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Survey of the Undergraduate Health Status during the Outbreak of COVID-19: a Case Study of an Urban University in Thailand

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ABSTRACT

OBJECTIVE: This study aimed to survey the health status of undergraduates during the outbreak of COVID-19 in Thailand.

METHODS: This cross-sectional descriptive study recruited undergraduate students from a university in an urban area in Thailand. The survey was conducted online by the electronic mailing of questionnaires to the studied participants. The daily health behaviors questionnaire, the 28-item General Health Questionnaire (Thai GHQ28), and the participants' satisfaction with the online learning questionnaire were used in this study.

RESULTS: There was a total of 390 undergraduate students who participated and responded to the survey. The results showed they scored poorly in the areas of controlling food consumption, such as salt and sweet intakes, and exercise or continuous movement. The majority of the surveyed students (303 out of 390 students or 77.7% of the total) have shown a normal health status in response to the Thai GHQ28 except for social dysfunction. There was a strong association between daily health behaviors (p = .015) and general health (p = .019) status with the online satisfactory level.

CONCLUSION: At-home online learning was found to be directly associated with the health behaviors and the health status of the surveyed students. Based on the findings, counseling centers should be set up to offer advice to students on how to stay healthy and socially connected during the online learning period.

KEYWORDS: COVID-19, health status, online learning, undergraduate

INTRODUCTION

The novel coronavirus disease 2019 (COVID-19) pandemic has greatly affected many aspects of society from the economy to health and lifestyle[1]. People are also overly stressed from travel bans and social isolation, taking in too much information about the pandemic, and hoarding household products[2]. According to previous studies[3-4], COVID-19 heavily affects people's mental health as it causes stress and worries that may even lead to depression.

During the first wave of the COVID-19 outbreak in Thailand, the government enacted social distancing rules and began the "Stay Home, Stop the Virus, Help the Nation" policy on March 2020[5]. The enforcement of this policy caused the

temporary closure of schools, universities, public transportation, big companies, and the prohibition of public events/gatherings. People began to work from home, and educational institutions implemented online learning to prevent gatherings and limit physical interactions to contain the outbreak. The COVID-19 pandemic has put tremendous pressure on the schooling framework across the world to contain the outbreak. It forced educational institutions to move away from traditional, direct teacher-students classroom learning to long-distance, teacher-students online classes.

Prior to the COVID-19 outbreak, online learning had been developing consistently worldwide, as technology and education co-evolved to provide people with the opportunity to acquire new skills[6]. Since the pandemic, online learning has become an integral part of the lives of teachers and students who want to acquire knowledge and new skills. Although online learning allows physical distancing among teachers and students, preventing the spread of the virus as recommended by various health agencies around the world, there are unintended, negative consequences as well. First, it has a negative impact on student's health due to inactivity. Normal physical activities that students have to engage are absent in the online classroom. In addition, these students lack physical interaction with friends in the form of sports or exercise due to home isolation. At the same time, the students consume more food and drinks that contain high amounts of salt and sugar[7-8] which may lead to obesity. Second, online learning has a negative effect on the students' mental health. Because online learning lacks direct human-to-human interaction (i.e., with friends and teachers) and seems to connect just humans to a computer, there is little or no social engagement. In Thailand, due to the first lockdown from March to December 2020, almost all institutions abruptly canceled their classes. For example, universities were forced to shut down for a long period of time.

Conventional learning platform shifted enormously to virtual one insofar as it immediately tackled unprecedented situations. Therefore, a great number of students were confronted with challenges as to deal with online activities and adjust themselves to be familiar with online lessons to carry on their studies during the initial lockdown. Previous studies have associated mental health problems with online learning, caused by factors like uncertainties about the mode of examination, and the constant worry about the future[9-10]. In some cases, instructors are not familiar with or are not prepared to teach online which results in poor presentations to the online students[11]. This in turn causes mental stress among students because they do not understand what is being taught. Some students even used prescription drugs to relieve this stress[12]. A student's mental health may also be directly affected by their family's financial issues due to the closure of their family's business. This is supported by the findings which claim that educational outcome is affected by 4 factors: communication, learning facilities, proper guidance, and family stress[13].

