

Enhancing Intern-Nurses Critical Thinking Using Self-Learning Package

Ahmed Farghaly Towfik¹, Gehan Mohammed Ahmed², Salwa Ahmed Mohammed³ and Howida Hassan El-sayed⁴

(1) Assistant lecturer of Nursing Administration, Faculty of Nursing, Beni-suef University, Egypt

(2) Professor of Nursing Administration, Faculty of Nursing, Helawn university, Egypt, (3)

Assistant professor of Nursing Administration, Faculty of Nursing, Beni-suef university, Egypt and

(4) Assistant professor of Nursing Administration, Faculty of Nursing, Benha university, Egypt

Abstract

Background: The development of critical thinking is imperative, nowadays, since people are challenged to face complex situations, taking reasonable decisions and assessing alternative solutions critically. **Aim of the study:** Was to enhance intern- nurses' critical thinking using self-learning package. **Design:** Quasi-experimental design was utilized to conduct this study. **Sample:** All intern-nurses who are enrolled in the internship year at Beni-Suef University hospital at the time of the study. The sample composed of (114) enrolled intern-nurses. **Setting:** This study was carried out at Beni-suef University hospital. **Tools:** Two tools were used to collect data: Critical Thinking Knowledge Questionnaire and Self-Learning Package Attitude Questionnaire. **Results:** There was no statistically significant correlation between level of knowledge and level of self-learning package attitude. **Conclusion:** There were improvements in the levels of knowledge regarding critical thinking among studied intern-nurses in both study and control groups throughout immediate post and follow up phases from the preprogram phase. **Recommendations:** Adopt self-learning packages in the orientation program of intern-nurses by nursing faculties. Further research can be conducted to consider longitudinal research designs that will enable them to track nurses' critical thinking development over the course of their entire undergraduate careers.

Key words: Critical thinking, intern-nurses, self-learning package.

Introduction

The practice of nursing requires critical thinking. Critical thinking is the process of intentional higher-level thinking to define a client's problem, examine the evidence-based practice in caring for the client, and make choices in the delivery of care. Critical Thinking is identifying problems, assessing resources and generating possible solutions and skills including the ability to analyze, synthesize, infer, and evaluate situations. In addition, critical thinking is a disciplined, self-directed cognitive process leading to high quality

decisions and judgments through the analysis, assessment and reformulation of thinking (Byrd & Asunda, 2020).

The concept of self-directedness in learning was first discussed in educational literature as early as 1926. From these writings, a preliminary description of self-directed learning emerged. Self-directed learning, in its broadest meaning, describes a process in which individuals take the initiative with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying resources for learning, choosing and implementing learning strategies and evaluating learning outcomes (Kim, Meng & Kim, 2021).

Intern-nurses practice in the clinical setting provides them with the opportunity to use their critical thinking skills. But, for a variety of reasons, clinical education may not offer each student with sufficient time to do this. Nursing educators are looking for other learning strategies that will assist their students to practice critical thinking. For some educators, self-learning package is used with clinical education (Zuriguél-Pérez et al., 2018).

Aim of the study

This study aimed to enhance intern-nurses' critical thinking using self-learning package.

Research Hypotheses

Implementation of self-learning package would improve intern-nurses' knowledge and skills toward critical thinking; it is more stimulating and engaging to them for gaining knowledge and skills than traditional methods.

Subjects and Methods

Research design

A quasi-experimental design was used to achieve the aim of the present study.

Setting

This study was conducted at Beni-sueif University hospital. Beni-sueif university hospital consists of seven main departments and units providing multi services.

Subjects

Subjects were composed of all intern-nurses who are enrolled in the internship year at Beni-Suef University hospital at the time of the study. The sample composed of (114) enrolled intern-nurses were divided into two groups; control group (traditional method) and a study group (self-learning package). Every group composed of (57) intern-nurses.

Data collection tools

Data for the present study was collected using the following two tools (all tools were used throughout the three phases of the program implementation (pre, immediate post and follow-up three months after the program)).

I. Critical Thinking Knowledge Questionnaire

A structured questionnaire was developed by the investigator based on the review of related. It included two parts:

Part (1): Intern-Nurses' personal data such as (age, gender, training area, previous education, marital status, place of residence and have you ever completed a course in critical thinking).

Part (2): Intern-Nurses' critical thinking knowledge to assess intern-nurses, knowledge about critical thinking. It consisted of (30) question categorized under two dimensions: First: Critical thinking concept knowledge, consisted of multiple choice questions and true or false question (Total number was=16). Second: Disposition and skills knowledge, consisted of multiple choice questions and true or false question (Total number was=14).

