

ORIGINAL RESEARCH

Filipino Nursing Students' Health Promoting Behaviors during Pandemic



Ma. Prestige Leudouel J. Diana¹, Francesca G. Cercado¹, Pearl Zerrha T. Chiu¹, Ma. Pamela Andrea D. De Justo¹, April Rhose C. De Silva¹, Ryan Michael F. Oducado¹

¹College of Nursing, West Visayas State University, Philippines

Article Info

Article History:

Received: 29 October 2022

Revised: 28 February 2023

Accepted: 2 March 2023

Online: 30 April 2023

Keywords:

Lifestyle; nursing; pandemic;
Philippines; students

Corresponding Author:

Ryan Michael F. Oducado
College of Nursing, West Visayas
State University, Philippines
Email:
rmoducado@wvsu.edu.ph

Abstract

Background: Research on health promoting behaviors can assist nursing students in identifying, maintaining, and improving health behaviors. The notable impact and changes in lifestyle behaviors during the pandemic necessitate a closer look into students' health-promoting behaviors. However, there is a lacuna in the literature about health promoting activities of nursing students stuck at home and attending online learning during the pandemic.

Purpose: This study assessed the level and predictors of health promoting behaviors of nursing students in a Philippine public university during a pandemic.

Methods: This study used a cross-sectional design with 363 out of 531 undergraduate nursing students of a public university in the Philippines as study participants. Data were gathered using an online survey last March 2022 employing the Health Promoting Lifestyle Profile (HPLP) II. Significant predictors were identified using multiple linear regression analysis with the aid of SPSS version 26.0.

Results: Results showed that nursing students had a high ($M=2.80$ out of 5) practice of health promoting behaviors. Physical activity ranked the lowest among the six dimensions of health promotion behaviors. The variables that predicted the health promoting behaviors of nursing students were self-reported academic performance ($\beta=2.110$, $p=.000$), family income level ($\beta=.055$, $p=.001$), and academic year level ($\beta=.057$, $p=.002$).

Conclusion: Nursing students should continue to maintain their good practice of health promoting behaviors. However, more attention should be given to engaging in physical activity to maintain holistic well-being.

How to cite: Diana, M. P. L. J., Cercado, F. G., Chiu, P. Z. T., De Justo, M. P. A. D., De Silva, A. R. C., & Oducado, R. M. F. (2023). Filipino nursing students' health promoting behaviors during pandemic. *Nurse Media Journal of Nursing*, 13(1), 1-11. <https://doi.org/10.14710/nmjn.v12i3.49896>

1. Introduction

Healthy lifestyle promotion is an important factor of health status (Almutairi et al., 2018; Wei et al., 2012). Health promotion combines educational, social, and environmental efforts to promote healthy lifestyles and habits (Kim & Kim, 2018). It is designed to aid people in achieving their full potential in terms of physical, mental, social, and spiritual health (Kim & Kim, 2018; Shariferad et al., 2013). Moreover, health promoting behaviors involves a positive living approach and a way of boosting well-being and increasing self-actualization (Nassar & Shaheen, 2014; Wang et al., 2009). Health promoting behavior is an ever-present factor in the lives of university students, many of whom have varying lifestyles and practices (Al-Momani, 2021; Almutairi et al., 2018; Ashgar, 2021). Individuals can choose whether they want to improve their lifestyles and have several methods or means they can choose from (National Institute of Health, 2021). Health promoting behaviors, especially those of students, have been researched many times throughout the years, and studies found that those with good health promoting behaviors have better healthy lifestyles (Al-Momani, 2021; Hwang & Oh, 2020).

With the advent of the COVID-19 pandemic, restrictions, and quarantine practices were implemented to control and prevent the spread of the COVID-19 virus (Mattioli et al., 2020). The pandemic has impacted all sectors, including nursing education (Agu et al., 2021). As the crisis worsened, many governments shut down schools, colleges, and institutions to protect students, teachers, and their countries (Schleicher, 2020). As a means of maintaining and safeguarding the overall health of students and teachers, traditional in-person classes, skills laboratories, and

student clinical or hospital placement were either suspended or restricted when the pandemic broke out and education shifted to online mode (Agu et al., 2021; Oducado & Soriano, 2021).

Meanwhile, multiple studies have already been conducted related to the health promoting behaviors of university students in pre-pandemic conditions (e.g., Al-Momani, 2021; Alzahrani et al., 2019; Ashgar, 2021; Fashafsheh et al., 2021; Hosseini et al., 2014; Hwang & Oh, 2020; Polat et al., 2016), particularly nursing students, and the factors affecting it. Mixed results were found with other studies reporting high (Hosseini et al., 2014), while others disclosing only moderate levels (Fashafsheh et al., 2021; Farokhzadian et al., 2018; Polat et al., 2016) of health promoting behaviors. However, to the researchers' best knowledge, there is a lacuna in published literature touching on the health promoting behaviors of nursing students in the pandemic setting.

