Original Article

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Physical activity among nursing students during coronavirus disease 2019 pandemic, Nepal

Mandal PK,[1] **Yangden N,**[2] **Rai B,**[3] **Bhandari M,**[4] **Paudel S**[5]

[1]Punam Kumari Mandal, Assistant Professor; [2]Namita Yangden, Lecturer, Department of Community Health; [3]Bhumika Rai, Instructor, Department of Psychiatric Nursing; [4]Menuka Bhandari, Lecturer, Department of Child Health, Biratnagar Nursing Campus, Biratnagar, Morang, Nepal; [5]Susan Paudel, Research Fellow, Institute for Physical Activity and Nutrition, School of Exercise and Nutrition Sciences, Deakin University, Geelong, Victoria, Australia.

Abstract

Background: Reduced physical activity is one of the major factors affecting health and has been a serious global problem during coronavirus disease 2019 (COVID-19). Prolonged homestays can lead to increased sedentary behavior and reduced physical activity.

Objectives: To assess the level of physical activity among nursing students.

Methods: An analytical cross-sectional study was carried out on nursing campuses of Tribhuvan University in 2020 September 15 to 2020 December 15 among undergraduate students after Institutional ethical clearance using a self-administered structured International Physical Activity questionnaire. Samples of 255 students using proportionate systematic random sampling were included. Data analysis was done using SPSS version 17.0. The total score of physical activity was calculated and the level was categorised as low, moderate, and high. Ordinal logistic regression was used to find the association between the level of physical activity and selected demographic variables.

Results: The study showed that engagement in vigorous physical activity was lower but the median time spent on moderate MET-Minutes/Week was 630 (1620-180). Likewise, (75, 29.4%) have low and (129, 49%) have a moderate level of Physical Activity. Furthermore, there is an association between the level of physical activity with the place of residence.

Conclusion: The study concludes that more than one-third of respondents have a low level of physical activity. Furthermore, there is an association between the level of physical activity and place of residence. This reflects the need to sensitise nursing students to adopt physical activity in everyday life to improve general health and well-being during the COVID-19 pandemic.

Key words: Coronavirus disease 2019; Nursing; Pandemic; Physical activity; Student; University.

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Address for correspondence

Ms. Punam Kumari Mandal
Assistant Professor, Department of Community Health,
Biratnagar Nursing Campus, Biratnagar, Morang, Nepal.
E-mail: punammandal777@gmail.com

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INTRODUCTION

Physical activity (PA) is a major public health concern during the coronavirus disease 2019 (COVID-19) outbreak. The World Health Organisation (WHO) recommends 150-300 mins of moderate exercise or 75-150 mins of vigorous activity or an equivalent combination of moderate-and vigorous-intensity aerobic exercise, per week for adults.[1] The outbreak of COVID-19 has interrupted people's typical daily routines by the required travel limitations and prohibitions on outdoor activities, including regular physical activity.[2] A study reported before COVID-19 more students were involved in PA than there were during the national lockdown.[3] Literature suggests that despite being aware of the importance of regular physical activity, nursing students do not meet WHO recommendations.[4]

Nursing students are role models to their patients. Few studies are available on PA among health professionals

in Nepal.[5,6] Furthermore, not much is known regarding nursing undergraduates' level of PA. This study aimed to assess the level of PA among nursing students during the COVID-19 pandemic.

