THE EFFECT OF REFLECTIVE CLINICAL LEARNING WITH MIND MAP ON CRITICAL THINKING STUDENTS AT THE NURSING PROFESSION PROGRAM IN YOGYAKARTA

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Abstract

Introduction: *Critical thinking skills must be improved and need to be started from the education stage. Mind map has been used as a learning method which is expected to improve the ability of prospective professional nurses in terms of critical thinking. The purpose of this study was to determine the effect of reflective clinical learning with mind map on the critical thinking skills of nursing students in Yogyakarta.*

Methods: *This was a quantitative study with a quasi-experimental design, pre-test and post-test design with non-equivalent control groups. The research subjects were students in a nursing profession program which found 40 people who were selected by purposive sampling, which were divided into 18 people in the experimental group and 22 in the control group. The research data collection was carried out September-October 2022. The instrument used a questionnaire with a critical thinking disposition self-rating form as measured by a ratio scale.*

Results: *A statistical test results paired t-test showed critical thinking skills in the intervention group, p-value = 0.144 (> 0.05) which means there is no significant difference in the average before and before treatment. With the same statistics, showing the critical thinking ability of the control group, p-value = 0.531 (> 0.05) which means there is also no significant difference in the average before and before the test in the group. There was no difference in the two groups before and after the intervention, but there was an increase in value after being given the intervention in the treatment group.*

Conclusions: *Although there was no significant difference in the critical thinking ability of respondents between pre and post-test in both the control group and the experimental group, there was an increase in the average score in experimental group after intervention, but in the control group it decreased at the post-test. This approach may be used as a complementary learning method for*

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INTRODUCTION

The nursing profession program consists of several stages, including pediatric nursing. As a learning environment, there are challenges in the nursing profession program (Cantillon, P. & Wood, 2010) This learning process is an adaptation of the profession, developing skills, and perfecting the scope of practice (Scott, C dan Elliott, 2019). The challenges of the professional learning process include lack of goals/expectations, focus on memory rather than reasoning/skills, passivity, and few opportunities for reflection (Cantillon, P. & Wood, 2010). The stages in the nursing profession program allows for stress and the other hand becomes a challenge for nursing students (Jansson, I & Ene, 2016) . Empowerment clinical learning is needed in achieving competence as a solution. Lecturers and clinical supervisors are expected to optimize teaching and learning opportunities, with careful curriculum planning for the professional stage (Cantillon, P. & Wood, 2010).

Accurate planning such as through reflection with mind mapping can support student readiness. A study in Sweden during autumn 2012 and spring 2013 on 269 nursing students in the t learning process during their clinical practice underlines that reflection, continuity, communication and feedback were important for the students' learning process. Reflection as a pedagogic tool builds a link between theory and practice. Reflection is a professional way of thinking and acting, analyzing and summarizing what happened in different situations (Jansson, I & Ene, 2016). The study sample is comprised of 20 third year nursing students enrolled in the same bachelor's nursing program at a higher educational institution in Lebanon. All the students have passed the Maternity Health Nursing theoretical course which was taught using Concept Mapping (CM) as an instructional method. There are four themes of students' perceptions about the use of mind mapping: "Improving Learning/Building Knowledge", "Improving Independent Learning", "Improving Cognitive Skills", and "Building Comprehensive Awareness" (Fawaz, M & Kavuran, 2021). The use of mind mapping is able to show meaningful learning, as a reflective learning strategy (Bressington, D.T., Wong, W., Claire Lam, K.K & Chien, 2018).

The limited opportunity for educators to facilitate student reflection requires support for facilitating student reflection (Duffy, 2009). Students explain if there is a lack of awareness and culture in reflecting at clinical setting (O'Donovan, 2006). Reflective learning is needed for their ability to link theory with practice and is closely related to the level of theoretical knowledge and reflective learning skills (Bressington, D.T., Wong, W., Claire Lam, K.K & Chien, 2018). Mind map affects critical thinking and cognitive skills. Critical thinking skills are needed in providing better nursing care (Yue, M., Zhang, M., Zhang, C & Jin, 2017).

