The Effect of Usingmobile Devicewithquick Responsecode on Academic Performance Amongst Pediatric Nursing Students

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Abstract: *Mobile devices are more powerful and portable nowadays with plenty of useful tools for assisting people handle daily life. Mobile technology and quick response (QR) codes have great potential to improve teaching and learning because mobile technologies enable learning across multiple contexts, through social and content interactions.* ***Purpose of the study****: The purpose of the study was to evaluate theeffect of usingmobile devicewithquick response codeon the academic performance amongst pediatric nursing students.* ***Design****: A quasi-experimental research design was used to conduct the study (study and control groups).* ***Settings****: This study was carried out in clinical pediatric laboratory skills for third year students and teaching hall of Faculty of Nursing / Benha University.* ***Sample:****A purposive sample 180 pediatric nursing students from third year, wereincluded. Systematic random sample was used to assign students into study and control group.Each group contained (90) students.* ***Instruments:*** *Four instruments consist of three parts,Instrument (1): A structured interviewing questionnaire, instrument (2): Likert scale: attitude scale toward mobile device with quick response code and instrument (3): An observational checklist sheet.* ***Results:*** *The results showed that, there were improvements in student knowledge, practice and attitude in study more than control groups in post training as compared to pre training, majority (97.8% and 90%) of study and control groups had unsatisfactory knowledge in pre training. While,more than three quarter of study and control groups had satisfactory in post training. In relation to total practice, majority (100%) of study and control groups had poor practicein pre training as compared to (95.6%) of study group had good practice in post training. Meanwhile,the majority (93.3%) of study group had positive attitudes towards mobile device with quick response code in the post training in relation to control group.****Conclusion:*** *the study was concluded that, the pediatric nursing students (study group) who utilized mobile devices with quick response code achieved a higher level of academic performance than pediatric nursing students (control group) who received traditional teaching (lecture, demonstration and redemonstration only).****Recommendations:****The teaching staff should be use mobile device with quick response code technology such as guidelines for taking pictures and videos during lectures or clinical practices.*
Keywords: *Mobile devices,Quick Responsecodes (QR).*

I.   Introduction

A mobile device is "any device that is small, autonomous and unobtrusive enough to accompany us in every moment. Mobile devices also can be mediated to acquiring knowledge and skills through actions or interactions. Mobile learning three aspects can be specified for this type of learning: Mobility of technology, mobility of learning and mobility of learner. Mobility of technology focuses on examining the possibility of using portable and wireless devices such as mobile phones, android, laptops, and tablets for educational purposes **(Rahimia and Miri, 2014).**

Learning can refer to the mental processes that lead to changes or outcomes in knowledge, behaviors, skills, attitudes and values. Learning can occur inside and outside the classroom and the learning situations can be either formal planned lessons or informal unplanned and spontaneous learning experiences. Mobile learning refers to a teaching and learning method that utilizes mobile devices to extend traditional teaching and learning and sustain high levels of student engagement with rich connections to other people and resources across different contexts **(Rikala, 2015).**Mobile learning facilitates the interaction between students and teachers in the classroom and allows the exchange of information outside the university. M-learning will not replace the traditional classroom or the electronic learning system, but it can work as additional support to complement and add value to the existing learning models **(Aish, 2014).** Mobile devices are currently used to enhance or support learning in a graduate in order to facilitate student achievement **(Megan and Mendez, 2014).**The benefit of using mobile and wireless communication technologies to provide learners with learning supports and learning guidance for infield activities or in class activities **(Sung, et al., 2016).**

Quick response code (QR) is a special type of barcode than can hold more information can be retrieved and displayed quickly using the camera on a smartphone,android or a tablet device.QR Code is a two-dimensional barcode, which consists of black modules arranged in a square pattern on a white background(**McKee, 2014**).The QR code functions as a link between reality and the virtual world by allowing users to scan a printed object (via their phones' cameras), giving access to content such as a website, a video, etc. QR codes in education can be placed in the context of mobile learning. QR codes facilitate learning outside of classroom and learning materials are no longer limited to textbooks. QR code can be applied to various practical applications such as science, nursing, medicine and social science learning and language courses(**Thayer, 2012**).

Nursing learning environment is shared among a classroom, hospital, community and other educational settings. Particularly in clinical learning environment, students might encounter many challenges as they apply theoretical knowledge and practical skills gained in academic and health care settings. Therefore, mobile phone with QR technologies can be an important resource for clinical practice because of their accessibility. The nurse educators should explore the use of mobile phone with QR technologies to support nursing students in clinical training as they provide easy access to quality educational material at the point of care, especially the current generation of students has grown up encompassed by information technology (**Durak, etal., 2016**).

