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ORIGINAL RESEARCH ARTICLE

PHYSICAL ACTIVITY STATUS AMONG HEALTH SCIENCE STUDENTS OF CHITWAN, NEPAL

Kishor Adhikari[1,2,*], Sadikshya Neupane[3], Sachin Sapkota[4], Gayatri Khanal[1]
[1]School of Public Health & Dept. of Community Medicine, Chitwan Medical College, Nepal
[2]Himalayan Environment and Public Health Network, Nepal
[3]School of Nursing, Department of Community Health Nursing, Chitwan Medical College
[4]School of Medicine, Chitwan Medical College, Bharatpur, Chitwan

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***Correspondence to:** Kishor Adhikari, School of Public Health and Department of Community Medicine, Chitwan Medical College, Nepal.
Email: kishoo2006@gmail.com

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ABSTRACT

Background: Physical inactivity has become a major public health concern in todays' world. Evidences suggest that nearly one-fifth of the overall risk for coronary heart disease, type 2 diabetes, breast cancer, colon cancer is due to physical inactivity. The aim of present study is to assess the physical activity status among health science students in Chitwan District of Nepal.

Methods: Present study is a cross-sectional study conducted among health science students of Chitwan District identified through non-probability sampling technique. Ethical approval was obtained from CMC IRC. Information on physical activity was gathered using the self-reported Global GPAQ – 16 items. A final activity response from each student was summed into MET/minutes per week, which was further classified as: inactive, low active, moderately active and highly active in terms of total MET minute/week. Descriptive and inferential analysis was done through this IBM SPSS software version 20.

Results: More than two-third of students reported their status as low active. Nearly 7% were physically inactive. About 93% of the health science students met the minimum WHO recommendation for physical activity (≥600 MET-minutes/week). The difference on physical activity status according to gender and age groups was found statistically significant (p<0.005).

Conclusions: There was huge proportion of students with low level of physical activity. There is need for focusing on health information system to aware public regarding the importance of physical activity.

INTRODUCTION

Physical inactivity, defined as insufficient levels of activity to meet recommendations, is now identified as the fourth leading risk factor for global mortality.[1]Physical inactivity has become a major public health concern in todays' world. Global researches evident that 15–20% of the overall risk for major non-communicable diseases (NCDs) is due to physical inactivity.[2] A regular physical activity not only decreases the risk of developing various NCDs but also enhances the control over stress and emotions.[3] The risk of NCDs may increase due to physical inactivity during adolescent and young adulthood periods. People involved in continuous physical activity have positive body image, higher self-esteem, lower level of anxiety and depression in comparison with inactive young adult.[4] Physical activity offers the chance to accept challenges, improves positive mood, and enhances sensation of happiness.[5]

According to WHO, 60 to 85 percent of people in the world lead sedentary lifestyles, making it one of the more serious yet insufficiently addressed public health problems of this time.[6]Lifestyle related risk of NCDs have increased markedly as a result of increasing urbanization and modernization.[7]

Despite plenty of evidences of physical inactivity and its' various health outcomes, the high prevalence of physical inactivity is common all over the world.[8]Evidences suggest that physical activity is required for healthful living because of its interrelationship with physical, mental and social well-being.[9,10]

Nepal, a lower-middle-income country located in South Asian Region, is in the stage of an epidemiological transition. Growing urbanization along with demographic transition has led to an increase in behavioural risk factors of chronic diseases.[11, 12] The present study was aimed to assess the level of physical activity among health science students of Chitwan Nepal.

METHODS

This was a cross-sectional study conducted to assess the status of physical activity among health science students of Chitwan, which is one of the Districts with high pace of urbanization. Study unit comprises the health science students who are currently studying in diploma, bachelor and master level institutions throughout the District. Ethical clearance was sought from CMC IRC. Permission was taken from the concerned authority from each college to conduct study on their students. Informed consent from the students was maintained from

the google questionnaires where students were asked to tick whether they accept or reject the process of filing the google sheet for the research. The data collection process was carried out between15th December 2020 and 15th January 2021. The sampling technique used in this study was non-probability sampling technique. Sample size was conducted by using the Cochrane's formula, $n=z^2pq/l^2$ where, z= Z value (1.645 for 90% confidence interval) p= proportion of prevalence of physical inactivity reported from similar study conducted in Nepal i.e. 43.3%.[20] Here, p=0.433; q=0.577; l= margin of error (±5%) or 0.05. Hence, final sample size was calculated and rounded up as 370. The data collection procedure was stopped or closed by disabling the data entry process at google form platform when the intended sample size was achieved.