Health concept is a multi-faceted construct and identified by four main dimensions: physical, mental, social, and cultural[14]. However, most studies[15-18] only investigated the impact of online learning and psychological disorders. There is still a lack of information on physical and social health and health behaviors which are also important for the undergraduate students to excel in their studies. The objective of this study is to survey the health and health behaviors of students. The study also aims at analyzing the association between daily health behaviors and Thai GHQ28 during the first wave of COVID-19 pandemic in Thailand. These preliminary results will be used to improve the health of students, provide consultation, and prepare students for online classes in the future.

METHODS

This cross-sectional descriptive study was carried out from August to October 2020. The undergraduate students at the university in Thailand were recruited. The recruited students were enrolled and taking classes at the university during the onset of COVID-19 pandemic.

Total population were 1,564. The sample size was calculated for proportions considering a 95% confidence level, 0.05 margin of error and a finite correction for the student population of 371[19]. The inclusion criteria for this study were that each recruit must be an undergraduate student at the university and is willing to participate in the study. There was a 25% quota of each faculty in the sampling with no exclusion criteria. A simple random sampling from the list of students' email addresses was used to recruit the study participants. Initially, the questionnaires were administered to 500 undergraduates via email. At first, merely 20% of emails were returned. With this, the researcher resent the emails every two weeks and urged them to complete the questionnaires. After three months, the number of responses increased.

This study was conducted using questionnaires on two major topics: students' health and students' satisfaction with online learning. The "students' health" topic was subdivided into two categories: daily health behaviors and general health status. The questionnaires were designed to collect basic information to assess the students' health behaviors and the general health status while studying online at home. The daily health behaviors of the participants were evaluated using a questionnaire of the Health Education Division, Ministry of Public Health of Thailand[20]. The reliability of daily health behaviors questionnaire was 0.7. The questionnaire is made up of six items which consisted of consumption (2 items), physical activity (1 items), stress management (1 items), drug addiction (2 items) dimensions, giving a combined total score of 30. The score of 5 is given for each positive health behavior that is practiced 6-7 times per week, and each one that is never practiced is given 1.

The 28-item General Health Questionnaire (Thai GHQ28) of the Department of Mental Health, Ministry of Public Health, Thailand[21] was employed in this study. The reliability of the Thai GHQ28 is 0.8. The questionnaire requests the participants to indicate the status of their health in general over the past few weeks. The questionnaire is subdivided into four behavioral dimensions assigned with a 4-point scale to indicate the following frequencies of experience: not at all, no more than usual, rather more than usual, and much more than usual. These four dimensions are somatic symptoms (items 1-7), anxiety (items 8-14), social dysfunction (items 15-21), and severe depression (items 22-28). Scores were assigned as follows: not at all = 0, no more than usual = 0, rather more than usual = 1 and much more than usual = 1.

A questionnaire was also developed to assess the participants' satisfaction with the online learning method. The questionnaire comprised of 13 items from the following topics: instructors (5 items), contents (2 items), learning processes (2 items), learning materials and resources (2 items), and measurement and evaluations (2 items). The content validity of the online learning questionnaire was verified by three experts in the field of education. Reliability was performed with 30 undergraduate students in the university having the same characteristics. The reliability of the online learning questionnaire was 0.8. The five-point Likert scale was used to investigate the questionnaire. The scale ranges 5 to 1 from strongly agree to strongly disagree or dissatisfied.

