

EFFECT of CRITICAL THINKING TRAINING PROGRAM on DEVELOPING REFLECTIVE THINKING AMONG NURSING STUDENTS

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Abstract:

Background: Requiring for critical thinking in nursing accentuated in response to speed changing health care atmospheres. Nursing students should bethink to give effective care whilst coping with expansion f role for associated by complexities of current health care. Present study aimed to assessment of critical thinking training program effects on developing reflective thinking.

Methods: Quasi-experimental design used in our investigation. A stratified proportionate random sample of 317 students was chosen from faculty of Nursing, Zagazig University that enrolled in the academic year 2017-2018. Data were collected using four tools namely; nursing students' knowledge assessment questionnaire, California critical thinking skills test, reflective thinking questionnaire.

Results: All nursing students (100%) had inadequate knowledge pre implementation program. While, after the program implementation all of them (100%) had adequate knowledge. Additionally, 74.4% of nurses have deficiency of critical thinking pre the program implementation. In contrast, all of them have strong levels post program implementation (100%). Likewise, 62.5% of nursing students had high level of reflective thinking before the program implementation that had increased to 100% after the program implementation.

Conclusion: there's no statistically significant relation between critical thinking, reflective thinking before the program implementation while there is statistically significant correlation between critical thinking, reflective thinking after the program implementation. Therefore, it is recommended that nurse educators should develop continuous in service- training and education program for refreshing and increasing nursing students' knowledge and skills about concept of critical thinking as well as to emphasize reflective thinking.

Key Words: *Critical Thinking, Reflective Thinking, Nursing Students, Learning Strategies, Training Program.*

INTRODUCTION

In today's technologically sophisticated healthcare globe, nursing students should be active learners and think critically about providing secure patient care. The capacity to think critically is also an important component of higher education and more specifically of education. Nurses need critical thinking to handle patients ' increasing cognitive ability and adapt to the-changing nature of the healthcare system (Emerson, J. (2010).

Additionally, nurse educators are essential to instructional communication, thus having the ability to promote learners' beneficial critical thinking skills and abilities. How critical thinking skill for nursing teachers is affected on ability of nursing students to think critically as well as how nursing educators can assist students attain the skills needed to achieve quality care for patients **(Dymok&Harrison,2018)**.

Critical thinking is rational reflective thinking on what do or believes **(Ennis,2008)**. And disciplined process of conceptualizing, analysis, synthesizing, and evaluating information's gathered or produced throughout observations, experiences and reasoning **(Devi,2008)**.

Critical thinking is used synonymous and to describing of using cognitive skills which led to increase the desirable result probabilities gain of thinking which is purposeful, reasoned and goal directed of thinking kinds which could be involve in solving some problems. On the other hand, thinking reflectivtion involves not only cognitive process, but an affective, social, cultural, and political reasoning **(Dewey,1933)**.

Modern society is very completed, provided many available information, and rapidly changing prompting user to constantly rethink, switch directions, and change problem-solving strategies more **(Dewey,2013)**.

Reflective thinking is one of the important learning process elements and cultivates meaningful learning for develop specific skills **(Dymok and Harrison,2012)** and stimulated by completed clinical problems. Reflection varies processing across individuals and context. The tendency as well as the ability to reflect also appears to vary individual **(Farrel,2011)**.

Learners are aware of and control their learning by actively participating in reflective thinking and comprehend thierthinking andlearning strategies. **(FlorenandHurji,2015)**.

Significance of the study

Currently, faculties across the nation are under pressure to meet academic standards by preparing well equipped students to meet the demands of the market. Additionally, some studies mentioned that critical thinking skills are very important to students where it fell more confident in them and their abilities are more liked and respected by others, and think reflectively. So, this study aims to the important of training program of critical thinking and develop reflectively thinking between students.

Aim of the Study

Assessment of critical thinking training program effects on developing reflective thinking.

Research hypothesis

The reflective thinking of nursing students will improved after implementing training program of critical thinking.

