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ORIGINAL RESEARCH

Assessment of risk factor profile of non-communicable diseases in field practice area of a medical College in Jammu and Kashmir

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ABSTRACT
We aimed to assess the prevalence of risk factors of non communicable diseases in urban area of district Kathua.A community based cross sectional study was conducted in urban field practice area of the Department of Community Medicine, GMC Kathua. WHO STEP wise approach was adopted. Sample size of 512 was calculated and Cluster sampling technique was used. Target population was all healthy adults aged more than 18 years of age. Core items were evaluated in three STEPS as sociodemographic information, information about behavioral risk factor and Physical as well as biochemical measurement in sequential manner. Our study revealed increase in the prevalence of behavioral risk factor among males, less consumption of fruits and vegetables and less physical activity in both males and females. We recommend community based screening of NCD on large scale through Community based assessment Checklist (CBAC) and strict Implementation of National programme for prevention and control of Non – Communicable diseases at facility and population level
Keywords: Cross Sectional, Risk Profile, Burden, STEPS, prevention

INTRODUCTION

Non-communicable disease (NCD) continues to be an important public health problem in India, being responsible for a major proportion of mortality and morbidity.It contribute to half of the disease burden in low and middle income countries. (LMIC)[1] According to WHO NCD's will be responsible for three quarters of all deaths in India by 2030 [2] Evidence based medicine has revealed that large number of chronic diseases can be prevented by controlling the risk factors [3]

Hypertension (HTN), type II diabetes mellitus, dyslipidaemia and cardiovascular (CV) diseases are the most prevalent NCDs in India. These diseases share common preventable risk factors [4] Present study was conducted to generate baseline data on the burden of risk factors in Urban area of district Kathua. The findings would help in formulating cost effective intervention at community level and to reduce the burden of NCDs.

Objective

To assess the of risk factors profile of non communicable diseases in urban area of district Kathua.

Study Design

It was a community based cross sectional study carried out in the urban field practice area of the Department of Community Medicine, GMC Kathua.

Prior consent for the study was Obtained from Institutional Ethical Committee. Urban field practice area consisted of 11 residential wards which caters to a population of about 47,000. We conducted this NCD risk factor survey by following the “The WHO STEP wise approach to non-communicable diseases risk factor surveillance from 01.08.2023- 31.10.2023. [5]

STEPS approach includes three sequential phases or "Steps" of risk factor assessment.

Step 1 constitute questionnaire on sociodemographic variables, and behavioural risk factors, i.e. tobacco

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use, alcohol use, physical inactivity, and dietary factors , obtaining physical measurements such as weight, height, waist circumference, and blood pressure using standardized protocols and instruments (STEP 2); acquiring biochemical measurements such as blood glucose, serum total cholesterol, serum low-density lipoprotein (LDL) and high-density lipoprotein (HDL) cholesterol, and triglycerides (TG) using fasting blood samples (STEP 3). Each step contain core items and expanded items. Each question has standard response options and is assigned a standard code for facilitating data anaylsis.[5]

Sample size of 512 was calculated using current prevalence rates of NCDs i.e., 20% (10–30%), with the precision of 5%, 95% confidence intervals and design effect of 2. Cluster sampling technique was used. Target population was all healthy adults aged more than 18 years of age. Persons with severe chronic illness and physical disability, pregnant women and candidates not willing to participate were excluded from the study. From each ward, first household was selected randomly using random number tables and then subsequent households were visited till sample size of 47 was obtained from each ward. From each of the selected household, one adult member aged more than 18 years was sampled randomly for the participation in the survey using lottery method. Same procedure was replicated in all the wards (cluster) till the total sample size of 512 was achieved. Prior consent was obtained from all the study participants.