Significance of the study

Worldwide, there has been a rapid increase in both the use of mobile technologies as a conduit for student learning and the use of wearable cameras to record sporting and recreational activities. The combination between two technologies to produce a repository of freely available short videos and supporting materials to enhance student development of psychomotor clinical skills. Quick Response (QR) Codes, that when linked to the videos placed on equipment assists with "just in time" mobile learning (**Cheong, et al., 2012**).Nursing students require extensive preparation and training to attain competency in clinical skills. Ensuring adequate competency prior to students being introduced to the clinical setting may improve patient safety and health outcomes. Teaching strategies for efficient clinical skill acquisition should allow students to experience situations similar to clinical settings. By using technology to support pedagogically sound learning activities, students may be able to faster acquire and master specialized information(**Yang, et al., 2013**).

The aim of the study to evaluate the effect ofusing mobiledevice with quick responsecode on the pediatric nursing students' performance in their learning experience.

Purpose

The purpose of the study was to evaluate the effect of mobiledevice withquick response (QR)code on the pediatric nursing students' performance in their learning experience, through the following:

1-Assesingknowledge, practiceand attitudesofpediatric nursing students regarding mobile device withQR code.
2-Implementing training course by usingmobile device with QR code on pediatric nursing students
3-Evaluatethe knowledge, practice and attitude of pediatric nursing students' after program implementation.

Hypothesis

Pediatric nursing students who use mobile devices (study group) will achieve a higher level of academic performance than pediatric nursing students (control group) who received traditional teaching (lecture, demonstration and redemonstration only).

Definition of variables

Quick response code (QR)

Quick Response Codeis the trademark for a type of matrix barcode (or two-dimensional barcode). QR code uses four standardized encoding modes (numeric, alphanumeric, byte and binary) to store data efficiently.A Quick Response (QR) code is a two dimensional barcode consisting of black modules (small squares) arranged in a square grid on a white background, which can be read by an imaging device such as a camera in any mobile device connected to the internet.

II. Subjects and methods

Research Design

 A quasi experimental design was used in the current study (study and control groups)

Setting

This study was conducted in the accreditedfaculty of nursing/ Benha University at both clinical pediatric laboratory skills for the third year/ pediatric nursing students and the teaching hall of theFaculty of Nursing.

Sample

A purposive sample of 180 pediatric nursing students from the third year, were included. Systematic random sample was used to assign students into study and control group. Each group contained (90) students.

Exclusion criteria:
Students who received previous training in pediatric nursing course by using mobile device with quick response code.

Instruments
Instrument (1): A structured interviewing questionnaire:
    It was developed by the researcher in an Arabic language after reviewing the related literatures, it included two parts:

Part I: Personal characteristics of the study subjects
Personal characteristics of the studied students include the following: age, sex, academic year, residence and previous training in pediatric course with mobiledevicewith quick response code.

Part II: Pediatric nursing student's knowledge sheet
It was developed by the researcher in an Arabic language after reviewing the related literatures, it included two parts:

Part(One): Pediatric nursing student's knowledge about mobile device with quick response code
It was developed by the researcher to assess pediatric nursing student's knowledge regarding mobile learninginclude the following: previous using of mobile device, uses of mobile device, concept, reasons for use of mobile device, benefits, typesand difficulties facinglearning through using mobile devices.

