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Effect of Cooperative Learning Training Program on Academic Achievement of Nursing Students

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Abstract: **Background:** Cooperative learning is one of the foremost active learning techniques, in which the nursing students work together in small groups from different academic levels for sharing their knowledge and skills to achieve their learning goals **Aim:** This study was conducted to evaluate the effect of cooperative learning training program on nursing students' academic achievement and their attitude. **Method:** A quasi-experimental design was used and the study sample consists of 82 students in the fourth academic year, randomized into two equal groups; study and control. Three tools were used for data collection; "Self-administered Questionnaire about personal characteristics", "students' clinical evaluation practical checklist", and "students' attitude toward cooperative learning scale". **Results:** The total mean scores of achievement are higher in the study group (46.9 ± 2.01) than those in the control group (35.4 ± 3.6) with a highly statistically significant difference in all practical units of achievement. As well as, the highest percentage of nursing students had a positive attitude towards adopting cooperative learning to learn clinical nursing administration course (80.5%). **Conclusion:** the cooperative training program improved the academic achievement in the study group with a highly a statistically significant correlation between achievement and attitude. **It recommended** that providing in-service training programs to clinical nurse educators for utilizing cooperative learning in their clinical environment

Keywords: Cooperative learning; Training Program; Academic Achievement; Nursing Administration

Introduction

Nursing education comprises of theoretical and practical learning experiences to help the nursing students acquiring the needed knowledge, skills, and attitudes for providing high nursing care. A significant portion of nursing education takes place in a clinical placement. It provides opportunities for the nursing students to

develop their skills, relieves gap between theory and practice, and gives nursing students the chance to grow professionally (Jamshidi, Molazem, Sharif, Torabizadeh, & Kalyani, 2016). Thus, clinical education is regarded as the center of the nursing education program, that clinical nurse educators bear a primary responsibility for reforming nursing education (Alammar, Ahmad, Almutairi, & Salem, 2020). In recent years, there is a growing awareness of the need for changes in nursing education systems, especially in developing self-learning techniques where the student is an active participant in the learning process for enhancing and preparing nursing students' skills to ensure the high quality of nursing care practice after graduation (Cosme, 2023). This objective would encourage nursing educators to use innovative teaching and training strategies for nursing students and test their effectiveness.

cooperative learning (CL) is one of the most significant fields of research and practice in nursing education that has grown in prominence over the past three decades (Namaziandost, Shatalebi, & Nasri, 2019). Cooperative learning is defined as an evidence-based teaching strategy in which nursing students collaborate in small groups to complete tasks that support one another's learning processes and achieve shared goals (Abramczyk & Jurkowski, 2020).

Cooperative learning offers nursing students a number of advantages, including the chance to collaborate with peers at varying academic levels, exchange ideas and perspectives to solve problems that can improve their academic achievement, build self-confidence and self-esteem through active participation in the learning process, and develop decision-making and communication skills. As a result, nursing students are better equipped to function more efficiently in a complex, interdependent work environment (Keramati & Gillies, 2022).

Cooperative learning training program is a planned process designed to promote inquisitive learning levels of nursing students, so they become more knowledgeable and competent in nursing subjects, skillful in nursing practice with higher critical thinking dispositions. Additionally, Cooperative learning promotes active engagement, critical thinking, and peer tutoring, which contribute to improved learning outcomes (Abraham, 2021; Khan, Noreen, & Al Hussaini, 2024). Academic achievement is considered one of the most significant indicator of success in academic settings and influenced by students' participation in the learning process that operationalized through quantitative metrics like grades, test scores, completion rates and acceptance into further program of the study. Academic achievement refers to students' success of pre-determined learning goals that were expected to achieve in their learning attempts. Additionally, measuring academic achievement reflects individuals' past performance results and presents key information about students' mastery in academic activities and clinical or technical skills (Fernandez-Perez & Martin-Rojas, 2022; Xu, Zhao, Zhang, Liew, & Kogut, 2023). Cooperative learning was positively correlated with nursing students' academic achievement as it seem that nursing students faced many challenges during their study and CL can help students overcome these challenges. Thus, Scholars suggest that cooperative learning should be used 60 to 80% of the time in most classrooms (Mahmoud, 2017). Therefore, our study aimed to assess the effect of cooperative learning training program on nursing students' academic achievement and their attitude.

