

PHYSICAL AND BEHAVIORAL HEALTH OF HEALTH SCIENCE STUDENTS OF A MEDICAL COLLEGE OF NEPAL DURING COVID PANDEMIC

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**ABSTRACT****Introduction:** Worldwide pandemic of COVID-19 and its confinement has affected the physical and behavioral aspect of every individual in many ways. Health science students are generally known to have reduced physical activity and decreased sleep duration. During the COVID pandemic health science students may adapt different health behavior because of their knowledge about the healthy behaviors. This study aims to explore the physical and behavioral health of health science students of Maharajgunj Medical Campus, and Maharajgunj Nursing Campus during COVID pandemic in Nepal.**Methods:** A descriptive cross-sectional study was conducted from February 2021 to June 2021 using self-structured questionnaires to examine the students in two domains (i) Physical health (ii) Behavioral health. A convenience sampling was used. 146 students were enrolled in the study. Statistical analysis was done using SPSS version 25.**Results:** The study revealed that 63% of the participants exercised during the pandemic. Majority of the female participants had change in eating pattern (65%) and sleeping pattern (60.3%) while majority of male reported no change in eating pattern (52.4%) and sleeping pattern (60.3%). Majority of both males (70%) and females (85.2%) consumed nutritious food during the pandemic. 98.8% females and 100% males used face mask and maintained physical distance while outdoor. Fewer participants with cough and fever (64.9%) self-isolated while majority used face mask (97.3%), covered mouth while coughing (94.6%) and maintained physical distance (81.1%).**Conclusions:** COVID pandemic affected the physical health of health science students and they adapted various behaviors during the pandemic.**Keywords:** behavior; exercise, pandemic, COVID-19; students.**INTRODUCTION**

COVID-19 has affected at least 1.8 billion people around the world and involved 222 countries until mid-June 2021.¹ Nepal is one of the countries where strict lockdown was imposed as a precautionary measure to prevent and minimize the worst consequences of COVID-19.² Nepal started second lockdown for COVID-19 on April 29 2021.³ Strict confinement and the uncertainty and safety issues created by COVID is known to affect the physical health of the individuals as well as their behavior related to diet, sleep and precautionary measures.⁴⁻⁹

Good number of studies on the impact of COVID-19 on physical and behavioral health of the general population around the world are found in literature.⁵⁻⁷ However, only few studies have been published on the physical activity, dietary intake and sedentary lifestyle of university students during the pandemic.⁸⁻¹⁰ Study by S Marelli et al. in university students and administrative staffs in Italy showed poor sleep quality, particularly in students.¹⁰ According to a survey conducted during the COVID-19 confinement on Italian adult population, there was

notable change in the eating and smoking habit. Slight increase in physical activity was also seen in 38.3% of the population in the same study.¹¹ In a questionnaire-based study conducted by F. Luciano et al. in Italian medical students, showed increased sedentary lifestyle, reduced physical activity and increased sleep duration of more than 7 hours.¹²

There is scarcity of published data on physical health such as sleep, diet and exercise in health science students in context of Nepal.¹³ On one hand, health education including medical education is tedious and difficult to pursue while on the other hand transition from direct classroom teaching to online platforms has created a new challenging environment for learning so health science students are more prone to develop adverse physical health and are less likely to adopt safe healthy behaviors.¹²⁻¹⁴ In this situation, timely recognition and diagnosis of the adverse physical health and recognition of protective health behaviors may help in prevention of many health issues due to COVID and its consequences.

MATERIALS AND METHODS

A descriptive cross-sectional study was conducted from February 2021 to June 2021 with approval from Ethical Review Committee of Institute of Medicine, Maharajgunj, Kathmandu. A self-structured questionnaire containing 21 items was distributed among the preclinical undergraduate medical, dental, nursing and health science students. Convenience sampling was used and data was collected.

Self-structured questionnaire built on Google form was distributed online to all undergraduate medical and nursing students. Information sheet about the objective of the study along with the consent to participate was also distributed along with the questionnaire. All undergraduate medical and nursing students who were in their preclinical years were eligible to participate in the study.