The operational definitions for behavioural variables like smoking, tobacco use and alcohol, level of physical activity and serving of fruits and vegetables were used as WHO guidelines.[6,7,8,9,10]

For physical measurement, parameters like weight, height, BMI calculation, waist circumference and blood pressure measurement were taken into account. Body weight was recorded with standardized bathroom scale. Measurements were taken to the nearest 0.1 kg. Height was measured by asking the participants to stand upright barefoot with heels and knee together with back touching the wall and head in Frankfurt position. Height was marked and measured in cm using tape from the mark to the floor .WHO criteria of BMI was used to classify overweight and obesity. Waist circumference was measured using tape in cm by taking midaxillary point midway between the last rib and anterior superior iliac crest. Waist circumference > 102 cm in males and> 88 cm in females was taken as abdominal obesity. Blood pressure was measured using standardized Sphygmanometer three times in sitting position. The average of two readings and blood pressure reading of 140/90 mmhg or more without the use of antihypertensive and those already on antihypertensive drugs were labelled as Hypertensives

For biochemical assessment, core and expanded core indicators like Fasting blood glucose, Total cholesterol, fasting high density Lipoprotein and triglycerides was measured. Blood sample was drawn from every 10th participant. The respondents were informed one day prior to remain fasting for at least 8 hrs. Fasting 4 ml blood sample was collected from the subjects under tourniquet pressure and aseptic precautions, in red topped evacuation tubes. Second sample was collected by visiting the household on the consecutive morning of the first visit. Samples were transported in vaccine carriers maintaining the temperature of 2-8"C to the testing facility. Centrifugation of the sample in the evacuation tubes was done at 2500 rpm for fifteen minutes in the centrifugation machine. Serum was separated, collected in Eppendorf tubes and estimation of the parameters was done immediately without delay. Like this, a total of 105 blood samples were taken. All the report of blood sugar and lipid profile was shared with the participants and intervention in the form of health promotion and other measures was given wherever it was needed. Data was entered in the MS-Excel. The study being descriptive, analysis was done in number and percentage.

RESULTS

Among the total 512 study participants, 54.4% were females and 45.4% were males. Most of the individuals were in the age group of 31-40 years . 23.4% of the participants had done schooling up to secondary school whereas only 36 participants had no formal schooling. 29.4% of the participants were self employed and 35% of the female participants were homemakers in our study. Majority earned an income above 30,000. (Table 1)

Table 1 depicts the socio demographic data of the respondents. Table 2 shows smoking and alcohol use was 3.4% and 7.9% respectively, which was only contributed by the male participants in our study. Alcohol use was almost two times higher as compared to smoking. Among all the participants, 44.9% of the females and 37.5% of the males were consuming only 1 serving of the fruit per day. Consumption of more than 3 servings fruits per day was found to be very low. Similarly, consumption of more than 5 servings of vegetables was very low whereas consumption of 0-2 servings was found in 69.3% of the participants. Most of the respondents were doing moderate intensity work on day to day basis.

More women were found to be overweight (34.1%) and obese (14.9%) as compared to males. Regarding the waist circumference, it was found that 35.9 % of the women had raised waist circumference whereas only 11.9% of the males had raised waist circumference. (Table 3).

Table 2 shows the distribution of biochemical parameters among the study participants. Elevated Fasting Blood Sugar (FBS) were found in 8 % of

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males and 18 % of females. Hypercholesterolemia was observed in 5 % of males and 6 % of women.

