

OVERVIEW OF METACOGNITIVE SKILLS ON NURSING STUDENTS

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ABSTRACT

Background: Metacognitive skills play an important role in the academic success of Nursing students. However, understanding of the description of cognitive skills in nursing students is still limited, especially at Padjadjaran University. Efforts to evaluate and understand students' cognitive skill levels can provide valuable insights for the development of more effective Nursing education curricula. Objective: This study aims to describe the cognitive skills of Padjadjaran University Nursing students. Method: This research uses quantitative descriptive. The questionnaire used is the 18 item Self-Regulated Online Learning Questionnaire (SOL-Q) to measure students' cognitive skills. The sample technique uses accidental sampling. The sample in this study was 103 nursing students at Padjadjaran University. Data analysis uses univariate analysis. Results: The results of this study showed that 103 Nursing students at Padjadjaran University were research subjects. There were 61.3% of the total research subjects who had low metacognitive skills. These findings indicate the need for special attention to the development of cognitive skills, especially metacognitive skills, in the Nursing education curriculum. Potential factors influencing students' cognitive skills also need to be further explored. Conclusion: Understanding the description of cognitive skills in nursing students can be the basis for developing more effective and targeted learning strategies.

Keywords: metacognitive skills, nursing, students

Introduction

Online learning has become a common sight in higher education, including for nursing students. However, this transition is not without challenges, especially in the context of developing students' metacognitive skills (Drissi et al., 2021). Metacognitive skills, which include understanding the learning process, setting learning strategies, and evaluating self-understanding of learning material, are very important in forming professionalism and competence in the field of nursing (Kan et al., 2020).

Mental health problems during the COVID-19 pandemic are not only felt by parents, but are also felt by children and adolescents (Cornish et al., 2021; Lamb & Arisandy, 2020). Research in the UK shows an increase in mental health problems in children and adolescents aged 11 – 16 years by 10.8% in 2017, increasing to 16% in 2020 (Kara, 2021). A study from Spain stated that 72% of teenagers aged 18 years and over experienced psychological distress (Gómez-Salgado et al., 2020). Studies in China state that 90.4% of children and adolescents aged 6 – 15 years experience depression and anxiety (Chen et al., 2022). Studies in Indonesia show that 59.5% of teenagers aged 15 – 18 years experience psychological disorders (Rogowska et al., 2020). Disturbed mental health in adolescents can result in reduced quality of life, use of psychoactive substances, psychotic disorders, and suicide.

Nursing students' mental health is greatly influenced by various factors, ranging from academic pressure to lifestyle changes and changing learning environments along with the global pandemic (Sheroun et al., 2020; Yosep, Suryani, et al., 2023). Factors such as a high study load, high expectations from oneself and others, and feelings of isolation due to online learning can cause stress, anxiety and depression (Demirtas, 2021). When nursing students experience mental health imbalances, it can impact their ability to focus, process information, and respond effectively to learning challenges. Metacognitive skills are crucial because they enable students to recognize and manage stress and learning challenges more efficiently (Lamiri et al., 2020).

Metacognitive skills refer to an individual's ability to recognize, organize, and control their own cognitive processes. It involves a deep understanding of how we learn, understand information, and complete intellectual tasks (Anthonysamy et al., 2020). Specifically, metacognitive skills include self-awareness of effective learning strategies, understanding strengths and weaknesses in problem solving, the ability to manage time and resources efficiently, and the ability to monitor and evaluate learning progress (Akben, 2020; Bakar & Ismail, 2020). Metacognitive skills enable individuals to become more independent, adaptive, and effective learners by understanding and managing their own mental processes while learning and completing tasks (Yosep, Mardhiyah, et al., 2023).

The urgency of metacognitive skills in students cannot be ignored in today's increasingly complex and dynamic educational context (Fan et al., 2021). Students are required to not only master academic material, but also develop the ability to learn independently, solve problems, and adapt to rapid changes (Schaeffner et al., 2021). Metacognitive skills play an important role in meeting these demands. Students who have strong metacognitive skills can be more effective in managing time, choosing appropriate learning strategies, and evaluating their own understanding (Hikmat et al., 2022). Therefore, the author is interested in knowing the description of metacognitive skills in nursing students.

