Effect of Utilizing Teaching Styles on Nursing Students' Learning Outcomes

Amira Ali Mohammed [1,2], Reda Abd El-Fatah Abo Gad[3], Maha Eid Shokir[4], Aml Hamdy Abo Ramadan [5]

[1] Master student of Nursing Administration, Faculty of Nursing, Tanta University, Egypt.

[2] Teacher at Nuursing Institute in Kafr El Sheikh,

[3] Prof of Nursing Administration, Faculty of Nursing, Tanta University, Egypt.

[4,5]Assistant prof of Nursing Administration, Faculty of Nursing, Tanta University, Egypt.

Corresponding Author: PG_95288@nursing.tanta.edu.eg

Abstract

Background: Teaching style significantly affects education quality, especially in nursing. Nursing students' learning outcomes rely on how effectively teachers apply and adapt teaching styles to meet learners' needs. **Aim:** Determine the effect of utilizing teaching styles on nursing students learning outcomes. **Design:** Quasi experimental research design used in the study. **Setting:** the study was conducted at Technical Health Institute at Tanta and Kafr El-Sheikh. **The subject:** consisted of 48 nursing teachers and 400 nursing students. **Tools:** Four tools were used; Tool I: Teaching Styles' Knowledge Structured Questionnaire, Tool II: Teachers' Teaching Styles Practices Observational Checklist, Tool III: Nursing Students' Perception Regarding Teachers' Teaching Styles Questionnaire and Tool IV: Learning Outcomes Structured Questionnaire were used to collect the data. **Results:** pre-program, majority of nursing teachers (91.3%) had low knowledge levels regarding teaching styles, which significantly decreased at immediate post-program, to only (6.3%) and slightly increasing to (16.7%) after 3 months of program. Also, the minority (4.2%) of them had satisfactory level of practice related it. For nursing students, low percent (0.5%) had a high perception of teaching styles pre-program, which increased to the majority (84.0%) after 3 months of program. Additionally, none of them had satisfactory level regarding learning outcomes pre-program, improving to about three-quarters (73.5%) after 3 months of program. **Conclusion:** Implementation of an educational program about teaching styles had a significant improvement in nursing teachers' knowledge, practice and nursing students' perception. **Recommendations:** Provide continuous training programs for nursing teachers' focusing on diverse teaching strategies and effective classroom management techniques.

Keywords: Educational program, learning outcomes, nursing students, nursing teachers, teaching styles

Introduction

Teaching is one of the most respected professions in the world. Teaching is an activity that guides nursing students to learn. The various methods used in teaching are the "means" to achieve the teaching objectives **(Chen, Zhang, & Lee, 2021).** Teachers not only use appropriate techniques to stimulate and encourage nursing students to think and learn automatically, but also to determine the teaching methods to be adopted depending on the nursing students interest in learning, the content of the abilities and materials, and even the teaching environment **(Ali & Thomas, 2024).**

Teaching styles are the general principles, educational, and management strategies for classroom instruction. Different teaching styles may suit different subjects, nursing students, and learning objectives **(Andrews, 2024).** Some of the most common teaching styles are expert, formal authority, personal model, facilitator, and delegator. The expert teaching style; the teacher acting as a knowledge authority. The teacher demonstrates deep subject mastery and provides detailed information, structured content, and high academic expectations. It is effective for teaching complex or technical subjects but may limit student engagement if not balanced with interactive methods (**Ahmed, El-Sayed, & Farag, 2022).**

The formal authority; the teacher is the main source of information and delivers long lectures or presentations. This style is suitable for students who require memorization of facts, such as history, but it may not engage nursing students or accommodate their individual needs (**Zhang & Chen, 2021)**. The personal model teaching style; the teacher demonstrating behaviors and skills for students to observe and imitate. The instructor serves as a role model, showing how to think, organize, and perform tasks. It is especially effective in clinical or skill-based settings, such as nursing education, where modeling correct behavior is essential **(Smith & Doe, 2023).**

The facilitator style; the teacher promotes self-learning and helps nursing students' develop critical thinking skills and retain knowledge through exploration and discovery. **(Brown & Green, 2019).** The Delegator style; the teacher assigns tasks and projects to nursing students and lets them work in groups or individually. The teacher acts as a consultant and observer, providing feedback and support when needed. This style is well-suited for subjects that require lab work, peer feedback, or creative expression, such as chemistry, biology, debate, or writing, but it may erode the teacher's authority or control **(Smith & Doe, 2023).** Teachers may switch between styles depending on the situation. Considering different teaching styles is important because everyone has a different learning process If teachers want to engage nursing students, it is important to consider different approaches that will resonate and help get through to them **(Al-Qahtani, & Al-Mazroa 2023).** In addition, depending on what the teacher is teaching, different subject matters are better suited for

specific teaching styles. Teachers need to be adaptable and try different teaching styles to find an approach that will reach each of their nursing students' needs and achieve learning outcomes **(Karimi Mirzanezam, 2024).**

Learning outcomes are measurable statements that define what learners are expected to know, understand, and demonstrate after completing a learning experience. They guide the selection of teaching strategies, learning activities, and assessment methods, ensuring alignment with educational objectives **(Burgess, van Diggele, & Mellis, 2020).** In nursing education, clearly defined outcomes help students recognize the value of content and the competencies they are expected to achieve. Learning outcomes include several dimensions. Knowledge involves the comprehension of concepts and principles within the discipline. Communication refers to the effective exchange of ideas through speaking, writing, and listening **(Oleson, 2014).** The student's role emphasizes self-directed learning, goal-setting, and responsibility **(Sajadi, 2021).** Accountability reflects students' commitment to demonstrating progress and responding to feedback **(Burgess, et al., 2020).**

Teaching and learning outcomes relate to how structured environments foster engagement and achievement. Organization involves managing time, resources, and information to meet learning goals **(Bastami, Shahrbabaki, & Cheraghi, 2022).** Finally, caring captures empathy, compassion, and ethical behavior, which are foundational in nursing practice **(Salem & Said 2021).**

Significance of the study:

Effective learning depends on the teacher's ability to maintain the interest that brought nursing students to the course in the first place. Teachers also must recognize that not all nursing students' are learned by the same styles. Teaching styles help nursing students learn more easily, remember information longer, think more positively, achieve academic goals quickly, and utilize information effectively **(Iqbal, & Arain 2024).** Mismatched teaching styles can lead to poor performance and outcomes, challenges, and uncomfortable learning experiences. Thus, identifying teachers' teaching styles is essential for providing successful learning outcomes **(Sajadi et al., 2021).**

Aim of the study

Determine the effect of utilizing teaching styles on nursing students' learning outcomes.

Research hypothesis:

- It is expected that the knowledge and practices of teachers' teaching styles will be improved.
- Nursing students' learning outcomes are expected to be improved after utilizing different teaching styles

Subject and method:

Study design:

Quasi experimental study design was utilized to accomplish the aim of the present study.

Setting:

The study was conducted at Technical Health Institute at Tanta and Kafr El-Sheikh that affiliated to Ministry of

Health and Population including: medical-surgical, obstetric and gynecological, pediatric, psychiatric and mental health, community health nursing, and nursing administration department.

Subjects:

The study subjects were consisted of two groups; all available (N=48) nursing teachers who are worked in the previously mentioned settings and accepted to participate in the study; Tanta Technical Health Institute (n= 17) and Kafr El-shaikh (n= 31).

A convenience sample of nursing students' (n= 384) who are enrolled in the previously mentioned settings. The total study sample was calculated using the Epi. Info. Microsoft to ensure obtaining an adequate and representative size, where N= population size (2243), Z= confidence level at 95% (1.96), d= margin of error proportion (0.05). The sample size was increased to 400 to compensate for missed information and improve quality of data of the study.

Tools

Four tools were used to accomplish the aim of this study including:

Tool 1: Teaching Styles' Knowledge Structured Questionnaire

This tool included two parts namely;

Part (1): Teachers' Personal and work related data teacher's personal characteristics included; age, gender, marital status, educational level, department, years of experience and previous training program

Part (2): Teachers' knowledge questionnaire regarding teaching styles: This tool was developed by researcher based on related literature (**Grasha 2006, El-Bastwese 2020, Alghamdi 2022).** It used to assess teachers' knowledge about teaching styles. It included 60 questions about teaching styles and learning outcomes in form of true and false (24), matching (5), and multiple choice (31).