Research hypothesis

The academic achievement of nursing students in the study group who learned by cooperative learning method will be significantly better than those in the control group who learned by traditional methods.

1. Methods

1.1. Study Design and Setting

A quasi-experimental design (posttest) only was used to achieve the aim of the current study from the mid of February 2023 to end of May 2023 in faculty of nursing at Zagazig University.

1.2. Sample

Simple random sample of the fourth year nursing students from the academic year 2022 - 2023, they registered in the nursing administration course and the total number of nursing students were 320; the required sample size was consisted of 82 nursing students. They were divided into two equal groups; 41 study group (learned by cooperative learning) and 41 control group (learned by traditional method).

Inclusion criteria

Fourth year nursing students who studied the nursing administration course, with different academic levels, and agreed to participate in the study.

Exclusion criteria: Nursing student in another academic grade, nursing student who studied another course.

1.3. Sample size calculation

The sample size was estimated at confidence interval 95% according to the program Epi Info version 6. A simple random sampling technique used and the sample was split into study and control group randomly through writing the names of all students on papers and placing them in a container then they were picked up randomly until the needed sample size from each group was obtained.

1.4. Tool of data collection

Three tools were used to collect the necessary data.

Tool I: Self-administered Questionnaire: The researchers constructed a questionnaire sheet after reviewing the related literature. It included the personal characteristics of students as age, gender, marital status.

Tool II: Students' clinical evaluation practical checklist: was developed by Nursing Administration department based on related literature to evaluate nursing students' achievement regarding five topics in clinical part of nursing administration course for both control and study groups: (1) kardex: consists of 33 steps, (2) functional method of assignment: consists of 12 steps, (3) supervision: consists of 19 steps, (4) shift report consists of 18 steps, (5) paired comparison method of performance appraisal consists of 14 steps. Each step was to be checked under done or not done, respectively scored 1 and 0.5 for some items and 0.25 for others and 0. The total score was 50. Then students' achievement scored according to the scoring system at the faculty of Nursing, Zagazig University, as follows

- If the score range from 85% to 100% is excellent degree.
- If the score range from 75% to less than 85% is very good degree.
- If the score range from 65% to less than 75% is good degree.
- If the score range from 60% to less than 65% is pass degree.
- If the score Less than 60% is poor degree.

Tool III: Attitude Scale of nursing students toward Cooperative Learning: developed by Xuan, L. (Xuan, 2015) to assess nursing students' attitude toward cooperative learning in the study group. It consisted of 23 items divided into three dimensions as follows; Group members understanding through cooperative learning, Group members' communication through cooperative learning, and Group members learning experience through cooperative learning. The response of the statements were measured by using a three point Likert Scale ranged from (2) agree, (1) neutral and (0) disagree. It is Cronbach α was 0.919.

For each item, the scores were summed-up and giving a mean score for the item. These scores were converted into a percent score. Total attitude score was calculated as follows; **Positive attitude:** if the score $\geq 75\%$ of total attitude score

Negative attitude: if the score $< 75\%$ of total attitude scores

1.5. Cooperative learning training program(Field work):

The cooperative learning training has been developed for the fourth year nursing students who enrolled in the practical nursing administration course. The objective of the cooperative learning training used as teaching method by using different strategies such as Jigsaw strategy and think-pair-share to learn the practical part of nursing administration course that influence on their academic achievement score.

1.5.1. Preparation phase

In the pre training phase, the researcher assigned readings by reviewing the theoretical and empirical literature of national and international resources concerning the topic of the study using textbooks, articles, magazines, research, and internet search in order to get a clear picture of all aspects related to the study to obtain the data collection tools. Then the objectives of the cooperative learning training were stated and the content was designed. The researcher Prepared cooperative activities in the form of real format situations that covered 5units that mentioned above and taught in practical part of nursing administration course out of 10 units as these units are the most important skills in practical part of nursing administration course.

