Effect of Mobile-Based Video Learning on Clinical Nursing Students Learning Outcomes

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Abstract

Background: Mobile device is a valuable form of technology that can be used with video clips in nursing education to promote nursing students' learning motivation and confidence in learning a clinical nursing skill. **Aim of study:** Was to evaluate the effect of mobile-based video learning on clinical nursing students learning outcomes. **Research design:** Quasi experimental design was conducted to achieve the aim of this study. **Setting:** The present study was conducted at Medical Surgical Nursing department skill lab - Faculty of Nursing- Benha University. **Subject:** A purposive sample of 150 of the second year nursing students at the academic year 2020-2021, Faculty of nursing, Benha University. **Tools of data collection**: (1) Self-Reporting Questionnaire (SRQ) Part I: Students' Demographic Characteristics. Part II: Students' Class Satisfaction Measuring questionnaire. Part III: Instructional Materials Motivation Survey (IMMS). (2) Nursing Students' competency skills observational checklist. **Results:** There was a significant improvement of students' motivation, satisfaction and their competency skills concerning initiating IV access and administrating IV infusion procedures among the study group subjects on 2nd and 4th week at follow up of implementing mobile based video learning program compared with control group subjects on the traditional method of learning with a high statistical significant difference P= 0.000, there were a positive correlation post implementing mobile based video learning between students' satisfaction, motivation and their skill competency. **Conclusion:** There was a positive effect of implementing mobile based video learning on students' satisfaction, motivation and their skill competency among the study group. **Recommendations:** Provide adequate training programs to students on using mobile application in education. Provision of mobile courses wherever possible in nursing education.

Key words: Clinical nursing, Learning outcomes, Mobile based learning, Motivation, Satisfaction.

Introduction

Mobile learning has become an important instructional technology component in higher education. It makes it possible for students to learn, collaborate, and share ideas, so there is a greater need for educational institutions to strengthen the practices in the curriculum and the use of innovative teaching techniques and approaches will be a paramount importance **(Toquero, 2020).**

Several researches on mobile learning has been conducted in order to understand the use of mobile devices in educational settings as mobile learning generally, helps students to develop technological skills, conversational skills, find answers to their questions, develop a sense of collaboration, allow knowledge sharing, and hence leverage their learning outcomes **(Naciri et al., 2020).**

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In the nursing training context, common strategies of teaching and learning that are commonly present: lecture and dialogical classes, skills practicing, the development of simulated clinical scenarios and mobile learning. From this perspective there is the need for a closer look at the identification of satisfaction with teaching-learning and the development in the self-confidence of the students who experiences these strategies throughout their training. That is, because the learner's satisfaction and self-confidence are variables that allow us to identify and evaluate the effectiveness of the teaching and learning strategies used during the training (**Romero-Rodríguez, et al, 2020).**

Learning motivation is one of the key properties learners must possess to satisfactorily participate in learning activities. The young generation who has grown up with mobile devices may become more motivated to learn when mobile devices are incorporated in education (**Saeedi, et al., 2021).**

Use of mobile devices for educational purposes among nursing students today is widespread trend. Evidences showed that integrating mobile devices can improve the quality of nursing education by engaging students in learning experience. Integration of Mobile learning (M-learning) in educational settings is an important issue for academic institutions and universities (**Snezhko, et al., 2022).**

Significant of the Study

Mobile penetration has grown in leaps and bounds. For the year 2020, the Egypt Ministry of Communications and Information Technology announced that 98.8% of Egyptian households and 95% of individuals owned mobile phones (**Ezzat & Khamees, 2021).**

Use of mobile devices in education highlights the transition from educator-centered teaching to learner-centered education (**Kakeeto, 2021).** A study of undergraduate nursing students demonstrated that learning motivation was positively associated with class satisfaction. Hence, mobile-based learning may enhance the learning motivation and class satisfaction of nursing students (**Chen, et al., 2021) .**

However, few studies have investigated how learning motivation can be improved among students and whether motivation is associated with other learning outcomes. Furthermore, the use of mobile-based learning in nursing skill education has been rarely investigated before in Egypt .

Aim of the study

The aim of this study is to evaluate the effect of mobile-based video learning on clinical nursing students learning outcomes.

Research Hypotheses

The study hypothesized that:

The mobile-based video learning has a positive effect on:

-Clinical skill competency of nursing students .

-Class satisfaction of nursing students .

-Learning motivation of nursing students.

Subjects and Methods

Study design:

Setting:

The present study was conducted at medical surgical nursing department skill lab - Faculty of nursing- Benha University.

Subjects:

A purposive sample of 150 students at the second year nursing students in the academic year 2020-2021 at the Faculty of Nursing,

Benha University. They was classified into two groups, group A (control 75 students) used the usual method of learning skill using demonstration and re-demonstration and group B (study 75 students) used smartphones to conduct the aim of this study.