Scoring system:

Teachers' responses were measured on two points ranged from 0-1, where (one) as correct and (zero) as incorrect responses. The total score was calculated by cut-off points and summing scores of all categories. The total score represented varying levels as follows:

- High knowledge level ≥ 80% (equal to 49-60)
- Moderate knowledge level 60 - < 80% (equal to 36-48)
- Low knowledge level ≤ 60% (equal to 0-35)

Tool II: Teachers' Teaching Styles Practices Observational Checklist

This tool was developed by the researcher based on related literatures (**Mohanna 2007, umar 2016, Gafoor 2016, Alhirtani 2020**). to assess practices of teachers' teaching styles. It included 56 items. It was divided at five dimensions as following; the expert style (10 items), the formal authority style (11 items), the personal model style (13 items), the facilitator style (13 items), and the delegator style (9 items).

The scoring system:

Teachers' responses were measured on a two point (0-1) where done was scored

as (1), Not done was scored as (0). The total score was calculated by cut off points and summing scores of all categories. The total score represented varying levels as follows:-

- Satisfactory practice ≥ 80%.
- Unsatisfactory practice < 80%.

Tool (III): Nursing Students' Perception Regarding Teachers' Teaching Styles Questionnaire.

Part (1): Nursing students' personal characteristics included age, gender, marital status, qualification and place of residence.

Part (2): Nursing students' perception regarding teaching styles:

This tool was developed by the researcher based on related literatures (**Mohanna 2007, Umar 2016, Gafoor 2016,& Alhirtani 2020)** This tool was used to assess nursing students' perception regarding their teachers' teaching styles. It included the same five dimensions as mentioned above in tool II.

Scoring system:

- Nursing students' responses were measured on a five Likert scale ranged from1 to 5 where strongly agree (5), agree (4), neutral (3), disagree (2) and strongly disagree (1). The total score was calculated by cut off points and summing scores of all categories. The total score was calculated and classified into:
- High level of perception ≥75%
- Moderate level of perception 60% - 75%
- Low level of perception ≤ 60%

Tool IV: Learning Outcomes Structured Questionnaire. This tool was developed by the researcher based on **Al-Kandari, (2009)** and related literatures **Hesbon (2016) & Razzaque (2021)** this tool was used to assess nursing students' perception regarding their learning outcomes. It included 43 items categorized into seven dimensions as follow; knowledge (8 items), communication (6 items), student role (5 items), accountability (6 items), teaching/learning (5 items), organization (7items), and caring (6 items).

Scoring system:

Nursing students' responses were measured on a five Likert scale ranged from1 to 5 where strongly agree (5), agree (4), neutral (3), disagree (2) and strongly disagree (1). The total score was calculated by cut off points and summing scores of all categories.

The total score was calculated and classified into:

- Satisfactory level ≥ 80%
- Unsatisfactory level < 80%

Method

1. An official permission clarifying the purpose of the study was obtained from Dean of the Faculty of Nursing and submitted to the responsible authorities of the selected setting included for Technical Health Institute at Tanta and Kafr El-Sheikh for permission to carry out the study.

2. Ethical consideration:

a) Approval of the Faculty of Nursing scientific research ethical committee was obtained, **(Code. No: 2023,6,264).**

b) All participants were informed about the purpose of the study.
c) An informed consent was taken from each participant in the study including the right to withdraw at any time.
d) The researcher ensured that the nature of the study didn't cause any harm for the entire sample.
e) Confidentiality and privacy was taken into consideration regarding data collection.

3. Tools of the study were developed by researcher based on related literature and translated into Arabic language.
4. Tools was tested for its content validity and relevance by jury of seven experts in the area of specialty and their comments was taken into consideration. The seven experts were three assistant professors from Nursing Administration department, Faculty of Nursing, Minofyia University, four experts of Nursing Administration, Faculty of Nursing, Tanta University where two professors and two assistant professors of Nursing Administration, Faculty of Nursing, Tanta University
5. The content validity index value tool (I) = 99.2%, tool (II) = 97.4%, and tool (III) = 97.4%, and tool (IV) = 98.9%
6. A pilot study was carried out on 10% of sample (5) of teachers and (40) of nursing students for testing clarity and sequence of items, applicability then needed correction was done. The time taken for completing each questionnaire was 20-30 minutes.
7. The reliability of tools was tested using Cronbach's Alpha Coefficient Factor, its value was tool (I) =0.970, tool (II) = 0.984, tool (III) = 0.976, and tool (IV) = 0.966.
8. Data collection was done within one academic year, starting from the beginning of October 2023 to the end of April 2024.
9. The educational program was conducted in four phases as follows: assessment phase, planning of the educational program phase, implementation of the educational program phase, and finally evaluation phases.

Phase I: Assessment

Pre-test was conducted to assess teacher's knowledge regarding teaching styles through filling tool (I), teachers' teaching styles practice through filling tool (II). Also, assess nursing students' perception toward teaching styles using and their learning outcomes through filling tool (III, IV).

Phase II: Planning of the educational program

The educational program was developed by the researcher.

Aim of the educational program:

Enhance nursing teachers' knowledge and practices after educational program about teaching styles.

General objectives of the educational program:

The educational program enhances the nursing teachers' knowledge about teaching styles and practice it effectively in their work as possible.

- Content of the educational program:

The nursing intervention program included six sessions for nursing teachers:

- First session: Teaching and learning process, teaching styles concepts, objectives and importance
- Second session: teaching styles characteristics, advantages and disadvantages of each style.
- Third session: Teaching styles approaches and nursing students' learning outcomes.
- Fourth session: Principles and factors affecting teaching styles.
- Fifth session: Teachers' practice regarding expert, formal authority, and personal model teaching styles.
- Sixth session: Teachers' practice regarding facilitator and delegator teaching styles, strategies to improve teaching styles.

- **Preparation of the educational program:**

The educational program included six sessions and was carried out in the previously mentioned setting. The total number of nursing teachers are (n=48) divided into six groups. Each group consisted of nearly eight nursing teachers. The content was presented at six days per group, three day per week. The duration of each session ranged from 30-45 minutes.

- **Teaching - Learning strategies:**

Selection of teaching methods were governed by studying the subject themselves and content of the program. The methods used in teaching the program were interactive lectures, group discussion, brainstorming, role-play, and scenario from work situations.

Teaching aids

PowerPoint Presentation (PPT), data show, and videos were included and utilized as teaching aids in the educational program.

- **Phase III: Implementation of the educational program**

- The educational program started by informing the nursing teachers about objectives of the educational program and building positive relationships to encourage their participation and more involvement in the program.

Phase IV: Evaluation of the educational program

- Post- test to assess nursing teachers' levels of knowledge regarding teaching styles immediately after implementation of the educational program through tool (I).
- Teachers' teaching styles practices observational checklist to assess their levels of actual practice regarding teaching styles three months later using tool (II).
- Assess nursing students' perception regarding teaching styles and learning outcomes three months later using tool (III, IV).

Statistical analysis of the data

The collected data were organized, tabulated and statistically analyzed using IBM SPSS software package version 20.0. (Armonk, NY: IBM Corp) Qualitative data were described using number and percent. Quantitative data were described using range (minimum and maximum), mean, and standard deviation. Significance of the obtained results was judged at the 5% level.

The used tests were

1. Student t-test for normally distributed quantitative variables, to compare between two studied groups.
2. F-test (ANOVA) for normally distributed quantitative variables, to compare between more than two groups.
3. Pearson coefficient to correlate between two normally distributed quantitative variables.
4. Cronbach's Alpha, reliability Statistics was assessed using Cronbach's Alpha test.

Results

Table (1) represents distributions of nursing teachers according to their personal and work related characteristics. The table reveals that nearly half (45.8%) of nursing teachers were at age <40 years with mean score age 43.98 ± 8.22. All (100%) nursing teachers were female. The majority (87.5%) of them were married. Regarding the educational level, around one-third (35.4%, 33.3%) of nursing teachers had Baccalaureate and Doctorate degree, respectively. Regarding the years of experience, nearly half (47.9%) of nursing teachers had ≥25 years of experience and more than one-third (31.3%) of them had 10 - <15 years with mean score 20.56 ± 8.08. Regarding previous attending training programs, all (100%) nursing teachers attending previous training programs, and the highest percent (75%) of them had attend training about method of teaching training course.