1.5.2. Implementation phase:

The researcher conducted the training program through 8 sessions. These sessions were lasted for 13hours (3 hours theory and 10 hours practical) each session was taken one hour for theoretical session and two hours for each practical session according to pre-designed schedule of nursing administration course. The researcher taught cooperative learning training in their classes, two days per week (Tuesday & Thursday). The content of the theoretical sessions through 3 session that included: knowledge about introduction to the program, definition of cooperative learning, the skills needed in cooperative learning, methods and strategies of cooperative learning, the role nursing students in cooperative learning, advantages &disadvantages of cooperative learning, and barriers in implementing cooperative learning and how to overcome it.

The practical sessions involved the practical part to implement cooperative learning as teaching method and consists of 5 sessions each session lasted 2 hours for five topics in the practical part of nursing administration course. The researcher started to assess students' personal characteristic using Self-administered Questionnaire tool, it took 5 minutes to complete the tools. Before starting, an illustrated educational booklet prepared by the researcher about constructing cooperative learning was offered to each the nursing students. The researcher act as facilitator by assigned nursing students randomly into small groups 8 groups each group consisted of 5 students. Once they divided into groups, students selected the name of each group, recorded the name of the group and the names of each member in groups, accordingly, and every group selected team leader and who record the answers. The researcher distributed the applications exercises that handled by cooperative learning. Each group worked at the same time in the educational class, the students in each group started to work together; they motivated each other to learn the assigned topic. Finally, each group select a leader to explain for entire class by using white board for illustration answers to all groups. Feedback was given at the beginning of each session about the previous one and at the end of each session about the current session.

1.5.3. Evaluation phase:

The evaluation of the effectiveness of the training program (posttest) was done immediately after completion the program. Assessing nursing students' achievement scores regarding the main five topics that used in the training program for both study and control groups, and assessing nursing students' attitude towards training program in the study group.

Ethical Considerations:

The study was approved by the Ethics Research Committee at the Faculty of Nursing; Zagazig University. The researcher explained the nature, purpose, and benefits of the study to nursing students in the study sample. Oral and written consent were taken from subjects and reassured them about the confidentiality and anonymity of the study. They were informed about their right to refuse or withdraw from the study at any time without giving a reason.

Statistical analysis

All data were collected, tabulated and statistically analyzed using IBM Corp. Released 2015. IBM SPSS Statistics for Windows, Version 23.0. Quantitative data were expressed as the mean \pm SD & median (range), and qualitative data were expressed as number & (percentage). Percent of categorical variables were compared using Chi square test or Fisher Exact test when appropriate. Marginal Homogeneity Test was used to compare between paired ordinal data. Pearson' correlation coefficient was calculated to assess relationship between various study variables, (+) sign indicate direct correlation & (-) sign indicate inverse correlation, also values near to 1 indicate strong correlation & values near 0 indicate weak correlation. All tests were two sided. P-value < 0.05 was considered statistically significant, p-value \geq 0.05 was considered statistically insignificant.

2. Results

2.1. Personal characteristics of studied groups

Table 1 shows personal characteristics of nursing students, it is clear from the table that, nursing students in the study and control groups were in the age group 22 years old (48.8% & 51.2% respectively). As regards gender of nursing students in the study and the control groups were females (51.2%). In addition, the majority of nursing students in both groups were single (87.8% & 85.4% respectively).

Table (1): Personal characteristics of nursing students (n=82)

Personal Characteristics	Study group (n=41)		Control group (n=41)		χ^2	p-value
	No.	%	No.	%		
Age in years						
21 year	16	39.0	18	43.9	2.067	0.356
22 year	20	48.8	21	51.2		
23 year	5	12.2	2	4.9		
Mean \pm SD	21.73 \pm 0.67		21.54 \pm 0.59			
Gender						
Males	20	48.8	20	48.8	0.443	0.51
Females	21	51.2	21	51.2		
Marital status						
Single	36	87.8	35	85.4	0.11	0.75
Married	5	12.2	6	14.6		

2.2. Comparison of nursing students' academic achievement in the study and control groups

Table 2 clarifies the nursing student's achievement in the study and control groups regarding five the practical units of nursing administration course. It is clear from the table that there was a highly statically significant differences between study and control groups in all practical areas (p=0.0001). In addition, the total mean score of achievement in the study group was higher than the nursing students in the control group (46.9 \pm 2.01 & 35.4 \pm 3.6 respectively).