SUBJECTS AND METHODS

Design:

A quasi experimental design used to achieve our aims from present investigation.

Setting:

Study conducted in Faculty of Nursing, Zagazig University and included 7 departments: nursing administration, psychiatric and mental health nursing, medical surgical nursing, maternal and newborn health nursing, pediatric nursing, community health nursing, and geriatric nursing, and the faculty consisted of five floors.

Subjects

In the academic year 2017/2018 the faculty contained 1800 students distributed on four academic years.

Tools of data collection

Tool I: Critical thinking knowledge questionnaire (Appendix I)

It included two parts as following:

- Part one: Personal characteristics data sheet used to get nursery data as; age, gender, marital status, attendance of related training courses regarding critical thinking.
- Part two: Critical thinking knowledge questionnaire: It was developed by the researcher to assess nursing students' knowledge about critical thinking. It consisted of 26 multiple choice questions as: Thinking is the action of using one's mind to produce: A- Thoughts, B- Opinions, C- Judgments, D- All the above

Tool II: California of Critical thinking skills tool (Appendix II)

for assessment critical thinking skills levels of among nursing students. It consisted of 34 multiple choice questions grouped into five critical thinking cognitive skills domain (**Facion, 1991**).

Tool III: Reflective Thinking Questionnaire (RTQ) (Appendix III)

It was developed by (**Kamber et al 2000**) to assess the level of reflective thinking among nursing students. It consisted of 16 statements grouped under four domains.

Pilot study

which carried out for testing our tools feasibility, understanding and consuming time (20-30 minutes) to write filling our forms on 10% of sample (32) and explained our purposes for each one, and later we provided a copy from our tools. The times consumed in filling the tools were about 20-30 minutes..

Methods

After official permissions were obtained from Faculty Dean of Nursing at Zagazig University, the researcher introduces herself and explains purposes of the study for nursing students included in the study. Post explained our targets, tools distributed in classroom and researchers present at all time to more clarification.

Data collection was carried out during the period from the beginning of October 2017 to the end of April 2018 excluding two months of examination and vacation (January & February). The researcher taught the training program for nursing students six days per week after lectures began with theoretical session then followed by practical one, after taken rest for ten minutes, two weeks were needed for completion the program session for each group of nursing students, these sessions were repeated for 16 groups, so 20 weeks were used for providing all sessions of the training program.

Administrative design

Official letters after explaining the nature of the study was obtained from the Dean of the faculty, Vice Dean of Education and Students' affairs and Department Heads of the Faculty of Nursing, Zagazig University. These letters of support indicated agreement with the purpose of the study and granted permission to collect data and to implement the program. Administrative support was helpful for a successful implementation period.

Statistical analysis

Data analyzed by using SPSS, version 25. Quality control done at all stages of coding and data entry and presented by descriptive statistics as frequencies and percentages for $\pm M$, and SD. Independent t- test used for means comparison of two independent groups of normally distributed data. Paired t-test was used for comparison of repeated observation on the same individuals (pre and post result) of normally distributed quantitative data. Correlation analysis used to assessment of inter-relationships between quantitative variables. ANOVA done for testing comparison of means of multiple independent groups of normally distributed data. $p < 0.05$

RESULT

Mean age of the nursing students was 21.85 ± 2.095 years and 54.50% of them aged more than 21 years. The highest percentages of nursing students were female, not married, in the 4th year, and didn't attend previous training courses about critical thinking (71%, 95.9%, 29.7%, & 99.4%, respectively) **Table 1**.

Table 2 reveals the comparison between pre and post results regarding total knowledge scores among nursing students. High significant differences among pre and post results regarding the total knowledge score of nursing students.

Table 3: show the Comparison between pre and post results regarding total critical thinking skills scores among nursing students. It well- defined from the table that 74.4% of nursing students had a weak level of critical thinking before the program implementation. While, all of them (100%) had a strong level after the program implementation.

