

## A Cross-Sectional Study on Physical Activity Patterns and Dietary Habits of a Nursing College Students in Central Karnataka

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### Abstract

**Introduction:** Nutritional habits and physical activity influence the health status of young adults. Non-communicable diseases (NCDs) such as obesity and cardiovascular diseases (CVD) are the major human health problems of 21<sup>st</sup> century. NCD risk factors like sedentary lifestyle, increased consumption of diet rich in sugar, fats and salt, tobacco and alcohol consumption are increasingly found among youth. Having proper dietary habits (nutritional behaviour) and moderate physical exercise are the best methods for reducing CVD risk.

**Objectives:** To assess patterns of physical activity and dietary habits followed by students studying at a nursing college in Chitradurga.

**Methodology:** It was a cross-sectional study. Assessments, by questionnaire, included daily food intake, frequency of consuming foodstuffs with an adequate nutritional value and evaluating adverse dietary habits and types of physical activity undertaken.

**Results:** 175 students participated in the study. Physical activities of moderate and vigorous intensity were followed by 65.7% and 65.1% students respectively. Foods with good nutritional value were consumed in lesser quantities. 14.9% consumed < 1 vegetable serving/day, 38.3% consumed < 1 fruit serving / week. There were students who did not consume vegetables (8%) or fruits (14.9%) at all. Higher frequencies (2-6 days/week) of consumption of junk food (12.6%) and soft drinks (10.3%) were found.

**Conclusion:** It is an encouraging fact to know that students were involved in moderate or vigorous physical activities on regular basis. Whereas healthy dietary practice was less and consumption of junk food and soft drinks was more. Present study highlights areas of nutritional concerns that must be addressed to bring about reduction in proportion of modifiable risk factors of NCDs among youth in health care professional courses.

**Key words:** Non communicable diseases, modifiable risk factors, physical activity pattern, dietary habits.

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## Introduction

Non-communicable diseases (NCDs) are one of the major public health challenges of the 21<sup>st</sup> century. Along with the significant human sufferings, NCDs also inflict harm/burden on the socioeconomic development of the country.<sup>[1]</sup> Non-communicable diseases result in about 41 million deaths every year, i.e., nearly 71% of all deaths globally.<sup>[2]</sup> India is witnessing an epidemic of non-communicable diseases due to increase in prevalence of diabetes, hypertension, stroke, cancers, coronary heart disease and obesity.<sup>[1]</sup> Simultaneously, deaths due to NCDs have also increased in India from 37.9% in 1990 to 61.8% in 2016. Around 55.4% of the Disability Adjusted Life Years (DALYs) lost are due to NCDs.<sup>[3]</sup> Many factors like high salt intake, high fats, junk foods, fast foods, soft-drinks intake, low physical activity, tobacco usage, alcohol consumption among others are associated with NCDs. These risk factors are modifiable and preventable.<sup>[4]</sup> Fit India Movement was launched by the Government of India (GoI) with the aim to bring about behavioural changes towards more physically active lifestyle.<sup>[5]</sup> Eat Right India Movement is a large-scale effort by the GoI to ensure safe, healthy and sustainable food for all Indians.<sup>[6]</sup> Eat Right Campus, the flagship initiative by the Eat Right India Movement promotes healthy eating for people at workplaces, hospitals and higher education institutions.<sup>[7]</sup>

It is seen that dietary habits usually change when youth enter the professional courses. Moving away from home, independent living arrangements, freedom to opt for personal preferred lifestyles are more likely to result in increased consumption of fast foods that are high in saturated fats, energy and fat dense snacks whereas less consumption of dietary fibers and fruits.<sup>[8-11]</sup>

Health-care professionals are the important links for promoting healthy dietary and lifestyle habits among the general population. The dietary and lifestyle practices among the nursing students have to be explored to understand the existent NCD risk factors in them. If the healthy life style is promoted among these students, they are more likely to bring about positive changes in the general public.<sup>[12,13]</sup>

There are limited number of studies done to assess the lifestyle and physical activity among

nursing students in Central Karnataka. So, this study was conducted to understand the dietary patterns, physical activity and lifestyle practices among the nursing students in central Karnataka.

## Methodology

For the present cross-sectional study, the sample size was calculated considering 97.5% prevalence of vegetables consumption among nursing students as per study conducted by van den Berg VLet al.<sup>[14]</sup> At 99% confidence level and 4% margin of error, minimum sample size calculated by Openepi was 102.<sup>[15]</sup> After obtaining institutional ethics committee clearance, this study was conducted among nursing students studying in SJM Institute of Nursing Sciences, Chitradurga, Karnataka from August to September 2022. With the prior permission from the head of the institution, complete enumeration of all nursing students of the institution were considered for the study. The purpose of the study was explained and a pre-designed self-administered questionnaire was sent to all these students via google forms. All the nursing students who were willing to participate in the study and who gave informed consent were included in the study. The proforma from those students that were not returned or incompletely filled were excluded from the analysis.