Based on preliminary studies conducted by researchers referring to the results of UKNI, the number of professional level students for the 2020/2021 academic year in the STIKES Madani and STIKES Wira Husada is below

50 students with graduate competency test achievements below 70%. The results of interviews with supervisors and students at the two institutions show that, for clinical stages students, will prepare preliminary reports with papers, where most of them just copy and paste from previous sources and do not understand before managing patients optimally. When the clinical supervisor asks the meaning of the contents of the paper, students do not always understand what is being made. Mind map activities have not been carried out at the nursing profession program at STIKES Madani and STIKES Wira Husada. It has not been massive at all at the professional stage.

Innovative learning is needed to prepare professional nurses. A study at a nursing college in Chengdu, Sichuan Province, China involved 80 2nd year baccalaureate nursing students with a quasi-experimental design with pre-test and post-test model divided into two groups from September 15 to November 30, 2021. The intervention group students made regular reflective entries based on mind mapping and the control group students conducted traditional reflective journal, while attending routine educational and clinical activities, about their experiences of the Fundamentals of Nursing course learning process. The intervention group showed significant improvement in critical thinking (P = 0.000), including truth-seeking, open-mindedness, analyticity, systematization, and inquisitiveness sub-dimensions (P = 0.000–0.014). This study develops a mind mapping model as an alternative implementation of cognitive and constructive learning theory, increasing students' readiness to manage patients. Based on the above background, researchers are interested in examining the effect of reflective clinical learning with a mind map on the critical thinking skills of professional stage students in Daerah Istimewa Yogyakarta.

METHODS

Study design

This research is expected as a "pilot project" to improve the learning outcomes of nursing graduates at the professional stage, especially critical thinking skills. This was quasi-experimental study which used a pre-test-post-test nonequivalent control group design.

Population, samples, and sampling

The population in this research were active students in the final stage at nursing profession program at STIKES Wira Husada and STIKES Madani Yogyakarta, with a total of 51 students. The sampling technique in this study was purposive sampling. Inclusion criteria were final professional stage nursing students, willing to be respondents, following all stages in the research. Exclusion criteria were being sick or hospitalized at the time of the research. The existing samples were divided into the experimental group and the control group randomly. Respondents in this research amounted to 51, consisting of 18 respondents in the experimental group and 22 respondents in the control group. In this study, there were eight respondents who dropped out in the intervention group and three respondents dropped out in the control group, because they did not meet the inclusion criteria. The dependent variable is the critical thinking ability, that is the respondent's tendency to think, which directs the ability to solve problems, and is measured by a critical thinking disposition self-rating form, with a ratio scale. The independent variable is mind map reflection, one of the

strategies/methods of clinical guidance by utilizing mind maps in understanding existing nursing care, in this case focused on nursing care for children with diarrhea.

Instruments

This research instrument uses a questionnaire about the disposition of critical thinking in the form of self-rating. This research instrument uses a questionnaire about the disposition of critical thinking in the form of self-rating adopted from Aprisunadi (2011). The questionnaire contains an assessment of critical thinking tendencies in the last two days, consisting of 20 statement items. The instrument consists of favorable and unfavorable statements. Respondents get 4 points if they answer "very appropriate", 3 points for the "appropriate", 2 points for the "less appropriate", and 1 point for the "not appropriate" on the favorable statement, and vice versa for unfavorable statements. Cronbach's alpha coefficient value is 0.85 where this value supports the reliability of the instrument in measuring critical thinking carried out on nurses (Aprisunadi, 2011).

Because in this study the respondents were students, the researchers retested the questionnaire on 30 final academic stage nursing students, and obtained 13 valid items, which were then used as research data collection instruments, while seven invalid items were omitted because they still represented critical thinking skills, with Cronbach's alpha coefficient value 0.701.

Procedure

This research was conducted after ethical feasibility and validity reliability tests. The researcher determined the target population in each institution, then gave informed consent according to the inclusion and exclusion criteria by purposive sampling. Researchers divided the control and experimental groups randomly from respondents. Both the experimental group and the control group were carried out pre-test and post-test; a minimum post-test was carried out after two days of intervention activities for the experimental group and two days after the pre-test in the control group. To anticipate the potential for bias in this study, it is possible to convey existing information between groups, so researchers completed the research stages in the control group first, then followed by the experimental group.