Table 4: shows that 62.5% of nursing students had high level of reflective thinking before the program implementation that had increased to 100% after the program implementation.

DISCUSSION

Our findings indicated slight more 50% of nursing students aged more than 21 years old, with mean age 21.85. Additionally, the highest percentages of them were female and single. This may be due to that entering of male to the faculties of nursing is recent in Egypt in general and in Zagazig in particular. Likewise, studying in the faculty of nursing is practical and taking a lot of time from students and it is difficult for them to study and take responsibility of family.

The previous results are in the same line with a study carried out by (Alec, 2011), who assessed critical thinking among nursing students, and found that the majority of nursing students had more than 21 years old. As well, these findings are similar to (Halpern, 2012), who assessed critical thinking among nursing students in California and reported that the highest percentages of nursing students were female and single. Moreover, (Marsha, 2015), reported the most of nursing students were females and single. Furthermore, (Khalli, 2014), who evaluated the effectiveness of the educational programs of nursing students about critical

thinking skills and concluded that the majority of the students in the experimental and control groups were females. Likewise, these results are in agreement with a study conducted in the United States of America by **(Jasper,2015)**, majority of nursing students were in age group more than 21 years old.

Highest percentages of nursing students have weak critical thinking skills levels before the implementation of the program. On the other hand, the highest percentage of them had strong critical thinking skills after implementing the program. This might be due to that nursing students had inadequate knowledge regarding critical thinking before the program implementation. While improvement could be due to the providing activities and different situations about critical thinking skills and giving nursing students ways and steps of how to deal with these situations.

there were significant differences of total critical thinking skills before and after the program implementation. Additionally, these findings are consistent with that of previous studies conducted in U.S.A by **(Lanren,2010)**, **(Dalir et al,2011)**, **(Kayaet al,2012)**, **(Mahasneh and Cox,2013)**, and **(Ocak&Boyratz,2016)**, and undergraduate nursing students have critical thinking skills weakness and most nursing students had a weak level of critical thinking skills **(Ghisvandand Facion,2017)**.

Likewise, the findings are in agreement with a study carried out in USA, aimed to assessing critical thinking in baccalaureate nursing students by **(Beckie et al, 2017)** to determine critical thinking in baccalaureate nursing students, and found that there was improvement in critical thinking skills among nursing students after program implementation.

The current study findings illustrate that the highest percentages of nursing student had a high level of reflective thinking scores before implementation of the program. While, this percentage increased after the implementation of the program. This may be due to that the faculty members used deferent teaching methods throughout the learning process such as group discussion and brain storming as a part of change. On the other hand, the improvements might be due to that the researcher gave activities and problem solving situations to promote reflection and good relationship among teachers and learners and teaching quality. As well as the interaction of the researcher with nursing student's requirements that have a positive effectiveness on the level of reflective thinking which provides nursing students opportunity to think reflectively and select the best strategies to achieve their goals.

These findings are in accordance with a study carried out, in Australia, by **(Lucas,2012)**, who determined the effectiveness of integrating reflective thinking into the second-year undergraduate nursing curriculum and their impact on reflective thinking ability and found that a significant improvement in the reflective thinking score of undergraduate students after engaged in reflective activities. Additionally, the current study findings are matching with a study conducted, in Malaysia, by **(Fariba, 2014)** noted that significant improvement of reflective thinking after giving training program for nursing students. Likewise, these findings are in agreement with a study conducted, in Jordan, by **(Grams,2009)**, which assessed the impact of a training program based on development of reflective thinking among nursing students and found that the majority of nursing students had highly levels from reflective thinking post program implementation.

In same line in a study conducted, in Hong Kong by, **(Kamber,2008)**, reported there is improvement in reflective thinking score among nursing students after the implementation of the program. While, these findings are in disagreement with a study conducted, in London, by **(David et al, 2012)**, to investigate the nursing students' reflective thinking, high ratio of nursing students have lower level of reflective thinking score.