Inclusion criteria applied for the study was all the students enrolled for the health science course, at the time of data collection. Exclusion criteria included students who refused to give consent to participate in the study. List of all students studying in diploma, bachelors and master's level was obtained from the college authorities including email address of the students. While collecting information, Utmost care was taken so this process does not disturb their teaching schedule.

There were two sections of questionnaire i.e. Socio-demographic information and physical activity related information. The former part i.e. socio-economic information, was constructed by the researcher himself whereas information of physical activity was gathered using the self-reported Global Physical Activity Questionnaire (GPAQ) – 16 items.[13] This tool was developed by the WHO, and has been validated for physical activity surveillance in developing countries.[14] Physical activity was determined from the amount of time remained physically active in all the three domains, i.e. transport, at work and during leisure time. Through the use of online platform – Google form, participants were asked about the intensity of their physical activity for work and leisure, including ten continuous minutes spent walking or cycling for transport, number of days they executed these activities in a typical week and amount of time spent on each activity on a typical day.[13]

The collected data were cleaned based on the GPAQ protocol.[15]Invalid responses were omitted through following strategies during data cleaning: if the value for activity was more than 16 h/day in any of the physical activity sub-domains (vigorous-intensity work, moderate-intensity work, transport, vigorous-intensity leisure, or moderate-intensity leisure activity) or, unlikely response such as activity reported for more than 7 days in a week, and inconsistency in answering (e.g. transport activity was done 0 days in a week, but reported >0 min in the hour column).[15] As per the GPAQ data analysis guideline, all the activity data were converted to minutes and were multiplied by the corresponding number of days. The level of physical activity referred in the questionnaire is presented as Metabolic Equivalent (MET). 1 MET = a resting energy expenditure. Time spent in each activity level were multiplied with MET which have previously set to 8.0 for vigorous activity, 4.0 for moderate activity, 3.3 for walking, and 1.5 for sitting. By multiplying the MET values with number of days and minutes performed weekly, amount of each activity level was calculated and represented as MET-min/wk. Further, by adding MET-min/wk for each activity level, total Physical Activity (PA) level among the health science students were calculated. Their response in each domain of physical activity, viz. work, transport, leisure was noted. Total MET - minutes was then calculated by the product of MET value of the respective activities and time spent (in minutes) in doing those activities. The study participants were also categorized as inactive (less than 600 MET minutes/week), low active (600 to 3999 MET minutes/week, moderately active (4000 to 7999 MET) and highly active (more than 8000 MET minute/week) based on MET minutes of physical activity per week.[16] Descriptive (percentage, frequency, interquartile range and minimum and maximum values) and inferential analysis (chi-square test) was done through this IBM SPSS software version 20.

RESULTS

A total of 370 health science students participated in the web-based survey. Out of 370 respondents, most of them (70.0%) were under 22 years of age and majority of them (84.6%) were female. More than half (56.5%) were Brahmin followed by Janajati/ Adhibasi (23.0%). A great of participants (71.6%) were studying in Bachelors level followed by Diploma (23.5%). A large proportion of sample was from nursing stream of education (72.2%) followed by MBBS (16.5%). More than half of respondents i.e. 53.2% of respondents' father had completed above secondary level of education and 43.2% were engaged in service whereas 38.6% of respondents' mother had completed secondary level of education and 76.2% were housewife (Table 1).

Table 1: Socio demographic information of respondents (n=370)

Variables	Frequency (%)
Age (Years)	
<22	259 (70.0)
22 and above	111 (30.0)
Sex	
Male	57 (14.4)
Female	313 (84.6)
Ethnicity	
Brahmin	209 (56.5)
Chhetri	56 (15.1)
Janajati/Adhiwasi	85 (23.0)
Others	20 (5.4)
Level of Education	
Diploma	87 (23.5)
Bachelors	265 (71.6)
Master	18 (4.9)
Education Stream/Discipline	
MBBS	61 (16.5)
Nursing	267 (72.2)
Public Health	42 (11.3)
Educational Status of respondent's father	
Illiterate	4 (1.1)
Primary	32 (8.6)
Secondary	137 (37.0)
Above Secondary	197 (53.3)

Educational status of respondent's mother	
Illiterate	22 (5.9)
Primary	98 (26.5)
Secondary	143 (38.6)
Above Secondary	107 (28.9)
Occupational status of respondent's father	
Agriculture	36 (9.7)
Business	139 (37.6)
Service	160 (43.2)
Foreign Employment	35 (9.5)
Occupational status of respondent's mother	
Agriculture	7 (1.9)
Business	29 (7.8)
House wife	282 (76.2)
Service	47 (12.7)
Other	5 (1.4)
Marital status	
Unmarried	351 (94.9)
Married	19 (5.1)

Note: Figures in parentheses indicate percentage.

