

Access this article online
Quick Response Code:

Website: www.jehp.net
DOI: 10.4103/jehp.jehp_295_22

Learning and quality of life in undergraduate nursing students: An exploratory study in Chile during the COVID-19 pandemic

Alejandro Almonacid-Fierro¹, Karla Valdebenito²

Abstract

BACKGROUND: Coronavirus disease 2019 (COVID-19) is a global pandemic that has modified all social and, especially, learning instances. The purpose of this study was to determine the perception of final-year nursing students at a university in southern Chile regarding the impact of the pandemic on their learning, and consequently on their quality of life, in the context of the COVID-19 pandemic.

MATERIALS AND METHODS: This is a qualitative study. The research was conducted on 14 nursing students who were selected from a university located in the province of Talca, Maule Region, Chile. Data collection was done through semi-structured interviews conducted during July and September 2021. The data were analyzed using the inductive logic of theoretical categorization; this process was assisted by the Nvivo 10 program.

RESULTS: Two mega categories were generated that accounted for the nursing students' experience during the COVID-19 pandemic: objective factors category and subjective factors category. Six subcategories were derived from these two categories: free time, social relationships, learning from practice, physical exercise, eating habits, and emotional state.

CONCLUSION: The research findings indicate that the students, in addition to feeling upset about not being able to do the internship, also feel that they have not been able to acquire all the knowledge necessary for their training and professional development, since the virtual classes fail to deliver adequate learning as they lack the practical component that is so important in their careers. This has repercussions in the physical, social, and psychological areas, affecting their quality of life.

Keywords:

Academic Training, educational techniques, nursing education, pandemics, students' perception

Introduction

Coronavirus disease 2019 (COVID-19) is a new strain of coronavirus identified in China, which is a contagious disease caused by infection with the severe acute respiratory syndrome coronavirus or SARS-CoV-2 virus of the coronavirus family. The World Health Organization (WHO) declared it as a Public Health Emergency of International Concern (PHEIC) on January 31, 2020 and finally as a pandemic on March 11, 2020.^[1,2] In addition to significantly affecting the

health system, the pandemic situation also brought important repercussions to the educational system in Chile, since educational institutions had to interrupt their classroom activities, which foresees the substitution of presential classes by activities organized through digital tools and platforms for the duration of the pandemic situation.^[3]

In this movement of adaptation to the current educational context of the country, distance learning and education have

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Almonacid-Fierro A, Valdebenito K. Learning and quality of life in undergraduate nursing students: An exploratory study in Chile during the COVID-19 pandemic. *J Edu Health Promot* 2022;11:216.

¹Department of Physical Activity Sciences, Faculty of Education Sciences, Universidad Católica del Maule, Talca, Chile, ²Doctorate in Education Universidad Católica del Maule, Chile

Address for correspondence:

Dr. Alejandro Almonacid-Fierro, Av. San Miguel 3605, Talca, Chile. E-mail: aalmonacid@ucm.cl

Received: 23-02-2022
Accepted: 24-03-2022
Published: 29-07-2022

become protagonists in the conceptual debates on higher education in health in times of this health emergency.^[4,5] Higher education in health has been reconfigured to allow access to different formative processes such as technology-mediated teaching.^[6,7] Teachers and students experience the disappearance of the sense of security in the educational processes in the field of health, through the changes and uncertainties that arise with the pandemic.^[8,9]

Most of these activities that contextualize and enrich the theoretical and practical learning of health professionals suffered direct negative repercussions from the measures adopted in the face of the pandemic that impacted the training of these students, as demonstrated by the research findings of Dewart *et al.*,^[10] García-González *et al.*,^[11] and Kim & Park.^[12] These studies give insight into the complexity of learning in the health area and specifically in nursing. Several authors argue that considering the emergence of distance learning, the methods are still insufficient and require improvement due to the diverse context in which students live.^[13-15]

Several studies have suggested that the quality of life of university students in the health area is related to the following aspects: the practice of physical exercise, access to leisure, in particular, coexistence with family, community, and society.^[16,17] Therefore, quality of life implies a complex picture, as it encompasses objective and subjective aspects of the lives of young university students.^[18] Objective factors focus on biological and epidemiological aspects, while subjective factors refer to the individual's understanding of the values he or she holds and his or her expectations, goals, and concerns.^[19] Currently, according to the WHO,^[20] quality of life is a state of general satisfaction that involves the individual's sense of physical, mental, and social well-being, that is, it is a concept used to refer to the general social well-being of individuals, including elements of the environment, physical and mental health, education, recreation, and social group membership.

