Predictive Factors of Health Promoting Behaviors in Undergraduate Students During COVID-19 Pandemic: a Case Study of a Private University

ปัจจัยทำนายพฤติกรรมสร้างเสริมสุขภาพของนักศึกษาปริญญาตรี ในสถานการณ์การระบาดโควิด 19 กรณีศึกษาในมหาวิทยาลัยเอกชนแห่งหนึ่ง

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Abstract

Although the COVID-19 pandemic can influence lifestyle changes in the general population, there is limited information on how undergraduate students adapt and change their lifestyles during the COVID-19 pandemic. An analytic-cross-sectional study investigated health-promoting behaviors and their predictive factors among undergraduate students in a private university in Thailand during the COVID-19 pandemic. A total of 200 undergraduate students from the School of Nursing Science, School of Architecture and Design, and School of Music participated in an electronic survey from December 2021 to February 2022. The results showed that

most undergraduate students reported moderate levels of health-promoting behaviors (68%) with the highest mean of health responsibility. According to Pearson's correlation coefficient, perceived benefit (r = .588, p < .01), self-efficacy (r = .545, p < .01), interpersonal influence (r = .540, p < .05), perceived barrier (r = .292, p < .01) and GPA (r = .164, p < .05) showed positive correlations with health-promoting behaviors among undergraduate students. However, stress (r = -.279, p < .01) and self-rated health status (r = -.342, p < .01) showed negative correlations with health-promoting behaviors. According to Multiple Regression Analysis, perceived benefit, interpersonal influence, self-efficacy, being a third-year student, history of closed contact with COVID-19, and self-rated health status could jointly explain 52.9% of health-promoting behaviors of undergraduate students during the COVID-19 pandemic. The results of this study suggest that a program to increase students' self-efficacy, strengthen their interpersonal relationships and improve supportive facilities should be developed. The university's policymakers should initiate a preparation program for students and university personnel to enhance their competency to improve health-promoting behaviors and respond to any new pandemic episodes in the future.

Keywords: *Health Promoting Behaviors, Undergraduate students, COVID-19, Private University*

บทคัดย่อ

สถานการณ์การแพร่ระบาดโควิด-19 ส่งผลกระทบต่อการดำเนินชีวิตของประชาชนและยังมีข้อมูลจำกัด เกี่ยวกับการปรับตัวและเปลี่ยนแปลงการดำเนินชีวิตในกลุ่มนักศึกษาปริญญาตรีในช่วงสถานการณ์การระบาด โควิด-19 การศึกษาเชิงวิเคราะห์แบบภาคตัดขวางครั้งนี้จึงมีวัตถุประสงค์เพื่อศึกษาพฤติกรรมสร้างเสริมสุขภาพ และปัจจัยทำนายของนักศึกษาปริญญาตรีในสถานการณ์การแพร่ระบาดโควิด-19 ในมหาวิทยาลัยเอกชนแห่ง หนึ่ง ในประเทศไทย กลุ่มตัวอย่างจำนวน 200 คน ประกอบด้วยนักศึกษาปริญญาตรีจากคณะพยาบาลศาสตร์ คณะสถาปัตยกรรมศาสตร์ และคณะดนตรี เข้าร่วมการวิจัยโดยการสำรวจแบบออนไลน์ ระหว่างเดือนธันวาคม 2564 ถึง กุมภาพันธ์ 2565 ผลการวิจัยพบว่า กลุ่มตัวอย่างส่วนใหญ่มีพฤติกรรมสร้างเสริมสุขภาพในระดับ ปานกลางคิดเป็นร้อยละ 68.0 โดยมีค่าเฉลี่ยพฤติกรรมสร้างเสริมสุขภาพด้านความรับผิดชอบต่อสุขภาพมากที่สุด เมื่อใช้สถิติสัมประสิทธิ์สหสัมพันธ์แบบเพียร์สันพบว่าการรับรู้ประโยชน์ (r = .588, p < .01) การรับรู้ความสามารถ ของตนเอง (r = .545, p < .01) อิทธิพลระหว่างบุคคล (r = .540, p < .05) การรับรู้อุปสรรค (r = .292, p < .01) และเกรดเฉลี่ย (r = .164, p < .05) มีความสัมพันธ์เชิงบวกกับพฤติกรรมสร้างเสริมสุขภาพ ในขณะที่ภาวะเครียด (r = -.279, p < .01) และการรับรู้ภาวะสุขภาพ (r = -.342, p < .01) มีความสัมพันธ์เชิงลบกับพฤติกรรมสร้างเสริม สุขภาพ เมื่อวิเคราะห์ด้วยการถดถอยเชิงพหุคูณแบบขั้นตอนพบว่า การรับรู้ประโยชน์ อิทธิพลระหว่างบุคคล