The interventions carried out were the preparation of theoretical concepts of nursing care for children with diarrhea, discussion of theoretical mind mapping on medical aspects and healthcare for children with diarrhea as well as theoretical reflection and one healthcare for children

Table 1. Demographic details of the family caregiver of schizophrenia patients (n=5)

Participant	Age	Sex	Level of Education	Marital Status	Relationship with Patient	Patient		
						Age	Sex	Duration of illness (year)
P1	65	Female	Elementary	Married	Mother	34	Male	5
P2	61	Female	Elementary	Widower	Mother	28	Female	3
P3	66	Male	Junior High School	Married	Father	39	Male	4
P4	68	Male	Elementary	Married	Father	30	Male	8
P5	60	Female	High School	Widower	Mother	32	Male	6

with diarrhea through group discussions.

Data analysis

Respondents' characteristics were evaluated with univariate analysis for frequency distribution. The variable results served in mean form ± standard deviation (parametric). From bivariate analysis with paired sample t-test, with a p-value <0.05 it is said that there is a significant difference, but if the p-value> 0.05 it is said that there is no significant difference. Analysis was with SPSS 16.0.

Ethical clearance

The School of Health Science Wira Husada Yogyakarta research ethics committee has given the clearance to this study with the registration number 187/KEPK/STIKES-WHY/VII/2022.

RESULTS

Based on Table 1, it shows that most of the respondents in the experimental group were aged 18-25 years (55.6%), the gender of the respondents was mostly women (83.3%). Academic GPA of the majority of respondents >3.5 (88.9%), respondents who work and do not work are balanced (50%), the longest working period is five years (33,3%).

Table 1. Characteristics of respondents

Characteristics	Experimental group		Control group	
	n	%	n	%
Age				
18-25 years old	10	55.6	10	45.5
26-35 years old	5	27.8	5	22.7
36-45 years old	3	16.7	3	13.6
46-55 years old	0	0	4	18.2
Gender				
Male	3	16.7	18	81.81
Female	15	83.3	4	18.18
Academic Grade Point Average (GPA)				
3 > academic GPA ≤ 3,5	2	11.1	6	27.3
Academic GPA > 3,5	16	88.9	16	72.7
Work History				
Yes	9	50.0	12	54.5
No	9	50.0	10	45.5
Length of working				
0 years	9	50.0	10	45.5
0 years < length of working < 2 years	2	11.1	3	13.6
2-5 years	1	5.6	0	0
≥ 5 years	6	33.3	9	40.9
Total	18	100	22	100

Table 2. Critical thinking ability of respondents before and after intervention

Variable	Experimental group			Control group		
	n	mean±SD	P value	n	mean±SD	P value
Critical thinking ability before intervention	18	40.28±3.9	0.144	22	40.14±3.6	0.531
Critical thinking ability after intervention	18	42.06±3.4		22	39.09±6.8	

p-value both experimental and control groups > 0.05

Based on Table 1, it shows that most of the respondents in the control group are also 18-25 years old (45.5%), the gender of the respondents is mostly male (81.81%). Most respondents' academic GPA is >3.5 (72.7%). More than half of the respondents (54.5%) have worked, and of the 12 people who work, the longest working period is five years (40.9%).

Based on Table 2, it can be concluded that there is no significant difference in critical thinking ability in the experimental group between pre and post-tests, but there is an increase in critical thinking scores after the intervention.