Table (2) Represents distributions of nursing students' according to their personal characteristics. The table reveals that more than three quarters (79%) of nursing students were at age <20 years, while 21% of them were at ≥20 years with mean score age 18.88 ± 0.83. More than half (54.8%) of nursing students were female, while more than two-fifths (45.3%) of them were males. The majority (91.7%) of them were unmarried. Regarding the academic year, the highest percentage (70.5%) of nursing students enrolled in second year. Regarding the last academic achievement, the highest percent (60.8%) of nursing students had excellence and about one-third (30%) of them had very good degree. Regarding the place of residence, more than half (57%) of nursing students were from rural, while more than two-fifths (43%) of them were from urban area.

Table (3) reveals mean percent score and ranking of nursing teachers' knowledge about each session per, immediate, and after 3 months of educational program. The table showed that there was statistically significant difference between mean score of nursing teachers' knowledge on all sessions pre, immediate, and after 3 months of educational program at p=0.001. Pre- educational program, the total mean percent score of nursing teachers' knowledge about teaching styles was 33.16 ± 14.19. While, it increased to 91.42 ± 11.36 at immediate, and reached to 76.84 ± 16.13 after 3 months of educational program.

Table (4) Illustrates mean percent of

nursing teachers teaching styles practice including per and after 3 months of educational program. The table showed that there was statistically significant difference between nursing teachers practice on all domains of teaching styles pre and after 3 months of educational program at p=0.001. Pre-educational program, the total mean percent score of nursing teachers' practice of teaching styles was 29.04 ± 14.10. While, it increased to 86.34 ± 11.99 after 3 months of educational program.

Table (5) Illustrates mean score, mean percent and rank of nursing students perception regarding teaching styles including per and after 3 months of educational program. The table show that there was statistically significant difference between nursing students perception on all domains of teaching styles pre and after 3 months of educational program at p=0.001. In addition pre- educational program, the total mean score of nursing students perception regarding teaching styles was 121.1 ± 31.59 with low mean percent (29.04 ± 14.10). While, it increased to 249.4 ± 26.86 with high mean percent (86.34 ± 11.99) after 3 months of educational program.

Table (6) Illustrates mean score, mean percent and rank of nursing students learning outcomes including per and after 3 months of educational program. The table show that there was statistically significant difference between nursing students learning outcomes domains pre and after 3 months of educational program at p=0.001. In addition pre- educational program, the total mean score of nursing students learning outcomes was (81.65 ± 25.91) with low mean percent (22.47 ± 15.07). While, it increased to 191.8 ± 23.33 with high mean percent (86.49 ± 13.56) after 3 months of educational program.

Figure (1) Illustrates that pre-educational program, majority (91.3%) of nursing teachers had low overall knowledge level which decreased immediately post program to only minor percent (6.3%) of them had low level, with slightly increase only to only (16.7%) of them had low level after 3 months of educational program.

Figure (2) Illustrates that pre-educational program, the minority (4.2%) of nursing teachers had satisfactory level of overall teaching styles practice. While, improved to be more than half (56.3%) of them had satisfactory level after 3 months of educational program.

Figure (3): Illustrates that pre-educational program, low percent (0.5%) of nursing students had high level of total perception regarding teaching styles which changed to be the majority (84.0%) of them had high level after 3 months of educational program

Figure (4): Illustrates that pre-educational program (0.0%) none of nursing students had satisfactory level of learning outcomes. While, improved to be about three quarter (73.5%) of them had satisfactory achievement level after 3 months of educational program.

Figure (5, 6): Revealed that there was statistically significant positive

correlation between nursing teachers' knowledge about teaching styles and their practice at pre and post 3 months of educational program.

Figure (7, 8) Revealed that there was statistically significant positive correlation between nursing students' perception about teaching styles and their learning outcomes at pre and post 3 months of educational program.

Table (1): Distributions of nursing teachers according to their personal and work related characteristics (N = 48)

Part one: Personal data	Teachers (n = 48)	
	No.	%
Age (years)		
<40	22	45.8
40-50	13	27.1
>50	13	27.1
Min. – Max.	30.0 – 57.0	
Mean ± SD.	43.98 ± 8.22	
Gender		
Female	48	100.0
Marital status		
Married	42	87.5
Unmarried	6	12.5
Education level		
Baccalaureate degree	17	35.4
Master degree	15	31.3
Doctorate degree	16	33.3
Years of experience		
10 - <15	15	31.3
15 - <20	7	14.6
20 - <25	3	6.3
≥25	23	47.8
Min. – Max.	10.0 – 33.0	
Mean ± SD.	20.56 ± 8.08	
Attend to previous training programs		
Yes	48	100.0
Training course#		
Method of teaching	36	75.0
Educational technology	19	39.6
Communication	12	25.0
Counseling	3	6.3
Administration	8	16.7

SD:

Standard deviation

Table (2): Distributions of nursing students' according to their personal characteristics (N = 400)

Part 1: Nursing students' personal data	Students (n = 400)	
	No.	%
Age (years)		
<20	316	79.0
≥20	84	21.0
Min. – Max.	15.0 – 21.0	
Mean ± SD.	18.88 ± 0.83	
Gender		
Male	181	45.2
Female	219	54.8
Marital status		
Married	33	8.3
Unmarried	367	91.7
Academic year		
First year	118	29.5
Second year	282	70.5
Last academic achievement		
Excellence	243	60.8
Very good	120	30.0
Good	34	8.4
Acceptable	3	0.8
Place of residence		
Rural	228	57.0
Urban	172	43.0

SD: **Standard deviation**

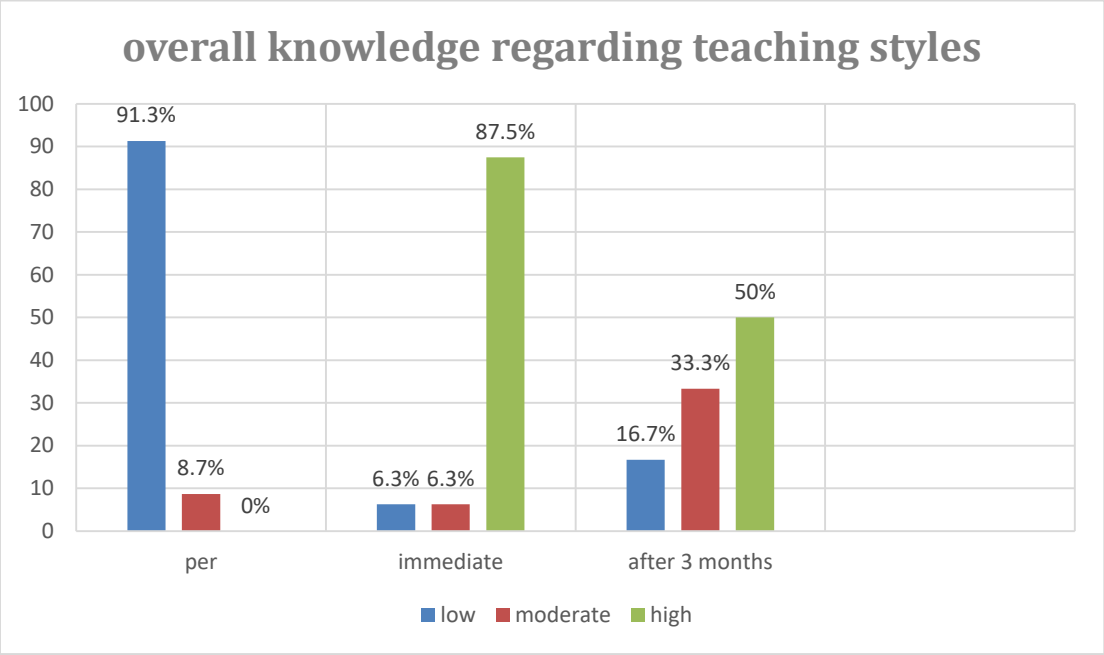


Figure (1): Levels of nursing teachers' overall knowledge regarding teaching styles per, immediate, and after 3 months of educational program