The questionnaire was built that basically measured two domains a) Physical health b) Behavioral health. Physical health was measured using nine items on Likert scale or dichotomous scale to assess participant's current physical health by self-rating, sleeping habit, eating habit and exercise. Similarly, behavioral health was measured with six items related to smoking, alcohol, consumption of nutritious food, consumption of vitamins, use of face mask, practice of isolation, physical distancing. Self-structured questionnaire was validated for content, readability and comprehension with the help of two experts. It was pilot tested in 40 students for reliability and validity. Internal consistency measured by Cronbach's alpha was calculated as 0.66 for physical construct and 0.62 for behavioral construct.

Data was transferred into SPSS software version 25 for statistical analysis. Descriptive statistical analysis was performed using percentage for categorical variables and mean with standard deviation (SD) for the quantitative variables.

RESULTS

Table I. General characteristics of the participants according to course of study

Course	N (%)	Gender	
		Male N (%)	Female N (%)
Allied health	30 (20.5%)	12 (19.1%)	18 (21.7%)
Dental	25 (17.1%)	9 (14.3%)	16 (19.3%)
MBBS	65 (55.4%)	41 (65%)	24 (28.9%)
Nursing	22 (15.1%)	0	22 (26.5%)
Public health	4 (2.7%)	1 (1.6%)	3 (3.6%)
Total	146 (100%)	63	83

The questionnaire was sent to 335 students and 157

(46.87%) responses were obtained. A total of 146 participants with complete responses were included which comprised of 83 (56.8%) females and 63 (43.2%) males. The overall response rate was 43.58%. The mean age of the participants was 20.79 \pm 2.16 years ranging from 18 years to 33 years. The majority of the participants were MBBS students as shown in table I.

Table II. Physical changes among the participants according to gender

Physical changes	Total participants N (%)	Gender	
		Female N (%)	Male N (%)
Self-physical health rating			
Very good	34 (23.3%)	15 (18.1%)	19 (30.2%)
Good	57 (39%)	39 (47%)	18 (28.6%)
Fair	37 (25.3%)	22 (26.5%)	15 (23.8%)
Poor	17 (11.6%)	7 (8.4%)	10 (15.9%)
Very poor	1 (0.7%)	0	1 (1.6%)
Chronic illness			
Absent	142 (97.3%)	81 (97.6%)	61 (96.8%)
Present	4 (2.7%)	2 (2.4%)	2 (3.2%)
Worsened	1 (25%)	0	1 (50%)
No change	3 (75%)	2 (100%)	1 (50%)
Exercise			
Yes	92 (63%)	53 (63.9%)	39 (61.9%)
No	54 (37%)	30 (36.1%)	24 (38.1%)
Type of exercise			
Resistance	50 (54%)	31 (58.5%)	19 (48.7%)
Aerobic	42 (46%)	22 (41.5%)	20 (51.3%)
Duration of exercise			
<10 minutes	9 (9.8%)	4 (7.6%)	5 (12.8%)
<30 minutes	52 (56.5%)	32 (60.4%)	20 (51.3%)
<1 hour	19 (20.7%)	11 (20.7%)	8 (20.5%)
More than 1 hour	12 (13%)	6 (11.3%)	6 (15.4%)
7-9 hours' sleep			
Always	88 (60.2%)	47 (56.6%)	41 (65.1%)
Often	34 (23.3%)	22 (26.5%)	12 (19%)
Sometimes	18 (12.3%)	11 (13.3%)	6 (11.1%)
Rarely	3 (2.1%)	2 (2.4%)	1 (1.6%)
Never	3 (2.1%)	1 (1.2%)	2 (3.2%)