METHODOLOGY

An analytical cross-sectional study was carried out on five constituent nursing campuses of Tribhuvan University in 2020 September 15 to 2020 December 15 among Bachelor in Nursing Science (BNS) and Bachelor of Science in (B.Sc.) Nursing students after ethical clearance from Institutional Review Committee, Tribhuvan University, Institute of Medicine, Kathmandu {Ref. 56(6-11) E^2 077/078}. The formula used to determine the sample size was $Z^2pq/ d^2+ (Z^2pq/N)$, where p = 0.52 (52% of nursing students meet recommended levels of PA needed to improve their health);[7] q =1-p, N = (number of students 686), and allowable error, d = 0.05 (5%). The total number of students in BNS and B.Sc. Nursing was 686 and samples of 255 students using proportionate systematic random sampling were included from Bachelor of Nursing Science and B.Sc. Nursing students of the five constituents Nursing Campuses of Institute of Medicine (IOM), Tribhuvan University (TU). The sampling frame was developed based on proportion. An online survey with a structured questionnaire was used to collect data. Questionnaires were e-mailed to the participants with clear instructions. The first sample was taken randomly then every third student from the list was taken as a sample. In case of non-response, the next participant of the frame was enrolled as a sample accordingly until desired sample size was achieved.

The data collection tool was divided into two parts. Part I asked for information related to demographic factors. Part II consisted of questions from the International Physical Activity Questionnaire – Long-form (IPAQ-LF). The IPAQ-LF is a valid tool and open available adopted in different studies.[8-10] It has reasonable measurement capabilities for monitoring population levels of physical activity among persons aged 18 years to 65 years in a variety of settings.[11]

The IPAQ-LF consists of a collection of four questions of the four activity categories (occupational PA, transportation-related PA, domestic PA, and leisure-time PA sitting).[8] For each of the four domains, the long-form of the IPAQ-LF asks specific questions regarding walking, moderate-intensity, and vigorous-intensity physical activity. The term MET (multiples of the resting metabolic rate) - min/week was used to express continuous scores. Each activity level's energy requirement is represented by a METs score: walking - 3.3 METs, moderate-intensity activity -4.0 METs, and vigorous-intensity requires 8.0 METs. To determine a participant's overall score, the duration and frequency of each activity level over seven days were added together to provide a total MET - min/week. Participants were assigned to one of three PA categories in categorical scoring: low, moderate, or high. Low (No activity is reported OR Some activity is reported but not enough to meet Categories 2 or 3), Moderate (three or more days of vigorous activity lasting at least 20 minutes per day OR five or more days of moderate activity and/or walking lasting at least 30 minutes per day OR five or more days of any combination of walking, moderate-intensity or vigorous activity achieving at least 600 MET-min/week) and High (Vigorous-intensity activity on at least three days and accumulating at least 1500 MET-minutes/week OR seven or more days of any combination of walking, moderate- or vigorous- intensity activities accumulating at least 3000 MET-minutes/week).[12]

Ethical approval was obtained from the Institutional Review Board of Institute of Medicine, T.U {Ref. 56(6-11) E2077/078}. Written permission for the data collection was taken from all constituent campuses of TU, IOM. Written informed consent was taken from each respondent. Privacy and confidentiality of information of all the respondents were maintained.

Data processing and analysis were done using computer Statistical Package for the Social Sciences (SPSS) Statistics for Windows, version 17.0 (SPSS Inc., Chicago, Ill., USA). For descriptive analyses, frequency, percentage mean, standard deviation, median, and Interquartile range were used. The level of physical activity was calculated. Ordinal logistic regression was used in inferential analysis to determine the relationship between dependent and independent variables. A p-value <0.05 was regarded as statistically significant (with a confidence interval of 95%). All variables with a p-value ≤ 0.20 in bivariate analysis were included in the multivariate ordinal regression.

RESULTS

The mean age of the participant was 22.73 ± 2.36 years, 170 (66.7%) of respondents were studying BNS while 85 (33.3%) were studying B.Sc. Nursing. Based on ethnicity, the majority of the respondents were Brahmin/ Chhetri (124, 48.6%) and 92 (36.1%) were relatively advantaged Janajati. The majority of the respondents were Hindus (205, 80.4%), 226 (88.6 %) were unmarried, 191 (74.9%) were from nuclear families, and 90 (35.3%) respondents were from rural areas. Regarding sitting time 154 (60.4%)

respondents spent <6 hours a day and 101 (39.6%) spent ≥6 hours a day. Similarly, 28 (11%) respondents had health problems (nervous system, gastrointestinal, renal, musculoskeletal, etc.) of which five (17.85%) respondents had gastrointestinal problems in the last seven days.