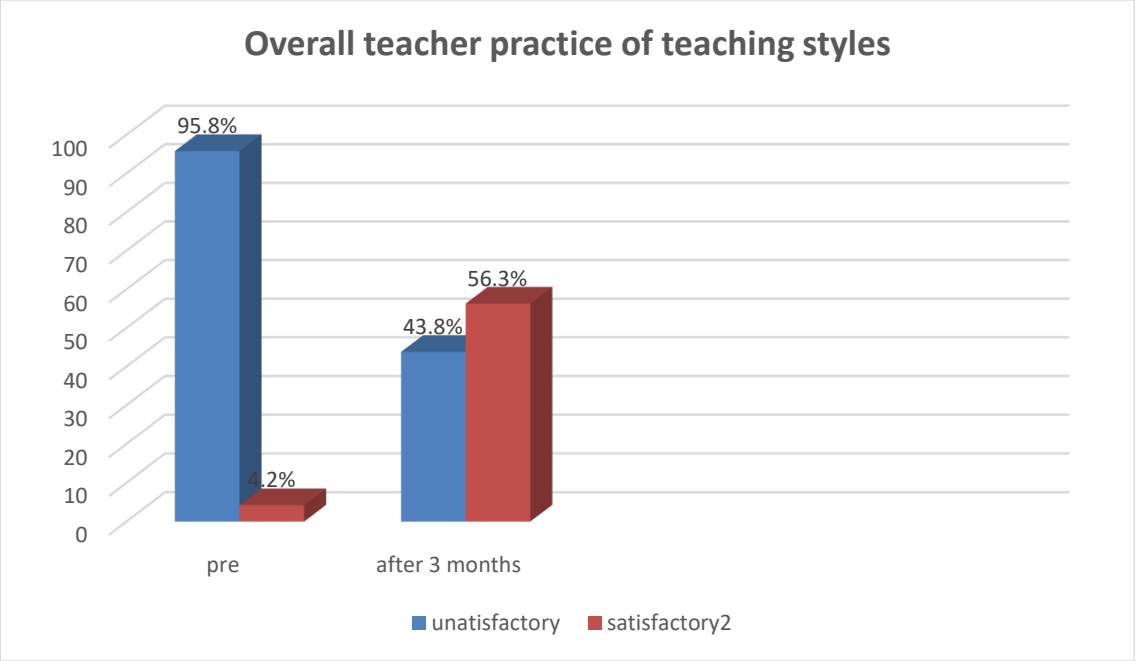


Figure (2): Levels of nursing teachers' overall practice regarding teaching styles pre and after 3 months of educational program (n = 48)

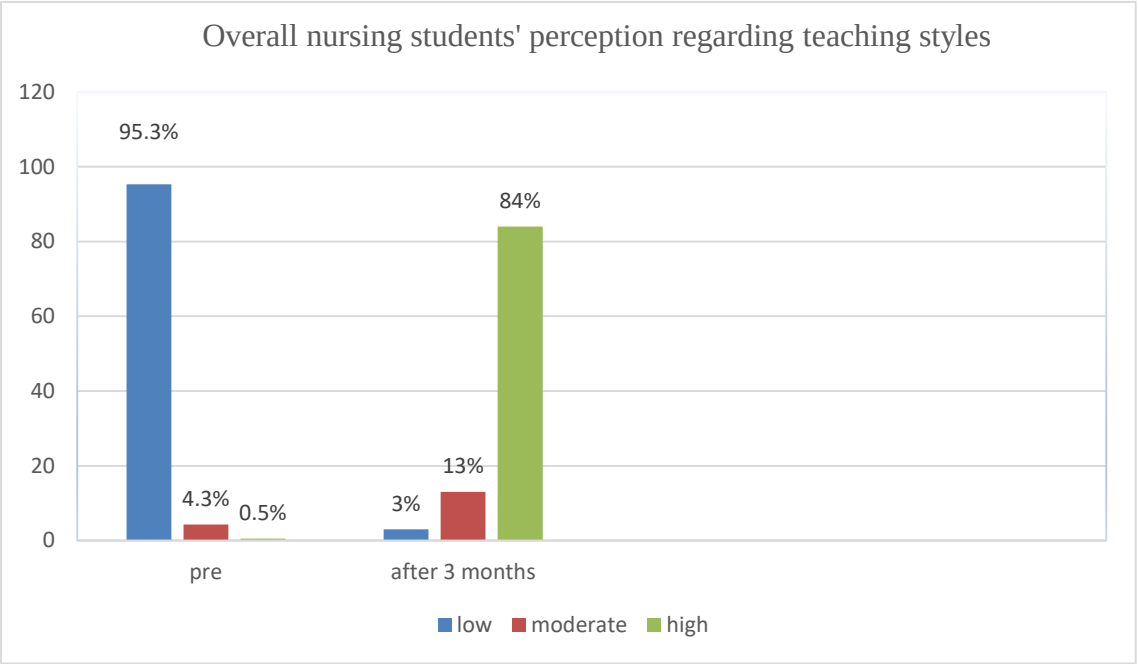


Figure (3): Levels of nursing students' perception regarding overall teaching styles domain pre and after 3 months of educational program (n = 400)

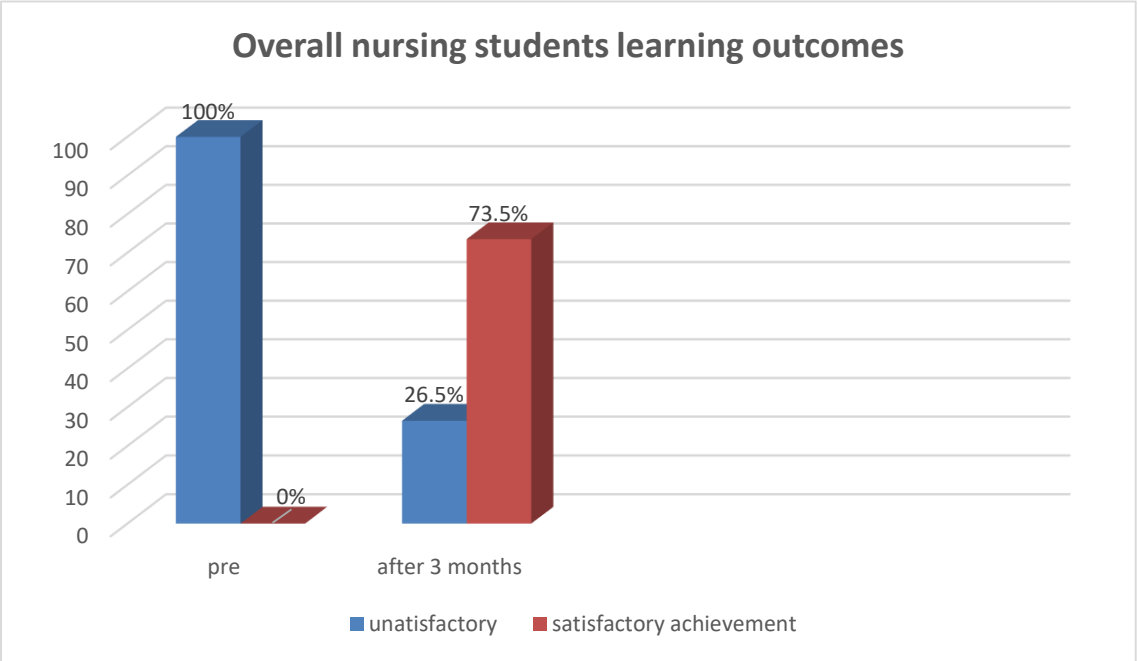


Figure (4): Levels of nursing students' overall learning outcomes pre and after 3 months of educational program

Table (3): Mean percent score and ranking of nursing teachers' knowledge about each sessions per, immediate, and after 3 months of educational program (N =48)