Tools of data collection:

The following tools were constructed, tested and piloted by the researcher to collect data; it was used as a follow:

Tool 1: Self Reporting Questionnaire (SRQ) it was designed by the researcher, based on reviewing of recent local and international related literatures (**Elgohary, 2018; Talan, 2020; Chen, et al., 2021**). Which divided into three parts:

▪ **Part I: Students' Demographic Characteristics:**

It was consist of five questions used to assess the demographic data of the nursing students such as; age, sex, economic family status, participation rate in Medical Surgical Nursing class, final grade in the Fundamentals of Nursing course,

Part II: Students' Class Satisfaction Measuring questionnaire:

It was used to assess the students' class satisfaction. The students were asked to rate their satisfaction with different aspects of their training that includes 39 sentences grouped under the following seven items:

▪ The objectives of the training program
▪ The content of the training program
▪ The timing of the training method
▪ The materials of the training methods
▪ The teacher
▪ Competence
▪ Generic skills and learning experiences

The scoring system:

The students' expressed and self-rating response of their satisfaction that was ranged from score 1 for strongly disagree, score 2 for disagree, score 3 for neither agree nor disagree, score 4 for agree, score 5 for strongly agree.

The total score for this tool was ranged from 1-195, which was calculated by multiplying the highest score (5) by the number of items (39) to yield the final total score and was classified as the following:

❖ From 1 to 97 points representing <50% was considered low satisfaction.
❖ From 98-146 points ranged from ≥ 50% - 75% was considered moderate satisfaction.
❖ From 147-195 points ranged from ≥ 75 % showing high satisfaction.

Part III: Instructional Materials Motivation Survey (IMMS):

It used by the researcher to assess the student's motivation regarding the used learning method. The IMMS consisted of **24** sentences grouped under three domains as the following;

▪ Attention
▪ Relevance
▪ Confidence

The scoring system:

The students' expressed and self-rating response of their motivation, that was ranged from score 1 for strongly disagree, score 2 for disagree, score 3 for neither agree nor disagree, score 4 for agree, score 5 for strongly agree**.**

The total score for this tool was ranged from 1-120, which was calculated by multiplying the highest score (5) by the number of items (24) to yield the final total score and classified as the following:

❖ From 1 to 60 points was considered <50% which represents low motivation.
❖ From 61 to 90 points was ranged from ≥ 50% - 75% which indicates moderate motivation.
❖ From 91-120 points was considered ≥ 75% which shows high motivation.

Tool 2: Nursing Students' competency skill observational checklist

This tool was designed by the researcher after reviewing the related literature **(Lynn, 2018; Daniels & Musafiri, 2020; Reddy & Ramesh, 2021).** It aimed to assess nurses' performance related to cannula insertion and initiating of intravenous fluid through the cannula. The designed tool consisted of two main phases as following;

Phase I: Initiating peripheral venous access observational check list

It was consisted of 43 steps to assess the students' skills level regarding insertion of cannula procedure.

Phase II: Initiating of intravenous infusion observational check list

It was consisted of 33 steps to assess the students' skills level concerning initiating of intravenous infusion therapy procedure.

The scoring system:

The students' response for each step of the observetional checklists procedure was categorized as follow: the complete done with score (2), incomplete done with score (1) and not done with score (zero). The score was calculated by multiplying the highest score (2) by the number of steps to yield the final total score, the total score for phase I was (86)and phase II was (66).

Total score of phase I &II were calculated, converted into precent and classified into the following categories:

❖ **Students' had < 80% of total score were considered incompetent level of practice.**
  - Phase I (<69 point).
  - Phase II (<53 point).

- Students' had ≥ 80% of total score were considered competent level of practice .
  - Phase I (≥ 69 point).
  - Phase II (≥ 53 point).

Video Training Program

This training program was developed for the purpose of the study to evaluate the effect of mobile-based video learning on clinical nursing students learning outcomes. It was designed by the researcher after reviewing the recent literatures of the clinical nursing procedures **(Lyshchik, 2019; Perry, et al., 2019; Barton, 2019; Collins, 2021).** The training program divided into two parts:

I. Theoretical part.

It included the theoretical knowledge about cannula insertion and administration of Intravenous infusion. It comprised the definitions, the indications of the procedures, the criteria of suitable vien and cannula selection, methods of IV administration and types of IV fluid infusion.

II. Practical part.

The researcher was designed and prepared two educational videos concerned with the steps for (1) initiating an intravenous access procedure. (2) Administrating IV fluid infusion procedure.

Ethical considerations:

The ethical research considerations in the study included the following:

- Ethical approval was obtained from the Scientific Ethical Committee of Benha University before starting of the study.
- The researcher assured maintaining anonymity and confidentiality of subject's data.
- Student nurses were informed that they were allowed to choose to participate or not in the study and that they had the right to withdraw from the study at any time without giving any reason.
- A master list of participant names was kept apart from the data collection forms.
- All data collection forms are kept in a locked file, separate from the master list.