Table (2): Comparison of study group and control group regarding achievement score (n.82)

Practical topics	Achievement level				χ^2	p-value
	Study group (n.41)		Control group (n.41)			
	No	%	No	%		
Kardex						
Excellent degree	39	95.1	6	14.6	55.2	0.0001*
Very good degree	2	4.9	6	14.6		
Good degree	0	0	15	36.6		
Pass degree	0	0	11	26.8		
Poor degree	0	0	3	7.3		
Mean \pm SD	9.56 \pm 0.58		7 \pm 1.1			
Assignment						
Excellent degree	35	85.4	14	34.1	23.76	0.0001*
Very good degree	6	14.6	19	46.3		
Good degree	0	0	6	14.6		
Pass degree	0	0	2	4.9		
Mean \pm SD	9.25 \pm 0.67		8.07 \pm 0.89			
Shift report						
Excellent degree	36	87.8	21	51.2	20.1	0.0001*
Very good degree	5	12.2	4	9.8		
Good degree	0	.0	11	26.8		
Poor degree	0	.0	5	12.2		
Mean \pm SD	9.3 \pm 0.66		7.88 \pm 1.38			
Supervision						
Excellent degree	36	87.8	3	7.3	58.6	0.0001*
Very good degree	5	12.2	8	19.5		
Good degree	0	.0	9	22.0		
Pass degree	0	.0	12	29.2		
Poor degree	0	.0	9	22.0		
Mean \pm SD	9.31 \pm 0.7		6.5 \pm 1.46			
Performance appraisal						
Excellent degree	35	85.4	3	7.3	61.3	0.0001*
Very good degree	6	14.6	4	9.8		
Good degree	0	.0	10	24.4		
Pass degree	0	.0	5	12.2		
Poor degree	0	.0	19	46.3		
Mean \pm SD	9.46 \pm 0.74		5.98 \pm 1.4			
Total achievement Level						
Excellent degree	34	82.9	3	7.3	53.68	0.0001*
Very good degree	7	17.1	11	26.8		
Good degree	0	.0	16	39.0		
Pass degree	0	.0	9	22.0		
Poor degree	0	.0	2	4.9		
Mean \pm SD	46.9\pm2.01		35.4 \pm 3.6			

χ^2 :Chisquare test, * **p<0.05**: significant

Table 3 shows the relation between nursing students' achievement score and their personal characteristics in study group. It is clear from the table, that there was a highly statistically significant relation between nursing students' achievement score and their personal characteristics regarding sex at p-value = 0.005, the highest percentage of female nursing students (100%) had excellent degree.

Table (3): Relation between nursing students' achievement score in study group and their personal characteristics

Personal characteristics	Achievement score in study group		n	χ^2	p-value
	Excellent n.34	Very good n.7			
Age per years					
21.00	13(81.8))	3(18.2)	16	0.12	0.94
22.00	17(85.0)	3(15.0)	20		
23.00	4(80.0)	1(20.0)	5		
Sex					
Males	14(66.7)	7(33.3)	21	8.04	0.005*
Females	20(100.0)	0(0)	20		
Marital status					
Single	29(80.6)	7 (19.4)	36	1.17	0.279
Married	5(100.0)	0(0)	5		

χ^2 = Chi square test, no significant $p > 0.05$, significant $*p < 0.05$

Figure 1 portrays that the highest percentage of nursing students in the study group had an excellent level in all units of practical part of nursing administration course (82.9%). While the nursing students in the control group had good and very good levels (39%, 26.8% respectively).