Knowledge of sessions	Pre	Rank	Immediate	Rank	After 3 Months	Rank	F	p
Teaching styles concepts (session 1)								
Total score (0 – 10)								
Min. – Max.	0.0 – 9.0		4.0 – 10.0		3.0 – 10.0			
Mean ± SD.	2.67 ± 2.66		9.15 ± 1.41		8.04 ± 1.96			
Average Score (0–1)	0.27 ± 0.27	6	0.91 ± 0.14	3	0.80 ± 0.20	2	152.606*	<0.001*
% Score (Mean ± SD.)	26.67 ± 26.60		91.46 ± 14.14		80.42 ± 19.57			
Teaching styles characteristics (session 2)								
Total score (0 – 10)								
Min. – Max.	0.0 – 8.0		5.0 – 10.0		2.0 – 10.0			
Mean ± SD.	3.48 ± 2.44		9.29 ± 1.05		8.10 ± 2.23			
Average Score (0–1)	0.35 ± 0.24	2	0.93 ± 0.11	1	0.81 ± 0.22	1	117.779*	<0.001*
% Score (Mean ± SD.)	34.79 ± 24.41		92.92 ± 10.51		81.04 ± 22.34			
Teaching styles approaches and learning outcomes (session 3)								
Total score (0 – 10)								
Min. – Max.	0.0 – 8.0		3.0 – 10.0		3.0 – 10.0			
Mean ± SD.	3.33 ± 2.54		9.23 ± 1.49		7.96 ± 2.12			
Average Score (0–1)	0.33 ± 0.25	4	0.92 ± 0.15	2	0.80 ± 0.21	3	108.854*	<0.001*
% Score (Mean ± SD.)	33.33 ± 25.38		92.29 ± 14.91		79.58 ± 21.23			
Principles and factors affecting teaching styles (session 4)								
Total score (0 – 10)								
Min. – Max.	0.0 – 8.0		2.0 – 10.0		2.0 – 10.0			
Mean ± SD.	3.46 ± 1.54		9.04 ± 1.53		7.63 ± 2.38			
Average Score (0–1)	0.35 ± 0.15	3	0.90 ± 0.15	6	0.76 ± 0.24	5	122.604*	<0.001*
% Score (Mean ± SD.)	34.58 ± 15.43		90.42 ± 15.29		76.25 ± 23.85			
Teachers' practices regarding expert, formal authority and personal model(5)								
Total score (0 – 10)								
Min. – Max.	1.0 – 8.0		4.0 – 10.0		1.0 – 10.0			
Mean ± SD.	3.69 ± 1.93		9.06 ± 1.44		6.67 ± 2.48			
Average Score (0–1)	0.37 ± 0.19	1	0.91 ± 0.14	5	0.67 ± 0.25	6	97.014*	<0.001*
% Score (Mean ± SD.)	36.88 ± 19.26		90.62 ± 14.35		66.67 ± 24.78			
Teachers practice regarding facilitator and delegator teaching styles (session 6)								
Total score (0 – 10)								

Min. – Max. Mean ± SD.	1.0 – 7.0 3.27 ± 1.45		5.0 – 10.0 9.08 ± 1.27		1.0 – 10.0 7.71 ± 2.54			
Average Score (0–1)	0.33 ± 0.15	5	0.91 ± 0.13	4	0.77 ± 0.25	4	132.546*	<0.001*
% Score (Mean ± SD.)	32.71 ± 14.55		90.83 ± 12.69		77.08 ± 25.43			
Total score (0 – 60)								
Min. – Max.	6.0 – 38.0		25.0 – 60.0		23.0 – 59.0			
Mean ± SD.	19.90 ± 8.52		54.85 ± 6.81		46.10 ± 9.68		F= 252.317*	<0.001*
Average Score (0–1) (Mean ± SD.)	0.33 ± 0.14		0.91 ± 0.11		0.77 ± 0.16			
% Score (Mean ± SD.)	33.16 ± 14.19		91.42 ± 11.36		76.84 ± 16.13			

SD: Standard deviation, F: F test (ANOVA) with repeated measures, p: p value for*: Statistically significant at p ≤0.05

Table (4): Mean percent score and ranking of nursing teachers' teaching styles practices domains per and after 3 months of educational program (N =48)

Knowledge domain	Pre program		Rank	After 3 month		Rank	t	p
	Mean score	% score		Mean score	% score			
Expert Style	(0 -10) 0.0 – 10.0 3.77± 3.50	0.38 ± 0.35 37.71 ± 35.02	3	0.0 – 10.0 7.42± 3.85	0.74 ± 0.39 74.17 ± 38.53	1	4.772*	<0.001*
Formal authority style	(0 -11) 0.0 – 11.0 4.15 ± 3.70	0.38 ± 0.34 37.69 ± 33.60	4	0.0 – 11.0 7.38 ± 3.70	0.67 ± 0.34 67.05 ± 33.63	5	5.106*	<0.001*
Personal model style	(0 -13) 0.0 – 13.0 4.75 ± 3.71	0.37 ± 0.29 36.54 ± 28.54	5	0.0 – 13.0 9.13 ± 4.10	0.70 ± 0.32 70.19 ± 31.52	3	6.072*	<0.001*
Facilitator style	(0 -13) 0.0 – 13.0 5.0 ± 4.69	0.38 ± 0.36 38.46 ± 36.11	2	0.0 – 13.0 9.15 ± 4.61	0.70 ± 0.35 70.35 ± 35.48	2	5.255*	<0.001*
Delegator style	(0 -9) 0.0 – 9.0 3.52 ± 3.13	0.39 ± 0.35 39.12 ± 34.76	1	0.0 – 9.0 6.13 ± 3.02	0.68 ± 0.34 68.06 ± 33.58	4	4.907*	<0.001*
Total score (0 – 56)	(0 -56) 1.0 – 56.0 21.19 ± 12.85	0.38 ± 0.23 29.04 ± 14.10		13.0 – 56.0 39.19 ± 11.51	0.70 ± 0.21 86.34 ± 11.99		7.911*	<0.001*

McN: McNemar test
p: p value for comparing between Pre and Post ***: Statistically significant at p ≤ 0.05**

Table (5): Mean score, mean percent and rank of nursing students perception regarding teaching styles (n = 400)

	Pre	Rank	After 3 Months	Rank	t	p
Expert Style						
Total score (10 – 50)						
Min. – Max.	10.0 – 48.0		27.0 – 50.0			
Mean ± SD.	21.82 ± 6.43		45.52 ± 4.81			
Average Score (1 – 5) (Mean ± SD.)	2.18 ± 0.64	**4**	4.55 ± 0.48	**1**	54.855*	<0.001*
% Score (Mean ± SD.)	29.54 ± 16.07		88.79 ± 12.01			
Formal authority style						
Total score (11 – 55)						
Min. – Max.	11.0 – 55.0		14.0 – 55.0			
Mean ± SD.	25.65 ± 7.36		47.66 ± 6.95			
Average Score (1 – 5) (Mean ± SD.)	2.33 ± 0.67	**1**	4.33 ± 0.63	**5**	38.828*	<0.001*
% Score (Mean ± SD.)	33.28 ± 16.72		83.31 ± 15.79			
Personal model style						
Total score (13 – 65)						
Min. – Max.	13.0 – 52.0		33.0 – 65.0			
Mean ± SD.	28.46 ± 7.75		58.19 ± 6.78			
Average Score (1 – 5) (Mean ± SD.)	2.19 ± 0.60	**3**	4.48 ± 0.52	**3**	53.463*	<0.001*
% Score (Mean ± SD.)	29.73 ± 14.90		86.91 ± 13.03			
Facilitator style						
Total score (13 – 65)						
Min. – Max.	13.0 – 65.0		26.0 – 65.0			
Mean ± SD.	24.90 ± 9.18		58.28 ± 6.98			
Average Score (1 – 5) (Mean ± SD.)	1.92 ± 0.71	**5**	4.48 ± 0.54	**2**	51.748*	<0.001*
% Score (Mean ± SD.)	22.87 ± 17.66		87.07 ± 13.42			
Delegator style						
Total score (9 – 45)						
Min. – Max.	9.0 – 45.0		15.0 – 45.0			
Mean ± SD.	20.24 ± 6.75		39.76 ± 5.58			
Average Score (1 – 5) (Mean ± SD.)	2.25 ± 0.75	**2**	4.42 ± 0.62	**4**	39.208*	<0.001*
% Score (Mean ± SD.)	31.22 ± 18.76		85.43 ± 15.50			
Total score (56 – 280)						
Min. – Max.	56.0 – 229.0		147.0 – 280.0			
Mean ± SD.	121.1 ± 31.59		249.4 ± 26.86		t= 58.402*	<0.001*
Average Score (1 – 5) (Mean ± SD.)	2.16 ± 0.56		4.45 ± 0.48			
% Score (Mean ± SD.)	29.04 ± 14.10		86.34 ± 11.99			

McN: McNemar test **MH: Marginal Homogeneity Test**
p: p value for comparing between **Pre** and **Post**
*: Statistically significant at $p \leq 0.05$

Table (6): mean score, mean percent and rank of nursing students' learning outcomes domains pre, and after 3 months of educational program (n = 400)