COVID-19 dramatically impacted lifestyle behavior (Azzouzi et al., 2022). A closer look at the lifestyle of students is necessary as lifestyle is considered a key factor for the onset and course of diseases (Van der Werf et al., 2021). Results of studies among the general population and university students conducted elsewhere indicated changes in the lifestyle during the pandemic, such as physical inactivity, faulty eating patterns, and increased mental stress (Gadi et al., 2022; Li et al., 2021; Singh et al., 2021). Online classes and restrictions related to quarantine inhibited students from practicing self-care and good health habits during the worldwide health crisis (Cleofas, 2021). During this research, the students were still living within the pandemic context. Previous studies have not touched on health promoting activities of nursing students stuck at home and attending online learning during the pandemic. It must be noted that while the survey was done towards the end of the pandemic and there was already some relaxation with COVID-19-related restrictions in other parts of the world, the conditions in which the study was conducted have not returned to its pre-pandemic state. Also, students in this study have not yet returned to on-campus instruction.

Meanwhile, Walker et al. (1987) identified six lifestyle behaviors that promote health. These include health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations, and stress management. The Health Promotion Model (Walker et al., 1987) assumes that demographic or personal characteristics may influence health promoting behaviors. Differentiation of behaviors that promote health by certain demographic constructs may help identify vulnerable student cohorts that may be targeted for health programs and interventions (Muller et al., 2022). It is argued that university life of students can be a crucial time in promoting the good and changing the unhealthy lifestyle behaviors of students (Cetinkaya & Sert, 2021). Given that the majority of lifelong good and ill lifestyle behaviors are formed throughout adolescence and continue to affect health even after early adulthood, it is critical to establish good health-related habits and disease prevention measures for teenagers and young adults (Fish & Nies, 1996; Musavian et al., 2014). Furthermore, the researchers recognized that it is vital to support students in developing and adopting behaviors that will maintain, improve and preserve their health and well-being and assist them in making sound health decisions (Ross et al., 2017). Nurses recognize the importance of a healthy balanced diet, stress management, adequate sleep, physical activity, and healthy relationships; this understanding, however, may not convert into self-care for nurses as they may not adhere to suggested physical activity and nutrition requirements (Ross et al., 2017). The same can be said about nursing students, especially if they are overburdened with assignments and classes (Chaabane et al., 2021).

As healthcare professionals in the future, nursing students have a vital role in public health for others and their own well-being and fitness (Hwang & Oh, 2020). Therefore, this study focused on how several factors involved in the lives of undergraduate nursing students affect their practice of health promoting behaviors, especially during the pandemic. The result of this study, based on student responses, could help inform university policymakers on ways to create healthier campuses, especially in nursing colleges. Hence this research was conducted to assess the level of practice and significant predictors of the health promoting behaviors among undergraduate nursing students during a pandemic.

2. Methods

2.1 Research design

This study was completed through the use of a descriptive cross-sectional research design.

2.2 Setting and samples

A complete or total enumeration was utilized in the study, wherein the acceptable response rate is 60% and above (Bennett et al., 2011; Fincham, 2008). All 531 undergraduate students from levels one to four of a public College of Nursing in the Philippines were invited to participate in the study. The college offers a four-year baccalaureate degree program and is the only public university within the Province of Iloilo. Out of 531 students, 363 responses (68.36%) responded. A-priori sample size using G*Power (Kang, 2021) for multiple regression with eight and nine predictors, .80 desired statistical power, and .15 anticipated effect size only requires a minimum sample of 108 and 113, respectively. The subjects included in this study were officially enrolled students of the college in the second semester of 2022 and were willing to participate in the study. The five students who were part of the research team of this present investigation were excluded.

2.3 Measurement and data collection

Data collection was done through a two-section questionnaire. The instrument was administered in the English language as the medium of instruction in Philippine Nursing schools is English. The first part included six socio-demographic questions (gender, academic year level, family income level, presence of medical condition, location of residence, and the number of people in the household) as well as the perceived academic performance of the student, COVID-19 infection history, and COVID-19 vaccination status. The second part consisted of the Health Promoting Lifestyle Profile (HPLP) II questionnaire (Walker et al., 1987). The researchers had permission to download and use the HPLP II for non-commercial data collection purposes. The HPLP II tool consists of 52 items categorized into six subscales: health responsibility (9 items), physical activity (8 items), nutrition (9 items), spiritual growth (9 items), interpersonal relations (9 items), and stress management (8 items). A Likert-type scale was used to measure each behavior, with ranges of never (1), sometimes (2), often (3), and routinely (4). The following scale of means based on the work of Beliran and Legaspi (2014) was followed for the interpretation of this study: Very Low (1.00-1.50), Low (1.51-2.50), High (2.51-3.50), and Very High (3.51 - 4.00). HPLP II had a Content Validity Index of 1.00 and a Cronbach's alpha result of .83 (Tejada, 2019). In addition, the researchers have also tested the internal consistency of the instrument based on the actual data and revealed that the results of Cronbach's alpha were the following: .81 for health responsibility, .85 for physical activity, .71 for nutrition, .86 for spiritual growth, .80 for interpersonal relations, .78 for stress management and .94 for the entire scale.

To gather data, the researchers secured permission and approval from the Office of the Dean and the respective Division Chairpersons per year level to conduct the study last March 2022. Afterwards, the chairpersons of the student curriculum of each level were asked to contact the class chairpersons of each section through messenger or email. They were requested to post the link in their respective class Facebook group chats or group pages. The students were encouraged to forward the link to their classmates through messaging or emailing apps to maximize the response rate. To ensure that only the study participants were given access to the survey link, the Google Forms were restricted to university users and were only distributed to college students included in the study. The link included the electronic informed consent. The participants had to click on the box that stated their voluntary participation. Then they had to click "next" to be directed to the research survey questionnaire. When the expected response rate was reached, the participants' responses were monitored, consolidated, and organized using Google Sheets. The data was then classified, tallied, interpreted, and processed.