การรับรู้ความสามารถของตนเอง นักศึกษาชั้นปีที่ 3 การมีประวัติสัมผัสใกล้ชิดผู้ติดเชื้อโควิด-19 และการรับรู้ภาวะสุขภาพ สามารถร่วมกันอธิบายพฤติกรรมสร้างเสริมสุขภาพของนักศึกษาปริญญาตรีในสถานการณ์การระบาดโควิด-19 ได้ร้อยละ 52.9 ผลการศึกษานี้สามารถนำไปส่งเสริมพฤติกรรมสุขภาพและออกแบบบริการสร้างเสริมสุขภาพสำหรับนักศึกษาปริญญาตรี โดยเฉพาะในนักศึกษาชั้นปีที่ 3ทั้งยังสามารถนำไปพัฒนาคลินิกสุขภาพจิต หรือโปรแกรมสายด่วนเพื่อดูแลนักศึกษาที่มีภาวะเครียดและต้องการความช่วยเหลือในช่วงสถานการณ์การแพร่ระบาดโควิด-19

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Introduction

During 2021-2022, Thailand faced the fourth wave of the COVID-19 pandemic resulted in the spreading of the new Omicron variant. The Thai government provided preventive measures and policies to control the spreading of COVID-19. The government agencies encouraged Thai citizens to receive the vaccine and to follow the measures of COVID-19 prevention, such as wearing a mask, washing hands, using alcohol gel, observing social distancing at least 1-2 meters from others, and self-checking for COVID-19 (Department of Disease Control, 2021). Ministry of Higher Education, Science, Research, and Innovation announced the measures for schools and universities to operate for teaching and learning, examinations, training, or undertaking activities that draw big crowds with the approval from related organizations and the provincial communicable disease committee (Laothamatas, 2021). In addition, with organization approval, schools, and universities were authorized to operate for teaching and learning, conducting exams, training, or undertaking activities that draw big crowds (Thai government gazette, 2021). A university student is a young adult transitioning from adolescence to adult life (World Health Organization, 2021). Inappropriate health behaviors are primarily found in this age group, such as nutrition and a sedentary lifestyle (Alzahrani et al., 2019), leading to non-communicable diseases such as Diabetes Mellitus, Cardiovascular disease, and Cancer (WHO, 2020). Like other countries, Thai people over 15 years old tend to have a higher prevalence of Diabetes Mellitus related to an increasing prevalence of obesity (Karnjanapiboonwong, Kamwangsanga, & Keawta, 2020).Covid-19 all universities were forced to close and provide online courses to prevent COVID-19 (Yongstar, 2020), leading to a sedentary lifestyle. However, few studies about changes in lifestyle among university students during the lockdown were reported. Compared with the previous study, about 46.1% showed a decrease in smoking

and alcohol consumption and increased exercise and sleeping hours (Renzo et al., 2020). Moreover, over 65% of undergraduate students reported having anxiety during the lockdown (Kaparounaki et al., 2020). In Thailand, the researchers found current faculty/college, stress, and adversity quotient using stepwise multiple regression analysis. Three predictive variables ordered adversity quotient ($\beta = .52$), stress ($\beta = -.32$), and current faculty/college ($\beta = .14$). (Suksatan W. et al, 2021).