Sleep pattern disturbance			
Always	9 (6.2%)	7 (8.4%)	2 (3.2%)
Often	14 (9.6%)	13 (15.7%)	1 (1.6%)
Sometimes	20 (13.7%)	13 (15.7%)	7 (11.1%)
Rarely	32 (21.9%)	17 (20.5%)	15 (23.8%)
Never	71 (48.6%)	33 (39.7%)	38 (60.3%)
Eating habits			
Severely decreased	1 (0.7%)	0	1 (1.6%)
Decreased	14 (9.6%)	9 (10.8%)	5 (7.9%)
No change	68 (46.6%)	35 (42.2%)	33 (52.4%)
Increased	45 (30.8%)	29 (35%)	16 (25.4%)
Severely increased	18 (12.3%)	10 (12%)	8 (12.7%)
Cough/fever			
Yes	37 (25.3%)	18 (21.7%)	19 (30.2%)
No	109 (74.7%)	65 (78.3%)	44 (69.8%)

Thirty-nine percent of the participants rated physical health as good. 63% of the participants exercised during the pandemic. Resistance type of exercise was preferred than aerobic type of exercise. Resistance type of exercise included yoga, weight lifting, pushups, plank and calisthenics whereas aerobic type of exercise included running, brisk walking, zumba and skipping. Most of the participants exercised for less than half an hour. Large percentage (97.9%) of participants slept for seven to nine hours. More than half (51.4%) of the participants had some kind of sleeping disturbance. 46.6% of the participants reported no change in dietary habit. Males reported fever or cough more than females (21.7%) as illustrated in table II.

Table III. Behavioral changes according to gender

Behavioral changes	Total participants N (%)	Gender	
		Female N (%)	Male N (%)
Smoke			
Yes	1 (0.7%)	0	1 (1.6%)
Smoked more	0	0	0
No change	1 (100%)	0	0
No	145 (99.3%)	83 (100%)	62 (98.4%)
Alcohol consumption			
Yes	5 (3.4%)	2 (2.4%)	3 (4.8%)
Consumed more	0	0	0
No change	5 (100%)	2 (100%)	0
No	141(96.6%)	81 (97.6%)	60 (95.2%)

Change in diet			
Yes	94 (64.4%)	54 (63.9%)	40 (63.5%)
Consumed nutritious food	74 (78.7%)	46 (85.2%)	28 (70%)
Didn't consume nutritious food	20 (21.3%)	8 (14.8%)	12 (30%)
No	52 (35.6%)	29 (36.1%)	23 (36.5%)
Participants with cough/fever			
Covered mouth while coughing	35 (94.6%)	18 (100%)	17 (89.5%)
Face-mask used	36 (97.3%)	17 (94.4%)	19 (100%)
Physical distance maintained	30 (81.1%)	14 (77.8%)	16 (84.2%)
Self-isolated	24 (64.9%)	10 (55.6%)	14 (73.7%)
Face mask and social distancing while going out			
Yes	145 (99.3%)	82 (98.8%)	63 (100%)
No	1 (0.7%)	1 (1.2%)	0
Prophylactic vitamins/medicine			
Yes	30 (20.5%)	18 (21.7%)	12 (19%)
No	116 (79.5%)	65 (78.3%)	51 (81%)

Only one male reported smoking whereas, 5 participants consumed alcohol but remaining participants reported no change in smoking or alcohol consumption behavior during the pandemic. Among the participants who reported dietary habit changes, 78.7% consumed nutritious food. Most of the students with cough or fever covered mouth while coughing, used face-masks, maintained physical distance and self-isolated themselves. However, lower number of participants followed self-isolation in comparison to other preventive measures. Use of face mask and social distancing was maintained by the participants while going out. Use of prophylactic vitamins or medicine was less common among the participants. Among those who used prophylactic vitamins or medicine majority were females as illustrated in table III.