Part (Two): Pediatric nursing knowledge test
This testwas designed by the researcher based on reviewcurrent literaturesreview to assess clinical pediatric nursing skills. It consistsof 40questions that covered:Phototherapy, oxygen therapy, weight, height and drug administration. In form of multiple choices, true and false, filling the missing space and complete the following question.
Scoring system of the knowledge questionnaire
The studied students answers were compared with a model key answer,   where 2 scores were given for complete correct answer, 1 score was given for incomplete correct answer and 0 score for wrong answer and unknown answer. According to the students' responses, their total level of knowledge was categorized as eitherunsatisfactory level (less than 60%) or satisfactory level (from 60% to 100%).
Instrument (2): Likert rating scale for student attitude toward mobile device with QR;It was adopted from a standardized likert type rating scale by **Lynch et al., (2011).** It was used to assess the pediatric nursing student's attitude toward mobile with QR code. It included 15questions.
Scoring system of the attitude
The responses of students' attitudes were classified into yes (2), sometimes (1) and no (0). The total scores of attitudes were divided into two levels as eithernegative attitudes (< 60%) or positive attitudes (60 % ≤ 100%).
Instrument (3): An observational checklist sheet; It was developed by the researcher in the light of relevant literature review to assess pediatric nursing students in clinical pediatric nursing skills. It included 4 procedures:phototherapy, oxygen therapy, drug administration (IM injection) and growth measurement (weight and length), According to the actual students responses, their total level of practice was categorized as either poor level (less than 50%), average level (50% to less than 75%) orgood level (75% to 100%).
Preparatory phase:
Validity
To measure content validity of the study instrument, the researchers assure that items of the instruments were submitted to a jury of fiveexperts in the field of pediatric nursing (3 professors and 2 assistance professors)to test face and content validity. Modification of the study instruments were done according to the panel judgment on clarity of sentences, appropriateness of content and sequence of items.
Reliability
The reliability and internal consistency reliability of all items of the instruments was assessed by using coefficient alpha. It was 0.94 for a structured interviewing questionnaire part 2 to assess pediatric nursing student's knowledge regarding mobile device with quick response code, 0.83 for student's pre and post questionnaire, 0.75 for instrument (3) to assess attitude of pediatric nursing student's regarding mobile device with quick response code.
Method:
Exploratory phase:
A pilot study
A pilot study was carried out on 10 % of the total sample size (18 pediatric nursing students) over a period of two weeks to test the validity and applicability of the study instruments and to estimate the time needed to fill the questionnaire. No radical modifications were carried out on the study instruments so the study subjects were included in the study sample.

Ethical considerations and human rights

The researcher explained the aim of the study to the pediatric nursing students and they were informed that the study is harmless. The researchersecured that all the gathered data are confidential and are used for the research purpose only. The students were informed that they are optionally allowed either to participate or not in the study and they have the right to withdraw at any time. An oral consent was taken from the students.

Field work:

An official permission to carry out the study was obtained from faculty dean of nursing; Benha University, explaining the purpose of the study and methods of data collection to take an approval for conducting the study.

Data werecollected from the 1ˢᵗ October till the end of December 2016,during academic year 2016-2017.The purpose of the study was explained by the researcher to all students (study and control groups) included in the study. Total number of pediatric nursing student in first term was (196), (5) students refusedto participate and (11)student not have mobile phone. So the final total of study sample was (180) who agree to participate in the study them were 90 as a study group and 90 as control group. The study group divided into (5 groups), each group consists of (18 students). The researcherinterviewed each student. Initial individually assessment of student's knowledge and practice by using mobile phone device was carried out prior to training sessions using instrument 1 and 3. The training started by teaching the theoretical pediatric course for all students. In study group the theoretical pediatric course consist of definition, indication, equipment and procedure for each procedure and takes about 35minutes for knowledge.

Theoretical partconducted in the 3rd year pediatric nursing students' department class room and teaching hall take 2 hours while the implementation of the practical part conducted in the affiliated nursing laboratory as previously mentioned.

Practical part: started by setting objective of mobile phone device based training, preparation of the content which covered the reason behind the application of the sessions:Phototherapy, oxygen therapy, growth measurement anddrug administration (IM). Demonstration and redemonstration were conducted in 2 sessions for each group in the clinical pediatric nursing laboratory skills, 2 sessions per day/ approximately 2 to 3 day per week, the time of each session about 15to 20 minutes, the time depending upon understanding and responses of the students. Students divided into groups (the group consist of 5 students) to facilitate their training on the mobile phone device. Study group and control group take the same course. Each student takes about 15-20 minutes, student was allowed to perform the steps of each procedure in the faculty clinical pediatric nursing laboratory skills under the supervision of researcher. The researcher was repeated procedures until the student mastered these skills. The evaluation phase, during this period the researcherobserved the students' practice for pediatric clinical skills after using mobile device with QR through pre and post examination form and assessed their knowledge and attitude through students' self-administered questionnaire sheet.

Data analysis

The collected data were organized, tabulated and analyzed using electronic computer and statistical package for social sciences (SPSS) version 20. Descriptive statistics were calculated for the data in the form of: Mean and standard deviation for quantitative data, and frequency and distribution for qualitative data. Also in analytical statistics, inter-group comparison of categorical data was performed by using chi square test (X^2value). Also, Pearson correlation coefficient test was used. P value <0.05 was considered statistically significant (*) while >0.05 statistically insignificant and P value <0.001 was considered highly significant (**) in all analyses.