Total MET minutes/week for all the respondents were calculated and categorized into 4 categories based on self-reported responses on physical activity. As per the classification, majority (69.5%) were low active, 20.3% were moderately active, 6.5% were inactive while least 3.8% of respondents were highly active. About 93% of the health science students met the minimum WHO recommendation for physical activity (≥600 MET-minutes/week) while nearly 7% have not met the WHO recommendation (Table 2).

Table 2: Physical activity status among health science students of Chitwan(n=370)

Physical Activity Status	Frequency (%)
Inactive (600 MET minutes/week)	24 (6.5)
Low Active (600 to 3999 MET/week)	257 (69.5)
Moderately Active (4000 to 7999MET/week)	75 (20.3)
Highly Active (More than 8000 MET/week)	14 (3.7)

Note: Figures in parentheses indicate percentage.

The total physically active and physically inactive percentage was derived by combining the physically inactive and low active students to inadequate physical activity category whereas moderate physical activity and high physical activity to form adequate physical activity category. Out of total students, 27.4% of less than 22 years found to be physically active (up to 3999 MET-minutes/week), whereas only 16% of the students of 22 and above year's age group were found physically active. The physical activity status was found statistically significant with age groups of the respondents. ($p<0.005$) Similarly, about 36.8% of the male students and 21.7% of the female students found physically active. The sexwise differences on physical activity status was also found statistically significant. ($p<0.005$) There was no other significant association between respondent's physical activity status and socio-demographic variables i.e. ethnicity, level of education, study discipline, father's education, mother's education, father's occupation and mother's occupation (Table 3).

Table 3: Association between physical activity status and socio-demographic variables (n= 370)

Variables	Physical Activity Status[a]		χ^2 p-value
	Physically inactive (%)	Physically active (%)	
Age group			
<22	188 (72.6)	71 (27.4)	0.02
22 and above	93 (83.8)	18 (16.2)	
Sex			
Male	36 (63.2)	21 (36.8)	0.01
Female	245 (78.3)	68 (21.7)	
Ethnicity			
Brahmin	150 (78.0)	48 (24.2)	0.82
Chhetri	43 (76.8)	13 (23.2)	
Janajati/Adhiwasi	73 (77.7)	21 (23.3)	
Others	15 (68.2)	7 (31.8)	
Level of Education			
Diploma	72 (82.8)	15 (17.2)	0.1
Bachelors	198 (74.7)	67 (25.3)	
Masters	11 (3.9)	7 (7.9)	
Study discipline			
MBBS	47 (77.0)	14 (23.0)	0.763
Nursing	204 (76.4)	63 (23.6)	
Public Health	30 (71.4)	12 (28.6)	
Father's education.			
Illiterate	4 (100.0)	0 (0.0)	0.32
Primary	21 (65.6)	11 (34.4)	
Secondary	107 (78.1)	30 (21.9)	
Above Secondary	149 (75.6)	48 24.4)	
Mother's education			
Illiterate	18 (81.8)	4 (18.2)	0.21
Primary	81 (82.7)	17 (17.3)	
Secondary	106 (74.1)	37 (25.9)	
Above Secondary	76 (71.0)	31 (29.0)	
Fathers occupation			
Agriculture	26 (72.2)	10 (27.8)	0.53
Business	104 (74.8)	35 (25.2)	
Service	121 (75.6)	39 (24.4)	
Foreign employment	30 (85.7)	5 (14.4)	
Mothers occupation			
Agriculture	6 (85.7)	1 (14.3)	0.38
Business	19 (65.5)	10 (34.5)	
House wife	217 (77.0)	65 (23.0)	
Service	34 (72.3)	13 (27.7)	
Other	5 (100.0)	0 (0.0)	
Marital status			
Unmarried	267 (76.1)	84(23.9)	0.81
Married	14 (73.7)	5 (26.3)	

[a]These are merged form of physical activity status

The median total self-reported physical activity among male and female health science students was found to be 3006 and 2214 MET-minutes/week, respectively. The highest self-reported energy expenditure was found in the travel domain in both men and women having 924 and 594 MET-minutes/

week respectively. Substantial amount of MET-minutes/week was reported from both male and female participants engaging in leisure-time physical activity i.e.280 and 240 respectively. Both men and women reported engaging in sedentary behaviour 250 and 180 minutes a week respectively. The difference in sedentary behaviour between two genders was statistically significant. ($p<0.05$) (Table 4).

