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Original Research Article

Physical activity levels and junk food intake among female undergraduate students in Mandya: a cross sectional study

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ABSTRACT

Background: Physical activity (PA) is defined as any bodily movement produced by skeletal muscles that requires energy expenditure. It has been proven that regular physical activity helps control and prevent noncommunicable diseases like diabetes, heart disease, stroke, and several types of cancer. This study aimed to describe the levels of physical activity among female undergraduate students in Mandya and to assess their knowledge, attitude and practice regarding junk food habits.
Methods: This cross-sectional study was done in Government women's degree college, Mandya district, South Karnataka between November 2023 to December 2023 among female undergraduate students in the institute. Global physical activity questionnaire (GPAQ) has been used to describe their physical activity levels. Descriptive statistics like frequency, proportion, mean and standard deviation has been used.
Results: The study was conducted among 170 students. Based on the MET values it is found that majority of them had moderate level of PA 81 (47.6%), while 39(22.9%) had high levels and 50 (29.4%) had low PA levels. Of 170 participants, 43 (25%) had junk food intake once a week, 46 (27%) had twice a week, 81 (48%) had thrice or more per week. The association between PA level and junk food was found to be statistically significant ($p<0.05$).
Conclusions: The findings of this study help us in understanding the importance of adopting a healthy lifestyle, including a balanced diet and regular physical activity practice.

Keywords: Exercise, Global physical activity questionnaire, Junk foods, Physical activity, Lifestyle diseases

INTRODUCTION

Physical activity is defined as any bodily movement produced by skeletal muscles that requires energy expenditure and refers to all movement including during leisure time, for transport to get to and from places, or as part of a person's work. As per World Health Organization recommendations, adults aged 18-64 years should engage in at least 150-300 minutes of moderate-intensity aerobic physical activity or 75-150 minutes of vigorous-intensity aerobic physical activity per week, or an equivalent combination of moderate- and vigorous-intensity activity.[1]

Physical inactivity and unhealthy diets were the two most common risk factors for noncommunicable diseases (NCD). Worldwide about 74% and in India, about 66% of deaths were due to noncommunicable diseases.[2,3] People who are insufficiently active have a 20% to 30% increased risk of death compared to people who are sufficiently active.[1]

Between 2001 and 2016, insufficient activity increased by 5%, from 31.6% to 36.8% in high-income nations.[1] Worldwide around one-third of women and one-fourth of men lack enough physical activity in order to remain healthy. In 2016, 28% of adults aged 18 and up were not physically active enough, among them 23% of them were males and 32% were females.[1] In India, 25% of males

and 44% of females aged more than 18 years were physically inactive.[2]

Junk food is defined as, any food, which is low in essential nutrients such as proteins, vitamins or minerals and high in salt, sugar, fats and calories. Highly salted like chips, high in refined carbohydrates with zero calories like candy, soft drinks and high in saturated fats like cake and chocolates were few examples for junk foods.[4]

An energy imbalance between calories expended and calories consumed, which results from an increase in energy-dense foods high in fat and sugar, as well as an increase in physical inactivity brought on by a shift in transportation options, an increasingly sedentary workforce, and growing urbanization, is the cause of obesity and overweight. Overall, about 13% of the world's adult population (11% of men and 15% of women) were obese in 2016 and worldwide prevalence of obesity nearly tripled between 1975 and 2016.[5]

Physical activity levels and prevalence of obesity differ by gender among adolescents. Globally, 84.7% of adolescent girls and 77.6% for boys do not meet World Health Organization recommendations for physical activity.[6] This pattern of behaviour is common among female adolescents worldwide, and more effective NCD prevention strategies for this group are needed. This research will be crucial in creating targeted interventions to promote healthier lifestyles among female undergraduate students and to empower young women to make educated choices that benefit their long-term health.

Metabolic equivalent task (MET) is a method of estimating the intensity of physical activity. Every activity has a specific MET value based on its energy requirements. One MET is the amount of energy used while sitting quietly. The product of the MET value of the activity and the amount of time spent performing that activity yields MET-minutes.[7]

Recognizing the pivotal role of physical activity and dietary habits in shaping overall well-being, this research proposal aims to investigate the relationship between physical activity levels and junk food intake among female undergraduate students in Mandya.

This study aimed to describe the levels of physical activity among female undergraduate students and to assess their knowledge, attitude and practice regarding junk food habits.

METHODS

Study design and study population

This cross-sectional study was carried out in Government women's degree college in Mandya district, South Karnataka between February to March 2023. The study subjects were female undergraduate students.

Inclusion criteria

A purposive sample consisting of all students studying Bachelor of Arts (BA), Bachelor of Commerce (B. Com), or Bachelor of Science (B. Sc) degrees in the colleges and those willing to give informed consent was enumerated and included in the study were included in the study.

Exclusion criteria

Students who were under 18 years of age which is below the legal age for giving consent, those with limitation in their physical functioning and students who are not available even after 3 visits has been excluded from the study.