CONCLUSION

Based on the study findings, it could be concluded that: Before the program implementation; all nursing student had inadequate knowledge levels regard to critical thinking, highest percentages of them had a weak level of critical thinking skills, a high level of reflective thinking. However, after the program implementation; all nursing students had an adequate level of knowledge regarding critical thinking, highest percentages of them had a strong level of critical thinking skills, a high level of reflective thinking,

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RECOMMENDATIONS

- Faculty management should publish posters containing tips for critical thinking and its effect on the outcome of nursing students
- Nurse educators should develop continuous in service- training and education program for refreshing and increasing nursing students' knowledge and skills about concept of critical thinking as well as to emphasize reflective thinking and motivation to learn
- Nurse educators should focus not only on course structure but also course assignments and teaching strategies that foster critical thinking.
- Nurse educators should develop of curriculum contents.

Further researches

- Investigate socio cultural circumstances that may hinder or enhance the individual to be critical thinker.
- Replication of the study in other universities is highly recommended to achieve generalization results.

Table (1): Personal characteristics of nursing students (n= 317)

		No	%
Age(years)	≤ 21years	144	45.5%
	>21years		
Mean ±SD	21.85±2.095		
Gender	Female	225	71.0
	Male	92	29.0
Marital status	Not married	304	95.9
	Married	13	4.1
Academic year	First year	66	20.8
	Second year	78	24.6
	Third year	79	24.9
	Fourth year	94	29.7
Attend previous training courses about critical thinking	No	315	99.4
	Yes	2	0.6

Table (2): Total knowledge of critical thinking level among nursing students throughout program phases (n=317)

	Total knowledge scores		Paired t	P-value
	Mean ±SD	Range		
Pre	7.7±2.5	0-15	96.428	<0.001**
Post	22.4±1.9	16-26		

Table (3): Total level of critical thinking skills among nursing students throughout program phases (n=317).

Total critical thinking skills	Pre No.=317		Post No.=317	
	No.	%	No.	%
Weak	236	74.4	0	0.0
Moderate	80	25.2	0	0.0
Strong	1	0.3	317	100.0

Table (4): Total level reflective thinking throughout the program phases as reported by nursing students (n=317)

Total reflective thinking	Pre No.=317		Post No.=317	
	No.	%	No.	%
Low	119	37.5	0	0.0
High	198	62.5	317	100.0

REFERENCES

- [1] Emerson, J. (2010): Critical thinking as an outcome of a Master's degree in nursing program. Journal of Advanced Nursing, 66(2); 422-431.
- [2] Dymok, L. & Harrison, G. M. (2018): Assessing reflective thinking and approaches to learning. Journal of Allied Health, 40 (3); 128-136
- [3] Ennis, R. H. (2008): Problems in testing informal logic critical thinking reasoning ability, Informal Logic, Vol. 6, No. 1, Pp. 3-9.
- [4] Devi, E. (2008): Nursing Education. (1st ed.); Ch 17. Pp. 109-217. New Delhi. India.