This study is aimed to assess health-promoting behavior and its predictive factors among undergraduate students at a private university during the COVID-19 pandemic, using Pender's Health Promoting Behavior Model, which noted that each person has unique personal characteristics and experiences that affect subsequence action.

Research Methodology

An analytic-cross-sectional study was applied using Pender's Health Promoting Behavior Model to investigate health-promoting behaviors and their predictors among undergraduate students of a private international university. A private international university with 7,959 Thai and international students in a suburban area was selected as a study location. The G*power was used to calculate the sample size with an increase of 30%, totaling 200 participants. Multistage sampling was used to recruit participants from 3 out of 10 faculties, including the School of Nursing Science, the School of Music, and the School of Architecture and Design. Then, the proportion allocation was used to recruit 200 participants from 3 faculties. Convenience sampling was used to recruit first to fourth-year students from each faculty. Inclusion criteria included 1) being 18 years old, 2) being enrolled in the selected school in the academic year 2021, 3) being able to read and understand the English language, and 4) being willing to participate in the study.

1. Research Instruments

The researcher developed and revised a self-report questionnaire with nine parts using Pender's Health Promoting Behavior Model. Part 1 consisted of demographic data, health status, study program, parent's education and career, and history of COVID-19 contact. Part 2 was a 1-item self-rated health, which was developed by Subramanian, Huijits, & Avendano (2009) and revised by the researcher. It asked, "How do you rate your current health compared with the last 12 months?". The item was evaluated on five rating scales ranging from 1 (very good), 2 (good), 3 (fair), 4 (bad), and 5 (very bad). Part 3 Stress was measured by Test 5 (ST5) developed by Silapakit (2008), consisting of 5 items with 4-rating ranges: 0 (never), 1 (sometimes), 2 (often), and 3 (always). The total score of ST5 ranges from 0-15 and is classified into four levels: less stress for ranges 0-4, moderate stress

for ranges 5-7, stress ranges from 8-9, and significant stress ranges from 10-15. Part 4 was perceived benefit consisting of 10 items with a 4 Likert scale, ranging from 1 (Strongly disagree), 2 (Disagree), 3 (Agree), and 4 (Strongly agree), the higher score, the more positive perceived benefit. Part 5 was about the perceived barrier of health-promoting behaviors during the COVID-19 pandemic and consisted of 10 items with a 4 Likert scale, ranging from 1 (Strongly disagree), 2 (Disagree), 3 (Agree), and 4 (Strongly agree). The higher score, the more positive the perceived barrier. Part 6 was about the perceived self–efficacy of health-promoting behaviors during the COVID-19 pandemic and consisted of 15 items with a 4 Likert scale, ranging from 1 (Strongly disagree), 2 (Disagree), 3 (Agree), and 4 (Strongly agree): the higher score, the more positive the perceived self-efficacy. Part 7 was a situational influence, consisting of 15 items with a 4 Likert scale, ranging from 1 (Strongly disagree), 2 (Disagree), 3 (Agree), and 4 (Strongly agree): the higher score, the more positive the perceived situational influence. Part 8 was the interpersonal influence that affected health-promoting behaviors. This part consisted of 10 items with 3 rating scales, ranging from 1 (never), 2 (sometimes), and 3 (often). The higher score, the more positive the perceived interpersonal influence. Part 9 was about health-promoting behaviors during the COVID-19 pandemic, modified by

the researcher based on Health Promoting Lifestyle Profile II (Walker et al., 1995). The questionnaire consisted of 50 items with ranges of 1 (never), 2 (sometimes), 3 (often), and 4 (regularly). The higher score, the more positive health-promoting behaviors. The expert panel examined the content validity with an acceptable validity of .85-1.00. Then the questionnaire was tried on 30 participants with an acceptable Cronbach's alpha of .82-.95.