2.4 Data analysis

Statistical computations were calculated using IBM SPSS version 26. Data were described using descriptive statistics. A test for normality of data distribution using the Kolmogorov - Smirnov Test was done. The t-test for Independent Samples and one-way ANOVA were used to test the difference between categories of the independent variable. Multiple regression analysis (step-wise) was employed to identify significant predictors. The significance level was set at .05 alpha.

2.5 Ethical considerations

The researchers submitted this study to the West Visayas State University Unified Research Ethics Review Committee (URERC), and it was approved with URERC Protocol Number

WVSU.URERC-2022.CONS_001. Electronic informed consent was used, and the participants were allowed to withdraw from the study without feeling obligated to continue. Moreover, there were no repercussions for those who did not participate since this was not a mandatory survey. The consolidated data were only made accessible to the researchers.

3. Results

3.1 Profile of participants

A total of 363 responses were included in this analysis. It can be gleaned from Table 1 that the majority of the participants were female (71.6%), from the lower middle-income class (28.4%), had four (4) or less number of family members in the household (49.0%), residing in towns (52.9%), have average academic performance (81.0%), reported no medical condition (77.7%), and have not been infected with COVID-19 (88.4%). Almost all (99.2%) are fully vaccinated. There were nearly an equal number of students per year except for Level IV (20.4%).

Table 1. Profile of participants (n=363)

Profile	f	%
Gender		
Male	103	28.4
Female	260	71.6
Year level		
Level I	94	25.9
Level II	95	26.2
Level III	100	27.5
Level IV	74	20.4
Family income level		
Poor to low-income	87	24.0
Lower middle-income	103	28.4
Middle middle-income	87	24.0
Upper middle-income	47	12.9
Upper-income to rich	39	10.7
Number of family members in household		
Currently not living with family members	21	5.8
4 or less	178	49.0
5 or more	164	45.2
Medical condition		
No	282	77.7
Yes	81	22.3
Location of residence		
City	171	47.1
Town	192	52.9
Academic performance		
Failing	3	.8
Below average	47	12.9
Average	294	81.0
Above average	19	5.2
Vaccination status		
Fully vaccinated	360	99.2
Partially vaccinated	2	.6
Unvaccinated	1	.3
COVID-19 status		
No	321	88.4
Yes	42	11.6

3.2 Level of health promoting behaviors

Table 2 shows that the majority (73.8%) had a high level of overall health promoting behaviors with a mean score of 2.80 (SD=.40). In terms of subscales, interpersonal relations ($M=3.18$, $SD=.46$) had the highest mean, followed by spiritual growth ($M=3.11$, $SD=.53$), stress

management ($M=2.79$, $SD=.50$), health responsibility ($M=2.63$, $SD=.54$), and nutrition ($M=2.56$, $SD=.46$). Meanwhile, physical activity ($M=2.47$, $SD=.65$) had the lowest mean.

Table 2. Level of health promoting behaviors of nursing students (n=363)

Level	Very low		Low		High		Very High		M	SD
	f	%	f	%	f	%	f	%		
Overall HPB	2	.6	80	22	268	73.8	13	3.6	2.80	.40
Interpersonal Relations	1	.3	24	6.6	243	66.9	95	26.2	3.18	.46
Spiritual Growth	4	1.1	40	11.0	229	63.1	90	24.8	3.11	.53
Stress Management	5	1.4	109	30.0	228	62.8	21	5.8	2.79	.50
Health Responsibility	8	2.2	139	38.3	193	53.2	23	6.3	2.63	.54
Nutrition	4	1.1	167	46.0	187	51.5	5	1.4	2.56	.46
Physical Activity	29	8.0	176	48.5	138	38.0	20	5.5	2.47	.65

3.3 Differences in health promoting behaviors

Table 3 shows the differences in health promoting behaviors of nursing students using t-test for Independent Samples and ANOVA. Results of statistical analysis revealed that there was a significant difference in the overall health promoting behaviors of nursing students when grouped according to academic year level ($F=3.817$, $p=.010$), family income level ($F=2.773$, $p=.027$), and self-reported academic performance ($F=12.473$, $p=.000$).

Table 3. Differences in health promoting behaviors of nursing students (n=363)

Profile	M	SD	Test Statistics	p-value
Gender			-1.875	.062
Male	2.86	.46		
Female	2.77	.38		
Year Level			3.817	.010*
Level I	2.73	.41		
Level II	2.76	.41		
Level III	2.79	.39		
Level IV	2.93	.39		
Family Income Level			2.773	.027*
Poor to low-income	2.70	.41		
Lower middle-income	2.77	.39		
Middle middle-income	2.82	.43		
Upper middle-income	2.90	.38		
Upper-income to rich	2.88	.36		
Number of family members			1.801	.167
Currently not living with family	2.94	.39		
4 or less	2.77	.42		
5 or more	2.81	.39		
Medical condition			-.681	.496
No	2.79	.40		
Yes	2.82	.42		
Location of residence			-.115	.909
City	2.79	.44		
Town	2.80	.37		
Academic Performance			12.473	.000*
Failing to Below Average	2.56	.43		
Average	2.82	.39		
Above Average	2.99	.33		
COVID-19 status			-1.508	.132
No	2.78	.41		
Yes	2.88	.37		

* $p<.05$

4. Predictors of health promoting behaviors

Table 4 shows that multiple regression analysis using step-wise method revealed that self-reported academic performance ($\beta=2.110$, $p=.000$), family income level ($\beta=.055$, $p=.001$), and academic year level ($\beta=.057$, $p=.002$) were significant predictors of nursing students' health promoting behaviors accounting for 11.4% of the variance.