Data were collected between August to October 2020 using Google Forms that were emailed to the students. The data were extracted from the Google Forms and analyzed in SPSS Statistics for Windows, Version 28.0 (IBM SPSS Statistics for Windows, Version 28.0. Armonk, NY: IBM Corp). Each question of the daily health behaviors questionnaire has a maximum score of

5.0. An average score of < 2.9, 3.0-3.4, 3.5-3.9 and ≥ 4.0 was considered to be poor behavior, quite poor behavior, good behavior and very good behavior, respectively. The total score of the daily health behaviors questionnaire was 30.0. An average score of 0-17.9, 18.0-20.9, 21.0-23.9 and 24.0-30.0 was considered to be "poor behavior", "quite poor behavior", "good behavior", and very good behavior, respectively[20]. The minimum score for the Thai GHQ28 general health survey is 0, and the maximum is 28. Total scores of 5 or below was classified as normality, while participants with scores of ≥ 6 were classified as abnormality[21]. Scorings of online learning questionnaire are classified as follows: < 80% indicating dissatisfied and ≥ 80% indicating satisfied. Analyzed data were presented as average, standard deviation, frequencies, and percentages. The association between online learning with the students' daily health behaviors and the students' general health (Thai GHQ28) was established using Chi-square.

This study was approved by the Human Research Ethics Committee at the Vajira Hospital (COA 116/2563). Informed consent process was also sent to the respondent online. For confidentiality, the data were anonymized and just the pooled/total outcomes are presented.

RESULTS

A total of 390 undergraduate students participated in this study, composed of 107 medical students, 163 nursing students, 93 sciences and health technology students, and 27 students from non-health sciences majors. The majority of the surveyed subject were females with an average age of 21.4 years. Most of the participants had an average body mass index (BMI) of 21.7 kg/m². Almost half of the respondents (46.4%) experienced weight gain from self-weight assessment during online learning at home. The basic profile of the undergraduate students has been shown in Table 1.

Table 1 Basic profile of undergraduate students

Basic characteristics	n	(%)
Sex		
Female	325	83.3
Male	65	16.7
Age (years)		
< 20	218	55.9
20–30	153	39.1
> 30	19	5.0
BMI (kg/m²)		
< 18.5	91	23.3
18.5–22.9	179	45.9
23.0–24.9	44	11.3
25.0–29.9	58	14.9
> 30	18	4.6
Faculty		
Medicine	107	27.4
Nurse	163	41.8
Sciences and Health Technology	93	23.8
Other	27	7.0
Self-weight assessment while online learning at home		
Increase	181	46.4
Not change	124	31.8
Decrease	85	21.8

Abbreviations: BMI, body mass index; kg, kilogram; m, meter; n, number

The mean total score of daily health behaviors was 21.3 out of 30 (S.D.= 3.4) which indicated that most of them were in good health behaviors. An average score for each item of the daily health behaviors was ranged from 2.7–4.7 out of 5. These data illustrated that the surveyed subjects performed poorly in controlling food, salt and sweet intakes, and also fared poorly in exercise or continuous movement until feeling tired. On the other hand, they scored excellent on items of no smoking or inhaling cigarette smoke and no alcohol drinking. The details on health behaviors in the daily lives of the surveyed undergraduate students during the COVID-19 pandemic are depicted in Table 2.

The majority of the surveyed students (77.7%) have a normal health status as indicated by the scores in the total Thai GHQ28 questionnaire. More than two-thirds of the participants (66.7%, 67.4%, and 83.3%) did not exhibit the symptom of somatic, anxiety, and severe depression, respectively. However, about two-thirds of the studied subjects (68.7%) experienced some form of social dysfunction. The details of the general health status of the surveyed undergraduate students are shown in Table 3.