Method

This study used descriptive quantitative. Descriptive research is a type of research that aims to describe observed characteristics or phenomena without manipulating variables. The aim is to provide a clear picture of the situation or conditions being studied. In this context, this research will be used to describe the metacognitive skills of nursing students during online learning.

The sampling technique used is purposive sampling, where the sample is selected based on certain characteristics that are in accordance with the research objectives. The sample for this study consisted of 103 nursing students from Padjadjaran University. Inclusion criteria included active students who were participating in online learning at the time the research was conducted. Exclusion criteria include students who do not actively participate in online learning. The location of this research will be carried out in the online learning environment of Padjadjaran University nursing students.

Data will be collected through distributing questionnaires online using the 18-item Self-Regulated in Online Learning Questionnaire (SOL-Q) (Jansen et al., 2017). The validity of the questionnaire will be tested through content validity testing by field experts, while its reliability will be tested through the Cronbach's alpha test to measure internal consistency between items in the questionnaire.

In this research, ethical considerations will be emphasized through the basic principles of research ethics, such as autonomy (respect for individual freedom in making participation decisions), justice (fair treatment of participants), goodness (creating maximum benefits), not causing harm. (avoiding unnecessary risks), and confidentiality (protecting participants' personal data).

The collected data will be analyzed using descriptive statistics, including frequency distribution, mean, minimum and maximum values, and standard deviation. Univariate analysis will be used to

analyze the characteristics of nursing students' metacognitive skills during online learning, providing a comprehensive picture of the observed variables.

Results

This research was conducted online on 103 nursing students at Padjadjaran University. The author describes the research results in the form of demographic characteristics which include age, gender and class. Then, the researchers also described the results of univariate tests related to metacognitive skill variables in nursing students.

Table 1.
Respondent characteristics (n= 103)

Characteristics	Frequency	Percentage
Age	17 – 20 years	67
	21 – 23 years	36
Gender	Male	20
	Female	83
Class	2017	20
	2018	31
	2019	32
	2020	20

Based on the demographic characteristics in table 1, the results showed that of the 103 respondents, 67 respondents were aged 17-20 years (65%). Then, the gender of most respondents was female (80.6%). Then, the most numerous respondent classes were class 2019 (31.3%) and class 2018 (30.1%).

Table 2.
Results of distribution of metacognitive skills (n=103)

Variables	Mean	Standard deviation	Min - Max	Frequency (f)		Percentage (%)	
				High	Low	High	Low
Metacognitive skills	89.46	15,955	27-126	40	63	38.8	61.2

Based on table 2, it was found that the mean value for metacognitive skills from 103 respondents was 89.46 with a standard deviation of 15,955 and a minimum value of 27 and a maximum value of 126. The level of metacognitive skills of most respondents was at a low level (61.2%).

Discussion

The research results showed that 61.2% of the total 103 respondents involved in this study showed a low level of metacognitive skills. This indicates that there are significant challenges in developing nursing students' metacognitive skills during online learning. This decline in the quality of metacognitive skills can affect students' ability to manage time, choose appropriate learning strategies, and evaluate their understanding of learning material (Asadzandi et al., 2022). This condition can be influenced by various factors, including lack of experience in online learning, limited access to learning resources, and lack of support and guidance provided to students. Therefore, these findings indicate the need for greater efforts to improve understanding and development of nursing students' metacognitive skills, both through the development of appropriate learning programs and the provision of adequate resources and support in online learning contexts (Miharja et al., 2019).