II. Self-learning Package Attitude Questionnaire:

Structured questionnaire developed by the investigator based on the review of related literature. It include different items to assess intern-nurses' attitude toward self-learning package. It consisted of 10 items to assess intern-nurses' attitude toward self-learning package.

Validity of the tools:

Once the data collection tool was prepared in its preliminary form revising and judging the tools of data collection and critical thinking self-learning package by five experts of nursing professors from different Faculties of Nursing (three assistant

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professors of Nursing Administration from Cairo, Helwan, and Benha Universities), two Professors of Nursing administration from (Ain Shams and Menoufiya Universities). Modifications of the tools and self-learning package were done according to experts, instructions. The modification concerns some items language construction and arrangement.

Reliability of tools:

The reliability of the data collection tool scales was assessed using internal consistency method. The two tools showed good reliability as shown by their Cronbach's alpha coefficient.

Ethical consideration:

At the interview with intern-nurses to collect data, they were informed about the purpose and benefits of the study, their participation was voluntary, and they have the right to refuse to participate in the study without giving any reason. In addition, confidentiality and anonymity of the subjects were assured through coding of all data.

Pilot study

Pilot study was conducted in March 2020 to assess tools validity and reliability. It has also served for estimating the time needed for filling the questionnaires. It was done on 10% of the total intern-nurses (11) intern nurses. The time needed for answering tool sheet "25-30" minutes. No modifications were done so subjects involved in the pilot were included in the study.

Field work

Data of the current study were collected from April 2020 to July 2020. The researcher held meetings with intern-nurses and gave orientation about the critical thinking program.

Implementation of the program done in online basis as the circumstances of virus corona (COVID-19) outbreak at April 2020.

Implementation of program done in two ways at the same time; self-learning package sent to intern nurses in electronic form beside a what's app chat group created for communication with students and answering any concerns or question throughout period of implementation that extend for two weeks .

Self-learning package consisted of different learning methods to make information pleasing and interesting for intern-nurses beginning with concepts mind-mapping to presenting information in the form of concepts and activities.

Regarding program implementation; a Google website created and intern nurses invited to participate.

The contents of the program converted into videos divided into six sessions and intern nurses had the freedom to view contents at any time suitable for them beside an offer of 24 hours availability of the researcher to answer and explain any question or concern from intern nurses.

The data collection tools was answered by intern-nurses after the implementation of the program via online basis using Google forms as forms sent to intern- nurses personal pages and asked them to fill it out. Beside, the google form link sent to intern-nurses official group and asked to fill it out.

Statistical analysis

Data were verified prior to entry into the computer. The Statistical Package for Social Sciences created by IBM, Illinois, Chicago, USA (SPSS version 25.0) was used for that purpose, followed by data analysis and tabulation.

Results

Table (1): Indicates that there are no statistically significant differences between control and study group intern-nurses' personal characteristics. Regarding study group intern nurses: approximately two thirds of them were females (59.6%), aged 23 years (61.4%), from rural (56.1%), didn't complete a previous critical thinking course (66.7%). the majority have general secondary school (82.5%) and approximately three quarters were single (71.9%). Regarding control group intern-nurses: approximately three quarters of them were female (71.9%), have general secondary school (78.9%), regarding their age approximately two thirds aged 23 years (63.2%), didn't complete a previous course (64.9%) and single (68.4%).

Figure (1): Illustrates intern-nurses total knowledge level: as shown in figure intern-nurses total knowledge improved throughout post and follow up phases after three months of the program implementation from the pre-program phase. the highest percentage was immediate post implementation of the program for study and control group as the highest percentage of them (77.2%, 47.4%) have adequate knowledge level.

Table (2): Illustrates that there was a highly significant improvement in study group intern nurses knowledge regarding critical thinking concept ($p= 0.001$ & 0.009), critical thinking disposition and skills knowledge ($p= 0.006$ & 0.037) and total critical thinking knowledge ($p= 0.000$ & 0.002) between pre and immediate post and between pre program and follow up phase of the program respectively. Regarding control group intern nurses there is no statistically significant differences.

Table (3): Indicates that there was a statistically significant difference in the Critical thinking knowledge level immediate

post ($p= 0.001$) and follow-up program implementation ($p= 0.024$) among the studied intern-nurses between study and control group in favor of study group.

Table (4): Shows that there was a statistically significant difference in the critical thinking concept level immediate post program implementation ($p= 0.037$) among the studied intern-nurses in both study and control group.