Table 4. Regression analysis of health promoting behaviors (n=363)

Model	β Coefficients	t	p-value
(Constant)	2.110	20.336	.000*
Academic performance	.213	4.827	.000*
Family Income Level	.055	3.474	.001*
Year Level	.057	3.045	.002
Gender	.073	1.465	.144
Number family members	.000	.010	.992
Medical condition	.033	.658	.511
Location of residence	.052	1.028	.305
COVID-19 status	.038	.756	.450

Note: $R^2 = .114$; $F = 15.370$; $p = .000$

4. Discussion

This study assessed the level of practice and significant predictors of health promoting behaviors among undergraduate nursing students during a pandemic. This study demonstrated that self-reported academic performance, family income level, and academic year level significantly predicted nursing students' health promoting behaviors.

In this study, the majority of nursing students have not been diagnosed or experienced being infected with COVID-19. This may be due to the students and community members' strict implementation of safety precautions (Tuppall et al., 2021). A study by Rabacal et al. (2022) indicated that higher education students from Western Visayas region of the Philippines generally had a high practice of COVID-19 preventive measures. Nursing students were concerned about their well-being and their families during the pandemic (Barrett, 2022) and thus practiced COVID-19 preventive measures to reduce the chances of acquiring the disease. The suspension of face-to-face teaching and learning and clinical experiences may also have benefited nursing students, reducing the chances of COVID-19 transmission (Agu et al., 2021; Oducado & Soriano, 2021).

It is also significant to note that nursing students in this study had very high COVID-19 vaccination rates. Based on their background in nursing, nursing students could understand the necessity, effectiveness, and safety of the COVID-19 vaccine, as evidenced by their willingness to get the vaccination (Jiang et al., 2021). Furthermore, the study of Oducado et al. (2022) disclosed that nursing students highly intend to attend face-to-face classes. During data collection, only vaccinated students of higher education institutions were allowed to join limited face-to-face classes.

In this study, while very high practice was deemed most desirable, the health promoting behaviors of student nurses were still found to be high. This result is similar to the study of Hosseini et al. (2014), which showed that Tehran-based nursing students' health promoting behaviors scored high. On the contrary, studies conducted by Fashafsheh et al. (2021) in Palestine, Polat et al. (2016) in Turkey, and Farokhzadian et al. (2018) in Iran showed that nursing students had a moderate degree of health promotion. The variation with other related studies and this research may be due to how the mean was interpreted as the interpretation of a "moderate" corresponds to "high" in terms of this study's scale of means. Nevertheless, it is noteworthy that nursing students practice health promoting behaviors to a moderate to a great extent, although improvements can also still be made.

Moreover, in this study, the overall mean score was highest in the subscale of interpersonal relations. This could be due to the students spending most of their time with their classmates, who are also their friends, even on the online platform. Also, the school and the college provide a range of extracurricular activities that could strengthen student camaraderie despite the virtual setup. The relationships among nursing students are recognized by them as being crucial to their

learning in clinical practice, as a forum for their feelings of safety and decreased anxiety while learning together. Peer learning has shown positive experiences when the students support each other in knowledge development (Holst et al., 2017; Stenberg & Carlson, 2015).

In addition, spiritual growth was also rated high by the respondents. This could be attributed to the educational institution, which offers a wide range of spiritual formation activities such as regular masses and recollections, including the various religious organizations open to nursing students. This result is similar to the study by Tejada (2019) in the Philippines, which showed that among 118 regular nursing students, the highest means were spiritual growth and interpersonal relations. Moreover, other studies by Alzahrani et al. (2019) among medical students in Saudi Arabia, Fashafsheh et al. (2021) among nursing students in Palestine, Polat et al. (2016) among nursing students in Turkey, Farokhzadian et al. (2018) among nursing and midwifery school in Iran, Hosseini et al. (2014) among nursing students in Tehran, Shaheen et al. (2015) among university students in Jordan, and Al-Momani (2021) among medical students in Saudi Arabia revealed that the greatest mean in the spiritual growth dimension.

On the other hand, physical activity had the lowest mean that was reported in this study. It is significant to note that 48.5% had low and 8.0% had very low physical activity. Other studies conducted pre-pandemic by Alzahrani et al. (2019), Cetinkaya and Sert (2021), Farokhzadian et al. (2018), Fashafsheh et al. (2021), Hosseini et al. (2014), Polat et al. (2016), and Shaheen et al. (2015) showed that physical activity similarly had the lowest mean. Fashafsheh et al. (2021) explained that regular exercise routines still need to be fully absorbed into daily life as leisure activities. During the pandemic, accessing sports equipment and facilities was challenging due to lockdowns and restrictions on physical mobility. Also, with the advent of the pandemic and online classes, students spend most of their time in front of their computers and gadgets (Oducado et al., 2021), further limiting their physical activity. Other variables that may hinder physical activity include poor time management and a disregard for the negative effects of immobility (Thivel et al., 2018).