There are several factors that may be the cause of low metacognitive skills in nursing students in the online learning context. First, lack of experience in online learning can be a major factor influencing

students' metacognitive skills (Akben, 2020). Students may not be used to the online learning environment, so they have difficulty managing their time, choosing effective learning strategies, and managing resources optimally. Second, lack of access to learning resources can also limit students' ability to develop metacognitive skills (Taghani & Razavi, 2022). Inability to access necessary learning materials or difficulty in communicating with lecturers and fellow students can hinder the development of these skills. Apart from that, the lack of support and guidance from educational institutions can also affect students' metacognitive skills (Naseri et al., 2017; Reisoğlu et al., 2020). When students feel unsupported in facing learning challenges, they may be less motivated to develop the necessary metacognitive skills.

Interesting research results show that although the majority of respondents showed a low level of metacognitive skills, there were 38.8% of the total 103 respondents who had high metacognitive skills. These findings provide an optimistic insight that there are still some nursing students who are able to develop fairly good metacognitive skills in the online learning context (Chan et al., 2021; Fan et al., 2021). The presence of a number of students with high metacognitive skills indicates that certain factors, such as intrinsic motivation, strong adaptability, or adequate support from the learning environment, may play a role in the development of these skills (Teng & Yue, 2023).

The high level of metacognitive skills in some respondents in this study could be caused by several factors that contributed to the development of these abilities. First, strong intrinsic motivation may be a factor influencing the level of metacognitive skills of nursing students (Trust & Goodman, 2023). Students who have high internal motivation to learn and achieve their academic goals tend to be better able to manage time, manage resources, and evaluate their understanding of learning material effectively. Second, previous experience in online learning or extensive use of information and communication technology can improve students' metacognitive skills (Teng & Yue, 2023; Tuononen et al., 2023). Students who are accustomed to online learning environments may be more likely to develop learning strategies that are adaptive and efficient in online contexts. Apart from that, social support and guidance from lecturers and fellow students can also play an important role in the development of high metacognitive skills. When students feel supported and given adequate direction, they are more likely to develop the confidence and ability to overcome learning challenges (Asadzandi et al., 2022; Khodaei et al., 2022).

Metacognitive skills have a significant impact in online learning for nursing students. Students who have strong metacognitive skills are more likely to be able to overcome the challenges of online learning effectively (Pelikan et al., 2021). They can proactively identify their learning needs, plan appropriate learning strategies, and manage time and resources efficiently. This allows them to stay focused and organized in accessing learning materials, actively participating in online discussions, and completing assignments well (Chan et al., 2021; Susantini et al., 2021). Good metacognitive skills also enable students to regularly self-evaluate their understanding of learning material, so they can identify areas that need improvement and take steps to improve their understanding (Asadzandi et al., 2022).

To improve metacognitive skills in online learning for nursing students, various efforts can be made by educational institutions and teachers. First of all, there is a need to develop online learning programs that are specifically designed to strengthen students' metacognitive skills (Babayigit et al., 2022). These programs may include training and guidance on effective study strategies, time management, and self-evaluation (Intansari & Dwiantoro, 2021). In addition, lecturers can utilize interactive learning technology to design learning experiences that are challenging and require high-level thinking, thereby encouraging students to actively engage their metacognitive skills (Wardaningsih & Halawi, 2020). Furthermore, it is important for lecturers to provide constructive and supportive feedback to students about their progress in developing metacognitive skills. By providing specific and relevant feedback, students can more easily identify areas that need improvement and develop appropriate improvement strategies. In addition, the use of online tutors or mentors can also

be an effective means of providing individual support and guidance to students in developing their metacognitive skills (Hartinah et al., 2019). Lastly, it is important to facilitate inclusive and collaborative online learning communities among students (Romero-Blanco et al., 2020). Through interactions and discussions with fellow students, they can support each other and share experiences and learning strategies, which can help in the collective development of metacognitive skills (Shayestehfard et al., 2020).

Conclusions

The results of this study showed that 61.2% of the total 103 respondents showed a low level of metacognitive skills, while the remaining 38.8% had high metacognitive skills. There is significant variation in the level of metacognitive skills of nursing students during online learning. Factors such as intrinsic motivation, previous experience in online learning, and social support may contribute to these varying levels of metacognitive skills. This shows the need for greater efforts from educational institutions and teachers to strengthen the metacognitive skills of nursing students, both through developing appropriate learning programs and providing adequate support in online learning.