As shown in **figure (2)**, there was a significant improvement in intern-nurses attitude toward self-learning package throughout post and follow up phases after three months of the program implementation from the pre-program phase. Regarding percentage of study group and control group intern-nurses have positive self-learning package attitude immediate post and follow-up program implementation (96%, 94.7%), (94.7%, 92%) respectively.

Regarding Intern-Nurses' self-learning package attitude **Table (5):** illustrates that there was a highly statistically significant differences in study group intern- nurses self-learning package attitude ($p=0.008$), between pre and immediate post phase of the program.

Table (6): Indicates that there was no statistically significant difference in the Intern-Nurses' self-learning package attitude among the studied intern-nurses in both control and study group.

Table (7): Indicates that there was no statistically significant correlation between critical thinking knowledge and intern-nurses self-learning package attitude.

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Table 1 : Percentage distribution of intern nurses' personal characteristics (n= 114)

Items	Study Group (N= 57)		Control Group (N= 57)		Test	
	No	%	No	%	χ^2	P-value
	57	50.0	57	50.0		
Gender					1.9	0.167
Male	23	40.4	16	28.1		
Female	34	59.6	41	71.9		
Marital status					0.168	0.682
Single	41	71.9	39	68.4		
Married	16	28.1	18	31.6		
Previous education					0.49	0.807
General Secondary	47	82.5	45	78.9		
Technical Nursing Diploma	9	15.8	10	17.5		
Associate Nursing Diploma	1	1.7	2	3.5		
Age					0.186	0.996
23-	35	61.4	36	63.2		
24-	18	31.5	17	29.7		
25-	4	7.1	4	7.1		
Mean± SD	23.4±.8					
Place of residence					0.141	0.709
Rural	32	56.1	30	52.6		
Urban	25	43.9	27	47.4		
Have you complete a course in Critical Thinking					0.039	0.843
Yes	19	33.3	20	53.1		
No	38	66.7	37	64.9		

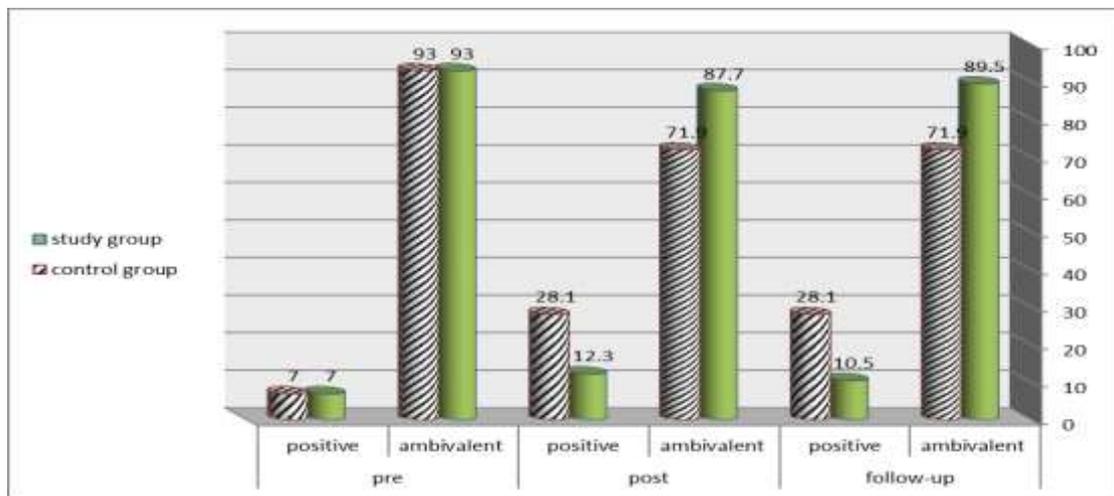


Figure (1): Percentage distribution of intern nurses regarding their total knowledge level

Table (2): Mean scores of Intern-Nurses' "study and control group" critical thinking knowledge. Pre, immediate post and follow up phases of the program implementation (n= 114)