In this context, studying how the COVID-19 pandemic has affected the learning and quality of life of university nursing students has become a challenge due to the complexity of almost 2 years of a global pandemic. Consequently, the objective of the present study is to know and understand the perception of senior nursing students regarding the impact of the pandemic on their learning and, consequently, on their quality of life.

Materials and Methods

Study design and setting

This research was conducted in the interpretative paradigm.^[21] The methodological and analytical

approach of the study is associated with the field of qualitative research.^[22] Fourteen semi-structured interviews were conducted with final year nursing students from a university located in the province of Talca, Maule Region, Chile.

Study participants and sampling

The following inclusion criteria were considered for the study: nursing students in their final years, students who, before the pandemic, have had practical courses in the field; showing interest in participating in the study, and students who experienced the teaching-learning processes in virtual modality in 2020 and 2021. The exclusion criterion was students in their first years of studies. The study data were collected in the period July–September 2021. The interview was conducted via Zoom or Meet due to the health emergency the country is going through and had an average duration of 50 min.

Data collection tool and technique

The instrument used was an interview script, which was developed by the research team, based on the dimensions of the problem under study. The script was validated by five expert academics, who, through an exhaustive review, helped to ensure that the questions were specific and focused on the objectives set. Some of the questions that were asked to the participants are as follows: In what areas or areas of your daily life have you been affected during the development of the pandemic? How do you perceive your emotional state during the time that the pandemic has lasted, specifically in the moments of greater confinement? How has your performance been affected during the time that the pandemic has lasted? How has your academic performance been affected by not being able to attend in person and not having carried out the practical work required for training as a health professional? What is your opinion about the teaching-learning processes experienced in virtual modality during the COVID-19 pandemic?

For data processing, we opted for a content analysis,^[23] which comprises three flows of activity: condensation of data, presentation of data, and elaboration/verification of conclusions. Subsequently, the previous categories were grouped through open coding, which allows the emergence of primary categories, giving way from a first descriptive moment to an instance of the interpretative character. The data were analyzed using the inductive logic of theoretical categorization, which is based on categorization as the main data analytical tool, aimed at theorizing through operations that lead to theoretical construction.^[24,25] This process was assisted by the Nvivo 10 program.

The research team conducted this stage in the following sequence: i) The data were reviewed in their entirety in

an open-ended approach, in an attempt to answer the question “What do the data tell us?” The information collected was regrouped into six classificatory categories that subsequently evolved with the following phases of coding. ii) In the second phase, connections were established between the codes to construct descriptive and explanatory categories. These categories will be detailed in the results section of this article. iii) The last phase corresponds to theoretical elaboration, the purpose of which is to produce an explanatory framework to understand the perception of the learning process and the impact on the quality of life of university nursing students during the COVID-19 pandemic.

Ethical consideration

Before data collection, researchers obtained written informed consent to ensure the confidentiality of individuals’ names, considering privacy and emphasizing voluntary participation. Consent was sent via e-mail and received by the same means. The participants were informed of the purposes of the research and their authorization was requested to record the interview to safeguard the ethical aspects of the study according to the Helsinki Declaration. The project was approved by the scientific committee of the Faculty of Education of the Universidad Católica del Maule, Chile (Ethics Committee of the Universidad Católica del Maule vide Act No. 255/2020).