Data collection tool

Interview method using a pretested questionnaire having parts. The first part will collect general information like Name, age, sex, etc. The second part will collect information of their physical activity using Global physical activity questionnaire (GPAQ). GPAQ is a self-reported questionnaire which had three domains: activities at work, travelling activities and recreational activities.

The energy use of each physical activity domain was calculated as metabolic equivalent (MET)-min/week. There are different levels of physical activity assigned by the GPAQ creators that consist of low, moderate and high physical activity levels.

GPAQ total of greater than or equal to 3000 MET min/week was high category. GPAQ total ranging from 600-2999 MET minutes/week was moderate category. GPAQ total below 600 MET minutes/week was low category.

For the calculation of physical activity, the following MET values are used: 1) Walking MET value = 3.3, 2) Moderate MET value = 4.0 and Vigorous MET value = 8.0.

Total physical activity is calculated by summing up walking, moderate and vigorous MET values. The third part will collect information of their knowledge, attitude and practices regarding junk foods.

Data analysis

All the collected data were entered in a Microsoft Excel sheet and the data was statistically analysed by using Statistical Package for the Social Sciences Software (IBM- SPSS trial version 22). Descriptive statistics like frequency and proportion for categorical data and mean and standard deviation for continuous data were used.

The chi-square test was used to find the association. A p-value of < 0.05 is considered statistically significant.

RESULTS

A total of 170 students have participated in the study. The majority of them have a moderate level of physical activity 81 (47.6%), while 39 (22.9%) of the students reported that they had high level of physical activity and 50 (29.4%) had low physical activity level (Table 1).

Table 1: Different levels of PA among the study participants.

	Frequency	Percentage
Low	50	29.4
Moderate	81	47.6
High	39	22.9
Total	170	100

The mean age of respondents was 21.44±2.86 years. The mean time spent in sedentary behavior was about 6 hours and 36 minutes. Among the participants, 12.4% were overweight and 19.4% were obese (Figure 1).

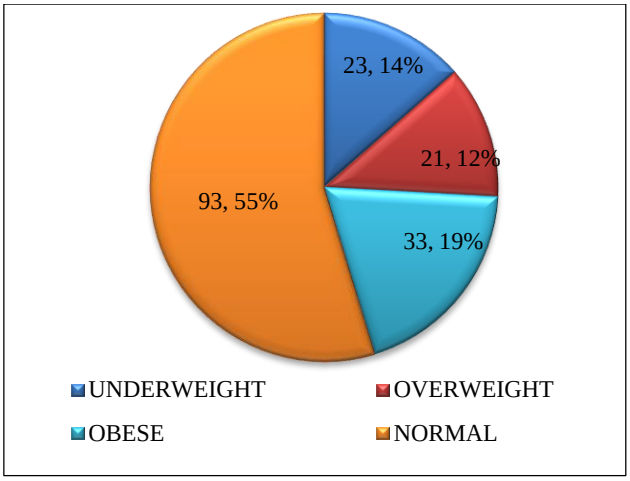

Figure 1: Body mass index of the participants.

Table 2 shows the knowledge, attitude and practices among the study participants regarding junk foods. 164 (96.5%) of them knew about junk food and 131 (77%) of them were aware of harmful effects of junk food. 99 (58%) of participants felt junk foods as habit forming and 87 (51%) of them consume junk foods due to its taste.

Table 2: Knowledge, attitude, practice regarding junk foods among the study participants (n=170).

KAP		Frequency	Percentage
Knowledge			
What do you mean by junk food?	High in fat	2	1.2
	High in sugar and salt	3	1.8
	High in calories	1	0.6
	All the above	164	96.5
Are you aware about the chemicals present in the junk food and its safety level?	Yes, I know	102	60
	Partially aware	67	39
	Unaware	1	1
Do you really know the harmful effects of chemical present in junk food?	Yes, completely aware	131	77
	No	39	23
Do you think government is adequately monitoring junk food quality?	Yes	4	2
	No	103	61
	Maybe	63	37
Attitude			
In your opinion do you consider junk food is healthy or not?	Yes	3	2
	No	167	98
What are the factors influencing the choice of junk food?	Time	11	7
	Taste	87	51
	Changing lifestyle	68	40
	Influence of advertisements	4	2
What is your favourite junk food?	Fast foods	84	49
	Snacks	35	21
	Soft drinks	13	8
	Candies	38	22
Do you consider junk food as addictive?	Yes	99	58
	No	50	29
	Can't say	21	12
Do you think you need to cutdown on your junk food intake?	Yes	133	78
	No	37	22

Continued.