Preparatory Phase:

○ Developing a structured questionnaire format for assessing students' demographic characteristics, class satisfaction and motivation (Tool 1).

○ Nursing Students' competency skill observational checklist (Tool 2).

○ Measuring tools of subjective and objective outcomes was adapted through:

Validity and reliability:

The revision of the tools was done by a panel of five medical surgical nursing expertise to test the relevance and clarity of contents and minor modifications were done.

Testing reliability of the developed tools was done by reliability statistics for students' class satisfaction, Instructional Materials Motivation Survey (IMMS) and Nursing Students' competency skill had an excellent internal consistency; tests were applied (0.86; 0.85 and 0.88). The total Cronbach's Alpha ($\alpha = 0.87$ for n = 15) indicating acceptable reliability.

Pilot study:

The pilot study was applied on 10% of nursing students (15) chosen from the study settings to test applicability of tools and clarity of designed questionnaire, as well as to estimate the time needed to answer them. Student nurses included in the pilot study were excluded from the main study sample.

Field work:-

Data were collected within two months from the ending of September 2020 to the end of November 2020. The aim and nature of the study was explained by the researcher to the students who were confirmed in the study according the study included criteria and take their oral approval to participate in the study prior any data collection. The video training program was implemented for the students in the previously mentioned settings. The data collection included the following phases:

1. Implementation and assessment phase.
2. Evaluation phase.

1. Implementation and assessment phase for both control and study groups:

1. The researcher started the implementation phase by welcoming the students, an orientation to the study objectives.

2. The aim of the video training program was explained to gain their best possible cooperation.

3. The researcher randomly classified the total number of the students into two equal groups, control group [A] and study group [B].

4. The researcher asked the participants students in both groups to ensure downloading and installing of Google drive application in their smartphones.

5. The students were informed about a time table chart and the training plan by the researcher to start the implementation of the study.

6. The researcher assessed the Scio demographic characteristics of the students in both groups (control and study) by using **(Tool I part I)**.

For control group [A]

7. The students in the control group classified into 3 subgroups each subgroup 25 students.

8. The training program for each subgroup of the control group was implemented using the traditional method of learning over 2 weeks. The parts of the training program was divided into 2 sessions as follow:

❖ The first session contains the theoretical part, it included, definition the IV cannulation, the indications of IV cannulation, the criteria for selection of suitable vein and cannula, purposes of IV infusion therapies, types and uses of infusion fluid therapy. The session explained over 1 hour.

❖ The second session for the control group that covered the practical part including, the demonstration of the clinical skills was conducted in the clinical skill lab on three scheduled clinical days for each subgroup for one week on Sunday, Tuesday and Thursday (25 students per day). The demonstration of two procedures was taken over 1hr. for each day.

9. The redemonstration for the immediate post trail was done by the students of the control group and the evaluation of their competency skill performance was observed by the researcher using **tool (2).**

10. Control group students' class satisfaction and motivation were assessed as a base line data by using (**Tool I part II & III**) through sharing Google forms link https://docs.google.com/forms/d/1CQJ0 qeVdgyZheEu7bDqL2dbl_Ka_violUXckktq CuME/edit?usp=sharing as a part of infection control measures to prevent of Covid-19 spreading.

For study group B

11. The study group was divided into 3 subgroups 25 students in each subgroup.

12. The training program for each subgroup of the study group was implemented using mobile based video learning over 2 weeks. The parts of the training program was divided into 2 sessions as follow:

- The first session which included theoretical part as follow: definition the IV cannulation, the indications of IV cannulation, the criteria for selection of suitable vein and cannula, purposes of IV infusion therapies, types and uses of infusion fluid therapy, the session was explained over 1hour.

- The second session covered the practical part, the researcher just shared the 2 videos (initiating intravenous access & administrating IV infusion) to the entire study group to be available on their smartphones, and asked them to watch the two videos on their smart phones.

13. The redemonstration for the immediate post trail was done by the students of the study group in the lab and the evaluation of their competency skill performance was done by the researcher using **tool (2).**

14. Study group students' class satisfaction and motivation were assessed as a base line data assessment by using (**Tool I part II & III**) through sharing Google forms link https://docs.google.com/forms/d/1CQJ0 qeVdgyZheEu7bDqL2dbl_Ka_violUXckktq CuME/edit?usp=sharing . It was use as a part of infection control measures to prevent of Covid-19 spreading.

15. The text messages were sent for the study group students by the researcher on what's app. group to remind the students for watching the educational videos twice per week before 2nd and 4th week of implementing the video based learning.

2. Evaluation phase:

- Evaluation of the effect of mobile-based video learning on clinical nursing students learning outcomes was done by comparing the results of immediate post, 2nd and 4th week of the implementation of mobile-based video learning program by using the same data collection tools for both study and control groups in the previous mentioned sitting.