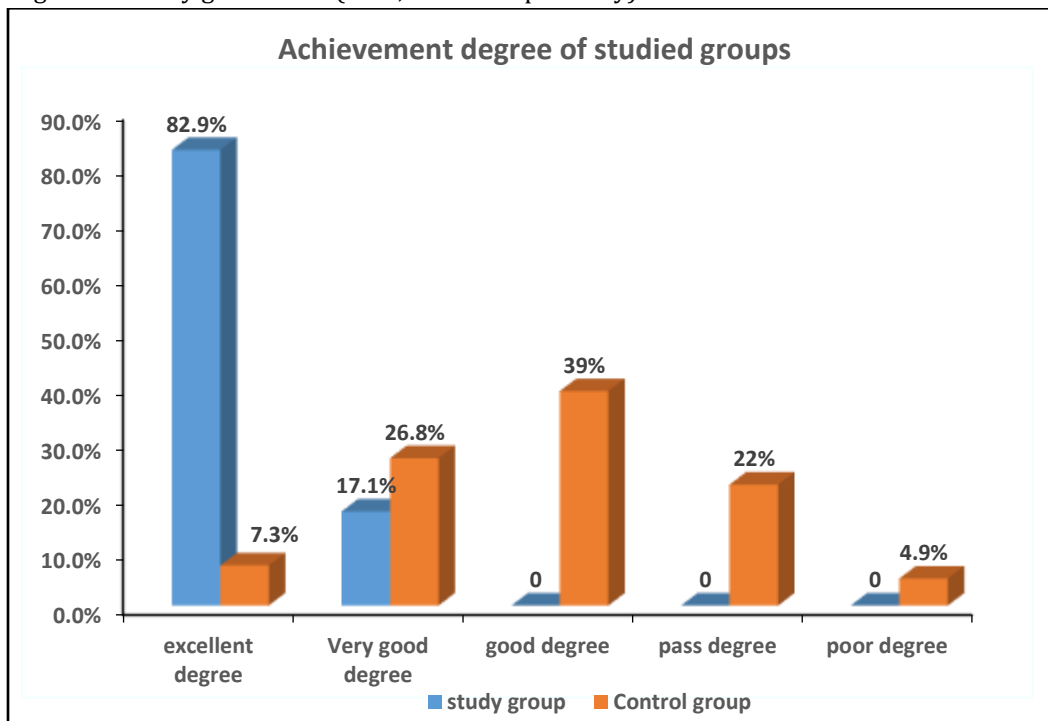
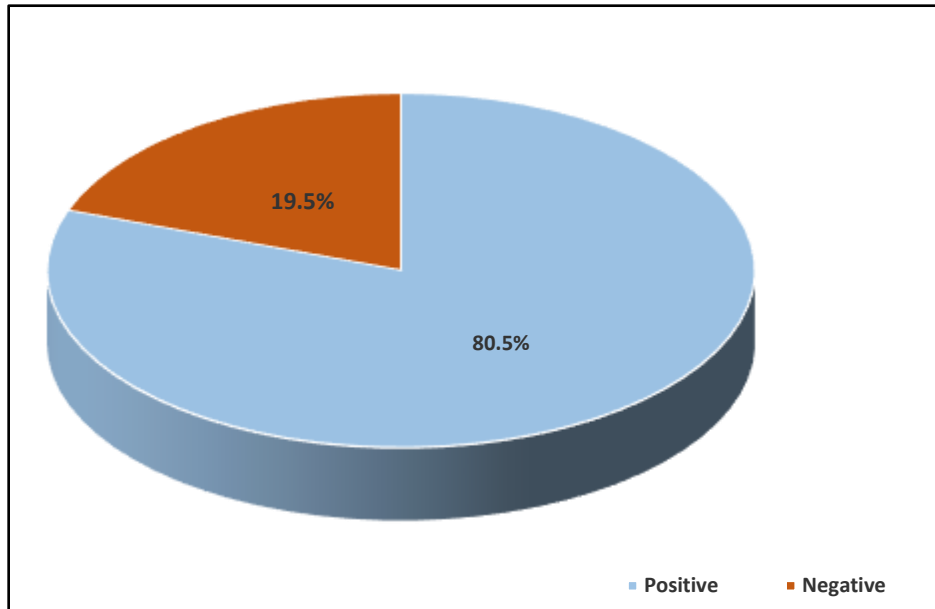


Figure 1. Comparison between study and control groups regarding achievement score after implementing the training program.

Figure 2 illustrates the nursing students' attitude toward cooperative learning training program in the study group. This figure reveals that the majority of nursing students had positive attitude toward training program (80.5%). While the least of them had negative attitude (19.5%).



Positive attitude $\geq 75\%$, Negative attitude $< 75\%$

Figure 2. Nursing students' attitude toward cooperative learning in the study group (n.41).