The suggestion from this research is that educational institutions need to develop more interactive and structured online learning programs to help students develop their metacognitive skills. This program should include training and guidance focused on effective study strategies, time management, and self-evaluation. The implication of this research is the need to develop more interactive and adaptive learning technology that can stimulate higher level thinking and encourage active student participation in online learning. Future research could further explore the factors that influence the development of students' metacognitive skills, as well as effective intervention strategies to improve these skills in online learning contexts.

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References

- Akben, N. (2020). Effects of the Problem-Posing Approach on Students' Problem Solving Skills and Metacognitive Awareness in Science Education. *Research in Science Education*, 50(3), 1143–1165. <https://doi.org/10.1007/s11165-018-9726-7>
- Anthonyamy, L., Koo, A.-C., & Hew, S.-H. (2020). Self-regulated learning strategies and non-academic outcomes in higher education blended learning environments: A one decade review. *Education and Information Technologies*, 25(5), 3677–3704. <https://doi.org/10.1007/s10639-020-10134-2>
- Asadzandi, S., Mojtahedzadeh, R., & Mohammadi, A. (2022). What are the Factors that Enhance Metacognitive Skills in Nursing Students? A Systematic Review. *Iranian Journal of Nursing and Midwifery Research*, 27(6). https://journals.lww.com/jnmr/fulltext/2022/27060/what_are_the_factors_that_enhance_metacognitive.1.aspx
- Babayigit, A., Karaaziz, M., Babayigit, H. A., & Sağsan, M. (2022). The predictive role of addiction to smartphones in the relationship of metacognitive problems and social media addiction with general belongingness and perceived stress in higher education students. *Current Psychology*. <https://doi.org/10.1007/s12144-022-04113-8>
- Bakar, M. A. A., & Ismail, N. (2020). Express Students' Problem Solving Skills from Metacognitive Skills Perspective on Effective Mathematics Learning. *Universal Journal of Educational Research*, 8, 1404–1412. <https://api.semanticscholar.org/CorpusID:218780269>
- Chan, C. W. H., Tang, F. W. K., Chow, K. M., & Wong, C. L. (2021). Enhancing generic capabilities and metacognitive awareness of first-year nursing students using active learning strategy. *BMC Nursing*, 20(1), 81. <https://doi.org/10.1186/s12912-021-00601-7>