- For both groups immediate post evaluation considered as an initial and baseline assessment data.

- The researcher repeated the process of evaluation using the same tools on the 2nd and 4th weeks of follow up for the study group.

- Each student in both groups (study and control) took about 15 to 20 minutes in re-

demonstrating the two procedures in the skill lab.

Statistical Analysis:

Data were analyzed using Statistical Program for Social Science (SPSS) version 26.0.

The following tests were done:

▪ **Chi-square (X^2) test** of significance was used in order to compare proportions between two qualitative parameters.

▪ **The independent-samples t-test** (or independent t-test, for short) compares the means between two unrelated groups on the same continuous, dependent variable.

▪ **The Pearson rank coefficient of correlation** is a measure of the strength of a linear association between two variables and is denoted by r.

▪ **Multiple linear regression** is used to estimate the relationship between two or more independent variables and one dependent variable.

Results:-

Table (1): Shows that 60% of the study students' genders of the control group were males while 80 % of the study group were females. Concerning economic family status, nearly half and more than half in both groups control and study (56%, 50.7%), respectively their level was at a moderate. Also, 42.7% and 34.7% of both groups control and study, respectively had very good in their of fundamentals of nursing course. As well as, they highly participated in medical surgical nursing classes 40%, and 74.7% of both groups control and study, respectively.

Figure (1): Demonstrates that, 24% of the control group had a high level of satisfaction immediate post-evaluation and decreased to 17.3% on the 2nd week post the traditional method of learning, and then returned to 24% on the 4th week. On the other hand, 22.7% of the study group had a high satisfaction level immediate post-mobile-based video learning implementation and increased to 88% on 2nd week and then declined to 69.3 % on 4th week post-implementation of mobile-based video learning. .

Figure (2): Illustrates that 34.7% of the control group had high motivation levels on the immediate post and 2nd-week post the traditional method of learning and then increased to 46.7% on 4th week while 34.7% of the study group had had high motivation level immediate post-evaluation increased to 96% on 2nd week and then to 80% on 4th week post mobile based video learning implementation.

Figure (3): Shows that, 64% of the control group had a competent level of practice immediate post-the traditional method of learning and increased to 68% on 2nd week, and slightly increased to 69.3% on 4th week. Meanwhile, 65.3% of the study group had a competent level of performance immediate post-mobile-based video learning implementation and then increased to 100% on the 2nd week, and 4th week post video-based learning by mobile.

Figure (4): Demonstrates that 56% of the control group had a competent level of practice immediate post- the traditional method of learning and increased to 64% and 65.3 % on the 2nd and 4th week. Meanwhile, 57.3% of the study group had had a competency level of performance immediate post-implementation of mobile-based video learning and then increased to 100% on the 2nd week, and 4th week.

Table (2): Presents that, there was a positive correlation between students' motivation and satisfaction for both the study and control group (R=0.88**, 0.91** P= 0.000), respectively on immediately post

implementing video-based learning. Meanwhile, there was a negative correlation between the students' motivation and total their competency level of performance among the control group in which (r=- 0.25*, P=0.06) immediate post using the traditional learning method.

Table (3): Shows that there was a positive correlation between students' motivation and satisfaction with total students' competency level of practice (r= 0.78**, 0.74** and 0.76** P=0.000), respectively of the study group on the 2nd week post implementing mobile-based video learning program. Meanwhile, only a positive correlation was founded between students' satisfaction and their motivation for the control group on the 2nd week of implementing the traditional method of learning (r= 0.78** P=0.000).

Table (4): Reveals that, there was a positive correlation between students' motivation and satisfaction with total students' competency level of performance (R= 0.59**, 0.93** and 0.60** P=0.000 respectively) of the study group subjects on the 4th week of implementing video-based learning program. Also, a positive correlation was found between the control group student's satisfaction and their motivation on the 4th week (r= 0.68** P= 0.000).

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Table (1): Frequency and percentage distribution of socio-demographic characteristics in both study and control group (n=150).

| Items	Control group (n = 75)		Study group (n = 75)		Test of significance	
	N	%	N	%	X2	P value
Age in years						
≥20	33	44.0	28	37.3	0.691	0.406
< 20	42	56.0	47	62.7		
Gender						
Male	45	60.0	15	20.0	25.000	0.000**
Female	30	40.0	60	80.0		
Economic family status						
Low	12	16.0	7	9.3	8.788	0.038*
Moderate	42	56.0	38	50.7		
High	21	28.5	30	40.0		
Students' final grads of fundamentals of nursing course						
Accepted	15	20.0	2	2.7	22.851	0.000**
Good	17	22.7	13	17.3		
Very good	32	42.7	26	34.7		
Excellent	11	14.7	34	45.3		
Students' participation in medical surgical nursing class						
Low	9	12	2	2.7	27.006	0.000**
Moderate	36	48.0	16	21.3		
High	30	40.0	56	74.7		