The findings showed Median MET (multiples of the resting metabolic rate) Minutes/week for domestic PA is 420 (135-990), transport domain 198 (0-396) followed by Leisure time domain 132 (40-412.50). Total scores for all activities, including walking and moderate and vigorous ones, with median moderate MET-Minutes/week, was 630 (180-1620) followed by walking MET- Minutes/week 429 (148.50-957). The median total physical activity MET-Minutes/week was 1510 (3379.50-609-33) (Table 1), one-third (75, 29.4%) of respondents had a low level of PA, and nearly half (125, 49%) have a moderate level (Table 2).

Bivariate analysis showed age, place of residence, and presence of health problems are associated with the level of physical activity (Table 3). Multivariate analysis of the association of level of PA and demographic variables in which place of residence is associated with the level of physical activity (OR 0.366, CI 0.216-0.621, Table 4). Whereas other variables such as age, ethnicity, religion, marital status, types of family, sitting time, and presence of health problems were not associated with the level of PA.

Table 1: Total scores for all walking, moderate and vigorous activities (n = 255)

Variables	Median MET-Minutes/week	Q_1-Q_3
Walking MET-Minutes/week	429	148.50-957
Moderate MET-Minutes/week	630	180-1620
Vigorous MET-Minutes/week	0	0-240
Physical activity MET-Minutes/per week	1510	609-3379.50

Table 2: Level of physical activity of the respondents (n = 255)

Level of physical activity	Frequency (Percent)
High	55 (21.6)
Moderate	125 (49.0)
Low	75 (29.4)

Table 3: Association between the level of physical activity and demographic variables (N = 255)

Variables	Low PA	Moderate PA	High PA	Unadjusted OR	CI	p-value
Age (in years)						
19-21	23 (9.0)	50 (19.6)	23 (9,0)	0.472	0.253-0.881	0.018*
22-24	38 (14.9)	49 (19.2)	15 (5.9)			
≥25	14 (5.5)	26 (10.2)	17 (6.7)			
Level of study						
BNS	54 (21.2)	77 (30.2)	39 (15.3)	1.095	0.675-1.778	0.713
B.Sc. Nursing	21 (8.2)	48 (18.8)	16 (6.3)			
Ethnicity						
Brahmin	34 (13.30)	62 (24.3)	28 (11.0)	0.662	0.331-1.326	0.245
Relatively advantaged janajati	32 (12.5)	42 (16.5)	18 (7.1)			
Others †	9 (3.5)	22 (8.6)	9 (3.5)			
Religion						
Hindu	59 (23.1)	98 (38.4)	48 (18.8)	0.729	0.410-1.295	0.281
Others ‡	16 (6.3)	27 (10.6)	7 (2.7)			

Variables	Low PA	Moderate PA	High PA	Unadjusted OR	CI	p-value
Types of family						
Nuclear	57 (22.4)	99 (38.8)	35(13.7)	1.475	0.854-2.548	0.169
Joint	18 (7.1)	26 (10.2)	20 (7.8)			
Marital status						
Married	9 (3.5)	9 (3.5)	11 (4.3)	0.629	0.291-1.363	0.240
Unmarried	24 (9.4)	116 (45.5)	44 (17.3)			
Place of residence						
Rural	21 (8.2)	38 (14.9)	31 (12.2)	0.452	0.274-0.746	0.002*
Urban	54 (21.2)	54 (21.2)	24 (9.4)			
sitting time						
<6 hours	50 (19.6)	73 (28.6)	36 (14.1)	1.081	0.673-1.737	0.747
≥6 hours	25 (9.8)	52 (20.4)	19 (7.5)			
Health problems						
Yes	5 (2.0)	13 (5.1)	11 (4.3)	0.418	0.199-0.878	0.021*
No	70 (27.5)	112 (43.9)	44 (17.3)			

*Significant = p-value <0.05; others † = Kirat, Buddhist, Christian, Muslim; others ‡ = Relatively disadvantaged janajati, other socially excluded, dalit and religious minorities.