First part of the questionnaire consisted of socio-demographic details. Second part consisted of food frequency questionnaire. This included questions on frequency of consumption of low-salt, low-fat, low-sugar diet, fruits, vegetables, junk foods and soft drinks. Further, the questionnaire also elicited information regarding consumption of alcohol and tobacco. In the final section of proforma, physical activity pattern practiced by the students was elicited utilizing 'Global Physical Activity Questionnaire (GPAQ)'. GPAQ is a component of World Health Organization's STEPwise approach to Surveillance (STEPS) that identifies chronic disease risks. GPAQ comprises of 16 questions that ask information about physical activities performed at work place, during day-to-day travel and during recreational activities. 'Vigorous-intensity activities' are defined as activities that require heavy physical effort and cause large increases in breathing or heart rate. 'Moderate-intensity activities' are activities that require

moderate physical effort and cause small increase in breathing or heart rate. GPAQ also included a question 'Do you walk or use a bicycle for at least 10 minutes continuously to travel to and from places such as work place, for shopping, to market, to place of worship?' [16]

Data was compiled in Microsoft Excel spreadsheet and analysed using Statistical Package for the Social Sciences version 20 (SPSS Inc., SPSS for Windows, Chicago, USA). Qualitative variables are presented as frequencies and percentages. Quantitative variables are presented as Mean±SD. Chi square test is applied to assess the significance of associations among the qualitative variables, and those associations with  $p < 0.05$  were considered to be statistically significant. Data is presented in tables and figures.

## Results

A total of 175 nursing students participated in the study. Socio-demographic characteristics of respondents are given in Table 1. A majority of the study respondents were aged between 18-22 years (96.6%). Majority were females (77%). Nearly half of them were from Karnataka (53%). A 29% of students were from the state of Kerala and 16% students were from West Bengal. Most of the students were from rural areas (68%). A majority of students were studying B.Sc. Nursing (87.4%) and stayed at hostels (76.6%). A higher proportion of students (73.7%) were reportedly studying nursing course by their choice. (Table: 1).

**Table 1: Socio-demographic characteristics of participants**

Characteristic	Frequency	Percentage
<b>Age (in years)</b>		
18-20	115	65.7
21-25	60	34.3
Female	135	77.1
Male	40	22.9
<b>State of origin</b>		
Karnataka	93	53.1
Kerala	51	29.1
West Bengal	28	16.0
Not answered/ improper answer	3	1.7

Continue Table 1.....

<b>Place of origin</b>		
Rural	119	68.0
Urban	56	32.0
<b>Course</b>		
BSc Nursing	153	87.4
General Nursing and Midwifery (GNM)	22	12.6
<b>Residence during course</b>		
Home	28	16.0
Hostel	134	76.6
Paying guest	6	3.4
Share flat with friends	7	4.0
<b>Year of studies</b>		
1st year	69	39.4
2nd year	49	28.0
3rd year	31	17.7
4th year	26	14.9
<b>Studying nursing by choice</b>		
No	46	26.3
Yes	129	73.7
<b>Mother's education</b>		
Illiterate	11	6.3
1-5 standard	12	6.9
6-10 standard	81	46.3
Pre-University	34	19.4
Graduation and above	28	16.0
Improper response	9	5.1
<b>Father's education</b>		
Illiterate	9	5.1
1-5 standard	10	5.7
6-10 standard	78	44.6
Pre-University	19	10.9
Graduation and above	55	31.4
Improper response	4	2.3
Total	175	100.0

The dietary practices of participant students are given in Table 2. One fifth of the students (20%) reportedly did not consume fruits at all and 38.3% had less than one serving of fruit per week. Nearly one tenth (8%) of students reportedly did not consume vegetables at all. A 14.9% of students reportedly consumed less than one vegetable serving per day.

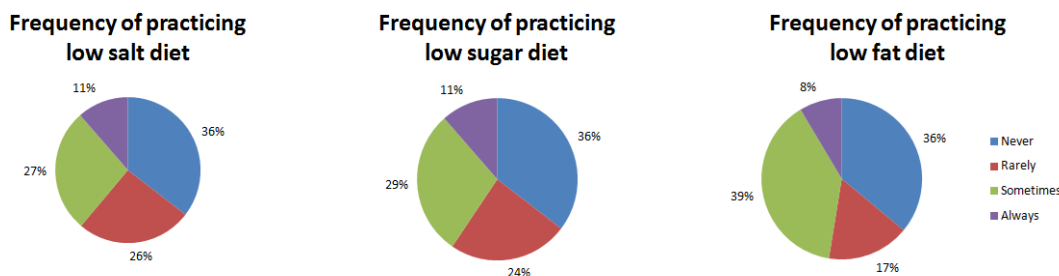
Higher frequencies (2-6 days per week or daily) of junk food and soft drinks consumption were found among 22.3% and 13.1% of students respectively. A higher proportion of students did not consume tobacco or alcohol (non-smokers: 98.9%, non-users of smokeless tobacco: 97.7% non-consumers of alcohol: 97.7%).