None significant P< 0.05   *Significant   P >0.05   **highly significant p <0.01
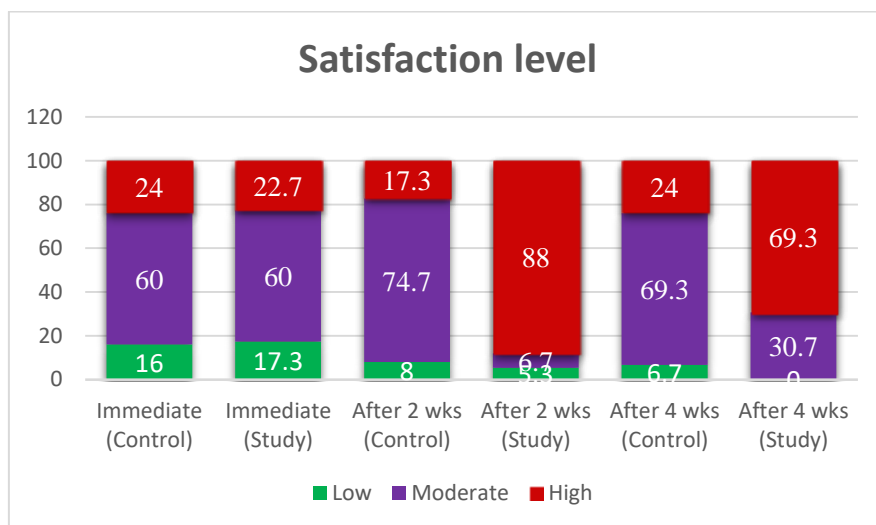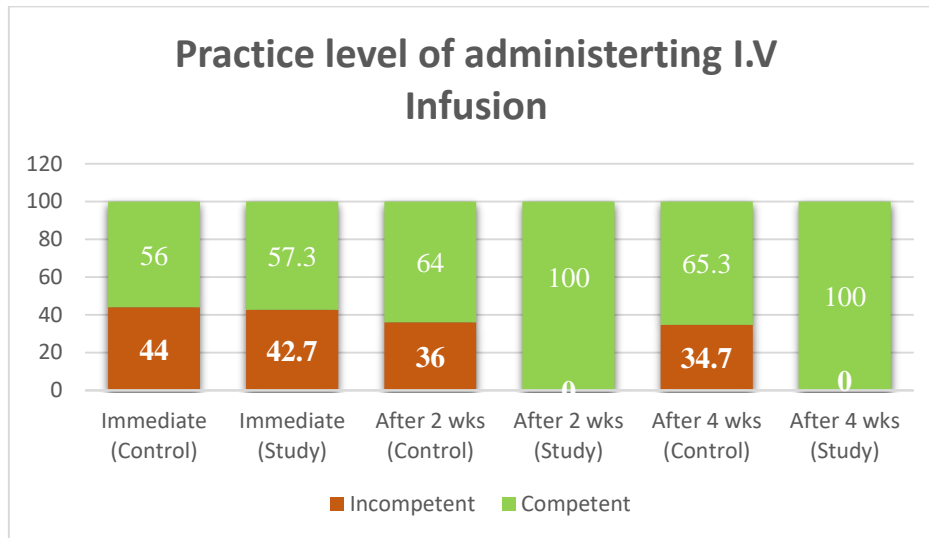