2. Data Collection

After the human ethics approval from the Faculty of Public Health, Mahidol University, research project No. 98/2564, approval code No. MUPH 2021-096, the researcher submitted a permission letter to the director of the selected university to ask for data collection. Then, the researcher contacted the assigned co-ordinators from each school to support data collection from 200 participants using Google Forms. Before the consent form was completed, the researcher met the student participants before data collection and informed them about the research objectives and the process. Each subject took about 45 minutes to complete the questionnaires. Data were collected from December 2021 – February 2022.

3. Data Analysis

The relationship between demographic data, self-rated health, stress, perceived benefit, perceived barrier, perceived self-efficacy of health-promoting behaviors, situational influence, interpersonal influence,

and Health Promoting Behavior during COVID-19 was examined using Pearson's Correlation Co-efficiency. To examine predictive factors of health-promoting behaviors during the COVID-19 pandemic among undergraduate students, the stepwise method of multiple regression analysis was performed at the p-values < .05.

Results

Among 200 undergraduate students, most participants were Thai (84.5 %), Buddhist (76.0 %), and female (59.0 %). The age of majority was 21-25 years old (64 %) with a mean of 21.83 ± 2.724 years.

More than half of the participants lived in Bangkok (56.5%). Most of their current level of study was fourth year (37.5%). About half of the participants were from the School of Architecture (51.0%). The average GPA was 3.09 ± .46, with a range of 3.01-3.50 (33.0%). About one-third (32.0%) had an income of 5,001-10,000 Baht/month with a mean of 15,258 ± 14,029, and most sources of income were from parents (82.0%). The highest education of mothers and fathers was a bachelor's degree (52.5% and 51.0%), and the occupation of mothers and fathers was a business owner (40.0% and 49.7%). Most subjects had an average Body Mass Index (BMI) (47.0%) with a mean of 22.83 ± 5.36. Most of the subjects reported having no underlying disease (87.5%) and rated their health as good (43.0%) with moderate stress (31.5%). Most of them (91.5%) had no history of a confirmed diagnosis of COVID-19 or close contact with or caring for someone diagnosed with COVID-19 (90.0%).

The results showed that most undergraduate participants reported moderate levels of health-promoting behaviors (68%) with a mean of 142.43 ± 18.38. The health responsibility sub-scale scored highest over the six other sub-scales, and the physical activity sub-scale was the lowest. The mean value of the perceived benefit of health-promoting behaviors during the COVID-19 pandemic was 32.56 ± 4.42, and the perceived barrier of health-promoting behaviors during the COVID-19 pandemic was 32.88 ± 5.28. The mean of self–efficacy of health-promoting behaviors during the COVID-19 pandemic was 40.98 ± 5.22. The mean of situational and interpersonal influence was 36.77 ± 3.46 and 29.25 ± 3.77.

Pearson's correlation co-efficiency results showed a significant positive correlation between perceiving the benefit of health-promoting behaviors during the COVID-19 pandemic (r = .588), self–efficacy of health-promoting behaviors during the COVID-19 pandemic (r = .545), interpersonal influence (r = .540), and perceive barrier of health-promoting behaviors during COVID-19 pandemic (r = .292) with health-promoting behaviors during COVID-19 pandemic (p-value < .01).

GPA (r = .164) had a significant positive correlation with health-promoting behaviors during the COVID-19 pandemic (p-value < .05). Self-rated health status (r = -.342) and stress (r = -.279) had a significant negative correlation with health-promoting behaviors during the COVID-19 pandemic (p-value < .01). (Shown in Table1)

Table 1 Correlation analysis of factors related to Health Promoting Behavior among undergraduate participants during the COVID-19 pandemic (n=200)