This study demonstrated that year level predicted the overall level of practice of health promoting of nursing students. Post-hoc analysis revealed that level IV or senior students had significantly higher overall health promoting behaviors than level 1 or first-year ($p=.008$) and level 2 or second-year ($p=.040$) students. Similarly, the study of Polat et al. (2016) found that the mean total score of fourth-year students was significantly higher than the other year levels. A significant difference in health promoting behaviors based on the academic level was also noted in other studies conducted elsewhere (Cetinkaya & Sert, 2021; Muller et al., 2022). And while some scholars pointed out that sedentary lifestyle tends to increase with age especially after early adolescence (Tamanal & Kim (2020), it may also be that students in higher academic year levels have acquired more valuable information about the importance of practicing healthy lifestyle and deleterious health outcome of sedentary behavior. College students' drive to modify their lifestyle by gaining additional health knowledge while studying health-related courses may be one factor (Mašina et al., 2017). These may help explain why higher academic levels have better health behaviors than those in the lower academic years.

Also, this study found that the practice of health promoting behaviors of nursing students was influenced by family income. Post-hoc analysis revealed that the upper middle-income class had significantly higher overall health promoting behaviors than the poor to low-income class ($p=.046$). This finding is supported by the study of Shaheen et al. (2015), whose findings indicated a statistically significant positive association between monthly family income and the average score on all subscales of health promoting behaviors among university students in Jordan. Socio-economic variation in healthy lifestyle was also noted among university students in Europe (Cicchella et al., 2022). In addition, Ashgar (2021) also found that among adults in Saudi Arabia, those with stable income were more likely to adopt one or more of the health promoting behaviors. The study of Nacar et al. (2014) also noted that health promoting behaviors were higher for those with better economic situations among medical students in Turkey. Money directly influences health through the services and goods people purchase, either helping or harming their health.

Finally, this study demonstrated that perceived academic performance predicted the overall level of practice of health promoting behaviors of nursing students. Results reveal that those with above-average academic performance ($p=.000$) and average academic performance ($p=.000$) had significantly higher overall health promoting behaviors than those with failing to below-average academic performance. This finding is supported by the studies of Heidari et al. (2017) and

Tamanal & Kim (2020), wherein academic performance was positively related to a healthier lifestyle: the higher the academic achievement, the more the student practices a health promoting lifestyle. Students with high academic performance have lifestyle habits that positively affect their health, including lessening their screen time, regular eating and sleeping schedules, and decreased social media use (Dubuc et al., 2019). Habits that promote the students' academic performance could also promote their well-being. High academically performing students know how to plan effectively, pay attention to their schedules, set attainable goals, and know when they need activity and rest.

5. Implications and limitations

The study results provide several important implications concerning the practice of health promoting behaviors of nursing students. Since health-related habits continue to affect health after early adulthood, establishing positive health behaviors among college-age students is crucial since altering behavioral patterns in early adulthood is easier. It is vital to identify the level and factors influencing health promoting behaviors to improve and encourage health promoting behaviors among college students. Future healthcare practitioners, such as nursing students, will be crucial in educating patients on good lifestyle choices and serving as role models for healthy living. Nursing students must maintain and promote their personal and professional health. The study findings will also be instrumental in designing and implementing strategies and programs to promote students' health and exploring modification of school policies and environments to help students maintain and encourage their practice of health behaviors.

This study has limitations. The study only focused on the practices of health promoting behaviors reported by nursing students with respect to the six subscales of the HPLP II. The study was limited to undergraduate nursing students in one nursing college in the Philippines. The conclusions drawn from this study cannot be extended to other nursing students who are not included in the sample. Furthermore, because this study utilized a descriptive cross-sectional design, it could not infer causality between variables or follow changes over time. Given the use of online survey questionnaires, self-report bias, subjectivity, and social desirability were also limitations of this study. This study only included selected predictors, and there may also be other factors that may influence health promoting behaviors not included in this study.

6. Conclusion

This study highlights that while nursing students frequently incorporate health promoting behaviors into their lifestyle, they still seldom engage in physical activities, and regular exercise routines are still not fully integrated into daily activities. Also, this study underscores that certain personal characteristics, such as perceived academic performance, academic year level, and family income influence nursing students' health-promoting behaviors. Nursing students should continue to maintain their health-promoting behavior, and focus should be given to incorporating any form of physical activity into their daily schedule to keep active and maintain holistic well-being.

Acknowledgment

We thank Dr. Rosana Grace B. Delariarte and Dr. Ben Remor E. Inventor for the financial help extended when we presented this study during the International Conference of Nurses.

Author contribution

All authors contributed substantially to the study design, data collection, analysis, and interpretation of results. All authors drafted and revised the article, approved the published version, and agreed to be accountable for all aspects of the work.

Conflict of interest

Authors declare no conflict of interest.