Figure (1) satisfaction level among both control and study groups at three phases of evaluating the effect of mobile–based video learning implementation (n= 150).
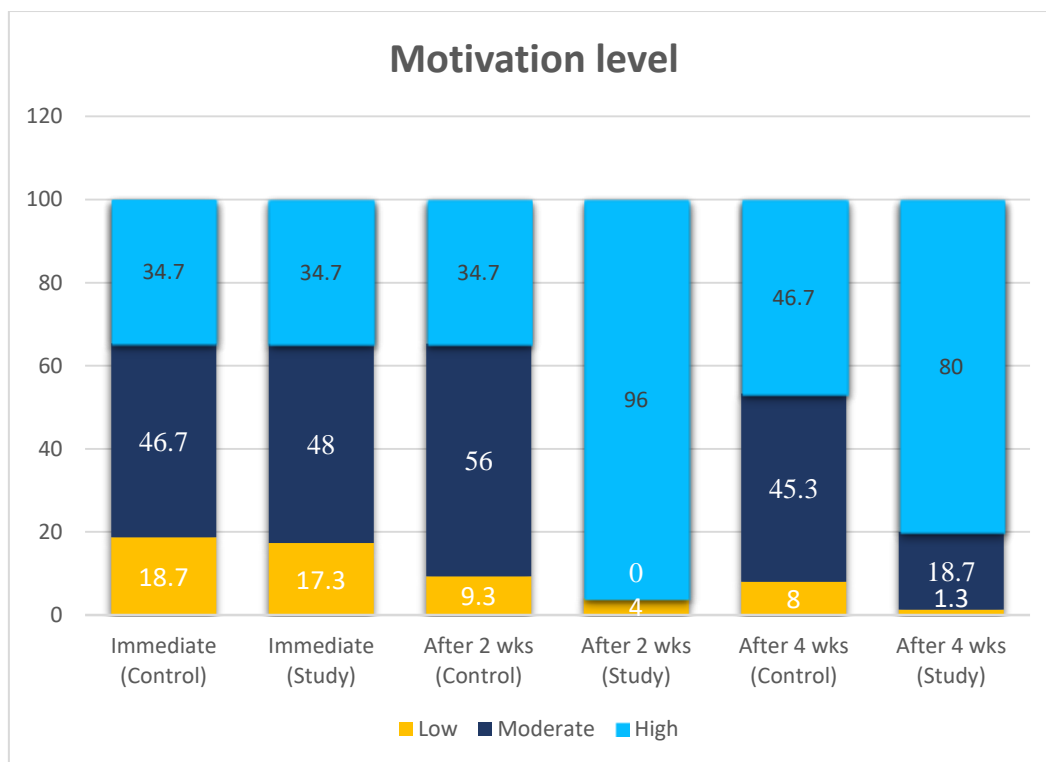
Figure (2): Motivation level among both control and study groups post-implementation of mobile-based video learning (n= 150).
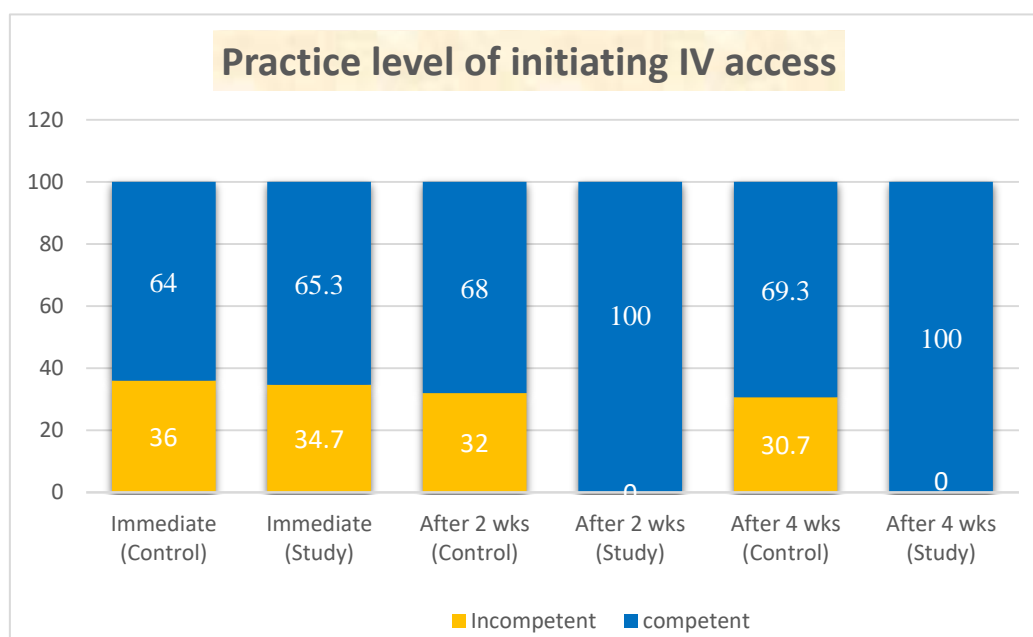
Figure (3) Practice level regarding initiation of IV. access among both control and study groups post-implementation of mobile-based video learning (n= 150).

Figure (4) Practice level regarding administering I.V infusion fluids therapy among both control and study group post-implementation of mobile-based video learning (n= 150).

Table (2): Correlation between students' satisfaction, motivation, and their competency level of practice for both control and study group on immediate post implementing video-based learning sessions (n=150).

Items		Control group (n=75)		Study group (n=75)	
		Satisfacti	Motivati	Satisfact	Motivati
1- Satisfaction	R				
	P value				
2- Motivation	R	0.68**		0.93**	
	P value	0.000		0.000	
3- Total Students' competency level of practice	R	-0.01	-0.14	0.60**	0.59**
	P value	0.91	0.20	0.000	0.000

Table (3): Correlation between students' satisfaction, motivation, and their competency level of practice for both control and study group in 2nd week of implementing video-based learning program (n=150).

Items		Control group (n=75)		Study group (n=75)	
		Satisfaction	Motivation	Satisfaction	Motivation
1- Satisfaction	R				
	P value				
2- Motivation	R	0.88**		0.91**	
	P value	0.000		0.000	
3- Total Students' competency level of practice	R	-0.20	-0.25	-0.13	-0.19
	P value	0.07	0.06*	0.23	0.09

Table (4): Correlation between the students' satisfaction, motivation, and their competency level of practice for both control and study group on 4th week of implementing video-based learning program (n=150).