Results

Figure 1 has as its major mega-category, “Perception about learning and quality of life in undergraduate nursing students during the COVID-19 pandemic.” From the data analysis, two categories emerge from the

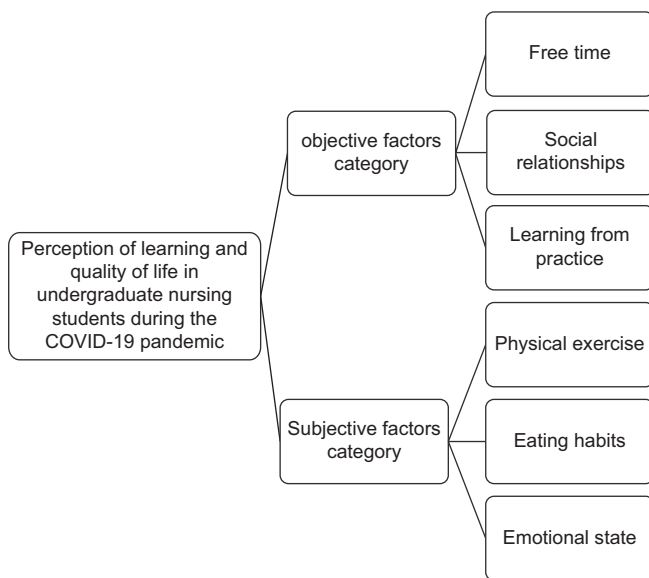


Figure 1: Systematization of data and descriptors. Source: Own elaboration. COVID-19 = coronavirus disease 2019

classification assigned by Chachula:^[17] objective factors (Learning in times of COVID-19) and subjective factors (Impact of COVID on the quality of life). Consequently, six subcategories are presented according to the coding of the primary documents (transcribed interviews). Each account presented has a code expressing the following nomenclature: interview number (Nº) and page (p) and paragraph (p). Table 1 shows the results of the research.

Discussion

The results of the research revealed that nursing students’ perceptions of learning and their quality of life in times of the COVID-19 pandemic were influenced by political, health, academic, and social factors. The analysis of the data revealed two pre-categories and six primary categories, which were configured as follows: the category “Learning in times of COVID-19” considered the associated themes of free time, social relationships, and learning by practice. The category “Impact of COVID-19 on the quality of life” considered aspects associated with physical exercise, eating habits, and emotional state.

Regarding the first previous category referred to as *objective factors*, the literature reports that the pandemic has generated, on the one hand, a whirlwind of emotions linked to hopelessness, boredom, loneliness, and depression due to isolation and, on the other hand, anger, frustration, or irritability due to the loss of autonomy and personal freedom, fear, and sometimes much anxiety in university students, particularly in the health area, as is the case of nursing.^[11,26-28] However, despite the negative consequences that the COVID-19 pandemic has caused in university nursing students, it is necessary to bring the notes found closer to the reality of higher education in health in Chile, to stimulate critical and reflective analysis in the context of a health emergency. Consequently, many discussions are still necessary, so that the adaptations in higher education that we are experiencing with the pandemic can contribute to the improvement of the training of health professionals, especially in the nursing area, as revealed in the research findings.^[7,8,10,14,29,30] Nursing students, faced with the crisis caused by the pandemic of the new coronavirus, suffer variations in terms of efforts to harmonize their personal needs and the academic area, since some of them fail to adequately reconcile these two areas, developing stressful episodes, which not only affect their understanding and decision-making capacity, but can also have a lasting effect on their overall well-being, as expressed in the account of the interviewees, coinciding with what is reported by the literature.^[31-36] In this line, it is expected that the decisions should procure reconstruction of the educational and social fabric after the pandemic, making

Table 1: Results of the analysis of the interviews with nursing students regarding the categories