Group	Program	Maximum	Pre	Post	Follow up	F	P1	F	P2
			$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD$				
Control Group	Critical thinking concept	16	8.4 ± 2.8	9.2 ± 3.9	8.95 ± 3.8	9.6	0.247	6.5	0.42
	Disposition and skills	14	8.35 ± 2.35	9.0 ± 2.8	8.8 ± 2.85	5.5	0.202	6.0	0.356
	Total knowledge level	30	16.8 ± 4.27	18.5 ± 5.6	17.69 ± 6.1	11.7	0.073	20.2	0.366
Study Group	Critical thinking concept	16	8.4 ± 2.9	10.56 ± 3.85	10.1 ± 3.83	12.3	0.001*	15.1	0.009**
	Disposition and skills	14	8.55 ± 2.45	10.2 ± 3.7	9.8 ± 3.8	17.9	0.006**	26.6	0.037*
	Total knowledge level	30	16.9 ± 4.58	22.77 ± 6.5	20.66 ± 7.5	6.4	0.000**	30.3	0.002**

(*) Statistically significant at p<0.05

(**) Statistically significant at p<0.01

P1= between pre and post

p2= between pre and follow-up

Table (3): Percentage distribution of Intern-Nurses' total critical thinking knowledge level. Pre, immediate post and follow up phases of the program implementation (n= 114):

Knowledge level		Intern group				χ^2	P-value
		Control Group		Study Group			
		No	%	No	%		
Pre	Adequate	24	42.1	25	43.9	0.036	0.85
	In-adequate	33	57.9	32	56.1		
Post	Adequate	27	47.4	44	77.2	10.8	0.001**
	In-adequate	30	52.6	13	22.8		
Follow up	Adequate	26	45.6	38	66.7	5.13	0.024*
	In-adequate	31	54.4	19	33.3		

(*) Statistically significant at p<0.05

(**) Highly statistically significant at p<0.01

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Table (4): Percentage distribution of Intern-Nurses' critical thinking knowledge dimensions level. Pre, immediate post and follow up phases of the program implementation (n= 114)

Knowledge level		Critical thinking concept				χ^2	P-value	Disposition and skills knowledge				χ^2	P-value
		Control Group		Study Group				Control Group		Study Group			
		No	%	No	%			No	%	No	%		
Pre	Adequate	22	38.6	20	35.1	0.15	0.69	2	42.1	2	45.6	0.14	0.71
	In-adequate	35	61.4	37	64.9			3	57.9	3	54.4		
Post	Adequate	27	47.4	38	66.7	4.33	0.037*	3	54.1	4	70.2	3.03	0.082
	In-adequate	30	52.6	19	33.3			2	45.6	1	29.8		
Follow up	Adequate	23	40.4	30	52.6	1.75	0.19	2	45.6	3	59.6	2.25	0.133
	In-adequate	34	59.6	27	47.4			3	54.1	2	40.4		

(*) Statistically significant at p<0.05

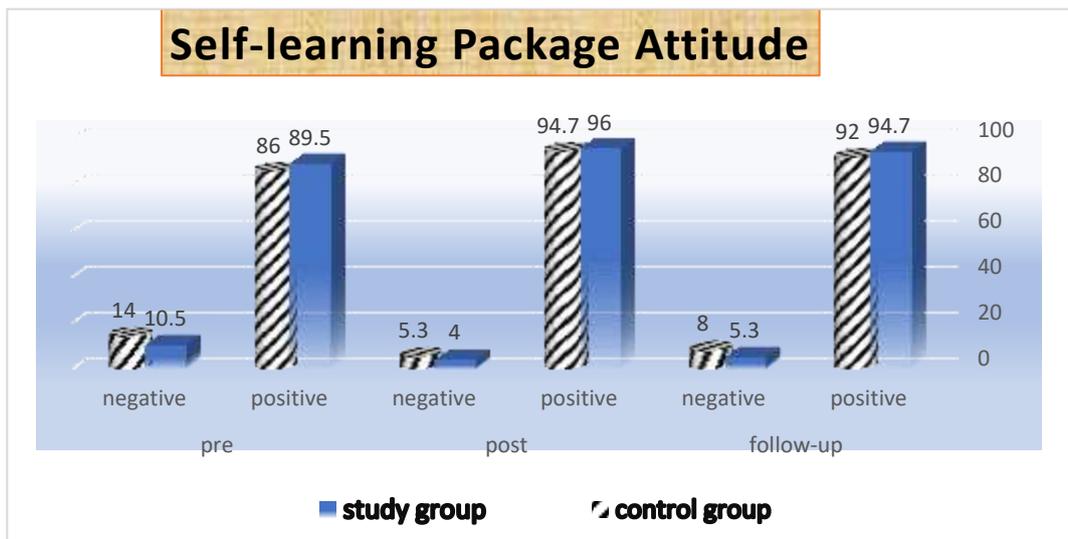


Figure (2): Percentage distribution of intern nurses regarding their self-learning package attitude level.