Table 1: Socio demographic characteristics of the study participants

Characteristic	Female n= 281	Male n= 235	Total
Age groups			
18-30 (134)	76	61	137
31-40	75	53	128
41-50	62	44	106
51-60	45	38	83
61-70	16	25	41
>70	7	14	21
Education			
No formal schooling	28	8	36
Less than primary school	6	5	11
Primary school	41	23	64
Secondary school	68	53	121
High school	53	62	115
College/ University completed	49	60	109
Post graduate degree	35	24	59
Refused to answer	1	0	1
Marital status			
Never married	39	56	95
Currently married	224	173	397
Separated	3	5	8
Divorced	0	0	0
Widowed	14	1	15
Cohabitating	1	0	1
Refused	0	0	0
Occupation			
Government employee	10	33	43
Non- government employee	19	36	55
Self-employed	40	112	152
Student	26	26	52
Homemaker	181	2	183
Retired	5	26	31
Refused to answer	0	0	0
Average monthly income			
Upto 5000	36	22	58
5001 -10,000	71	46	117
10,001- 15,000	29	18	47
15,001-20,000	27	36	63
20,001-25,000	24	19	43
25,001- 30,000	25	20	45
Above 30,000	69	74	143

Table 2: Distribution of behavioural risk factors for Non Communicable Diseases

	Women						Men						Total
	18-30	31-40	41-50	51-60	61-70	>70	18-30	31-40	41-50	51-60	61-70	>70	Women Men
Smoking-													
Yes	0	00	01	00	00	00	02	09	02	03	02	00	01
No	76	75	61	45	16	07	59	44	42	35	23	14	18 280 217
Tobacco use –													
Yes	00	00	00	00	00	00	00	00	00	00	00	00	00
No	76	75	62	45	16	07	61	53	44	38	25	14	00 280 235

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Alcohol use-													
Yes	0	0	0	0	0	0	09	12	08	08	02	02	00
No	76	75	62	45	16	7	52	41	36	30	23	12	41
													280
													194
Fruit consumption (serving /day)													
1 serving	63	59	56	39	11	04	48	43	37	34	20	12	232
2 servings	09	10	05	03	02	01	05	04	03	2	02	01	194
3 servings	02	04	01	01	02	01	06	05	03	01	01	01	30
>3 servings	02	02	00	02	01	01	02	01	01	01	02	00	17
													11
													17
													08
													07
Vegetable consumption (serving /day)													
0-2 serving	57	57	47	33	08	06	43	41	21	15	15	05	218
3-4 servings	16	17	15	11	08	01	15	11	21	20	10	09	140
4-5 servings	02	01	00	01	00	00	02	01	01	02	00	00	68
>5 servings	01	00	00	00	00	00	01	00	01	01	00	00	86
													4
													06
													1
													03
Type of work													
Vigorous intensity	04	03	04	01	02	00	12	06	05	05	02	01	14
Moderate intensity	18	16	12	09	05	01	22	19	09	09	06	03	31
													61
													68
Recreational activities (sports, fitness)													
Vigorous intensity	32	02	01	00	00	00	59	06	02	02	01	00	35
Moderate intensity	19	02	01	01	00	00	13	05	01	02	00	00	70
													23
													21

Table 3: Distribution of Physical parameters

	Women					Men					Total
	18-30	31-40	41-50	51-60	61-70 >70	18-30	31-40	41-50	51-60	61-70 >70	Women Men
Body Mass Index											
Underweight	11	06	05	00	03	10	01	01	05	02 01	26
Normal weight			01			30	33	23	13	06 04	20
Overweight	42	30	24	14	05	18	17	18	15	15 08	117
Obese			02			03	02	02	05	02 01	109
	14	30	20	24	05						96
			03								91
	09	09	13	07	03						42
			01								15
Waist circumference											
Normal											180
Raised	65	45	35	20	11 4	57	48	40	34	19 09	217
	11	30	27	25	05 03	04	05	04	04	06 05	101
											28

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Table 4: Distribution of Biochemical parameters

	Women					Men					Total	
	18-30	31-40	41-50	51-60	>60	18-30	31-40	41-50	51-60	>60	Women	Men
Fasting Blood glucose	14	10	07	04	03	12	08	09	07	05	38	41
FBS <126 mg/dl												
FBS >126 mg/dl	04.	04.	04.	04.	02	03	01	01	02	01	18	08
Cholesterol levels												
<200 mg/dl	67	73.	57.	43.	25	54	50.	40.	38.	35	265	217
>200 mg/dl	07	04	06	01	00	05	01	01	01	02	18	10
HDL												
<40 mg/dl	62	68.	54.	37.	20	53	47.	42.	33.	35	241	210
>40mg/dl	05.	05.	02.	05.	06	06.	06.	03.	07.	04	23	26