References

- Agu, C. F., Stewart, J., McFarlane-Stewart, N., & Rae, T. (2021). COVID-19 pandemic effects on nursing education: Looking through the lens of a developing country. *International Nursing Review*, 68(2), 153-158. <https://doi.org/10.1111/inr.12663>

- Al-Momani, M. M. (2021). Health-promoting lifestyle and its association with the academic achievements of medical students in Saudi Arabia. *Pakistan Journal of Medical Sciences*, 37(2), 561-566. <https://doi.org/10.12669/pjms.37.2.3417>
- Almutairi, K. M., Alonazi, W. B., Vinluan, J. M., Almigbal, T. H., Batais, M. A., Alodhayani, A. A., Alsadhan, N., Tumala, R. B., Moussa, M., Aboshaiqah, A. E., & Alhoqail, R. I. (2018). Health promoting lifestyle of university students in Saudi Arabia: A cross-sectional assessment. *BMC Public Health*, 18, 1093. <https://doi.org/10.1186/s12889-018-5999-z>
- Alzahrani, S. H., Malik, A. A., Bashawri, J., Shaheen, S. A., Shaheen, M. M., Alsaib, A. A., Mubarak, M. A., Adam, Y. S., & Abdulwasssi, H. K. (2019). Health-promoting lifestyle profile and associated factors among medical students in a Saudi university. *SAGE Open Medicine*, 7, 205031211983842. <https://doi.org/10.1177/2050312119838426>
- Ashgar, R. I. (2021). Health-promoting behaviour during the COVID-19 pandemic among Saudi adults: A cross-sectional study. *Journal of Advanced Nursing*, 77(8), 3389-3397. <https://doi.org/10.1111/jan.14863>
- Azzouzi, S., Stratton, C., Muñoz-Velasco, L. P., Wang, K., Fourtassi, M., Hong, B. Y., Cooper, R., Balikuddembe, J.K., Palomba, A., Peterson, M., Pandiyan, U., Krassioukov, A., Tripathi, D.R., Tuakli-Wosornu, Y.A., & Hajjioui, A. (2022). The impact of the COVID-19 pandemic on healthy lifestyle behaviors and perceived mental and physical health of people living with non-communicable diseases: An international cross-sectional survey. *International Journal of Environmental Research and Public Health*, 19(13), 8023. <https://doi.org/10.3390/ijerph19138023>
- Barrett, D. (2022). Impact of COVID-19 on nursing students: What does the evidence tell us? *Evidence Based Nursing*, 25(2), 37–38. <https://doi.org/10.1136/ebnurs-2022-103533>
- Beliran, S., & Legaspi, M. (2014). Health promoting behaviors and quality of life of Filipino older persons. *Asia Pacific Journal of Education, Arts and Sciences*, 1(5), 11-20.
- Bennett, C., Khangura, S., Brehaut, J. C., Graham, I. D., Moher, D., Potter, B. K., & M. Grimshaw, J. (2011). Reporting guidelines for survey research: An analysis of published guidance and reporting practices. *PLoS Medicine*, 8(8), e1001069. <https://doi.org/10.1371/journal.pmed.1001069>
- Cetinkaya, S., & Sert, H. (2021). Healthy lifestyle behaviors of university students and related factors. *Acta Paulista de Enfermagem*, 34, eAPE02942. <https://doi.org/10.37689/actaape/2021AO02942>
- Chaabane, S., Doraiswamy, S., Chaabna, K., Mamtani, R., & Cheema, S. (2021). The impact of COVID-19 school closure on child and adolescent health: A rapid systematic review. *Children*, 8(5), 415. <https://doi.org/10.3390/children8050415>
- Cicchella, A., Vecenane, H., & Usca, S. (2022). Healthy lifestyles of university students, according to demographics, nationality, and study specialty with special reference to sport studies. *Frontiers in Education*, 7, 889603. <https://doi.org/10.3389/educ.2022.889603>
- Cleofas, J. V. (2021). Self-care practices and online student engagement during COVID-19 in the Philippines: A mixed methods study. *Issues in Educational Research*, 31(3), 699-717.
- Dubuc, M.-M., Aubertin-Leheudre, M., & Karelis, A. D. (2019). Lifestyle habits predict academic performance in high school students: The adolescent student academic performance longitudinal study (ASAP). *International Journal of Environmental Research and Public Health*, 17(1), 243. <https://doi.org/10.3390/ijerph17010243>
- Farokhzadian, J., Karami, A., & Azizzadeh Forouzi, M. (2018). Health-promoting behaviors in nursing students: Is it related to self-efficacy for health practices and academic achievement? *International Journal of Adolescent Medicine and Health*, 32(3). <https://doi.org/10.1515/ijamh-2017-0148>
- Fashafsheh, I., Al-Ghabeesh, S. H., Ayed, A., Salama, B., Batran, A., & Bawadi, H. (2021). Health-promoting behaviors among nursing students: Palestinian perspective. *Inquiry: The Journal of Health Care Organization, Provision, and Financing*, 58, 004695802110187. <https://doi.org/10.1177/00469580211018790>
- Fincham, J. E. (2008). Response rates and responsiveness for surveys, standards, and the journal. *American Journal of Pharmaceutical Education*, 72(2), 43. <https://doi.org/10.5688/aj720243>
- Fish, C., & Nies, M. A. (1996). Health promotion needs of students in a college environment. *Public Health Nursing*, 13(2), 104-111. <https://doi.org/10.1111/j.1525-1446.1996.tb00227.x>