Mega-category	Subcategory	Description of the story	Interviewees' stories
Objective factors category	Free time	In the context of the previous category Experiences in times of COVID-19, arises from the coding process the category "free time," where students of the Faculty of Health make known some hobbies or distractions during confinement	<i>"To distract me I think that what weighed the most there was the telephone, I think that what was most occupied during the pandemic or during the time of confinement was the telephone, social networks."</i> (N° 1, p. 5, p. 4) <i>"Let's see, the first thing I started to do physical activity, the second to cook, in my free time I cook, as well as to distract myself and to relax because I like it, it relaxes me,."</i> (N° 13, p. 7, p. 3)
	Social relationships	Within the category Experiences in times of COVID-19 emerges the primary category "Social relationships," which refers to how the relationship of the students with their social environment was. In this category, great changes could be evidenced, for example, there was a great improvement in terms of the relationship with people at home, where the family played a very important role	<i>"Last year, the truth is that I did nothing, I talked with my university classmates, well with my friends, with my family I did not have a bad relationship [...] then with the distance I broke up with the person who was my ex-partner, that was what affected the pandemic the most, so to speak"</i> (N° 4, p. 5, p. 1) <i>"Well, on the couple level it was very bad because my ex-partner is from Santiago and we see each other very little due to the pandemic and in fact, we broke up about 3 months ago, the fact that we could not see each other and we could not travel for so long because of the pandemic affected us"</i> (N° 10, p. 6, p. 5)
	Learning from practice	Within the previous category Experiences in times of COVID-19, we found the primary category called "Learnings from practice," which is directly related to the practices carried out by the interviewees in the last 2 years. In the narratives, we perceive a dissatisfaction on the part of the students in the health area regarding the development and application of their practices due to the pandemic	<i>"Horrible, because last year we had no practice and we were all sent to internship, just like life, without having had practice, we only had online simulations that were like patients through the computer, which supposedly were like real simulations, etc., but it is not at all the same"</i> (N° 12, p. 5, p. 4) <i>".., I could not go to do the internship and we only developed theoretical aspects, but I do not feel prepared in the practical context since we have lost contact with people"</i> (N° 11, p. 5, p. 1).
Subjective factors category	Physical exercise	In the previous category Impact of COVID-19 on the quality of life of nursing students, the primary category "Physical exercise" emerges, which is related to the type and quality of physical exercise developed during the pandemic. The interviewed subjects reported that the COVID-19 pandemic allowed them to have more time for physical activity, since studying at home gave them the time they did not have before the long quarantines imposed by the health authority	<i>"...as we were in pandemic I had more free time and I tried to focus on doing physical activity as a distraction, then came a time when I managed to have periods of exercise, it used to happen to me before, that I would start and last a week and nothing more"</i> (N° 14, p. 4, p. 3) <i>"...that was one of the good things I did during the pandemic because not having to go anywhere else gave me time to exercise at home"</i> (No. 5, p. 8, p. 2)
	Eating habits	In the previous category Impact of COVID-19 on the quality of life of university students, the primary category "Eating habits" emerges, which refers to everything related to the food of students, preferably during quarantine periods. The students reported that the pandemic allowed them to improve the quality and type of food they ate on a daily basis, since the quarantine kept them at home, where they generally have more time and care to prepare healthier food	<i>"...now in pandemic I was able to regulate my eating by being at home and being able to eat the three main meals and snacks in between"</i> (No. 7, p. 3, p. 5) <i>"... I have to eat four meals a day, which must be breakfast, lunch, something in the afternoon and eleven or dinner. as for the type of food I have always taken care of myself, but I try to eat lots of vegetables, lots of fruit and not eat junk food"</i> (No. 1, p. 54, p. 4)
	Emotional state	From the previous category Impact of COVID-19 on the quality of life of university students of the Faculty of Health, the primary category "Emotional states" emerges, where difficulties to adapt to the context of the pandemic are evidenced in terms of the interviewees due to stress, anxiety, feeling of drowning, among others	<i>"I am easily stressed, I do not like to be locked up, I am burdened by the confinement and I have had a bad time, I have not had much encouragement for anything and there was a time when I was very bad and I did not even feel like training, so the confinement affected me badly"</i> (No. 10, p. 2, p. 4) <i>"It was difficult because I was going through a period of stress, because of my professional practice, so I was a bit sick, I felt like I was suffering from a pandemic depression, I feel like I needed the open air"</i> (N° 2, p. 5, p. 3)

COVID-19=coronavirus disease 2019

it indispensable to problematize the subject to travel new paths, since the present research invites us to reflect on

the constitution of health education, in the nursing area, in COVID-19 pandemic contexts.