	Pre	Rank	After 3 Months	Rank	t	P
Expert Style						
Total score (10 – 50)						
Min. – Max.	10.0 – 48.0		27.0 – 50.0			
Mean ± SD.	21.82 ± 6.43		45.52 ± 4.81			
Average Score (1 – 5) (Mean ± SD.)	2.18 ± 0.64	**4**	4.55 ± 0.48	**1**	54.855*	<0.001*
% Score (Mean ± SD.)	29.54 ± 16.07		88.79 ± 12.01			
Formal authority style						
Total score (11 – 55)						
Min. – Max.	11.0 – 55.0		14.0 – 55.0			
Mean ± SD.	25.65 ± 7.36		47.66 ± 6.95			
Average Score (1 – 5) (Mean ± SD.)	2.33 ± 0.67	**1**	4.33 ± 0.63	**5**	38.828*	<0.001*
% Score (Mean ± SD.)	33.28 ± 16.72		83.31 ± 15.79			
Personal model style						
Total score (13 – 65)						
Min. – Max.	13.0 – 52.0		33.0 – 65.0			
Mean ± SD.	28.46 ± 7.75		58.19 ± 6.78			
Average Score (1 – 5) (Mean ± SD.)	2.19 ± 0.60	**3**	4.48 ± 0.52	**3**	53.463*	<0.001*
% Score (Mean ± SD.)	29.73 ± 14.90		86.91 ± 13.03			
Facilitator style						
Total score (13 – 65)						
Min. – Max.	13.0 – 65.0		26.0 – 65.0			
Mean ± SD.	24.90 ± 9.18		58.28 ± 6.98			
Average Score (1 – 5) (Mean ± SD.)	1.92 ± 0.71	**5**	4.48 ± 0.54	**2**	51.748*	<0.001*
% Score (Mean ± SD.)	22.87 ± 17.66		87.07 ± 13.42			
Delegator style						
Total score (9 – 45)						
Min. – Max.	9.0 – 45.0		15.0 – 45.0			
Mean ± SD.	20.24 ± 6.75		39.76 ± 5.58			
Average Score (1 – 5) (Mean ± SD.)	2.25 ± 0.75	**2**	4.42 ± 0.62	**4**	39.208*	<0.001*
% Score (Mean ± SD.)	31.22 ± 18.76		85.43 ± 15.50			
Total score (56 – 280)						
Min. – Max.	56.0 – 229.0		147.0 – 280.0			
Mean ± SD.	121.1 ± 31.59		249.4 ± 26.86		t= 58.402*	<0.001*
Average Score (1 – 5) (Mean ± SD.)	2.16 ± 0.56		4.45 ± 0.48			
% Score (Mean ± SD.)	29.04 ± 14.10		86.34 ± 11.99			

MH: Marginal Homogeneity Test
p: p value for comparing between **Pre** and **Post**
*: Statistically significant at $p \leq 0.05$

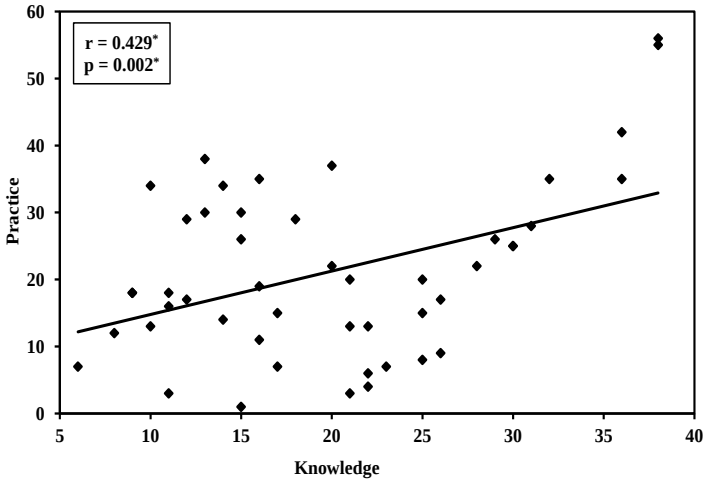


Figure (5) Pre program

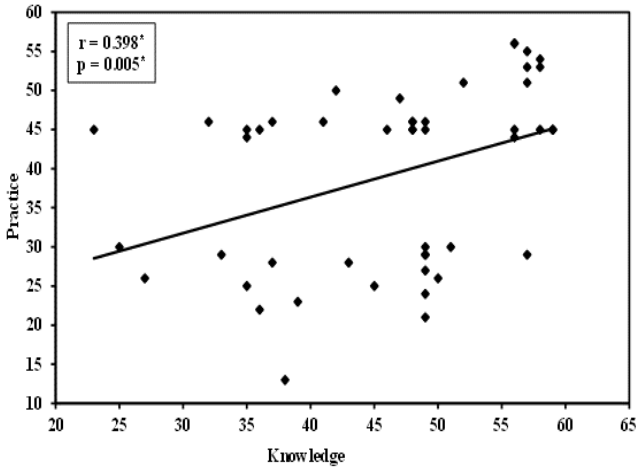
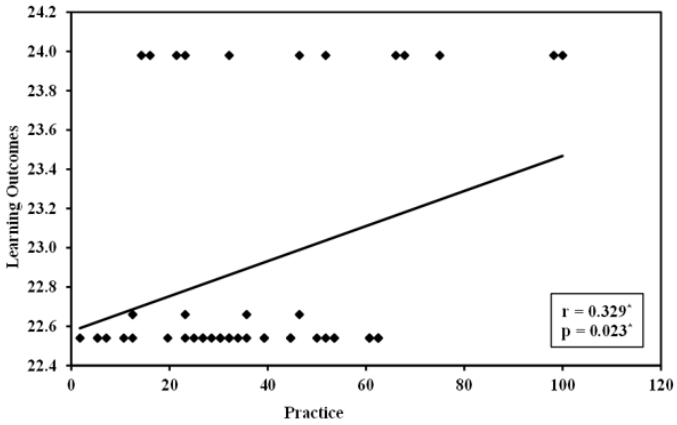


Figure (6) Post 3 months

Figure (5, 6): Correlation between nursing teachers' knowledge about teaching styles and their practice at pre and post 3 months of educational program (n = 48)



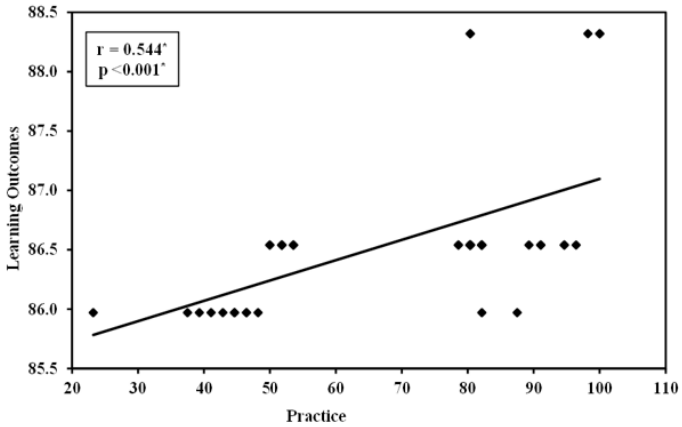


Figure (7, 8): Correlation between nursing teachers' practice and nursing students learning outcomes at pre and after 3 months of educational program (n = 400)

Discussion

Teaching styles play a pivotal role in shaping the educational experience and learning outcomes of nursing students. Effective teaching methods not only enhance knowledge retention but also foster critical thinking, self-directed learning, and clinical competence skills essential for future nursing professionals **(Alotaibi, Alshammari, & Aldossary, 2022).**

The pre-program results of the present study showed that the majority of nursing teachers exhibited low knowledge levels. This may be due to a lack of recent training, limited exposure to updated pedagogical methods, or reliance on traditional teaching practices. These results are consistent with the findings of **Zhao, Hu, and Wang, (2023),** who emphasized that many nursing educators lack adequate knowledge of modern teaching styles due to infrequent participation in professional development programs. Moreover, **Alshammari et al. (2023)** argued that despite years of teaching experience, educators may demonstrate low theoretical understanding of diverse instructional strategies unless continuous learning is prioritized.