- Chen, C. Y. C., Byrne, E., & Vélez, T. (2022). Impact of the 2020 pandemic of COVID-19 on families with school-aged children in the United States: roles of income level and race. *J Fam Issues*, 43. <https://doi.org/10.1177/0192513X21994153>
- Cornish, S., Klim, S., & Kelly, A. M. (2021). Is COVID-19 the straw that broke the back of the emergency nursing workforce? *Emerg Med Australas*, 33. <https://doi.org/10.1111/1742-6723.13843>
- Demirtas, A. (2021). Effectiveness of simulation-based cardiopulmonary resuscitation training programs on fourth-year nursing students. *Australasian Emerg Care*, 24. <https://doi.org/10.1016/j.auec.2020.08.005>
- Drissi, N., Ouhbi, S., Marques, G., De La Torre Díez, I., Ghogho, M., & Janati Idrissi, M. A. (2021). A Systematic Literature Review on e-Mental Health Solutions to Assist Health Care Workers during COVID-19. *Telemedicine and E-Health*, 27(6), 594–602. <https://doi.org/10.1089/tmj.2020.0287>
- Fan, Y., Matcha, W., Uzir, N. A., Wang, Q., & Gašević, D. (2021). Learning Analytics to Reveal Links Between Learning Design and Self-Regulated Learning. *International Journal of Artificial Intelligence in Education*, 31(4), 980–1021. <https://doi.org/10.1007/s40593-021-00249-z>
- Gómez-Salgado, J., Andrés-Villas, M., Domínguez-Salas, S., Díaz-Milanés, D., & Ruiz-Frutos, C. (2020). Related Health Factors of Psychological Distress During the COVID-19 Pandemic in Spain. In *International Journal of Environmental Research and Public Health* (Vol. 17, Issue 11). <https://doi.org/10.3390/ijerph17113947>
- Hartinah, S., Sriati, A., & Kosasih, C. E. (2019). Gambaran Tingkat Gejala Kecanduan Media Sosial pada Mahasiswa Keperawatan Universitas Padjadjaran. In *Jurnal Keperawatan BSI: Vol. VII* (Issue 1, pp. 123–133).
- Hikmat, R., Hermayanti, Y., Praptiwi, A., & Putri, A. M. (2022). Self-regulated Learning Among Undergraduate College Students with Parental Divorce. *Jendela Nursing Journal*, 6(2), 78–84. <https://doi.org/10.31983/jnj.v6i2.9164>
- Intansari, P. K., & Dwiantoro, L. (2021). Kajian Literatur: Upaya Menurunkan Stres Kerja Perawat Igd Melalui Penerapan Kepemimpinan Transformasional. *BIMIKI (Berkala Ilmiah Mahasiswa Ilmu Keperawatan Indonesia)*, 9(2), 117–126. <https://doi.org/10.53345/bimiki.v9i2.215>
- Jansen, R. S., Leeuwen, A., Janssen, J., Kester, L., & Kalz, M. (2017). Validation of the self-regulated online learning questionnaire. *Journal of Computing in Higher Education*, 29. <https://doi.org/10.1007/s12528-016-9125-x>
- Kan, D., Jing, Z., Yang, H., Sun, W., Liu, X., & Gao, X. (2020). Research and analysis of online learning of clinical theory course for medical undergraduates. *China Med Educ Tech*, 3.
- Kara, B. (2021). Determinants of perceived stress in health professional students during the COVID-19 pandemic. *AIMS Med Sci*, 8. <https://doi.org/10.3934/medsci.2021014>
- Khodaei, S., Hasanvand, S., Gholami, M., Mokhayeri, Y., & Amini, M. (2022). The effect of the online flipped classroom on self-directed learning readiness and metacognitive awareness in nursing students during the COVID-19 pandemic. *BMC Nursing*, 21(1), 22. <https://doi.org/10.1186/s12912-022-00804-6>
- Lamb, M., & Arisandy, F. E. (2020). The impact of online use of English on motivation to learn. *Computer Assisted Language Learning*, 33. <https://doi.org/10.1080/09588221.2018.1545670>
- Lamiri, A., Qaisar, R., Khoaja, D., Abidi, O., Bouzoubaa, H., & Khyati, A. (2020). Descriptive study of nursing students' learning styles. Case study of the professional bachelor's degree cycle in nursing of the higher institute of nursing professions and health techniques of Casablanca, Morocco. *The Open Nursing Journal*, 14. <https://doi.org/10.2174/1874434602014010309>
- Miharja, F. J., Hindun, I., & Fauzi, A. (2019). Critical thinking, metacognitive skills, and cognitive learning outcomes: A correlation study in genetic. *Biosfer*, 12.