Based on Table 2, it is concluded that there is no significant difference in critical thinking ability in the control group between pre and post-tests, but there is a decrease in critical thinking scores after the intervention

DISCUSSION

Based on the statistical results of the paired t test in Table 2, it shows the critical thinking ability in the experimental group, p-value = 0.144 (> 0.05), which means there is no significant difference in average before and after treatment. These results are not in line with the research of Wu and Wu (2020) who found there was a significant increase in respondents' critical thinking skills after treatment (p <0.05). Based on this research, there are four dimensions of mind map that have increased: (1) open-mindedness, (2) curiosity, (3) cognitive maturity (4) and the ability to think systematically (Wu H-Z, 2020). The results of this study are also different from the research of Draissi (2022), that reflective thinking facilitates critical thinking, metacognition, and self-involvement (Draissi, Z., BaoHui, Z & ZhanYong, 2011). Research by Parikh (2016) also states that mind map is a more effective learning method than conventional methods (Parikh, 2016). Of course, this can suggest that mind map should be more effective in improving students' ability to learn to think critically. Research by Sari et al. (2021) also shows that there are differences in students' critical thinking skills and motivation using the mind map learning method (Sari, R., Sumarmi, S., Astina, I., Utomo, D. & Ridhwan, 2022). The mind map learning method has the opportunity for students to be given a stimulus on how to be able to think divergently to the existing situation (Leeds, A.L., Kudrowitz, B & Kwon, 2019).

According to Novak and Gowin (1984 cited in Jones et al., 2012), the mind map method is defined as a means to represent ideas in diagrams with interrelationships between parts. When used as part of a learning method, mind map has been shown to increase motivation (Jones, Brett D.; Ruff, Chloe; Snyder, Jennifer Dee; Petrich, Britta; and Koonce, 2012) and also students'

academic performance (Holland, Brian; Holland, Lynda.; Davies, 2003). Nesbit and Adesope (2006) define a concept map as "a type of graphic organizer distinguished by the use of labeled nodes that represent concepts and links that show relationships between concepts." In general, the use of mind map method is described as a relationship between charts containing ideas or concepts that are connected to each other (Nesbit, J. C., & Adesope, 2006).

This difference in research results can be influenced by several things, but based on the researcher's analysis this happens because, in this study, the intervention was carried out only once so it was not significant in the results of the analysis. Researchers also analyzed these differences because the intervention only took one topic about nursing care for children with diarrhea. It means that there was less exposure to the stimulus. On the other hand, involvement of participants in the mind map process did not explore the innovation ability of respondents because of the limited time of respondents to participate in research so that, according to the researchers, it needed a natural process during the practice/learning activities of nursing students both at the academic stage and at the professional stage. This can also be a limitation in this research, which can be used as an improvement effort in repeating the same research.

The interesting thing in this study is that, although there was no significant difference in quantitative analysis in the experimental group, there was actually an increase in the mean score in the intervention group from 40.28 to 42.06. This certainly provides a positive discourse for further research so it needs in-depth analysis or using other approaches when carrying out the same intervention. According to Lorencova et al. (2019), critical thinking ability is also associated with contextual factors (learning climate, student initiatives) in addition to methodological (methods, tools, duration, feedback) as well as personal learning styles (student learning styles and motivation) (Lorencova, H., Jarošová, E., Avgitidou, S & Dimitriadou, 2019). Critical thinking skills can be improved by increasing the intensity of discussion, as well as deconstructing critical thinking into direct involvement and demonstration during the learning process (Hall, D. M. H., Miller, S. E & Tice, 2021).

With the same statistical test, Table 2 shows the critical thinking ability of the control group, obtained p-value = 0.531 (> 0.05) which means there is also no significant difference in the average before and after in the control group. Another unique thing is that, in the control group, the mean value decreased from 40.14 to 39.09. This is probably because at the time of filling out the questionnaire there were inconsistencies in the respondents from the past answers. This is common in research where respondents may be not in prime condition because of being tired after work.

CONCLUSIONS

The average critical thinking ability of pre-test and post-test respondents in the experimental group increased in scores after the intervention. On the other hand the average pre and post-test respondent's critical thinking ability in the control group experienced decreased in score after the intervention. There was no difference in scores of critical thinking skills with reflective mind map clinical learning

between pre and post-tests in both the experimental group and the control group. Suggestions for Mind Map Reflective Interventions: for institutions this intervention can be an alternative to innovative nursing student learning methods, systematic policy briefs in academic policies; for the nursing profession this intervention can be used as a component of Continuing Professional Development; For future researchers, this intervention can be used as replication in academic and clinical settings with a long duration through a natural process during learning.