KAP		Frequency	Percentage
Practice			
How many times do you eat junk food on an average per week?	Once	43	25
	Twice	46	27
	Three times or more	81	48
Where do you often have junk food?	Food places	118	69
	Canteen	26	16
	Roadside stands	17	10
	Malls	9	5
Do you take junk food as an alternative to breakfast?	Yes	15	9
	No	131	77
	Sometimes	24	14
Do you check the nutrient fact label in the junk food?	Yes	30	18
	No	72	42
	Sometimes	68	40
Does the nutritional information about a product really influence your decision to buy junk food?	Yes, always	60	35
	Yes, but sometimes	110	65
	Never	0	0
Have you noticed any adverse impact on your health due to junk food?	Yes, significantly	27	16
	Yes, but not significantly	110	65
	No	33	19

Of 170 participants, 43 (25%) had junk food intake once a week, 46 (27%) had twice a week, 81 (48%) had thrice or more per week (Figure 2).

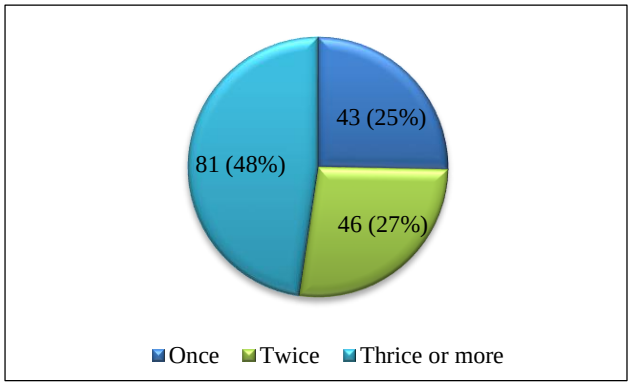

Figure 2: Frequency of junk food intake among the study participants.

Among those who were having junk food for thrice or more per week, 37 (46%) had low PA. The association between PA level and junk food was found to be statistically significant ($p<0.05$) (Table 3).

Table 3: Association between PA and junk food intake.

Junk food intake	Physical activity level			Total (n=170)
	Low	Moderate	High	
Once	9	16	18	43
Twice	4	33	9	46
Thrice or more	37	32	12	81

$\chi 2 = 44.142$, df = 4, $p<0.00$

DISCUSSION

The purpose of the study was to evaluate the level of physical activity among female undergraduate students using global physical activity questionnaire (GPAQ) developed by World Health Organization (WHO). In our study physical activity of the participants was calculated in terms of moderate and vigorous intensity in three domains work, travel to and from places and leisure time. At work, 17% of the study participants vigorous intensity and majority 72% were active for moderate intensity, which involved brisk walking between two lecture rooms spaced out in the campus. 68% of the study participants were found to be active in the travel domain. Majority of them used walking as a mode of transport. In leisure time 23% of participants were vigorously active and 50% were moderately active.

The study participants were further divided into low active, moderately active and highly active on the basis of MET minutes. The majority of them have a moderate level of physical activity 81 (47.6%), while 39 (22.9%) of the students reported that they had high level of physical activity and 50 (29.4%) had low physical activity level.

Many studies have been done in adolescents and adults who have shown mixed results about physical activities of moderate and vigorous intensity in various domains. In a study, 53% of adolescents had a moderate level of physical activity (n= 421), while 23% of the students reported that they had high level of physical activity and 24% had low physical activity level. The highest percentage of adolescents were found to consume at least one or the other form of junk food, at least once a week, either in the form of soft drinks or street food or fast food

(29.3%). They found a highly statistically significant association ($p<0.05$) between physical activity level and junk food.[8]

A study done in Bangalore, the prevalence of high levels physical activity among adolescents was found to be 41.3%. 43.2% and 15.4 % of students showed moderate level and low level of physical activity respectively. The average time spent in sitting was 7.06 hrs/day.[9] Similar study conducted in Pune, found that 26.76% were inactive, maximum 62.53% of the study participants belonged to low physical activity, 10.14% were moderately active and only 0.81% was highly active.[10]

It is observed that the high consumption of foods with higher energetic density, rich in fats and refined sugars, is directly associated to the increase of lipogenesis, the secretion of very low-density lipoproteins, and the reduced oxidation and greater accumulation of fatty acids in the tissues and blood.[11] A study in Kolkata showed that, most of the study participants (82.02%) had consumed junk food in last 7 days and 10.96% had taken junk food >3 times in last week. Among the participants 22.47% adolescents were in overweight category.

CONCLUSION

This study highlights the pattern of physical activity among female undergraduate students in Mandya and to assess their knowledge, attitude and practice regarding junk food habits. About one third of the participants had low physical activity and one half of participants reported increased frequency of junk food intake i.e., thrice a week or more. Sedentary behaviour seen in these study participants also needs to be altered.

Recommendations

Encouraging regular physical activity, promoting a balanced diet and advising participants to reduce junk food intake for their improved overall health and well-being. Creation of walking paths, cycling paths, parks and similar social activity areas in cities will promote regular physical activity of adolescents. Large scale media campaigns delivering messages on health promotion through physical activity and balanced diet can be done via radio, television, newspaper and social media.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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