Table 4 shows the relation between nursing students' attitude toward cooperative training program in the study group and their personal characteristics. This table indicates that there was a highly statistically significant relation between nursing students' attitude toward cooperative training program and their personal characteristics regarding sex ($p = 0.003$).

Table (4): Relation between nursing students' attitude toward cooperative learning training program in study group and their personal characteristics

Personal characteristics	Nursing students attitude about cooperative learning after training program				n	χ^2	p-value
	Positive n.33		Negative n.8				
	No.	%	No.	%			
Age per years							
21.00	14	87.5	2	12.5	16	0.885	0.64
22.00	15	75.0	5	25.0	20		
23.00	4	80.0	1	20.0	5		
Sex							
Males	13	61.9	8	38.1	21	f	0.003*
Females	20	100.0	0	.0	20		
Marital status							
Single	28	77.8	8	22.2	36	f	0.56
Married	5	100.0	0	.0	5		

χ^2 : Chisquare test, F:Fisher exact test, $p>0.05$: no significant, * $p<0.05$: significant

Table 5 & Figure 3 portrays the scatter dot positive correlation between nursing attitude and Academic achievement score at post intervention in study group. There was statistically significant correlation between attitude score, and academic achievement scores ($r=.531$ at p value= 0.0001).

Table (5): Correlation matrix between Academic achievement score and attitude at post intervention in study group

Variables	Attitude	
	r	p
Attitude score	1	
Academic achievement score	0.531**	0.0001

Pearson' correlation coefficient (r) ** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

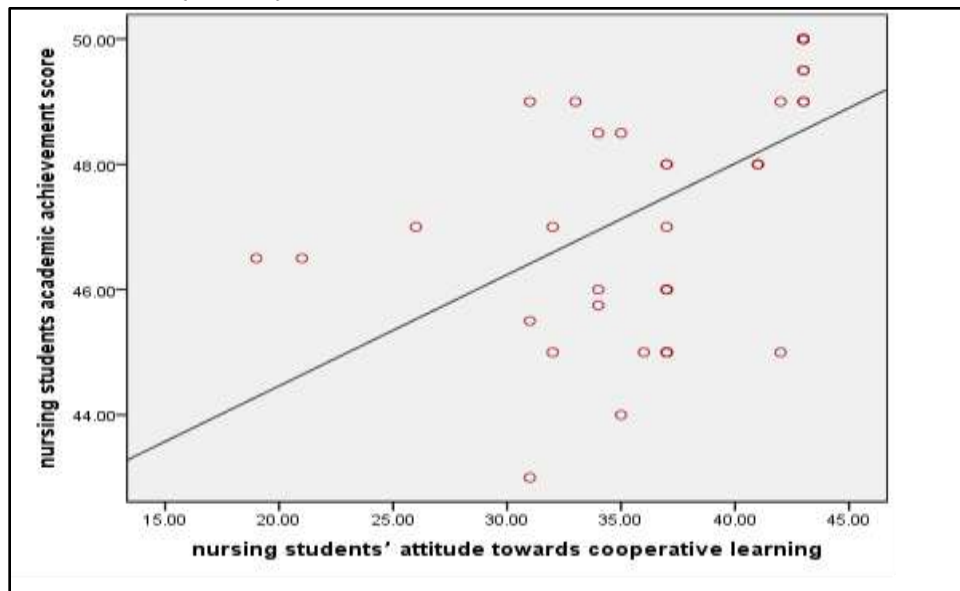


Figure 3. Scatter dot positive correlation between nursing attitude and Academic achievement score at post intervention in study group

3. Discussion

The results of the current study revealed that the total mean scores of achievement are higher in the study group than in the control group with a highly statistically significant difference in all units of achievement.