- Gadi, N., Saleh, S., Johnson, J. A., & Trinidad, A. (2022). The impact of the COVID-19 pandemic on the lifestyle and behaviours, mental health and education of students studying healthcare-related courses at a British university. *BMC Medical Education*, 22(1), 115. <https://doi.org/10.1186/s12909-022-03179-z>
- Heidari, M., Borujeni, M. B., Borujeni, M. G., & Shirvani, M. (2017). Relationship of lifestyle with academic achievement in nursing students. *Journal of Clinical and Diagnostic Research: JCDR*, 11(3), JCo1–JCo3. <https://doi.org/10.7860/JCDR/2017/24536.9501>
- Holst, H., Ozolins, L.-L., Brunt, D., & Hörberg, U. (2017). The experiences of supporting learning in pairs of nursing students in clinical practice. *Nurse Education in Practice*, 26, 6-11. <https://doi.org/10.1016/j.nepr.2017.06.002>
- Hosseini, M., Ashktorab, T., Taghdisi, M. H., Vardanjani, A. E., & Rafiei, H. (2014). Health-promoting behaviors and their association with certain demographic characteristics of nursing students of Tehran city in 2013. *Global Journal of Health Science*, 7(2), 264-272. <https://doi.org/10.5539/gjhs.v7n2p264>
- Hwang, Y., & Oh, J. (2020). Factors affecting health-promoting behaviors among nursing students. *International Journal of Environmental Research and Public Health*, 17(17), 6291. <https://doi.org/10.3390/ijerph17176291>
- Jiang, N., Wei, B., Lin, H., Wang, Y., Chai, S., & Liu, W. (2021). Nursing students' attitudes, knowledge and willingness of to receive the coronavirus disease vaccine: A cross-sectional study. *Nurse Education in Practice*, 55, 103148. <https://doi.org/10.1016/j.nepr.2021.103148>
- Kang, H. (2021). Sample size determination and power analysis using the G*Power software. *Journal of Educational Evaluation for Health Professions*, 18, 17. <https://doi.org/10.3352/jeehp.2021.18.17>
- Kim, M. Y., & Kim, Y. J. (2018). What causes health promotion behaviors in college students? *The Open Nursing Journal*, 12(1), 106-115. <https://doi.org/10.2174/1874434601812010106>
- Li, X., Li, J., Qing, P., & Hu, W. (2021). COVID-19 and the change in lifestyle: Bodyweight, time allocation, and food choices. *International Journal of Environmental Research and Public Health*, 18(19), 10552. <https://doi.org/10.3390/ijerph181910552>
- Mašina, T., Madžar, T., Musil, V., & Milošević, M. (2017). Differences in health-promoting lifestyle profile among Croatian medical students according to gender and year of study. *Acta Clinica Croatica*, 56(1), 84-91. <https://doi.org/10.20471/acc.2017.56.01.13>
- Mattioli, A. V., Ballerini Puviani, M., Nasi, M., & Farinetti, A. (2020). COVID-19 pandemic: The effects of quarantine on cardiovascular risk. *European Journal of Clinical Nutrition*, 74(6), 852–855. <https://doi.org/10.1038/s41430-020-0646-z>
- Müller, C., El-Ansari, K., & El Ansari, W. (2022). Health-promoting behavior and lifestyle characteristics of students as a function of sex and academic level. *International Journal of Environmental Research and Public Health*, 19(12), 7539. <https://doi.org/10.3390/ijerph19127539>
- Musavian, A. S., Pasha, A., Rahebi, S.-M., Atrkar Roushan, Z., & Ghanbari, A. (2014). Health promoting behaviors among adolescents: A cross-sectional study. *Nursing and Midwifery Studies*, 3(1), e14560. <https://doi.org/10.17795/nmsjournal14560>
- Nacar, M., Baykan, Z., Cetinkaya, F., Arslantas, D., Ozer, A., Coskun, O., Bati, H., Karaoglu, N., Elmali, F., & Yilmaze, G. (2014). Health promoting lifestyle behaviour in medical Students: A multicentre study from Turkey. *Asian Pacific Journal of Cancer Prevention*, 15(20), 8969-8974. <https://doi.org/10.7314/apjcp.2014.15.20.8969>
- Nassar, O. S., & Shaheen, A. M. (2014). Health-promoting behaviours of university nursing students in Jordan. *Health*, 6(19), 2756-2763. <https://doi.org/10.4236/health.2014.619315>
- National Institute of Health. (2021). *Changing your habits for better health*. <https://www.niddk.nih.gov/health-information/diet-nutrition/changing-habits-better-health>
- Oducado, R. M. F., Cleofas, J. V., & Soriano, G. P. (2022). Predicting nursing students' intention to attend face-to-face classes on school reopening: A theory of planned behavior application. *Nursing Forum*, 57(5), 733-738. <https://doi.org/10.1111/nuf.12732>
- Oducado, R. M. F., Fajardo, M. T. R., Parreño-Lachica, G. M., Maniago, J. D., Villanueva, P. M. B., Dequilla, M. A. C. V., Montaña, H. C., & Robite, E. E. (2021). Predictors of videoconference fatigue: Results from undergraduate nursing students in the Philippines. *Asian Journal for Public Opinion Research*, 9(4), 310-330. <https://doi.org/10.15206/ajpor.2021.9.4.310>