In the second previous category, *subjective factors*, it can be highlighted that it is in times of crisis when the human being is resilient and acts with altruism and cooperation. Consequently, to overcome these existential adversities, it is possible to resort to hobbies, physical exercises, readings, movies, meditations, prayers, and housework, which allow sustaining a good quality of life in times of adversity, as presented by the accounts of the research subjects in the present study, which coincide with what is reported by Chachula *et al.*^[17] Among other results of the research, students reported that physical activity improves their quality of life when they perform various types of exercise and maintain healthy habits, which is consistent with the findings of Backhaus *et al.*^[15] Several papers have suggested that university nursing students tend to associate their quality of life with the following aspects: the practice of physical exercise, access to leisure, intellectual activities, and, in particular, coexistence with family, community, and society.^[15,17] On the other hand, the literature reports that regular physical exercise promotes physiological improvement, helps in controlling glucose level, improves sleep quality, reduces anxiety and stress levels, improves mood and cognitive abilities, and improves health-related physical capacity.^[37-39] In this sense, systematic physical exercise in times of the COVID-19 pandemic contributes to maintaining the quality of life, as expressed by the subjects participating in the study, since the pandemic has allowed them to re-evaluate the practice of physical activity and its positive impact on their health and emotional aspects.

Limitation and recommendation

One of the limitations of the study is the need to increase the size of the sample, so it would be advisable to consider other university institutions that train nurses. Another limitation of the study would be to consider application of a second data collection technique, such as a focus group. In terms of recommendation, the study provides useful background for comparison with research in different international contexts, with the objective of understanding how students in the health area, specifically nursing students, have experienced the COVID-19 pandemic and its impact on the learning and professional training processes, during these last 2 years.

Conclusions

The results of the research of this study highlight the need for a reorganization or redesign on the part of the university institutions in the health area, during and after the pandemic, to create educational alternatives that support the pedagogical processes of health education and ensure the quality of professional training of nursing students. Concerning the reports, the students, besides feeling annoyed for not being able to do the internships,

also feel that they have not been able to acquire all the necessary knowledge for their training and professional development, since the virtual classes do not manage to deliver adequate learning as they lack the practical component that is so important in their careers.

The impact of the pandemic on nursing students was substantial, affecting their social, psychological, and physical environment and, ultimately, their quality of life. When analyzing the responses of the interviewees, it became evident that the young people who had more support in their homes did not see their psychological environment so damaged, since they had close support, which allowed them to talk or perform other activities. On the contrary, the people who did not have so much support during the pandemic experienced feelings of loneliness, stress, anxiety, and anguish due to the confinement.

Concerning the academic environment and the perception of virtual teaching, in the online modality, the subjects interviewed see it as something negative, which left them with gaps in their professional learning, since they could not acquire the expected knowledge and competencies and perform the clinical practices in person, which is essential for their professional development and training. Consequently, it is expected that universities can generate professional development opportunities for students of the 2020 and 2021 batches to enhance their educational quality for the transition of graduates to the world of work, in the context of the global pandemic.

Acknowledgements

The authors thank the nursing students who participated in the research and the faculties of health and education of the Universidad Católica del Maule, Chile, who allowed the project to be carried out.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

- Hua J, Shaw R. Corona virus (Covid-19) "infodemic" and emerging issues through a data lens: The case of China. *Int J Environ Res Public Health* 2020;17:2309. doi: 10.3390/ijerph 17072309.
- Hu B, Guo H, Zhou P, Shi ZL. Characteristics of SARS-CoV-2 and COVID-19. *Nat Rev Microbiol* 2021;19:141-54.
- Sepulveda-Escobar P, Morrison A. Online teaching placement during the COVID-19 pandemic in Chile: Challenges and opportunities. *Eur Journal Teach Educ* 2020;43:587-607.
- Sharma K, Deo G, Timalina S, Joshi A, Shrestha N, Neupane HC. Online learning in the face of COVID-19 pandemic: Assessment of students' satisfaction at Chitwan medical college of Nepal.