These findings could be explained by the fact that practice of the learning through the traditional teaching technique lead to concrete, dualistic thinking and surface learning, while, in the cooperative learning method improves the ability of the students to work hard collaboratively and individually, with shared learning experiences to organize and construct knowledge and acquire multiple sets of skills during their performance in essence, they obtain immediate instruction and feedback about the right performance through debriefing session which helps them to retain the knowledge, skills learned, and become more achievers than control group. This finding justifies the research hypothesis, which stated that nursing students' academic achievement will be improved after implementation of cooperative learning training program

These findings were consistent with the studies conducted by (Khan et al., 2024) in United States and study of (Vinod Kumar C S, Kalasuramath, Reddy, & Narayan Reddy, 2023), in India they found that mean scores and absolute achievement level were high in cooperative groups. Also, the study done by (Abobaker, Alamri,

Alshaery, & Hamdan-Mansour, 2023) in Egypt and in Iran by (Keramati & Gillies, 2022) and they revealed that there was a significant difference in mean scores of academic achievements between the control and intervention groups. Again the study of (Mahmoud, 2017) in Saudi Arabia reported that there was statistical significant difference between the pretest and post-test mean scores of nursing students' a deeper understanding of the management concepts learned in nursing administration course.

Furthermore, the current results were in the same line with the study conducted by (Aydin & Ince, 2023), in Turkey and by (Heydari, Yavari, & Yazdanian, 2023) in Iran as a result of the study, it was seen that the use cooperative learning methods in nursing education increased academic achievement level.

In contrast, these findings were not matched with the study that conducted by (Park, 2010), in Korea to identify the effectiveness of the Jigsaw cooperative learning in a facilitative communication class of nursing students and reported that the achievement between the two groups was not significantly different. In addition, the study conducted by (Doymus, Karacop, & Simsek, 2010) could not find any significant impact on academic achievement in a study group.

The present findings of the study revealed that the highest percentage of nursing students in the study group had an excellent level in all units of practical part of nursing administration course. While the nursing students in the control group had good and very good levels. This may be due to the guided interaction with cooperative learning training can promote students' conceptual understanding of the content included in real format situations that covered the topics of clinical part of nursing administration course that enhance the student discussion, freely expression viewpoints, enhancing critical thinking skills, promoting problem solving skills and enhance students' clinical reasoning and critical thinking that lead to higher academic achievement as learning out comes than traditional lecture method.

As well as, in traditional method, the assistant lecturers and demonstrators in nursing administration department possess the skills and knowledge; this due to continuous training and refreshing lectures regarding clinical teaching that provided to them before dealing with students in clinical area and class. Also there is a systematic weekly meeting designed by the lecturer who is responsible for practical part of nursing administration course who stress on one nursing management skill during the weekly seminar with all assistant teaching staff, these factors contributed that the students in the control group had very good and good levels in all units of practical part of nursing administration course.

The current finding agreed with the study in Egypt by (Ali EL-refaie, F., Farouk, O. E. S., Mousa, S., & Mustafa, 2023), (Bekhatroh Rashed, S. Abu Almakarem, Galal Mohamed Kahlil, & A. Ahmed, 2023) and (Farrag, Ahmed, & Gouda Nasr, 2022) and the results showed that students' theoretical achievement scores in maternity were higher among study group compared to control group and study group achieved higher rate in the excellent grade. As well, The current finding was matched with the study conducted by (Abdel-Mordy, Sabry, & Abdelrazek, 2022), in Egypt, and reported that jigsaw-learning strategy is effective in enhancing community nursing students' attitudes and achievement level during geriatric health nursing course.

As regards nursing students' attitude toward cooperative learning in the study group. The present study findings showed that the majority of nursing students had positive attitude toward training program. While the least of them had negative attitude. The explanation of these results may be due to nursing students in the study group viewed that cooperative learning was new teaching method to remember materials well after application real format exercises that used in CL. Furthermore, it helps them to retain information for longer time and improves deep learning, creates enjoyable learning through interaction with their peers by promoting peer tutoring for enhancing group discussion over the course and build bridges between knowledge and practice.

These results were consistent with (Abobaker et al., 2023) in Egypt, who found that the highest percentage of nursing students had preferred this method for teaching. In addition, these findings were in agreement with the study by (Bächtold, Roca, & De Checchi, 2023) in France and found that most students had a positive perception of group work. As well as, these findings were in agreement with the study by (Zhang & Chen, 2021)

in china, and in Iran by (Azizi, Bagheri, karimi moonaghi, & Mazloum, 2020), and they found the highest percentage of nursing students had positive attitude towards implementing the cooperative learning.