**Table 2: Frequency of consuming fruits, vegetables, junk foods and others.**

	Frequency (Percentage)
<b>Frequency of consuming fruits</b>	
Never	35 (20.0)
Rarely	1 (0.6)
Sometimes	1 (0.6)
< 1 serving/wk	67 (38.3)
Two time per week	1 (0.6)
1 serving/day	45 (25.7)
≥ 2 servings/day	25 (14.3)
<b>Frequency of consuming vegetables</b>	
Never	14 (8.0)
< 1 serving/day	26 (14.9)
1 serving/day	50 (28.6)
2 servings/day	43 (24.6)
≥ 3 servings/day	37 (21.1)

Continue Table 2.....

Others	5 (2.9)
<b>Frequency of consuming junk foods</b>	
Never	15 (8.6)
Once a month	27 (15.4)
Once in 2 weeks	23 (13.1)
Once in a week	71 (40.6)
2-6 days in a week	22 (12.6)
Daily	17 (9.7)
<b>Frequency of consuming soft drinks</b>	
Never	25 (14.3)
Once a month	63 (36)
Once in 2 weeks	25 (14.3)
Once in a week	39 (22.3)
2-6 days in a week	18 (10.3)
Daily	5 (2.9)
<b>Smoking tobacco</b>	
Yes	2 (1.1)
No	173 (98.9)
<b>Smokeless tobacco usage</b>	
Yes	4 (2.3)
No	171 (97.7)
<b>Alcohol history</b>	
Yes	4 (2.3)
No	171 (97.7)



**Figure 1: Frequency of practicing low salt, low sugar, low fat diet**

The physical activity pattern among the students was assessed in the present study. A majority of 64.6% of respondent students reported to walk or use bicycle for their routine commute purposes, which was significantly higher among males (85%) than females (58.5%). It was significantly more among 1<sup>st</sup> (72.5%)

and 2<sup>nd</sup> year (71.4%) students than 3<sup>rd</sup> (51.6%) and 4<sup>th</sup> year (46.2%) students. Vigorous intensity activities and moderate intensity activities were performed by 65.1% and 65.7% students respectively. Vigorous intensity physical activity was significantly more among males (85%) than females (59.3%). (Table 3 and 4)

**Table 3: Physical activity pattern among nursing students**

Response	Walk or use a bicycle n (%)	Vigorous intensity activities n (%)	Moderate intensity activities n (%)
Yes	113 (64.6)	114 (65.1)	115 (65.7)
No	62 (35.4)	61 (34.9)	60 (34.3)
Total	175 (100)	175 (100)	175 (100)

**Table 4: Factors affecting physical activity among nursing students**

	Walk or use a bicycle Frequency (Percentage)	Moderate intensity activities Frequency (Percentage)	Vigorous intensity activities Frequency (Percentage)
<b>Sex</b>			
Male	34 (85.0)	27 (67.5)	34 (85.0)
Female	79 (58.5)	88 (65.2)	80 (59.3)
$\chi^2, df, p$	$\chi^2 = 9.459, df = 1,$ $p < 0.05$	$\chi^2 = 0.073, df = 1,$ $p > 0.05$	$\chi^2 = 9.004, df = 1,$ $p < 0.05$
<b>Place of origin</b>			
Urban	34 (60.7)	37 (66.1)	31 (55.4)
Rural	79 (66.4)	78 (65.5)	83 (69.7)
$\chi^2, df, p$	$\chi^2 = 0.536, df = 1,$ $p > 0.05$	$\chi^2 = 0.005, df = 1,$ $p > 0.05$	$\chi^2 = 3.473, df = 1,$ $p > 0.05$
<b>Place of residence during course</b>			
Hostel	82 (61.2)	90 (67.2)	89 (66.4)
Home	20 (71.4)	17 (60.7)	16 (57.1)
Others	11 (84.6)	8 (61.5)	9 (69.2)
$\chi^2, df, p$	$\chi^2 = 3.527, df = 2,$ $p > 0.05$	$\chi^2 = 0.536, df = 2,$ $p > 0.05$	$\chi^2 = 0.981, df = 2,$ $p > 0.05$
<b>Year of nursing studies</b>			
1 <sup>st</sup> year	50 (72.5)	52 (75.4)	49 (71.0)
2 <sup>nd</sup> year	35 (71.4)	32 (65.3)	33 (67.3)
3 <sup>rd</sup> year	16 (51.6)	16 (51.6)	17 (54.8)
4 <sup>th</sup> year	12 (46.2)	15 (57.7)	15 (57.7)
$\chi^2, df, p$	$\chi^2 = 9.017, df = 3,$ $p < 0.05$	$\chi^2 = 6.333, df = 3,$ $p > 0.05$	$\chi^2 = 3.238, df = 3,$ $p > 0.05$