Table (5): Mean scores of Intern-Nurses' self-learning package attitude. Pre, immediate post and follow up phases of the program implementation (N=114).

Intern group	Program Max Score	Pre	Post	Follow up	F	P1	F	P2
		$\bar{X} \pm SD$	$\bar{X} \pm SD$	$\bar{X} \pm SD$				
Control Group	5	35.3 ±	37 ± 5.47	36.4 ±	0.1	0.094	1.0	0.33
	0	5.62		6.26				
Study Group	5	35.26 ±	37.79 ±	36.95 ±	10.8	0.008*	2.9	0.11
	0	6.38	2.99	4.52				

(**) Statistically significant at p<0.01

P1= between pre and post p2= between pre and follow-up

Table (6): Percentage distribution of Intern-Nurses' self-learning package attitude. Pre, immediate post and follow up phases of the program implementation (n= 114):

self-learning package attitude		Intern group				χ^2	P-value
		Control Group		Study Group			
		No	%	No	%		
Pre	Positive	55	86	54	89.5	0.20	0.647
	Negative	2	14	3	10.5		
Post	Positive	54	94.7	56	96	1.039	0.309
	Negative	3	5.3	1	4		
Follow up	Positive	49	92	51	94.7	0.326	0.568
	Negative	8	8	6	5.3		

Table (7): Correlation between total level of knowledge of studied intern- nurses and their critical thinking skills throughout pre, immediate post and follow up phases of the program implementation.

Study variable	Knowledge level					
	Pre		Post		Follow-up	
	r	P- value	r	P- value	r	P- value
Attitude	0.013	0.892	0.048	0.610	0.100	0.289

(**) Statistically significant at p<0.01

Discussion

Critical thinking is a philosophical and multidisciplinary development concept, with philosophy, education, and psychology being

the sciences that have inquired into and contributed to the development of the concept. Critical thinking defined as "the reasoned and reflexive thinking that focuses on deciding what to believe and what to do".

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Alternatively, critical thinking considered as "thinking that is purposeful, reasoned and goal directed - the kind of thinking involved in solving problems, formulating inferences, calculating likelihoods, and making decisions when the thinker is using skills that are thoughtful and effective for the particular context and type of thinking task" (D'Alessio, Avolio & Charles, 2019).

Regarding personal Characteristics of intern-nurses the study findings revealed that; the majority of the intern-nurses were females, approximately three quarters of them were single, more than half of them from rural, and the mean \pm Std of their age was 23.4 years old. The majority of them in both groups have general secondary school as a previous education. There was no statistical significant difference between study and control groups personal characteristics.

From the researcher's point of view, these findings could be due to the feminine nature of the nursing profession, the study participants from one academic year so there was no obvious variation in their age and majority of them graduated from general secondary as it is the main source of faculty of nursing students.

The findings of the present study are in agreement with those in a study done **Wu & Wu, (2020)**, who reported on their study on nursing students in China that their age group ranged from twenty one to twenty three years old, the majority of them were females and the majority of them were single.

The results of the present study revealed that there was a highly significant improvement in the total knowledge of study group intern-nurses, sample about critical thinking throughout immediate post and after three months of the program implementation

from the pre-program phase. The majority of the intern-nurses in both study and control groups had adequate knowledge level in follow up phase, and minority had inadequate knowledge level.

From the researcher's point of view, the previous finding could be explained as new knowledge presented to intern-nurses beside activities results in intern-nurses acquisition of more knowledge related to critical thinking resulting in improvement of their knowledge beside these retention of knowledge immediate post program implementation known to be higher than after 3 months as not all knowledge reserved in the long term memory as a biological fact and needed to be periodically refreshed and updated .

The improvement in knowledge of intern-nurses indicates show that the program was effective and could have resulted from comprehensive content of the program, using creative teaching approaches that encourage participants on open questions, facilitate collaboration in learning process and the handout which given to them beside the advantage of taking the learning on their own piece according to their preferences and time planning.

These findings are consistent with **Penningroth, Despain & Gray, (2007)**, examined whether a college course emphasizing active learning techniques would enhance overall student critical thinking scores. Utilizing the Watson-Glaser Critical Thinking Appraisal in a pretest/posttest design, the researchers found significant increases in overall critical thinking scores after incorporating active learning activities that included small-group work, contextual case studies, student presentations, scenarios, and role-playing .