- [5] Dewey, J. (1933): *How we think: A restatement of the Relation of Reflective Thinking to the Educative Process*. Boston: Houghton Mifflin.
- [6] -Dewey, J. (2013): *Experience and education*. New York, NY: Macmillan. In Henderson, G. (2014): *The Relationship between Problem- Based Learning and The development of Critical Thinking Skills in Higher Education*. *Journal of American Science*, 8 (12); <http://www.jofamericanscience.org>
- [7] Dymok, L. & Harrison, G. M. (2012): *Assessing reflective thinking and approaches to learning*. *Journal of Allied Health*, 40 (3); 12-136.
- [8] Farrel, M.C. (2011): *Clinical thinking ability and nursing students*. *Journal of Nursing Education*, 23 (7); 306-308.
- [9] Florena, N. and Hurji, E. (2015): *Critical thinking in elementary school children*. The 6th International Conference Edu World “Education Facing Contemporary World Issues”, 7th - 9th November 2014. *Procedia - Social and Behavioral Sciences* 180 (2015) 565 – 572. Available at: www.sciencedirect.com.
- [10] Alec Fisher, J.M. (2011): *Congruency in defining critical thinking by nurse educators and non-nurse scholars*. *Journal of Nursing Education*, 39 (8); 340-351.
- [11] Halpern, S. (2012): *Critical thinking at the bedside: A practical perspective*. *British Journal of Nursing*, 12 (19); 1142-1149.
- [12] Marsha, C. (2013): *Teaching students to think critically*. San Francisco, CA: Jossey-Bass99 (5); 52-54.
- [13] Khamli H. (2014): *Investigation of reliability, validity and normality Persian version of the California Critical Thinking Skills Test; Form B (CCTST)*. *Journal of Medical Education*, Vol.3, No.1.
- [14] Jasper, R. (2015): *Reflections on reflection: A critical appraisal of reflective practices in L2 teacher education*, *System*, 35(2); 192-207.
- [15] Lauren, M.L. (2010): *Critical thinking skills and dispositions of baccalaureate nursing students—A conceptual model for evaluation*. *Journal of Professional Nursing*, 13(4); 236-245.
- [16] Dalir, M.H., Stover, L.M., & Whitlow, J.F. (2011): *A longitudinal evaluation of baccalaureate nursing students' critical thinking abilities*. *Journal of Nursing Education*, 38(3); 139-141.
- [17] Kaya, B.A., Edell, V., Butell, S., Doughty, J., and Langford, C. (2012): *Critical thinking and clinical competence: A study of their relationship in BSN seniors*. *Journal of Nursing Education*, 38 (3); 100-110.
- [18] Mahasneh, D.J., & Cox, P.D. (2013): *Measuring change in students' critical thinking ability: implications for health care education*. *J Allied Health*, 31(2); 64-9.
- [19] Ocak, D.D., & Boyraz, C.A. (2016): *This study examined predictors for pre-pharmacy students' success in pharmacy school: grade point averages, pharmacy college admissions test (PCAT), communication abilities, and critical thinking skills*. *Pharmacy therapy*, 21(7); 842-9.
- [20] Ghisvand, C.A. & Facione, P.A. (2017): *A look across four years at the disposition toward critical thinking among undergraduate students*. *The Journal of General Education*, 50 (1); 29-55.
- [21] Beckie, T.M., Lowry, L.W., & Barnett, S. (2017): *Assessing critical thinking in baccalaureate nursing students: A longitudinal study*. *Holistic Nursing Practice*, 15(3); 18- 26.
- [22] Lucas, M.L. (2012): *Critical thinking skills and dispositions of baccalaureate nursing students A conceptual model for evaluation*. *Journal of Professional Nursing*, 13 (4); 236-245.

- [23] Fariba, J.M. (2014): Statistics, the literature, hospital data and patient profiles: A survival guide. *The Internet Journal of Anesthesiology*, 3(4); <http://www.ispub.com/journals/IJA/Vol3N4/literat>
- [24] Grams, C. (2009): Maslow's hierarchy of needs. Retrieved Nov. 22, 2013 from:<http://opensource.com/business/09/11/maslows-hierarchy-community-needs>
- [25] Kember, D. (2018): Exploring reflective thinking in nursing practice. *Journal of Advanced Nursing*, 31, 1125–1135.
- [26] David, Y.T., Takazawa, E.S., and Rose, C. L. (2017): Critical thinking and nursing education. *Journal of Nursing Education*, 26(8); 317-323.
- [27] Facione, P. A. (1991): The disposition toward critical thinking: Its character, measurement, and relationship to critical thinking skill. *Informal Logic*, 20 (1); 61-84.
- [28] Kember, D., Leung, D., Jones, A., Loke, A., McKay, J. and Sinclair, E. (2000): Development of a questionnaire to measure the level of reflective thinking. *Assessment and Evaluation in Higher Education*, 25, 381–395..