Items		Control group (n=75)		Study group (n=75)	
		Satisfaction	Motivat	Satisfaction	Motivatio
1- Satisfaction	R				
	P value				
2- Motivation	R	0.78**		0.74**	
	P value	0.000		0.000	
3- Total Students' competency level of practice	R	0.07	-0.03	0.76**	0.78**
	P value	0.52	0.74	0.000	0.000

Discussion

Mobile-based video learning has been playing an increasingly crucial role in education, allowing learning to take place beyond geographical barriers and time constraints. It supports learners who are studying "on the move" to access learning materials in various contexts, with different cultural and environmental cues necessary for understanding the learning contents. It also facilitates social interaction among learners and teachers through mobile applications such as text messaging or student response tools **(Chavoshi & Hamidi, 2019).**

Regarding the nursing students' age the present study revealed that more than half was aged < 20 years. These results are consistent with **Lee et al (2018)**, whose study were titled with " Mobile-based video learning outcomes in clinical nursing skill education: a randomized controlled trial" mentioned in relation to mean age was 19.92 ±1.03 years .

Concerning the gender, the current study results showed that, more than half in the control group and more than three quarters of the study group were females; these results are in the same line with **Kim and Suh (2018)** whose study titled with " The effects of an interactive nursing skills mobile application on nursing students' knowledge, self-efficacy, and skills performance: A randomized controlled trial" mentioned that, most participants were female (experimental group: 91.2%; control group: 90.6%).

The current study finding revealed that, the majority of the study group were using their mobile in studying. These result was in the same line with **Crompton and Burke (2018)** who conducted a study titled with " The use of mobile learning in higher education: A systematic review " stated that, 74% involved

undergraduate students and 54% took place in a formal educational context. Higher education facilities are encouraged to consider the opportunity to expand their learning possibilities beyond the classroom with mobile learning.

As regard the effect of mobile-based video learning on students' satisfaction dimensions among both control and study regarding the demonstration as traditional learning method and mobile based video learning as new technology of clinical nursing educational method, the finding revealed that, that there was a high statistically significant difference between the control and study group regarding students' satisfaction dimensions including "The objectives of the training program, the content of the training program, the timing of the training method, the materials of the training methods, the teacher, the competence, the generic skills and learning experiences of total satisfaction mean score" on 2nd and 4th week of mobile-based video learning implementation.

The total mean scores of student satisfaction on the immediate post, 2nd week , and 4th week of mobile-based video learning implementation among the study group were relatively higher than the total satisfaction mean scores among the control.

These finding were in the same line with **Arslan, et al., (2018)** whose study titled "A Study on the Satisfaction of Students for the Time Spent Watching Video-based Learning during their Basic Nursing Skills' Training " mentioned that, The mean scores of the control group and study group students were as follows: 66.82±8.94, 67.84±6.81 for the satisfaction from the video based wound care skills training. The difference between the average scores were statistically insignificant

(p=0.347). The high scores indicated a high average satisfaction in both groups.

By testing the effect mobile based video learning on students' motivation dimensions among both control and study group regarding the demonstration as traditional learning method and mobile based video learning as new technology of clinical nursing educational method, the finding of the current study exposed that, there was a high statistically significant difference between the control and study group regarding students' motivation dimensions including "attention, relevance, confidence, and total motivation mean score" on the 2nd week and 4th week of mobile-based video learning implementation (P= 0.000**).

This finding supported with **Kim and Suh (2018)** who reported that, Smartphone-based mobile learning had significantly positive influence on nursing students' knowledge, motivation, skills, confidence in performance, and learning attitude.

The current study finding was supported by **Gallegos and Nakashima (2018).** In the study titled with " Mobile Devices: a distraction, or a useful tool to engage nursing students " who stated that, Students reported that using the mobile technology helped them minimize off-task activities, interact more with each other and the instructor, solve problems in the class, and develop skills and confidence related to their career.

By testing the effect of mobile based video learning on students' competency level of performance regarding insertion of peripheral venous access and administrating IV fluid among both control and study groups.The current study revealed that, there was a high statistically significant difference between the control and study group regarding improvement of the students" performance of peripheral

venous access insertion and administrating IV fluid at pre, during, and post-procedure on 2nd and 4th week of implementing mobile-based video learning (P= 0.000**).

The current study finding was in agreement with **Li, et al., (2018),** who reported that, shows the test scores for the conventional learning group, and the mobile learning group, and the results of an independent sample t-test. Of the three types of scores, only the application score showed a significant group differences t(384) = 3.15, p < .01 indicating that the mobile learning group outperformed the conventional learning group in terms of the application of nursing concepts.

These result also in the same line with **Lee, et al., (2018)** who mentioned that scores for knowledge and skill performance, markers of fundamental nursing competency, were higher in the intervention group than in the control group, but there were no statistically significant differences.