- Kathmandu Univ Med J 2020;18:40-7.
5. Singh HK, Joshi A, Malepati RN, Najeeb S, Balakrishna P, Pannerselvam NK, *et al.* A survey of E-learning methods in nursing and medical education during COVID-19 pandemic in India. *Nurse Educ Today* 2021;99:104796. doi: 10.1016/j.nedt.2021.104796.
 6. Bączek M, Zagańczyk-Bączek M, Szpringer M, Jaroszyński A, Woźakowska-Kapłon B. Students' perception of online learning during the COVID-19 pandemic: A survey study of Polish medical students. *Medicine* 2021;100:e24821. doi: 10.1097/MD.00000000000024821.
 7. Agu CF, Stewart J, McFarlane-Stewart N, Rae T. COVID-19 pandemic effects on nursing education: Looking through the lens of a developing country. *Int Nurs Rev* 2021;68:153-8.
 8. Bdair IA. Nursing students' and faculty members' perspectives about online learning during COVID-19 pandemic: A qualitative study. *Teach Learn Nurs* 2021;16:220-6.
 9. Diab GM, Elgahsh NF. E-learning during COVID-19 pandemic: Obstacles faced nursing students and its effect on their attitudes while applying it. *Am J Nurs* 2020;9:300-14.
 10. Dewart G, Corcoran L, Thirsk L, Petrovic K. Nursing education in a pandemic: Academic challenges in response to COVID-19. *Nurse Educ Today* 2020;92:104471. doi: 10.1016/j.nedt.2020.104471.
 11. García-González J, Ruqiong W, Alarcon-Rodriguez R, Requena-Mullor M, Ding C, Ventura-Miranda MI. Analysis of anxiety levels of nursing students because of e-learning during the COVID-19 pandemic. *Healthcare* 2021;9:252. doi: 10.3390/healthcare9030252.
 12. Kim SH, Park S. Influence of learning flow and distance e-learning satisfaction on learning outcomes and the moderated mediation effect of social-evaluative anxiety in nursing college students during the COVID-19 pandemic: A cross-sectional study. *Nurse Educ Pract* 2021;56:103197. doi: 10.1016/j.nepr.2021.103197.
 13. Olum R, Atulinda L, Kigozi E, Nassozi DR, Mulekwa A, Bongomin F, *et al.* Medical education and E-learning during COVID-19 pandemic: Awareness, attitudes, preferences, and barriers among undergraduate medicine and nursing students at Makerere University, Uganda. *J Med Educ Curric Dev* 2020;7. doi: 10.1177/2382120520973212.
 14. Ulenaers D, Grosemans J, Schrooten W, Bergs J. Clinical placement experience of nursing students during the COVID-19 pandemic: A cross-sectional study. *Nurse Educ Today* 2021;99:104746. doi: 10.1016/j.nedt.2021.104746.
 15. Backhaus J, D'Egidio V, Saullé R, Masala D, Firenze A, De Vito E, *et al.* Health-related quality of life and its associated factors: Results of a multi-center cross-sectional study among university students. *J Public Health* 2019;42:285-93.
 16. Ziapour A, Kianipour N. Health-related quality of life among university students: The role of demographic variables. *J Clin Diagn Res* 2018;12:1-4. doi: 10.7860/JCDR/2018/29161.11258.
 17. Chachula KM. Professional quality of life factors and relationships in nursing and psychiatric nursing students: An exploratory study. *SAGE Open Nurs* 2021;7:2377960821994394. doi: 10.1177/2377960821994394.
 18. Zheng M, Jin H, Shi N, Duan C, Wang D, Yu X, *et al.* The relationship between health literacy and quality of life: A systematic review and meta-analysis. *Health Qual Life Outcomes* 2018;16:1-10. doi: 10.1186/s12955-018-1031-7.
 19. World Health Organization. Global Action Plan on Physical Activity 2018 2030: More Active People for a Healthier World. World Health Organization: Place: GENEVA year: 2018.
 20. Flick U. *An Introduction to Qualitative Research*. London: Sage Publications Limited; 2018.
 21. Bailey CR, Bailey CA. *A Guide to Qualitative Field Research*. London: Sage Publications; 2017.
 22. Bengtsson M. How to plan and perform a qualitative study using content analysis. *Nurs Plus Open* 2016;2:8-14.
 23. Morse J. Critical analysis of strategies for determining rigor in qualitative inquiry. *Qual Health Res* 2015;25:1212-22.