Table 2 Assessment of health behaviors in daily life of the surveyed undergraduate students during the COVID-19 virus pandemic

Items	Mean (SD)	Meaning
1. Controlling of food intake, controlling of salinity and sweetness food and salty at every meal	2.7 (1.3)	poor
2. Always eat fresh fruits and vegetables at least half a kilogram a day	3.0 (1.2)	quite poor
3. Exercise or continuous movement until feeling tired	2.7 (1.1)	poor
4. Stress management by always being optimistic	3.7 (1.0)	good
5. No smoking or inhale cigarette smoke	4.6 (0.9)	excellent
6. No alcohol drinking	4.7 (0.8)	excellent
Total score	3.6 (0.5)	good

Abbreviation: SD, standard deviation

Table 3 General health status of the surveyed undergraduate students

Dimension of symptoms	n	(%)
Somatic symptom		
No	260	66.7
Yes	130	33.3
Anxiety		
No	264	67.4
Yes	126	32.6
Social dysfunction		
No	122	31.3
Yes	268	68.7
Severe depression		
No	325	83.3
Yes	65	16.7
Total		
Normality (score < 6)	303	77.7
Abnormality (score ≥ 6)	87	22.3

Abbreviation: n, number

The majority of the participants (305 from 390 or 78.2%) reported dissatisfaction with the online class experience, while only around one-fifth (21.8%) felt satisfied. When analysis subgroups, it was found the most dissatisfaction with the online class in undergraduate student who had a good behavior and normality health status.

The results obtained from Chi-square analyses indicated the relationship between satisfactory of online learning with the daily health behaviors and general health status of the surveyed students. The association was found to be statistically significant for both variables (p = .015 and p = .019 respectively). These data were presented in Table 4.

DISCUSSION

The findings of this study reveal that during the COVID-19 pandemic, most students had normal average BMI. However, almost half of the students (46.4%) reported weight gain during the homebound online study and the rest were either unchanged (31.8%) or decreased in weight (21.8%) (table 1). This result of weight gain was in accordance with the poor score in the item of controlling food consumption (table 2). On the other hand, their eating behaviors were in the acceptable range for consuming fruit and vegetables, good for stress management, and excellent in avoiding smoke and alcohol (table 2). These results indicated that the undergraduates

maintained healthy lifestyle pertinent to stress management, smoking, and alcohol consumption. Such lifestyle lasted approximately eight months during the online platform.

Further analysis to find reasons for the poor daily health behaviors of the surveyed students in terms of foods, salt and sweet as well as low or lack of physical activities are discussed as follows. As soon as the government announced the lockdown and the physical distance policy, people may begin to excessively purchase and store household goods. They might be worried that they would not have enough food to eat and were too scared to go to buy food at the stores, afraid of being infected with the virus. This is in agreement with previous studies which reported that people were aware and scared of being under lockdown without enough food items to survive, and therefore they tended to buy household products including food in excessive amounts during the pandemic[2,22]. These long shelf-life food products are known to be highly processed, calorie-dense and with high salt, sugar and preservatives[7,8,23]. Thus, having excessive foods stored at home may result in increased consumption of food and snacks in the sample population[24]. Furthermore, the government's social distancing policy and classroom cancellation and online study forced students to be homebound. This could lead to boredom and/or stress; hence, they may opt to eat more foods to relieve their

Table 4 Relationship of satisfactory of online learning with daily health behaviors, and general health status of the surveyed students

Variables	Dissatisfy online learning n (%)	Satisfy online learning n (%)	P-value* (Chi-square)
Daily health behaviors			.015 (χ^2 =10.495)
Poor behavior	40 (13.1)	17 (20.0)	
Quite poor behavior	91 (29.8)	12 (14.1)	
Good behavior	92 (30.2)	25 (29.4)	
Very good behavior	82 (26.9)	31 (36.5)	
General health status			.019 (χ^2 =5.502)
Normality	229 (75.1)	74 (87.1)	
Abnormality	76 (24.9)	11 (12.9)	

Abbreviation: n, number

*P-value < .05 = statistically significant

burdens. The outcome of this is shown in this survey, which finds that almost half of the students have gained weight during the lockdown (table 1). Low or lack of physical activities may also contribute to weight gain. During normal circumstances, students in the sample population had engaged in several physical activities such as commuting to and from class and working and had the opportunity to exercise with their friends. These activities drastically decreased during the lockdown; instead, the students spent most of their time in front of computer screens, resulting in less physical activity more sedentary lifestyle. In addition, the closure of parks and outdoor arenas prevented students from outdoor exercises. However, it is noteworthy that the studied participants have an excellent score on health behavior concerning cigarette and alcohol intake (table 2). This could reflect that the majority of the surveyed students were female; therefore, were most likely to abstain from smoke and drink[25].