- <https://doi.org/10.21009/biosferjpb.v12n2.135-143>
- Naseri, M., Kazemi, M., & Effati Motlag, M. (2017). The effectiveness of metacognitive skills training on increasing academic achievement. *Iranian Journal of Educational Sociology*, 1.
- Pelikan, E. R., Lüftenegger, M., Holzer, J., Korlat, S., Spiel, C., & Schober, B. (2021). Learning during COVID-19: the role of self-regulated learning, motivation, and procrastination for perceived competence. *Zeitschrift Für Erziehungswissenschaft*, 24(2), 393–418. <https://doi.org/10.1007/s11618-021-01002-x>
- Reisoğlu, İ., Eryılmaz Toksoy, S., & Erenler, S. (2020). An analysis of the online information searching strategies and metacognitive skills exhibited by university students during argumentation activities. *Library & Information Science Research*, 42(3), 101019. <https://doi.org/https://doi.org/10.1016/j.lisr.2020.101019>
- Rogowska, A. M., Kuśnierz, C., & Bokszczanin, A. (2020). Examining anxiety, life satisfaction, general health, stress and coping styles during COVID-19 pandemic in polish sample of university students. *Psychology Research and Behavior Management*, 13. <https://doi.org/10.2147/PRBM.S266511>
- Romero-Blanco, C., Rodríguez-Almagro, J., Onieva-Zafra, M. D., Parra-Fernández, M. L., Prado-Laguna, M. D. C., & Hernández-Martínez, A. (2020). Sleep pattern changes in nursing students during the COVID-19 lockdown. *International Journal of Environmental Research and Public Health*, 17. <https://doi.org/10.3390/ijerph17145222>
- Schaeffner, S., Chevalier, N., Kubota, M., & Karbach, J. (2021). *Metacognitive Training BT - Cognitive Training: An Overview of Features and Applications* (T. Strobach & J. Karbach (eds.); pp. 255–270). Springer International Publishing. https://doi.org/10.1007/978-3-030-39292-5_18
- Shayestehfard, M., Torabizadeh, C., Gholamzadeh, S., & Ebadi, A. (2020). Ethical sensitivity in nursing students: Developing a context-based education. *Electronic Journal of General Medicine*, 17. <https://doi.org/10.29333/ejgm/7812>
- Sheroun, D., Wankhar, D. D., Devrani, A., Lissamma, P. V, Gita, S., & Chatterjee, K. (2020). A study to assess the perceived stress and coping strategies among B.Sc. nursing students of selected colleges in Pune during COVID-19 pandemic lockdown. *Int J Sci Healthc Res*, 5.
- Susantini, E., Puspitawati, R. P., Raharjo, & Suaidah, H. L. (2021). E-book of metacognitive learning strategies: design and implementation to activate student's self-regulation. *Research and Practice in Technology Enhanced Learning*, 16(1), 13. <https://doi.org/10.1186/s41039-021-00161-z>
- Taghani, A., & Razavi, M. R. (2022). The effect of metacognitive skills training of study strategies on academic self-efficacy and academic engagement and performance of female students in Taybad. *Current Psychology*, 41(12), 8784–8792. <https://doi.org/10.1007/s12144-020-01278-y>
- Teng, M. F., & Yue, M. (2023). Metacognitive writing strategies, critical thinking skills, and academic writing performance: A structural equation modeling approach. *Metacognition and Learning*, 18(1), 237–260. <https://doi.org/10.1007/s11409-022-09328-5>
- Trust, T., & Goodman, L. (2023). Cameras Optional? Examining Student Camera Use from a Learner-Centered Perspective. *TechTrends*. <https://doi.org/10.1007/s11528-023-00855-9>
- Tuononen, T., Hyytinen, H., Räisänen, M., Hailikari, T., & Parpala, A. (2023). Metacognitive awareness in relation to university students' learning profiles. *Metacognition and Learning*, 18(1), 37–54. <https://doi.org/10.1007/s11409-022-09314-x>
- Wardaningsih, S., & Halawi, Z. Al. (2020). Pembentukan Perilaku Caring Islami Pada Mahasiswa Keperawatan. *Konas 2019 Lampung*, 4(1), 330–340. <https://journalpress.org/proceeding/ipkji/article/view/59/0>
- Yosep, I., Mardhiyah, A., & Sriati, A. (2023). Mindfulness Intervention for Improving Psychological Wellbeing Among Students During COVID-19 Pandemic: A Scoping Review. *Journal of Multidisciplinary Healthcare*, 16, 1425–1437. <https://doi.org/10.2147/JMDH.S411849>

Yosep, I., Suryani, S., Mediani, H. S., Mardhiyah, A., & Maulana, I. (2023). Digital Therapy: Alleviating Anxiety and Depression in Adolescent Students During COVID-19 Online Learning - A Scoping Review. *Journal of Multidisciplinary Healthcare*, 16, 1705–1719. <https://doi.org/10.2147/JMDH.S416424>