Adding to that, the current study results revealed that, immediately after the educational program, there was a significant reduction in the proportion of teachers with low knowledge levels, indicating that well-designed programs can produce quick gains in knowledge when delivered with clarity, relevance, and interactivity. The result of the current study is in line with the findings of **Ebrahimi, Hassankhani, & Zamanzadeh, (2022),** who found that targeted faculty development programs significantly improved teaching competencies in a short time frame. Also, aligns with **Ali et al. (2023),** who found that structured educational programs significantly enhanced nursing educators' pedagogical knowledge and instructional practices.

The current study results revealed that, post three months of the program; a slight increase in the number of teachers with low knowledge levels suggests some decline in retention, highlighting the need for reinforcement strategies such as follow-up workshops or refresher sessions. Also, a statistically significant improvement of mean score for nursing teachers' knowledge on all sessions of teaching styles was detected at immediate and post three months after the program. This indicated that the current educational program was effective in both informing and maintaining knowledge among nursing teachers. According to **Tang and Choi (2021)**, knowledge retention over time can be influenced by continuous engagement and practical

application of new skills.

Regarding nursing teachers' practice of teaching styles, the minority of nursing teachers had satisfactory level regarding overall practice regarding dimensions of teaching styles. This may be due to a lack of theoretical knowledge of nursing teachers, lack of necessary resources, and limited exposure to structured pedagogical training, lack of opportunities for reflective teaching practice, or minimal institutional support to apply varied instructional methods. According to **Altun & Yilmaz (2022)** support this finding, and mention that many nursing teachers enter academia with strong clinical skills but insufficient formal preparation in educational methodologies, which affects their teaching practices.

Furthermore, **Tang and Choi (2021)**, highlighted that in environments where faculty development is not continuous or reinforced, teachers may struggle to adapt their instructional approaches to align with diverse student learning needs. In contrast, **Hussein & Fawzy, & El Sayed, (2021)** argued that even minimal training interventions can significantly enhance teaching practices when they are context-specific and include hands-on activities.

Adding to that, the current study results, more than half of nursing teachers had satisfactory level of practice about overall teaching styles with statistically significant improvement after three months of the program. This indicated that the training program was effective in enhancing the nursing teachers' skills and knowledge, leading to sustained improvements in their practice.

Such findings align with the conclusions of **Mechtel et al. (2024),** who emphasized that durable learning strategies, including spaced learning and team-based learning, are effective in promoting long-term knowledge retention in nursing education. Furthermore**, Alotaibi et al. (2023)** highlighted the importance of longitudinal faculty development programs based on competency-based frameworks, such as the Harden teacher's role framework.

Regarding nursing students' perception about teaching styles, pre-program low percentage of nursing students had a high level of overall perception regarding teaching styles. This may be due to limited exposure to varied instructional methods, a dominant reliance on teacher-centered approaches, or a lack of awareness among students about different teaching styles and their impact on learning. Additionally, students may have been accustomed to traditional lecture-based methods, which may not actively engage or foster positive perceptions of the teaching process.

This results are in line with **Altun & Yilmaz (2022),** who reported that students from conventional academic environments often show limited perception and understanding of interactive or learner-centered teaching styles, also **Kebede et al. (2022)** found that nursing students' limited prior experience with facilitative or participative teaching methods can affect their perceptions and expectations of instructors' roles. Post program, a majority of nursing students had a high level of perception about teaching styles after 3 months of educational program. These results are due to the effectiveness of the educational program in providing nursing students with a clear understanding, enhancing students' awareness and appreciation of diverse teaching styles. The intervention likely exposed students to more engaging, student-centered methods, improving their recognition of how teaching approaches impact their learning experience. This results is reinforced by **Ali et al. (2021),** who reported that structured educational interventions significantly improve nursing students' ability to evaluate and respond to various instructional approaches.

Regarding nursing students' perception of learning outcomes, pre-program, none of nursing students had satisfactory level of overall perception regarding learning outcomes. This may be due to nursing students may have experienced inconsistencies in instructional quality, unclear or poorly aligned learning objectives, or limited opportunities for feedback and reflection factors that are critical for perceiving positive learning outcomes. Additionally, lack of supportive learning environments characterized by minimal faculty guidance, limited engagement, and inadequate preparatory orientation can further undermine students' perceptions.

This result is supported by **Al-Richards, & Clarke, (2021),** who found that students often report low satisfaction with learning outcomes when teaching strategies do not promote critical thinking, self-directed learning, and clinical integration. However, **Vázquez-Cano et al. (2022)** argued that students' perceptions can also be influenced by external factors such as stress levels, workload, and assessment methods, regardless of instructional quality.

Adding to that, the current study results about three quarters of them had satisfactory level of learning outcomes after three months of the program with a statistically significant improvement. This indicated that the educational program was effective in enhancing students' awareness and recognition of their own learning gains, likely due

to improved teaching strategies and increased teacher preparedness. The consistent use of structured, student-centered teaching styles may have fostered a more engaging and supportive learning environment, contributing to greater satisfaction and perceived academic achievement.

This result aligns with the findings of **Vázquez-Cano et al. (2022),** who reported that innovative and interactive teaching methodologies significantly improved students' perceived learning outcomes in higher education. Conversely, **Eldeeb & Shama (2020)** found that without ongoing support and alignment between teaching style and students' learning preferences, short-term improvements in perceived learning may not always translate into long-term academic performance.

Correlation between nursing teachers' knowledge about teaching styles and their practice.

The present study revealed there was a statistically significant correlation was detected among nursing teachers' knowledge about teaching styles and their practice post program, this may be justified by the program enhanced nursing teachers' awareness and understanding of teaching styles that fosters reflective thinking, allowing nursing teachers' to align their instructional approaches with students' learning needs. Also, may explained by as nursing teachers become more informed about different teaching styles, they are better equipped to implement them effectively, leading to improved classroom interactions and teaching strategies.

This result is in agreement with **Buanz et al. (2024),** who found that nursing faculty members with higher knowledge of effective teaching strategies scored significantly better in teaching ability, and nursing competence. The authors concluded that pedagogical knowledge enhances educators' confidence and effectiveness in clinical instruction. In contrast, **Lindquist, Engström, & Säljö. (2022)**, argue that while teacher knowledge is foundational, it does not automatically translate into effective practice or positive perceptions. External factors such as organizational culture, institutional constraints, and student diversity often moderate this relationship. And **Hassanzadeh & Mohammadi (2023),** they found inconsistencies between nurse educators' perceived competence and actual teaching practices, suggesting that perception is not always a reliable predictor of performance. **Correlation between nursing teachers' practice teaching styles and nursing students learning outcomes**

The findings of the current study showed that a statistically significant positive correlation between nursing teachers' teaching style practices and nursing students' learning outcomes both at the pre-program phase and three months post-program. This suggests that improvements in teaching practices were associated with enhanced student learning outcomes over time.

This result is in agreement with **Keerthigha (2023)** who found that teaching styles significantly affect students' learning experiences and their perceptions of instructors. Specifically, student-centered teaching approaches were linked to higher levels of academic motivation and improved learning outcomes.

Conclusion

Based on the findings of the current study, it can be concluded that nursing teachers' had lacking practice of teaching styles but implementing a carefully designed educational program on teaching styles significantly improved their knowledge and practice regarding teaching styles. Also, a statistically significant positive correlation was detected between nursing teachers' knowledge about teaching styles and their practice.

Recommendations

On the line of the findings of the current study the following recommendations are suggested for:

Technical Health Institute administration

- Adopt and integrate student-centered teaching styles into the nursing curriculum to enhance students' motivation, engagement, and learning outcomes.
- Provide continuous training programs for nursing educators focusing on diverse teaching strategies, modern educational technologies, and effective classroom management techniques.

Nursing teachers

- Regular participate in training programs that focus on diverse teaching styles and innovative instructional strategies to enhance their teaching effectiveness.
- Emphasize teaching methods that promote active learning, critical thinking, and student engagement, such as facilitator and delegator styles.

Nursing education

- Integrate teaching styles into curriculum: Include content about effective teaching styles and their impact on learning outcomes in the nursing education curriculum, especially for future nurse educators.
- Conduct regular workshops and

training sessions for nursing faculty to enhance their knowledge and skills in adopting modern, student-centered teaching strategies.

Further research is needed on:

- Expand the study sample to include nursing students from multiple institutions and regions to enhance the generalizability of the findings.
- Investigate the long-term impact of different teaching styles on nursing graduates' professional performance and patient care quality.