Concerning the correlation between nursing students' satisfaction, motivation and competency level of performance for both study and control groups, the current study finding exposed that, there was a positive correlation between students' motivation and satisfaction for both the study and control group in immediately post implementing video-based learning. Meanwhile, there was a negative correlation between the students' motivation and total their competency level of performance among the control group in immediate post using the traditional learning method.

The researcher found that, there was a positive correlation between students' motivation and satisfaction with total students' competency level of performance of the study group subjects on the 2nd and 4th week of implementing video-based learning program. Also, a positive

correlation was found between the control group student's satisfaction and their motivation on the 2nd and 4th week using the traditional learning method.

This finding in the same line with **Kim and Park (2019)** who revealed that, Smartphone-based mobile learning had significantly positive influence on nursing students' knowledge, skills, confidence in performance, and learning attitude. Smartphone-based mobile learning may be an alternative or supportive method for better education in nursing fields.

The current study finding also congruent with **Chen, et al., (2021)** in the study titled "Effects of mobile learning for nursing students in clinical education: a meta-analysis" who mentioned that, the mobile learning intervention led to significant improvements in nursing students' skills, knowledge, satisfaction, and confidence compared with the control group.

Also current study finding agreed with **Lee, et al., (2016)** who stated that, that skill improvement was positively correlated with learning motivation, confidence in practice, and class satisfaction.

The study finding supported by **Gomaa, et al., (2020)** whose study conducted at Helwan University Egypt titled "Effect of Mobile-Based Learning on Second Year Nursing Students' Clinical Competence and Motivation" declared that, there was highly statistical significant improvement regarding student's clinical competence and motivation from pre to post implementation of program. This study demonstrated that a mobile device can be used in nursing education to promote nursing student's motivation and confidence in learning a clinical nursing skills; motivation and confidence in learning were improved.

Conclusion

Based on the findings of the current study, it could be concluded that, The student's satisfaction, motivation and competency level of practice means scores on the immediate post, 2nd and 4th week of implementing mobile- based video learning among the study group were relatively higher than the control group used the traditional method. As well as, the results of the current study supported the hypothesis of the study that there was a positive effect of implementing mobile based video learning on students' satisfaction, motivation, skill competency among the study group. On the other hand, only a positive correlation was found between students' satisfaction and motivation for control group used the traditional method of clinical learning skill.

Recommendation:

- Develop new learning mobile applications to be used in both theoretical and clinical curriculums.
- Provide adequate training programs to students on using mobile application in education.
- Provision of mobile based courses wherever possible in nursing education.

Further researches

- Future studies of single mobile devices such as smartphones and studies using multi-lingual platforms are needed to confirm our findings.
- Evaluate the effect of mobile learning on nursing education with larger number of subjects.
- Application of mobile learning in different clinical nursing training skills.

Effect of Mobile-Based Video Learning on Clinical Nursing Students Learning Outcomes

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تأثير استخدام الفيديو التعليمي عن طريق الهاتف المحمول علي مفردات تعلم المهارات الإكلينيكية لدي طلاب كلية التمريض

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يعد الهاتف المحمول شكلاً قيماً من أشكال التكنولوجيا حيث يمكن استخدام مقاطع الفيديو عن طريق الهاتف المحمول في تعليم طلاب التمريض لتحسين التحفيز التعليمي والثقة في تعليم المهارات الإكلينيكية. لذا هدفت هذه الدراسة إلى تقييم تأثير استخدام الفيديو التعليمي عن طريق الهاتف المحمول علي مفردات تعلم المهارات الإكلينيكية لدي طلاب كلية التمريض. وقد أجريت هذة الدراسة بمعمل المهارات التابع لقسم التمريض الباطني الجراحي - كلية التمريض - جامعة بنها. تم تطبيق هذة الدراسة علي عينة قصدية عددها ١٥٠ من طلاب الفرقة الثانية للعام الدراسي ٢٠٢٠-٢٠٢١ بكلية التمريض جامعة بنها. حيث كشفت النتائج عن وجود تحسن كبير في التحفيزالتعليمي،نسبة رضاء الطلاب ومستوي مهاراتهم فيما يتعلق بتركيب الكانيولا الوريدية الطرفية وإعطاء المحاليل الوريدة بين طلاب مجموعة الدراسة في الأسبوعين الثاني والرابع بعد تنفيذ برنامج التعليم باستخدام الفيديو عن طريق الهاتف المحمول مقارنة بالمجموعة الضابطة التي استخدمت الطريقة التقليدية للتعليم. واوصت الدراسة بتوفير برامج تدريبية مناسبة للطلاب حول استخدام تطبيقات الهاتف المحمول في التعليم. توفير مناهج تعليمية عن طريق الهاتف المحمول حيثما أمكن في تعليم طلاب كلية التمريض.