Table 4: Association of the level of physical activity and demographic variables (Multivariate analysis), N = 255

Variables	adjusted OR	CI	p-value
Age			
19-21	1.308	0.531-3.221	0.559
22-24	0.525		0.068
≥ 25	Ref		
Type of family			
Nuclear	1.410	0.796-2.494	0.239
Joint	Ref		
Place of residence			
Rural	0.366	0.621-0.216	<0.001*
Urban	Ref		
Health problems			
Yes	0.523	0.231-1.186	0.121
No	Ref		

DISCUSSION

This study showed that more than one-third (75, 29.4%) of respondents have a low level of PA, and nearly half (125, 49%) had a moderate level of PA which reiterates the previous findings from Nepal showed insufficient physical activity was the highest among the youngest age group and the women.[13] Similarly, a study conducted in India showed that the prevalence of insufficient PA in adults was 22.5%[14] whereas the findings contradict the findings of the study conducted at the University of California Los Angeles showed Baccalaureate students comprised 68.4% of low PA.[4] Likewise, a study conducted in the United States using IPQA showed students maintained high PA levels, walking was the predominant activity followed by vigorous and moderate activity.[9] Another study conducted in King Fahad Medical city showed that 60.2% are engaged in physical exercise[15] whereas another study showed nursing students experiences barriers in health promotional behaviours.[16] A study in Malaysia with a sample size of 189 student nurses showed that nurses were active[17] which contradicts the present study. These discrepancies might

be due to the setting and the time of study as the present study is conducted in COVID-19 pandemic and there is a lockdown and homestay order which might lead to increased sedentary behaviours and decreased PA levels among nursing students. It is crucial to maintain regular physical activity and to exercise routinely in a safe environment at home during the coronavirus outbreak. Although the social distancing measures are important and needed in a time such as now, we need physical activity.[18]

The findings reflected that (154, 60.4%) of respondents spent <6 hours a day and (101, 39.6%) spent ≥6 hours a day sitting which is congruent with the study conducted in Banke district, Nepal which showed per day mean sitting time was higher.[10] During a coronavirus crisis, infection control, and safety precautions must be followed but prolonged homestay can increase the probability of inactivity and lead to a sedentary lifestyle. Regarding health problems, in this study (28, 11%) of respondents had some kind of health problem. This study showed that the Median MET minutes/ week for domestic and the garden domain is 420(990-1135), transport domain 198(396-0) followed by leisure time domain 132(412.50-0) which contradicts the findings of the study done in Nigeria.[19] Social distancing and homestay during COVID-19 time provide fewer opportunities for physical activity. Previous studies from Nepal report girls' outdoor PA is limited.[10] The COVID-19 restrictions might have further limited their outdoor PA participation. This time to increase activity level students may engage in doing domestic and garden activities.

Likewise, this study showed that the median moderate MET - minutes/week was 630 (1620-180) followed by walking MET 429 (957-148.50) and the median total physical activity was 1510 (3379.50-609). Evidence from studies in Nepal showed that women participated for long hours in moderate-intensity activity while men participated in the more vigorous-intensity activity.[20] The findings are coherent with findings of the study conducted in Nigeria showed that students spent the least time in vigorous-intensity activity. Health professional students had a high prevalence of sedentary time and a very low prevalence of vigorous activity.[21] Another study conducted on Australian University students showed fewer students undertook any walking activity and less time was spent walking among students in 2019 compared to 2018.[22]

In multivariate analysis, there is an association between physical activity level and residence. (OR 0.366, CI 0.216-0.621). A study from Nepal reported that participation in physical activity was higher in rural municipalities.[13,21]

CONCLUSION

The study concludes that more than one-third of respondents have a low level of PA and nearly half have a moderate level. Furthermore, the level of physical activity and place of residence are associated. This reflects the need to sensitise the nursing students to adopt physical activity in everyday life to improve general health and well-being.

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