DISCUSSION

The current study was conducted to estimate the burden of risk factors of NCD for generating baseline data to get an insight into the spectrum of the disease at population level.Our study found the prevalence of smoking and alcohol to be 3.4% and 7.9% respectively, which was only contributed by the male participants. Alcohol use was almost two times higher as compared to smoking. The results conform to the findings by Nawi Ng et al which show higher prevalence of smoking among males of all age group and no tobacco use among females [4]. The results are in contradiction to the study conducted by Krishnan A et al which revealed 41% and 13 % male and female smokers respectively [11]

Among all the participants, 44.9% of the females and 37.5% of the males were consuming only 1 serving of the fruit per day. Consumption of more than 3 servings fruits per day was found to be very low. Similarly, consumption of more than 5 servings of vegetables was very low whereas consumption of 0-2 servings was found in 69.3% of the participants. Our findings is similar to the study findings by Srivastav et al where low consumption of fruits and vegetables was reported in 89.6% of males and 90 % of females [3] Poor intake of vegetables and fruits was observed in many other population based studies.(5,6,7,8). 70.3 % of respondents were taking inadequate intake of fruits and vegetables in a study by Ankita Singh et al. [12]

Males were found to be more physically active in our study. In contrary the findings by Tushi et al reported only by 3.4% of study population to be inactive .Similar results(7.5 %) have been reported by PunjitaTimalsina and Regina Singh in their study. [13]

More women were found to be overweight (34.1%) and obese (14.9%) as compared to males.The results are consistent with findings of DJ Raina et al where prevalence of overweight and obesity in females was found to be 1.5 times and 3.3 times more respectively in comparison to males[14] .Similary high prevalence of overweight and obesity was observed among urban men and women in all age group in a study conducted by Bhagyalaxmi et al.[15]

Regarding the waist circumference, it was found that 35.9 % of the women had raised waist circumference whereas only 11.9% of the males had raised waist circumference. (Table 3). This finding is consistent with the findings by Srivastav et al where 67.7 % of the females were found to have raised waist circumference [3] In contradiction, earlier study by SD Bhardwaj et al revealed 3.2 % men with waist circumference more than 102 cm in the age group of 35-44 years age group [1]

Elevated Fasting Blood Sugar (FBS) were found in 8 % of males and 18 % of females.This finding is corroborated by previous study by Garg et al where 18% of the study population revealed raised fasting blood sugar levels [2]

Hypercholesterolemia was observed in 10% of males and 18% ofwomen.Similar report of raised total cholesterol was reported in women in a nation wide STEPS Survey conducted by Kelias P. Msyamboza et al in Malawi [16] 18. 3 % raised total serum cholesterol was found in a study among women aged 18 years and above by Yichong Li et al in China which conform to our study finding [17]

CONCLUSION

Our study revealed increase in the prevalence of behavioral risk factor among males, less consumption of fruits and vegetables and less physical activity in both males and females.We recommend community based screening of NCD on large scale through Community based assessment Checklist(CBAC) , health education at grass root level for health promotion . Strict Implementation of National programme for prevention and control of Non – Communicable diseases (NP-NCD) at facility and population level is the need of hour to reduce the mortality and morbidity due to Non communicable disease.

Limitation

Our study is confined only to the urban area with limited sample size and hence the results could not be generalized to the whole population of the area. Secondly, optional/ expanded items mentioned in the STEPS instrument was not taken into account which

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could have given more specific picture of all the morbidities. Keeping in view the rising burden of Non communicable disease , further studies with larger sample size with population representation from all the blocks of the district would yield a better picture of disease burden and trends in the area.

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