The general health status assessment from the Thai GHQ28 found that 22.3% of the samples had abnormal symptoms which were slightly higher than the samples of similar age in the previous study which is reported to be 20.7%[26]. This study reveals that more than two-third (68.7%) of the surveyed students experienced some form of social dysfunction, indicating that they had difficulty adjusting in the early stages of social distancing. This is not a surprising outcome because most of these students may be independent individuals who enjoy doing things on their own. When their normal, carefree lifestyles came to a sudden stop due to the lockdown, they could feel disconnected. They needed to adjust to the new lifestyle to accommodate the pandemic, for instance, wearing a face mask and online study. This new lifestyle seems to draw people apart further; for example, people may not recognize each other with a face mask on, while online classes completely separate classmates and teachers. These numbers, however, may drop with time

because most people will adapt, modifying their lifestyles to be more socially connected. It is also found that after the peak pandemic, people started to adopt the lifestyle before the outbreak, increasing chances to socialize themselves. This could mean that poor social activities would no longer be an issue for the students. Additionally, the advisers should provide something to the students with abnormal health status.

Overall, the majority of the surveyed students were dissatisfied with homebound, online learning. Many factors contributed to the large number of dissatisfactions with online learning as revealed by the students in this study. Form the questionnaire, online learning lacks engagement with the teachers and their peers and offers less class time. Additionally, the lack of necessary equipment, lack of internet service, and insufficient online materials also further heighten the dissatisfaction of students. Moreover, the evaluation of students' progress, such as examinations, is difficult to conduct and potentially subject to an unfair practice. This data concurred with prior published data showing that the majority of students are dissatisfied with online classes[27-28]. To ascertain whether homebound, online learning influences daily health behaviors and general health status or not, a Chi-square analysis was performed on the acquired scores. The results of this study indicated that homebound, online learning and health status are related, as depicted in Table 4. These findings were consistent with previous research which found that online learning during the COVID-19 pandemic lockdown led to mental health problems[15] in terms of depression, anxiety, and stress[16,29-30]. Based on these findings, the students need to recognize potential health problems during homebound online studies such as unhealthy food consumption, poor physical activity, and social connectivity. Meanwhile, students who were satisfied with online instruction had better daily health behaviors. In addition, there was a higher proportion of normality in the general health status comparing

to those dissatisfied with online learning platform. Educational institutions should establish counseling centers to provide information to those who need guidance in maintaining healthy behaviors for a similar situation in the future.

The limitation of this study was surveyed in only one university in Thailand. The population given here may not be enough to generalize the findings to a larger scale. This could be due to the difficulties in collecting data, especially during the lockdown. Online data collection has proved to be problematic because of the lack of participation or response rate compared to face-to-face communication or questionnaires.

CONCLUSION

Homebound, online learning during the COVID-19 lockdown for some period of time has directly affected the students' health. The majority of the surveyed students (77.7%) had normal health status. However, the undergraduate students maintained a healthy lifestyle for stress management, smoking, and alcohol consumption. Almost half of the students (46.4%) gained weight and two third of them experienced social dysfunctions during this short period of study. More harmful effects would surely occur among students and the general population if the lockdown and home isolation were to continue for a longer period. Based on these findings, counseling centers should be established in schools and universities to provide advice to students and the general public on how to maintain a healthy lifestyle during a pandemic lockdown.

CONFLICT OF INTETEREST

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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DATA AVAILABILITY STATEMENT

All data generated or analyzed during this study are included in this article. Further enquiries can be directed to the corresponding author.

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