifth of the female students. Male students were found to have pre hypertension more and hypertensive also. They were advised to have antihypertensive drugs, regular check up of Blood Pressure, dietary modification, exercise etc Those students having 3 or more risk factors were advised to undergo blood biochemistry. Students having abnormal value were advised to take necessary action. Razeek Md Ibrahim and others in their study in TamilNadu among medical students also had similar type of findings.[11] Study done by Ms Nayan kumar Sanju & others in a Private Medical College among medical and dental students in Kathmandu, Nepal also found risk factors for Hypertension were quite high among two batches of students.[12] All of these findings of our study necessitates urgent intervention to curb those behavioural risk factors.

V. Conclusion

We have studied students from one medical college.It would have been better if other medical colleges would also been involved. This study highlights that there is huge scope to curb the modifiable risk factors among our future doctors by encouraging the students to modify their behavior related life styles such as smoking habits, alcohol use where their friends who are not having these risky behaviours also can play a major role. Dietary modification should also be encouraged with increase intake of fruits and vegetable, avoid unhealthy diets like junk food, salty food. The students should be involved in outdoor games, gymnasium,yoga etc. The college authority can come forward for making these arrangements in the college campus. Periodic screening of the students at regular intervals with appropriate advise is also needed. So that our future health providers become healthy and can join as partner of the global effort to downgrade the NCD EPIDEMIC.

References

[1]. WHO.Global Action Plan for the Prevention and control of NCDs,2013-2020:3-6.

[2]. [2].Reshma Naik and Toshiko Kaneda. *Addressing Non Communicable Disease Risk Factors among young people. Asia's window of opportunity to curb a Growing epidemic. Policy report,May 2016:2-8.www.prb.org*

[3]. [3]. Dalia S. Desouky,Mohammad S Omar, Dalal M Nemenquan, Jamiel Jabbar,Nighat M Tarak-Khan. *Risk Factors of Non communicable diseases among female university students of the Health Colleges of Taif University.Int Journal of Medicine & Medical Sciences,March 2014,vol 6(3):97-107.*

[4]. [4]. Aroor Bhagyalaxmi, Trivedi Atul and Jain Shikha. *Prevalence of Risk Factors of Non- communicable diseases in a district of Gujrat,India.J Health Popul Nutr,2013 Mar;31(1):78-85*

[5]. [5]. Dalia S.Desouky,Moha S. Omar,Dalal M. Nemenguan,Jawed Jabbar and Nighat M. Tarak Khan. *Risk Factors of non-communicable diseases among female University students of Health Colleges of Taif University. Int Journal of Medicine & Medical Sciences,March 2014,Vol 6(3):97-107.*

[6]. [6]. Hanan Abo-Elgamelen Ebrahim Essa and Monera Bassuny Abdal Ei-Shemy. *Prevalence of life style associated risk factors for non-communicable diseases and its effect on quality of life among nursing students,faculty of nursing,Tanta University. International Journal of Advanced Research 2015,Vol 3(5):429-446.*

[7]. [7]. Animesh Jain, Juhi Dhanawat, M Shashidhar Kotian, Ruth Angeline. *Assessment of risk factors for non-communicable diseases among high school students in Mangalore, India. IJHAS 2012,Vol1(4):249-254.*

[8]. [8]. Syed Esam Mahmood,Shanshad Hussain Ansary. *Life Style Disease Risk Factors among First Year Medical Students in Bareilly. NJIRM 2013:Vol 4(2):50-54.*

[9]. [9]. Kenneth V.Nyombi,Samuel Kizito,David Mukunya,Angella Nabukalu,Martin Bukama,Joseph Lunyera,Martha Asiimwe,Ivan Kimuli and Robert Kalyesubula.*High prevalence of hypertension and cardiovascular disease risk factors among medical students at Makerere University College of Health Sciences, Kampala, Uganda.BMC Res Notes 2016;9:110.*

[10]. [10]. Imaad Md Ismail, P P Venugoppalan, A K Sarada, Kanniyan Binub. *Prevalence of non-communicable disease risk factors among college students of Anjarakandy Integrated Campus, Kannaur, Kerala, India. J Med Soc 2016,30(2):106-110.*

[11]. [11]. M S Nayan Kumar Sanju,Mr Rajesh Kumar Shah,Ms Geethanjali S,Mr Rakesh Sankara.*The risk factors for Hypertension among medical & Dental students at a private medical college: Findings from a cross-sectional study.Web Med Central Hypertension 2015;6(7):WMC004941.*

[12]. [12]. Razeek Mohammad Ibrahim,Sengoda Gounder P Priyadarshini,Rahim Abdul Nayeem, V M Somasundaram,R Shankar. *Prevalence of Risk Factors for obesity, hypertension, coronary artery disease & diabetes among undergraduate Medical College students of Tamil Nadu. Int J Community Med Public Health,2017 Sep;4(9):3250-3255.*

Tables

Table 1: Sociodemography and family history of Non Communicable Diseases of the Medical undergraduates

Variables	First year n=96	Fourth year n=100
Mean age in years	19.30±0.89	21.53±1.01
Gender		
Male	53(55.2)	59(59.0)
Female	43(44.8)	41(41.0)