Table 4: Sedentary behaviour and total, domain-specific, and intensity-specific physical activity levels of Health Science Students of Chitwan(n=325)

Physical activity	Median (Interquartile range)		p-value[b]
Domains[a]	**Male**	**Female**	
Work	480 (970.0)	480 (1200.0)	0.72
Travel	924(1864.5)	594 (1089.0)	0.06
Leisure time/recretional	280 (960.0)	240 (720.0)	0.37
Intensity of Physical activity			
Moderate intensity[a]	870 (1255.0)	750 (1485.0)	0.87
Vigorous intensity[a]	0 (480.0)	0 (160.0)	0.29
Total Physical activity[a]	3006 (3236.2)	2214 (2305.2)	0.07
Total Sendentary time[c]	250 (330)	180 (180.0)	0.01

[a]MET-minutes/week
[b]p value of Mann whitney test
[c]Denoted in minutes

DISCUSSION

This study was carried out to assess physical activity status among health science students in Chitwan District, Nepal. About 93% of the health science students met the minimum WHO recommendation for physical activity (≥600 MET-minutes/week) while nearly 7% have not met the WHO recommendation. A similar finding was observed from a nationally representative study of Nepal using the Global Physical Activity Questionnaire (GPAQ) where around 97% (95% confidence interval [CI]: 96–98%) of men and 98% (95% CI: 98–99%) of women were found to meet the recommended levels of PA.[19]Our finding on physical inactivity is quite high as compared to the study conducted in Jhaukhel-Duwakot cross-sectional study, which has reported prevalence of low physical activity as 43.3%.[20] The variations in terms of prevalence of physical activity status may be due to dissimilar geographical setting and urbanization level in both study areas. More than two-third of students from this study reported to be physically low active with 4000-7999MET/week. The prevalence of low active is quite bigger as compared to the study conducted in peri-urban Nepalese population where 43.3% of respondents found to be physically low active.[20] Similar findings were observed in some other national and international studies conducted in Chandigarh and Puducherry, India (61.3%)[21], Pune India[22].In addition, a study conducted in Saudi Arabia to assess the prevalence of physical activity among primary health care physicians also revealed that 34.8% of the respondents were physically inactive.[17]

In our study, Median (IQR) of self-reported physical activity among male and female health science students was found to be 3006 (3236.2) and 2214 (2305.2) MET-minutes/week respectively which is nearly half as compared to the study conducted in Romania[23]with 5953.69 MET – minutes/week and 4303.28 MET-minutes/week for males and female respectively. The highest self-reported energy expenditure was found in the travel domain in both men and women having with Median (IQR) value of 924 (1864.5) and 594 (1089.0) MET-minutes/week respectively followed by work domain Median (IQR) 480 (970) and 480 (1200.0) MET-minutes/week respectively for man and women which is consistent with the other South Asian countries where majority of physical activity domain constitutes work and treavel.[24-27]Apart from work and travel, ample amount of MET-minutes/week was also reported from both male and female participants engaging in leisure-time physical activity i.e. 280 (960.0) and 240 (720.0) respectively. Both men and women reported engaging in sedentary behaviour with Median (IQR) of 250 (330.0) and 180 (180.0) minutes a week respectively. The difference in sedentary behaviour between two genders was statistically significant ($p<0.05$).

Our study reported that more proportion of males were physically active as compared to their female counterpart. Similar finding was evident from others study conducted in Nepal and abroad.[20, 28]But there was opposite finding from the nationally representative study from Nepal where slightly more percentage of female were physically active.[19]

CONCLUSION

Though, there was very low prevalence of physical inactivity as per WHO's recommendation, the low physical activity status was observed among considerably high percentage of health science students. Males were significantly more active than female participants. Young age (<22 years) groups had more physical activity status as compared to age (22 and over) students. There is need for focusing on health information system to aware public regarding the importance of physical activity.

CONFLICT OF INTEREST: None

FINANCIAL DISCLOSURE: None

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