- Oducado, R. M. F., & Soriano, G. P. (2021). Shifting the education paradigm amid the COVID-19 pandemic: Nursing students' attitude to e-learning. *Africa Journal of Nursing and Midwifery*, 23(1), 1-14. <https://doi.org/10.25159/2520-5293/8090>.
- Polat, Ü., Özen, Ş., Kahraman, B. B., & Bostanoğlu, H. (2016). Factors affecting health-promoting behaviors in nursing students at a university in Turkey. *Journal of Transcultural Nursing*, 27(4), 413-419. <https://doi.org/10.1177/1043659615569536>
- Rabacal, J. S., Lausa, S. M., Egcas, R. A., Oducado, R. M. F., Cleofas, J. V., & Tamdang, K. A. (2022). More than a year into the pandemic: Do higher education students still practice protective behaviors against COVID-19? *Journal of Education and Health Promotion*, 11, 155. https://doi.org/10.4103/jehp.jehp_1235_21
- Ross, A., Bevans, M., Brooks, A. T., Gibbons, S., & Wallen, G. R. (2017). Nurses and health-promoting behaviors: Knowledge may not translate into self-care. *AORN Journal*, 105(3), 267-275. <https://doi.org/10.1016/j.aorn.2016.12.018>
- Schleicher, A. (2020). *The impact of Covid-19 on education insights from education at a glance 2020*. <https://www.oecd.org/education/the-impact-of-covid-19-on-education-insights-education-at-a-glance-2020.pdf>
- Shaheen, A. M., Nassar, O. S., Amre, H. M., & Hamdan-Mansour, A. M. (2015). Factors affecting health-promoting behaviors of university students in Jordan. *Health*, 7(1), 1-8. <https://doi.org/10.4236/health.2015.71001>
- Shariferad, G., Shojaezadeh, D., Tol, A., & Tavassoli, E. (2013). Health-promoting lifestyle and quality of life among undergraduate students at school of health, Isfahan university of medical sciences. *Journal of Education and Health Promotion*, 2(1), 11. <https://doi.org/10.4103/2277-9531.108006>
- Singh, B., Jain, S., & Rastogi, A. (2021). Effects of nationwide COVID-19 lockdown on lifestyle and diet: An Indian survey. *Journal of Family Medicine and Primary Care*, 10(3), 1246. https://doi.org/10.4103/jfmpc.jfmpc_2046_20
- Stenberg, M., & Carlson, E. (2015). Swedish student nurses' perception of peer learning as an educational model during clinical practice in a hospital setting—An evaluation study. *BMC Nursing*, 14, 48. <https://doi.org/10.1186/s12912-015-0098-2>
- Tamanal, J. M., & Kim, C. H. (2020). Promoting healthy lifestyle in high school students: Determination of the lifestyle status through the healthy lifestyle screen (HLS) assessment. *Journal of Lifestyle Medicine*, 10(1), 30-43. <https://doi.org/10.15280/jlm.2020.10.1.30>
- Tejada, R. S. (2019). Health promoting lifestyle and perceived social support measure of nursing students in a selected college of nursing. *Journal of Health and Caring Sciences*, 1(1), 21-32. <https://doi.org/10.37719/jhcs.2019.vii1.0a002>
- Thivel, D., Tremblay, A., Genin, P. M., Panahi, S., Rivière, D., & Duclos, M. (2018). Physical activity, inactivity, and sedentary behaviors: Definitions and implications in occupational health. *Frontiers in Public Health*, 6, 288. <https://doi.org/10.3389/fpubh.2018.00288>
- Tuppal, C. P., Ninobla, M. M. G., Ruiz, M. G. D., Loresco, R. D., Tuppal, S. M. P., Panes, I. I., Oducado, R. M. F., Prudencio, D. A. M., Vega, P. D., Eribal, M. J. E., Real, D. V. P., & Roa, M. N. T. (2021). Knowledge, attitude, and practice toward COVID-19 among healthy population in the Philippines. *Nurse Media Journal of Nursing*, 11(1), 61-70. <https://doi.org/10.14710/nmjn.v11i1.36067>
- Van der Werf, E. T., Busch, M., Jong, M. C., & Hoenders, H. R. (2021). Lifestyle changes during the first wave of the COVID-19 pandemic: A cross-sectional survey in the Netherlands. *BMC Public Health*, 21(1), 1226. <https://doi.org/10.1186/s12889-021-11264-z>
- Walker, S. N., Sechrist, K. R., & Pender, N. J. (1987). The health-promoting lifestyle profile: Development and psychometric characterizations. *Nursing Research*, 36(2), 76-81. <https://doi.org/10.1097/00006199-198703000-00002>
- Wang, D., Ou, C. Q., Chen, M. Y., & Duan, N. (2009). Health-promoting lifestyles of university students in Mainland China. *BMC Public Health*, 9, 379.
- Wei, C. N., Harada, K., Ueda, K., Fukumoto, K., Minamoto, K., & Ueda, A. (2012). Assessment of health-promoting lifestyle profile in Japanese university students. *Environmental Health and Preventive Medicine*, 17, 222-227. <https://doi.org/10.1007/s12199-011-0244-8>