## Discussion

NCDs have risen in alarming proportions in the modern rapidly evolving world. [1-3] Globalization and industrialization have brought about the deleterious changes in the lifestyle and dietary patterns of the general population. The focus has to be shifted to understand the effect of these changes on the youth population. In this regard, the present study was conducted in the Central Karnataka among nursing students to understand their dietary, physical activity patterns and habits.

In our study, 40% students were consuming minimum one serving of fruit daily, and a 59.5% were consuming fruit at less than once per week frequency. (Table 2) In the study conducted on nursing students in Athens by Evagelou E et. al., 36.1% were consuming fruits daily and 13.2% consumed less than once per

week.[12] In a study conducted by Shekhar R. et.al. on medical and nursing students in India, it was seen that 18.4% of students consumed one or more fruits per day.[13] Whereas in a study done on undergraduate nursing students in South Africa by Van den Berg VL et.al., 57.8% were consuming 2 or more servings of fruits per day [14] WHO recommends adults to consume 2 cups (4 servings) of fruits daily. [17]

In the present study, 76% were consuming less than three servings of vegetables per day. (Table 2) Similarly, van den Berg VL et. al., reported a very high percentage (97.5%) for the same. [14] 77.7% consumed junk food once a week or still less. In the study by Shekhar R et al, 81.9% nursing students consumed junk foods < 3 times/week. [13] WHO recommends adults to consume 2.5 cups (5 servings) of vegetables daily. [17]

In the present study, a majority of students did not use any forms of tobacco (98.9% were non-smokers and 97.7% were non-consumers of smokeless tobacco). The results of the study are comparable with the studies done by Shekhar R et al., (88.2%).<sup>[13]</sup> Whereas, a 66.9% of non-users of tobacco was found in study conducted by Evagelou E. et. al.<sup>[12]</sup> In our study, a high proportion of 97.7% of students did not consume alcohol. The study results are similar to the findings in study conducted by Shekhar R et. al. (86.9%).<sup>[13]</sup> It was nil in the study by Evagelou E et al.<sup>[12]</sup> (Table 2)

Daily physical activity patterns followed by the nursing students was elicited in the present study. 64.6% of participant students regularly walked or used a bicycle for daily commuting purposes and a 65% of students were reportedly doing regular moderate or vigorous physical activity. Walking or using bicycle for commute purpose was significantly lesser among females (58.5%) compared to males (85.0%) and this was significantly in lesser proportion among the participants studying in 3<sup>rd</sup> or 4<sup>th</sup> year of professional degree courses (51.6% and 46.2% respectively) compared to those in the first or second years of studies (72.5% and 71.4% respectively). (Table 3 and 4) The pattern of walking or using bicycle was substantially lesser in study done on nursing students in Slovenia by Cilar L et al., (50% and 18% respectively).<sup>[18]</sup> Whereas, comparable results of moderate to vigorous physical activity practice was found in the study done on nurses in Kingdom of Saudi Arabia and Lebanon by Al-Tannir MA et al. (65% nurses practicing moderate to vigorous physical activity).<sup>[19]</sup> Lower percentage (53.1%) was reported for moderate physical activity in the study on nursing students in India by Kaur M.<sup>[20]</sup>

### Conclusion

Healthy dietary practices such as daily consumption of low salt, low sugar and low fat diet as well as daily consumption of fruits and vegetables were found to be lesser among the nursing students in the present study. Whereas higher frequencies of consumption of junk food and soft drinks were found. An encouraging result that was noted in the study was that a higher proportion of students adopted walking or cycling mode for daily commute purposes. Also,

nearly three-fourth of students performed moderate or vigorous physical activity on a regular basis. Whereas, physical activity was significantly lesser among females compared to males. And the physical activity practice was on a declining trend with the 3<sup>rd</sup> or 4<sup>th</sup> year of the professional course.

### Limitations of the study:

The present cross-sectional study which was conducted on students studying at a nursing college. The present study results are not generalizable to the students of all the health care system professional courses. Regional or national level multi-centric studies have to be done to analyse the pattern of dietary, physical activity patterns practiced by the students across all the levels of the health care system professional courses. Minutes per week for walk/bicycle, moderate and vigorous activity could not be calculated as students did not give proper responses.

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**Ethical Clearance** taken from the institutional ethics committee of Basaveshwara Medical College & Hospital, Chitradurga.

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