DISCUSSION

In this study, different aspects of physical health mainly related to exercise; sleep and diet have been assessed. The finding of the physical activity is contrary to the finding of number of studies during the COVID pandemic on physical activity.^{5,8,9} Majority of these studies reported decreased physical activity and sedentary behaviors as the major finding during the pandemic.^{8,9} These studies compared pre lockdown and during the lockdown data on physical activity and were conducted in general public and university students.^{5,8,9,12} This study findings of increased involvement in exercise by the health science students is in line with the finding by observational cross-sectional study by Romero- Blanco et al. conducted on Spanish

health science students.¹⁵ This finding on physical activity could be explained by the increased health awareness and recognition of the importance of physical activity by health science students as well as availability of extra time during the pandemic as student spent less time commuting due to the shift to online mode of teaching. In this study, we could not comment whether the student met the recommended level of physical activity because the study did not assess the intensity of the exercise performed by the students.¹⁶ There was lot of variation in the type of exercise performed by the participants and due to the lack of information on the daily variation in the duration of exercise performed by participant from the study, we were unable to categorize the exercise as mild, moderate or severe intensity.

In this study, 60.2 % of the participants slept for 7 to 9 hours (Recommended sleep for young adults).¹⁷ The finding on recommended sleep for young adult is similar to the finding of KP Wright Jr et al. where 84% to 92% of the University student reported 7 to 9 hours of sleep during weekdays before the stay at home order and after.¹⁸ This study also demonstrated that 60.3 % of females had sleep disturbance due to COVID related thoughts while majority male (60.3%) had no sleep pattern disturbance. This gender difference in sleep disturbance could be explained by increased prevalence of insomnia and anxiety in females.^{19, 20}

A total of 53.4% of the participant in this study had change in eating habit. On gender wise analysis, female students had change in eating habit (65%) while male students had no change in eating habit. Change in eating habit has also been demonstrated by other studies such as the study by Di Renzo et al in Italy where 52.1% of participants felt change in their hunger or satiety perception.¹¹ Similarly, Huber B.C et al demonstrated in his study that 52.1% of the participant had no alteration in the amount of food consumed.²¹ In this study, among the participants who reported change in eating habit, majority had increased eating habit. This finding of increased eating habit during pandemic is similar to other studies.^{22, 23} Majority of participant reported change in dietary habit (63.9% female and 63.5% male). Also, 85.2% female and 70% male consumed nutritious food. Many females consumed healthy food than men. The finding of healthy eating during pandemic is backed up by other studies around the world.^{22, 24}

We also assessed pandemic related behavioral changes in this study. Most of the participants in this study were non-smoker and did not consume alcohol. Among those who consumed alcohol and smoked, reported no change in alcohol or smoking habit during the pandemic. This finding is contrary to most of the studies on smoking and alcohol intake habit.^{11, 22, 23} However, the result of no

change in smoking habit and alcohol consumption could be due to less number of participants.

In this study, most of these participants (99.3%) followed social distancing and used mask while going out. Also, large percentage of participants with cough and fever followed preventive behaviors. Comparatively, fewer participants self-isolated (64.9%) in comparison to other behaviors of prevention. The finding on preventive behaviors demonstrated similar findings as other studies done worldwide on medical and health science students.^{25, 26} It was very interesting to know that only 20.5% of the health science students used prophylactic medicine and vitamins during the pandemic. Even though the effectiveness of vitamins and prophylactic medicine is yet to be proven beneficial in COVID-19, there is considerable degree of use of prophylactic medicine and vitamin by the general public.^{27, 28}

The strength of this study is that the study adds to the current knowledge of physical and behavioral changes in health science students in context of Nepal during COVID pandemic. The study has some limitations, such as the study was cross-sectional observational study. This study was a questionnaire-based study due to which it was not possible to explore physical activity quantitatively such as by the use of accelerometer. We failed to address in depth exploration of eating and sleeping habit missing various aspects of diet and sleep. This could probably be addressed by larger study with robust methodology and quantitative approach for the assessment of physical health and broader coverage of behavioral aspects.

CONCLUSION

The physical health as well as behavior of the health science students has been affected during the COVID pandemic. Eating and sleeping habits are particularly affected in female students. As expected, majority of the health science students practice the preventive measures during the pandemic.

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