These findings are consistent with **Phelan, (2012)**, who reported on their study about Enhancing student critical thinking knowledge, skills, dispositions, application and transfer in a higher education technology course. This study conducted in USA and revealed that there was an increases in critical thinking knowledge can occur over the course of an instructional intervention and that active learning exercises that integrate the language and concepts of critical thinking may explain the significant gains found in this study.

The current study results revealed there was a significant improvement in intern-nurses attitude toward self-learning package throughout post and follow up phases after three months of the program implementation from the pre-program phase.

Regarding Intern-Nurses' self-learning package attitude the current study results revealed illustrates that there was a highly statistically significant differences in study group intern- nurses self-learning package attitude, between pre and immediate post phase of the program. Also, the current study results indicates that there was no statistically significant difference in the Intern-Nurses' self-learning package attitude among the studied intern-nurses in both control and study group.

The improvement in the intern-nurses attitude toward self-learning package throughout immediate post and after three months after the program phases could be due to the privilege presented by self-learning package over traditional learning method as they can take the learning experience at their own pace and according to their preference regarding their time management.

In the same line a study conducted by **McGuire, (2010)**, who reported in his study

about improving student critical thinking in USA that there was a gain in critical thinking knowledge from the Pre- and Post- Critical Thinking knowledge and recommended that purposeful implementation of the active learning interventions could strengthen students' perceptions of critical thinking and of their own critical thinking abilities.

The above mentioned findings and discussion proved that the research hypotheses, which indicates that implementation of self-learning package will improve intern- nurses' knowledge and skills toward critical thinking; it will be more stimulating and engaging for gaining knowledge, disposition and skills than traditional methods accepted.

Conclusion

There were improvements in the levels of knowledge, regarding critical thinking and also the level self-learning package positive attitude among studied intern-nurses in both study and control groups throughout immediate post and follow up phases than the preprogram phase. In addition to there was positive statistical significant correlations among level of knowledge and level of disposition, level of knowledge and level of critical thinking skills, and negative correlation between the level of skills and level of self-learning package attitude of the studied intern-nurses at immediate post and follow up phases of the study.

Recommendations

1. Adopt self-learning packages in the orientation program of intern-nurses by nursing faculties.
2. Enhance awareness of the faculty staff members and assistants on the importance of critical thinking in

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improving nursing student's leadership skills.

3. Encourage critical thinking as a requirement for job promotion by health care organization.
4. Build positive work practice environment to enhance nursing staff critical thinking in health care organization.

Further research can be conducted to:

- Research has shown that critical thinking expertise is something to be developed over a lifetime. It is recommended that future researchers should consider longitudinal research designs that will enable them to track nurses' critical thinking development over the course of their entire undergraduate careers.

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تعزيز التفكير الناقد لمرضى الامتياز باستخدام حزمة التعلم الذاتي

احمد فرغلي توفيق- جيهان محمد احمد مصطفى- سلوى احمد محمد - هويدا حسن السيد

إن تطوير التفكير الناقد أمر حتمي، في الوقت الحاضر، حيث يواجه الناس تحديات لمواجهة المواقف المعقدة، واتخاذ قرارات معقولة وتقييم الحلول البديلة بشكل ناقد. هدفت هذه الدراسة إلى تعزيز التفكير الناقد لمرضى الامتياز باستخدام حزمة التعلم الذاتي وقد أجريت هذه الدراسة على ١١٤ من مرضى الامتياز المتدربين بمستشفى بني سويف الجامعي. تم استخدام اثنين أدوات لجمع البيانات: استبيان المعرفة بالتفكير الناقد، واستبيان موقف ممرضى الامتياز من حزمة التعلم الذاتي. كان هناك تحسن في مستويات المعرفة، والاستعدادات والمهارات فيما يتعلق بالتفكير الناقد بين ممرضى الامتياز تحت الدراسة في كل من مجموعتي الدراسة والضابطة خلال مراحل ما بعد البرنامج مباشرة والمتابعة من مرحلة ما قبل البرنامج. كانت هناك ارتباطات ذات دلالة إحصائية موجبة بين مستوى المعرفة في مرحلتي ما بعد الدراسة مباشرة والمتابعة. وقد اوصت الدراسة بأن يعمل طاقم التمريض وإدارة التمريض معاً لتوفير جو مناسب للتفكير الناقد والابتكار و استخدام حزمة التعلم الذاتي كوسيلة تعليمية فعالة. يمكن إجراء المزيد من الأبحاث للنظر في طرق بحث طويلة الامد التي ستمكنهم من تتبع تطور التفكير الناقد للممرضين على مدار حياتهم المهنية الجامعية بالكامل.