 24. Silverman D. *Interpreting Qualitative Data*. 5th ed. Los Angeles, CA: SAGE Publications; 2014.
 25. Casafont C, Fabrellas N, Rivera P, Olivé-Ferrer MC, Querol E, Venturas M, *et al.* Experiences of nursing students as healthcare aid during the COVID-19 pandemic in Spain: A phenomenological research study. *Nurse Educ Today* 2020;97:104711. doi: 10.1016/j.nedt.2020.104711.
 26. Konrad S, Fitzgerald A, Deckers C. Nursing fundamentals-supporting clinical competency online during the COVID-19 pandemic. *Teach Learn Nurs* 2021;16:53-6.
 27. Sveinsdóttir H, Flygenring BG, Svavarsdóttir MH, Thorsteinsson HS, Kristófersson GK, Bernharðsdóttir J, *et al.* Predictors of university nursing students burnout at the time of the COVID-19 pandemic: A cross-sectional study. *Nurse Educ Today* 2021;106:105070. doi: 10.1016/j.nedt.2021.105070.
 28. Christopher R, de Tantillo L, Watson J. Academic caring pedagogy, presence, and communitas in nursing education during the COVID-19 pandemic. *Nurs Outlook* 2020;68:822-9.
 29. Oducado RMF, Soriano GP. Shifting the education paradigm amid the COVID 19 pandemic: Nursing students' attitude to E learning. *Afr J Nurs Midwifery* 2021;23:1-14. doi: 10.12669/pjms.36.COVID19-S4.2766. <https://doi.org/10.25159/2520-5293/8090>.
 30. Khobragade SY, Soe H, Khobragade YS, Abas A. Virtual learning during the COVID-19 pandemic: What are the barriers and how to overcome them? *J Educ Health Promot* 2021;10:360. doi: 10.4103/jehp.jehp_14.
 31. Dos Santos LM. How does COVID-19 pandemic influence the sense of belonging and decision-making process of nursing students: The study of nursing students' experiences. *Int J Environ Res Public Health* 2020;17:5603. doi: 10.3390/ijerph17155603.
 32. Ghadrdooost B, Sadeghipour P, Amin A, Bakhshandeh H, Noohi F, Maleki M, *et al.* Validity and reliability of a virtual education satisfaction questionnaire from the perspective of cardiology residents during the COVID-19 pandemic. *J Educ Health Promot* 2021;10. doi: 10.4103/jehp.jehp_32_21.
 33. Leigh JA, Bolton M, Cain K, Harrison N, Yates-Bolton NJ, Ratcliffe SM. Student experiences of nursing on the front line during the COVID-19 pandemic. *Br J Nurs* 2020;29:788-9.
 34. Martin-Delgado L, Goni-Fuste B, Alfonso-Arias C, De Juan M, Wennberg L, Rodríguez E, *et al.* Nursing students on the frontline: Impact and personal and professional gains of joining the health care workforce during the COVID-19 pandemic in Spain. *J Prof Nurs* 2021;37:588-97.
 35. Santos LMD. The relationship between the COVID-19 pandemic and nursing students' sense of belonging: The experiences and nursing education management of pre-service nursing professionals. *Int J Environ Res Public Health* 2020;17:5848. doi: 10.3390/ijerph17165848.
 36. Velarde-García JF, Cachón-Pérez JM, Rodríguez-García M, Oliva-Fernández O, González-Sanz P, Espejo MM, *et al.* The challenges of "learning on the go": A qualitative study of final-year Spanish nursing students incorporated to work during the first Covid-19 pandemic. *Nurse Educ Today* 2021;103:104942. doi: 10.1016/j.nedt.2021.104942.
 37. Ge Y, Xin S, Luan D, Zou Z, Liu M, Bai X, *et al.* Association of physical activity, sedentary time, and sleep duration on the health-related quality of life of college students in Northeast China. *Health Qual Life Outcomes* 2019;17:1-8. doi: 10.1186/s12955-019-1194-x.
 38. Snedden TR, Scerpella J, Kliethermes SA, Norman RS, Blyholder L, Sanfilippo J, *et al.* Sport and physical activity level impacts health-related quality of life among collegiate students. *Am J Health Promot* 2019;33:675-82.
 39. Zhang T, Xiang P, Gu X, Rose M. College students' physical activity and health-related quality of life: An achievement goal perspective. *Res Q Exerc Sport* 2016;87:182-90.