References

Alghamdi., (2022). A. Factors affecting teaching method among academicians in Al-baha University, Saudi Arabia. Egyptian Journal of Educational Sciences. 2022; 2 (1): 14-23.

Alhirtani, N. A. K.(2020) The use of modern teaching methods in teaching the Arabic language at Higher education phase from the point view of Arabic Language professors, A Case of a Premier University. International Education Studies. 2020; 13(1): 32-41.

Ali, R., & Thomas, L. (2024). Digital competence among nurse educators: A catalyst for effective teaching strategies. Teaching and Learning in Nursing, 19(2), 158–165. https://doi.org/10.1016/j.teln.2024.01.009

Ahmed, M., El-Sayed, H., & Farag, M. (2022). Exploring nursing students' perceptions of teaching expertise: A qualitative study. Journal of Nursing Education and Practice, 12(5), 45–52.

Alotaibi, K., Alshammari, F., & Aldossary, H. (2022). The effectiveness of educational interventions on nursing students' knowledge: A systematic review. Nurse Education Today, 109, 105250. https://doi.org/10.1016/j.nedt.2021.105250

Al-Qahtani, A. M., & Al-Mazroa, A. A. (2023). Effectiveness of instructor modeling on nursing students' professional behavior: A quasi-experimental study. Nurse Education Today, 123, 105782. https://doi.org/10.1016/j.nedt.2023.105782

Alshammari, F., Alshammari, M., & Alotaibi, N. (2023). Nursing students' perceptions of structured and authoritative teaching: A cross-sectional study. Nurse Education Today, 125, 105793.

Altun, D., & Yilmaz, M. (2021). Students' perceptions of teaching styles in higher education: The impact of cultural and institutional contexts. International Journal of Instruction, 14(1), 15–30

Andrews, M., et al. (2023). Faculty Development Needs in Southeastern Conference Nursing Schools. Journal of Nursing Education, 62(9), 523–530. https://doi.org/10.3928/01484834-20240923-01

Bastami, F., Shahrbabaki, M. E., &

Cheraghi, F. (2022). The effect of self-directed learning training on nursing students' academic engagement and learning perception. Nurse Education in Practice, 58, 103293.

Brown, A., & Green, T. (2019). The role of mentorship in developing professional accountability among nursing students. Journal of Nursing Education and Practice, 9(7), 45–52. https://doi.org/10.5430/jnep.v9n7p45

Buanz, A. B., Ali, W. M., Ahmad, W., & Mebrouk, J. (2024). Impact of nurse educators' teaching strategies on student competence in clinical settings: A cross-sectional study. BMC Nursing, 23(1), 104.

Burgess, A., van Diggele, C., & Mellis, C. (2020). Teaching styles and approaches: Medical student perceptions. BMC Medical Education, 20, 221

Burgess, A., van Diggele, C., & Mellis, C. (2020). Teaching styles and approaches: Medical student perceptions. BMC Medical Education, 20, 221.

Chan, S. (2023). Teacher educators' teaching styles: Relation with learning motivation and academic engagement in pre-service teachers. Teaching in Higher Education, 28(3), 349–363. https://doi.org/10.1080/13562517.2021.1947226

Chen, Y., Zhang, L., & Lee, M. (2021). Faculty development and the adoption of innovative teaching in nursing education. Nurse Education Today, 103, 104923.https://doi.org/10.1016/j.nedt.2021.104923

Ebrahimi, H., Hassankhani, H., & Zamanzadeh, V. (2022). Transition from traditional to modern teaching methods in nursing education: Faculty perspectives. BMC Nursing, 21(1), 154.

Eldeeb, D., & Shama, G. (2020). Nursing students' learning preferences and the relationship with faculty teaching styles: Implications for nursing education. International Journal of Nursing Education, 12(2), 55–60.

Fatimah Al-Kandari, rn, dnsc, Victoria L. Vidal, rn, man and Deepa Thomas, rn,(2009) mscn College of Nursing, Public Authority for Applied Education and Training, Al-Shuwaikh, Kuwait. Nursing and Health Sciences. 2009; 11(2): 252–262.

Grasha F., Riechmann R. Teaching style survey. 2006. Available at: http://longleaf.net/teachingstyle.html.

Hassanzadeh, M., & Mohammadi, E. (2023). Perception-practice gap among nursing faculty: A qualitative exploration. BMC Nursing, 22(1), 199. https://doi.org/10.1186/s12912-023-01145-8

Hesbon O. Michael, (2016). The teaching methods used in universities in Rwanda and their effect on the students academic performance, World Journal of Educational Research.; 3, (5): 1-18

Hussein, M., Fawzy, M., & El Sayed, H. (2020). Impact of faculty development on student perception of teaching styles in nursing education. Journal of Nursing Education and Practice, 10(8), 45-52.

Iqbal, S., & Arain, F. M. (2024). Barriers and facilitators to pedagogical training among undergraduate nursing faculty: A qualitative study. SAGE Open Nursing, 10, 23779608241274728. https://doi.org/10.1177/23779608241274728

Karimi Mirzanezam, A., Ghahramanian, A., Ghafourifard, M., Davoodi, A., & Bagheriyeh, F. (2024). Nursing students' perception of the clinical learning environment and its impact on academic adjustment: A cross-sectional descriptive study. BMC Medical Education, 24, 1543.

Kebede, A. A., et al. (2022). Nursing students' perceptions of effective teaching styles in clinical education: A cross-sectional study. Nurse Education Today, 108, 105144.

Keerthigha, C., & Singh, R. (2023). The effect of teaching style and academic motivation on student evaluation of teaching: Insights from social cognition. Frontiers in Psychology, 13, 1107375. https://doi.org/10.3389/fpsyg.2022.1107375

Keerthigha, C., & Singh, R. (2023). The effect of teaching style and academic motivation on student evaluation of teaching: Insights from social cognition. Frontiers in Psychology, 13, 1107375. https://doi.org/10.3389/fpsyg.2022.1107375

Lindquist, I., Engström, M., & Säljö, R. (2022). Teacher knowledge versus teaching practice in nursing education: A socio-cultural perspective. Journal of Advanced Nursing, 78(2), 513–522. https://doi.org/10.1111/jan.14925

Oleson, A., & Hora, M. T. (2014). Teaching the way they were taught? Higher Education, 68(1), 29–45.

Razzaque, A. (2021). Culture and learning style's sensitive learning outcomes aid multicultural classrooms. International Journal of Innovation and Learning.; 30 (1):65- 90 .

Sajadi, M., Fayazi, S., & Moshirian Farahi, S. M. (2021). The effect of student-centered learning on nursing students' responsibility and learning outcomes. BMC Nursing, 20(1), 184. https://doi.org/10.1186/s12912-021-00689-3

Salem, M. A., & Said, N. M. (2021). Effect of instructional training strategies on students' knowledge and academic performance in nursing education. International Journal of Nursing Education, 13(1), 45–51. https://doi.org/10.37506/ijone.v13i1.13699

Smith, J., & Doe, A. (2021). Impact of interactive educational interventions on nursing students' professional role acquisition. Nurse Education Today, 95, 104615. https://doi.org/10.1016/j.nedt.2020.

104615

Tang, F., & Choi, P. (2021). Matching teaching styles and learning preferences in nursing education: A mixed-methods study. Nurse Education in Practice, 54, 103098. https://doi.org/10.1016/j.nepr.2021.103098

Umar, M. A., Dauda, B., Mutah, L. K (2016). Effectiveness of demonstration and lecture methods in learning concept in economics among secondary school students in Borno State, Nigeria. Journal of Education and Practice.; 7(12): 50-59.

Vázquez-Cano, E., Meneses, E. L., & García-Peñalvo, F. J. (2022). Student perceptions of learning outcomes in higher education: The role of teaching methodology and external stressors. International Journal of Educational Technology in Higher Education, 19(1), 1–17.

Zhang, L., & Chen, J. (2021). Teaching styles and student engagement in Chinese nursing education: A cross-sectional study. BMC Nursing, 20(1), 131

Zhou, Z.-Y., Hu, L.-Y., Wang, M.-L., & Zhou, L.-S. (2023). Narrative education combined with experiential teaching in the development of empathic competence of undergraduate nursing students: Pre-test post-test design. SAGE Open, 13(3), 1–11. https://doi.org/10.1177/21582440231193948