Variable	r	P-value
Perceived benefit of health-promoting behaviors		
Perceived Self – efficacy of health-promoting behaviors	.588	<.01
Interpersonal influence	.545	<.01
The perceived barriers to health-promoting behaviors	.540	<.01
GPA	.292	<.01
Stress	.164	<.05
Self-rated health status	-.279	<.01
	-.342	<.01

stepwise multiple regression analysis showed that the perceived benefit of health-promoting behaviors during the COVID-19 pandemic (B = 1.546, t = 5.724, p = <.01), interpersonal influence (B = 1.520, t = 5.634, p = <.01), perceived self-efficacy of health-promoting behaviors during COVID-19 pandemic (B = .710, t = 3.160, p = <.01), being a third-year student (B = -5.564, t = -2.885, p = <.01), and having a history of close contact with or caring for someone who diagnosed with COVID-19 (B = 7.231, t = 2.373, p = <.05) were able to significantly predicted health-promoting behaviors among undergraduate students at a private university during COVID-19 pandemic. Those five factors could jointly explain 52.9% of the variance in health-promoting behaviors among undergraduate students at a private university during the COVID-19 pandemic. (Shown in Table2)

Table 2 Regression analysis of factors influencing Health Promoting Behavior among undergraduate participants during the COVID-19 pandemic (n=200)

Variable	B	Std. error	Beta	t	Sig
Perceived benefit of health-promoting behaviors	1.546	.269	.358	5.724	< .01
Interpersonal influence	1.520	.270	.313	5.634	< .01
Perceived Self – efficacy of health-promoting behaviors	.710	.225	.201	3.160	< .01
Being a third-year student	-5.564	1.929	-.147	-2.885	< .01
Having close contact with or caring for someone who has been diagnosed with COVID-19	7.231	3.048	.119	2.373	< .05

F = 42.880** R^2 = .529 adjusted R^2 = .517

Discussion

In this study, the health-promoting behaviors among undergraduate participants during the COVID-19 pandemic were moderate, similar to those of the previous study (Suksatan et al., 2021). It was found that during the COVID-19 pandemic, health responsibility was reported as the highest sub-scale of health-promoting behavior was inconsistent with the previous studies (Alzahrani et al., 2019; Rakpanusit et al., 2018). In addition, the physical activity sub-scale reported the lowest score, consistent with previous studies (Alzahrani et al., 2019; Hwang & Oh, 2020). During the COVID-19 pandemic, most participants applied measures regarding social distancing, hand washing, wearing masks, and avoiding public exercises.

During lockdown and online study, six factors, including perceived benefit, interpersonal influence, self-efficacy, third-year student, and experiencing close contact with COVID-19, could jointly explain 52.9% of health-promoting behaviors among undergraduate students in a private university. The perceived benefit of health-promoting behaviors was able to predict health-promoting behaviors during the COVID-19 pandemic, which is inconsistent with Sabooteh et al. (2020). It found that perceived benefit was not able to predict physical activity. The interpersonal influence predicted health-promoting behaviors in undergraduate students at a private university during the COVID-19 pandemic, consistent with Saravirote & Janyam (2014).

Self–efficacy of health-promoting behaviors during the COVID-19 pandemic was able to predict health-promoting behaviors during the COVID-19 pandemic, which is consistent with Sabooteh et al. (2020); Sanasuttipun & Nookong (2015). This study found that self-rated health status, third-year student, and history of close contact with or caring for someone who was diagnosed with COVID-19 were able to predict health-promoting behaviors in undergraduate students at a private university during the COVID-19 pandemic.

Recommendations

Based on Pender's Health Promoting Behavior Model, this study reported that demographic factors, perceived benefit, self-efficacy, and interpersonal influence could predict health-promoting behaviors among undergraduate participants.

To promote students' health behaviors during COVID-19, the faculty members responsible for student affairs should initiate a program to increase students' self-efficacy, strengthen the interpersonal relationship among students and provide them with adequate facilities. In response to new pandemic episodes or emergencies, the university administrative team should initiate a new project or policy for students and university personnel.

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