On the contrary to this result, the study conducted by (SARIKAYA & EĞMİR, 2023) in turkey, to determine the effect of cooperative learning method on students' academic achievement, attitudes, and critical thinking dispositions, and concluded that the cooperative learning method was not effective in increasing the learning. Concerning of the relation between academic achievement and personal characteristics of nursing students, the present findings showed that there was a highly statistically significant relation between nursing students' academic achievement level in study group and their personal characteristics regarding sex and the highest percentage of females had excellent degree. This may be due to females' character had feeling of responsibility to achieve academic tasks. Furthermore, female students have better motivation for intrinsic goal orientation than males, which indicates that they pursue their nursing study due to their interest, which seeks challenge, curiosity, and mastery. This is in concordance with the nature of female on masculinity were to be dominant, thrill seeking, and becoming provider or protector for their family.

The findings disagreed with the study by (Ali EL-refaie, F., Farouk, O. E. S., Mousa, S., & Mustafa, 2023) and the study by (Ibrahiem, Gohar, & Fathalla, 2020) in Egypt, and they found there were no statically relation between achievement level and personal characteristics, but there was the relation between educational level of the students and their achievements. In contrast, these findings not matched with the study of (Ekeke & Telu, 2017) in Nigeria to determine how the cooperative learning and self-regulated learning styles impact on students' achievement, and found that significant relation in achievement scores between the male and female students.

The current findings of this study showed that there was a highly statistically significant relation between nursing students' attitude toward cooperative training program in study group and their personal characteristics regarding sex and females were the highly significant relation. This may be due to female students' often enjoys with cooperative learning because it fosters social interaction by working in groups, provides a supportive and inclusive environment, enhances their cognitive skills enhancing problem solving abilities, communication skills, and boosts high level of motivation.

This study disagreed with study conducted by (Amer, M, S., El-Sayed, H, S., & Mahmoud, I, 2022) in Egypt, and found that there was no statistical significant relation between intern nurses' total cooperative learning attitude levels and their personal characteristics thorough the program phases. Concerning correlation between nursing students' academic achievement, and attitude scores of in the study group, the findings of the current study revealed that there was a statistically significant positive correlation between nursing students' academic achievement, and attitude scores in the study group after the program implementation. This may be attributed to the nature of cooperative learning method that encourages students to generate the highest number of ideas that are varied and creative in a spontaneous and free open climate that doesn't limit the freedom of launching ideas that foster the deep learning level and taught the nursing students how to well-regulate their own learning, managed time and efforts effectively. .Furthermore, through cooperative learning strategy the nursing students can take control of their learning, plan, set their learning goals, and monitor progress which in turns better academic success.

These findings of current study were agreement with a study carried out by (Keramati & Gillies, 2023) in Iran and by (Abobaker et al., 2023) in Egypt, and (Vinod Kumar C S et al., 2023) in India, and they reported that there was a statistically significant correlation between cooperative learning and nursing student academic achievement in the study group after implementation the training program. Likewise the findings go on the same line with the study conducted by (Juwita, Sari, & Septianingrum, 2017) Indonesia and reported that, there was a significant correlation between TEAM GAME tournament (TGT) of cooperative learning method application and learning achievement among nursing students, especially in learning about nervous system anatomy and physiology.

4. Conclusion

Based on the findings of the present study, the hypotheses of the current study was achieved, as nursing students' academic achievement in practical part of nursing administration course were higher scores among study group than those in control group who learned by traditional method immediately after intervention with a statistically significant difference between all units of achievement Furthermore, nursing Students in the study group had a positive attitude toward cooperative learning method.

Recommendation: Based on the findings of this study, the following recommendations are suggested:

- Utilize cooperative learning as a teaching method in all nursing academic courses (theory & practice)
- Faculty staff members receive training and support to acquire skills in adapting cooperative learning and group facilitation techniques.
- Professional development programs should be focused on instructional techniques for facilitating group work, promoting positive interdependence, and fostering effective communication and collaboration among students.
- The faculty management should provide support and resources to sustain the implementation of cooperative learning, which is an important aspect of success.
- Nurse educator should implement cooperative learning in a way that ensures equitable participation and supports the diverse needs of all students.

Conflict of interest

The authors confirmed that there is no any conflict of interest.

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