Residence		
Rural	33(34.3)	18(18.0)
Urban	63(65.7)	82(82.0)
Type of Student		
Day Scholar	15(15.6)	14(14.0)
Boarder	81(84.4)	86(86.0)
Religion		
Hindu	82(85.4)	94(94.0)
Muslim	12(12.5)	06(06.0)
Christianity	02(02.1)	00(00.0)
Family Type		
Nuclear	68(70.8)	92(92.0)
Non Nuclear	28(29.2)	08(08.0)
Socio-Economic Status		
Class I	72(75.0)	93(93.0)
Class II	17(17.7)	05(05.0)
Class III	07(07.3)	02(02.0)
Positive Family History[#]		
Hypertension	52(54.2)	57(57.0)
Diabetes Mellitus	39(40.6)	33(33.0)
Cardio Vascular Diseases	10(10.4)	21(21.0)
Dyslipidemia	07(07.3)	24(24.0)
Obesity	20(20.8)	53(53.0)

Figures within brackets indicates percentages [#] Multiple response

Table 2: Distribution of the students according to Life style related risk factors.

Variables	First Year n= 96	Fourth Year n=100	χ^2	df	p
Physical Exercise					
No Exercise	51(53.1)	24(24.0)			
< 150 mins/week	29(30.2)	49(49.0)	2.89	1	.08
≥ 150 mins/week	16(16.7)	27(27.0)			
Current Smoker					
Yes	12(12.5)	32(32.0)	10.37	1	.001*
No	84(87.5)	68(68.0)			
Current Alcohol User					
Yes	08(08.3)	46(46.0)	34.16	1	.000*
No	88(91.7)	54(54.0)			
Primary Diet+					
Vegetarian	14(14.6)	04(04.0)	not done		
Non Vegetarian	82(85.4)	96(96.0)			
Skipped Meals+					
Yes	92(95.8)	64(64.0)	not done		
No	04(04.2)	36(36.0)			
Adverse food intake					
≤ 3 times/week	64(66.7)	30(30.0)	26.61	1	.0000*
> 3 times/week	32(33.3)	70(70.0)			
Snacks in between meals					
No	10(10.4)	07(07.0)			
Occasionally	73(76.0)	67(67.0)	4.55	1	.03*
1-5 times/day	13(13.5)	26(26.0)			
Intake of fruits					
No or <2 servings/day	17(17.7)	91(91.0)	105.07	1	.00*
≥ 2 servings/day	79(82.3)	09(09.0)			
Intake of Vegetables					
No or <2 servings/day	30((31.2)	24(24.0)	1.68	1	.195
≥ 2 servings/day	66(68.8)	76(76.0)			

Figures within brackets indicates percentages * significant +cell value < 5

Table 3: Medical Undergraduates according to their Physical Measurements.

Variables	First Year n= 96		Fourth Year n=100		Total n=196	
	Male n= 53	Female n=43	Male n=59	Female n=41	Male n=112	Female n=84
Body Mass Index (kg/m^2)						
Underweight (<18.5)	04(07.1)	04(09.3)	02(03.4)	06(14.6)	06(05.4)	10(11.9)
Acceptable (18.5-23)	26(49.0)	15(34.8)	22(37.3)	14(34.1)	48(42.8)	29(34.5)
Mild-Mod Risk (23.1-27.5)	20(37.7)	20(46.5)	32(54.2)	16(39.0)	52(46.4)	36(42.8)
Higher High Risk(≥27.6)	03(05.7)	04(09.3)	03(05.1)	05(12.2)	06(05.4)	09(10.8)
Waist circumference						
Normal	51(96.2)	21(48.8)	48 (81.4)	22(53.6)	99(88.4)	43(51.2)
Abnormal	02(01.8)	22(51.2)	11(18.6)	19(46.3)	13(11.6)	41(48.8)
Waist :Hip ratio						
Normal	53(100.0)	23(53.5)	59(100.0)	24(58.5)	112(100.0)	47(55.9)
Abnormal	00(00.0)	20(46.5)	00(00.0)	17(41.4)	00 (00.0)	37(44.1)
Blood Pressure						
Normal	30(56.6)	28(65.2)	21(35.6)	27(65.8)	51(45.5)	55(65.5)
Pre Hypertension	19(35.8)	15(34.8)	36(61.0)	14(34.2)	55(49.1)	29(34.5)
Increased	04(07.5)	00(00.0)	02(03.4)	00(00.0)	06(05.4)	00(00.0)

Figures within brackets indicates percentages

Table 4: Medical students and their Biochemical Parameters

Variables	First Year n=22	Fourth Year n=34
Fasting Blood Sugar		
Normal (70-100mg/dl)	21(95.5)	32(94.1)
Early Diabetes (101-125mg/dl)	01(04.5)	02(05.9)
Blood Cholesterol		
Desirable (< 200mg/dl)	18(81.9)	25(73.5)
Borderline (200-239mg/dl)	03(13.6)	07(20.6)
High Risk (≥ 240mg/dl)	01(04.5)	02(05.9)
Blood Triglyceride		
Desirable (< 150mg/dl)	19(96.4)	25(73.5)
Borderline (150-199mg/dl)	01(04.5)	08(23.6)
High Risk (≥ 200mg/dl)	02(09.1)	01(02.9)

Figures within brackets indicates percentages

Dr Jhuma Sarkar1 "Prevalence Of Risk Factors Of Non- Communicable Diseases Among Undergraduate Medical Students: Study From A District Of West Bengal, India ."IOSR Journal of Dental and Medical Sciences (IOSR-JDMS), vol. 17, no. 6, 2018, pp 16-21.