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CONFLICT OF INTEREST

The authors declares that there is no conflict of interest in this research.

REFERENCES

Aprisunadi. (2011). Hubungan antara Berpikir Kritis Perawat dengan Kualitas Asuhan Keperawatan di Unit Perawatan Ortopedi Rumah Sakit Umum Pusat Fatmawati Jakarta. Universitas Indonesia Depok.

Bressington, D.T., Wong, W., Claire Lam, K.K & Chien, W. T. (2018). Concept mapping to promote meaningful learning, help relate theory to practice and improve learning self-efficacy in Asian mental health nursing students: A mixed-methods pilot study. Nurse Education Today, 60, 47–55.

Cantillon, P. & Wood, D. (2010). ABC of learning and teaching in medicine (2nd ed.). Blackwell Publishing Ltd.

Draissi, Z., BaoHui, Z & ZhanYong, Q. (2011). Reflective journals: enhancing doctoral students' engagement. Reflective Practice, 22:3, 381–399. https://doi.org/10.1080/14623943.2021.1893166

Duffy, A. (2009). Guiding students through reflective practice- The preceptors experiences. A qualitative descriptive study. Nurse Education in Practice, 9, 166–175.

Fawaz, M & Kavuran, E. (2021). Lebanese nursing students' perceptions regarding use of concept mapping. Teaching and Learning in Nursing, 16(1), 48–52.

Hall, D. M. H., Miller, S. E & Tice, C. J. (2021). Understanding and Assessing Critical Thinking: A National Survey of Social Work Educators' Perceptions. Journal of Social Work Education, 57(2), 226–238. https://doi.org/10.1080/10437797.2019.1670308

Holland, Brian; Holland, Lynda.; Davies, J. (2003). An investigation into the concept of mind mapping and the use of mind mapping software to support and improve student academic performance. CELT Learning and Teaching Projects, 04.

Jansson, I & Ene, K. W. (2016). Nursing students' evaluation of quality indicators during learning in clinical practice. Nurse Education in Practice, 20, 17–22.

Jones, Brett D.; Ruff, Chloe; Snyder, Jennifer Dee; Petrich, Britta; and Koonce, C. (2012). The Effects of Mind Mapping Activities on Students' Motivation. International Journal for the Scholarship of Teaching and Learning, 6(5).

Leeds, A.L., Kudrowitz, B & Kwon, J. (2019). Mapping associations: exploring divergent thinking through mind mapping. International Journal of Design Creativity and Innovation, 1(1–2), 16–29. https://doi.org/10.1080/21650349.2018.1463178

Lorencova, H., Jarošová, E., Avgitidou, S & Dimitriadou, C. (2019). Critical thinking practices in teacher education programmes: a systematic review. Studies in Higher Education, 44(5), 844–859. https://doi.org/10.1080/03075079.2019.1586331

Nesbit, J. C., & Adesope, O. O. (2006). Learning with concept and knowledge maps: A meta-analysis. Review of Educational Research, 76(3), 413–448.

O'Donovan, M. (2006). Implementing reflection: Insights from pre-registration mental health students. Nurse Education Today, 27, 610–616.

Parikh, N. D. (2016). Efectiveness of teaching trough mind mapping technique. The International Journal of Indian Psychology, 3(3).

Sari, R., Sumarmi, S., Astina, I., Utomo, D. & Ridhwan, R. (2022). Increasing Students Critical Thinking Skills and Learning Motivation Using Inquiry Mind Map. International Journal of Emerging Technology in Learning, 16(3), 4–19.

Scott, C dan Elliott, M. (2019). Flipped Clinical Preceptorship: An Alternate Model of Nursing Student Supervision. Teaching and Learning in Nursing, 14(1), 43–46.

Wu H-Z, W. Q.-T. (2020). Impact of mind mapping on the critical thinking ability of clinical nursing students and teaching application. Journal of International Medical Research, 48(3). https://doi.org/10.1177/0300060519893225

Yue, M., Zhang, M., Zhang, C & Jin, C. (2017). The effectiveness of concept mapping on development of critical thinking in nursing education: A systematic review and meta-analysis. Nurse Education Today, 52, 87–94.

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