Results

Regarding to student age, all (100%) of the study and control groups had age between 20-22 years old. In relation to student gender, the majority (93.3%and 67.8%) of the study and control groups are female, less than three quarter (67.8% and 61.1%) of the study and control groups were reside from rural areas. In relation to previous uses of mobile device in learning pediatric nursing skills, all (100%) of the study and control groups haven't used mobile device in learning. Meanwhile, more than three quarter (82.2% and 57.8%) of study and control groups were used mobile device to download songs.

Table (1): Shows that, there was a highly statistically significant difference between study and control groups inknowledge score regardingmobile device with quick response code in post training as compared to pretraining implementation**(P=<0.001).**

Table (2): This table presented that, there was a highly statistically significant differences between study and control groups in relation to their knowledge regardingpediatric nursing skillsat post training as compared topre training (P<0.001)**.**

Table (3): Showed that, there was a highly statistical significant difference (P value <0.001) between study and control groups in relation to their total knowledge regarding pediatric nursing skill in study group.

Table (4): This table presented that, there was a highly statistically significant differences betweenstudy and control groups in relation to all items of pediatric nursing practice(phototherapy, oxygen, length, weight and drug administration)at post training as compared to pre training (X^2=172, P<0.001)

Figure (1): Reflects that, the majority (93.3%) of study group had positive attitudes towards mobile device with quick response code in the post training in relation to control group.

Figure (2): Showed that, the majority (95.6%) study group had good practice towards pediatric nursing skills in the post training in relation to control group.**Table (5):** Showed that,there were improvements in student knowledge, practice and attitude in study group more than control group in post training as compared to pre training,majority (97.8% and 90%) of study and control groups had unsatisfactory knowledge in pre training.While (88.9% and 85.6%)of study and control groups hadsatisfactory in post training.In relation to total practice, majority (100%) of study and control groups had poor practicein pre training as compared to (95.6%) of study group had good practice in post training. Meanwhile,the majority (93.3%) of study group had positive attitudes towards mobile device with quick response code in the post training in relation to control group.

Table (1): Mean and standard deviation of the studied student's knowledge regardingusing of mobile withquick response code (pre/post n=180).

Item	Study group(No=90)				Paired (t)	p	Control group(No=90)				Paired (t)	p
	Pre- training		Post- training				Pre- training		Post- training			
	Mean ± SD		Mean ± SD				Mean ± SD		Mean ± SD			
Concept of mobilewebsite QR codelearning	.1000	.39803	2.8889	.40901	.076	.940	.0000	.00000	.0000	.00000	40.137	.000
Reasons for using mobile website QR code	.0000	.00000	5.6333	1.17512	7.162	.000	.0000	.00000	.0000	.00000	40.137	.000
Benefits of mobile website QR code	.0000	.00000	7.3778	2.58160	7.981	.000	.0000	.00000	.0000	.00000	40.137	.000
Types of devices mobile website QR code	.2333	.83532	7.1333	1.31713	9.281	.000	.0000	.00000	.0000	.00000	40.137	.000
Difficulties facing the application of mobile website QR code	.1333	.73744	8.6333	3.24106	8.730	.000	.0000	.00000	.0000	.00000	40.137	.000

Table (2): Distribution of the studied students' knowledge regarding pediatric nursing skills at pre training and post training (study and control group n=180)

| Items	Study group(No=90)						X^2 test	p	Control group(No=90)						X^2 test	p
	Pre training			Post training					Pre training			Post training				
	Correct and complete answer	Correct and incomplete answer	Don't know	Correct and complete answer	Correct and incomplete answer	Don't know			Correct and complete answer	Correct and incomplete answer	Don't know	Correct and complete answer	Correct and incomplete answer	Don't know		
	%	%	%	%	%	%			%	%	%	%	%	%		
Choose the correct answer	4.4	23.3	72.2	70.0	22.2	7.8	104.34	.000	1.1	17.8	81.1	57.8	31.1	11.1	106.02	.000
Complete the missing space	2.2	31.1	66.7	71.1	14.4	14.4	101.79	.000	1.1	30.0	68.9	65.6	20.0	14.4	95.28	.000
Complete the following	4.4	22.2	73.3	61.1	21.1	17.8	80.63	.000	3.3	17.8	78.9	56.7	25.6	17.8	79.18	.000
True and false question	0.0	24.4	75.6	78.9	11.1	10.0	124.74	.000	0.0	18.9	81.1	67.8	22.2	10.0	111.65	.000

Table (3) Total knowledge scores of studied students regarding mobile learning through the training phases (No 180).

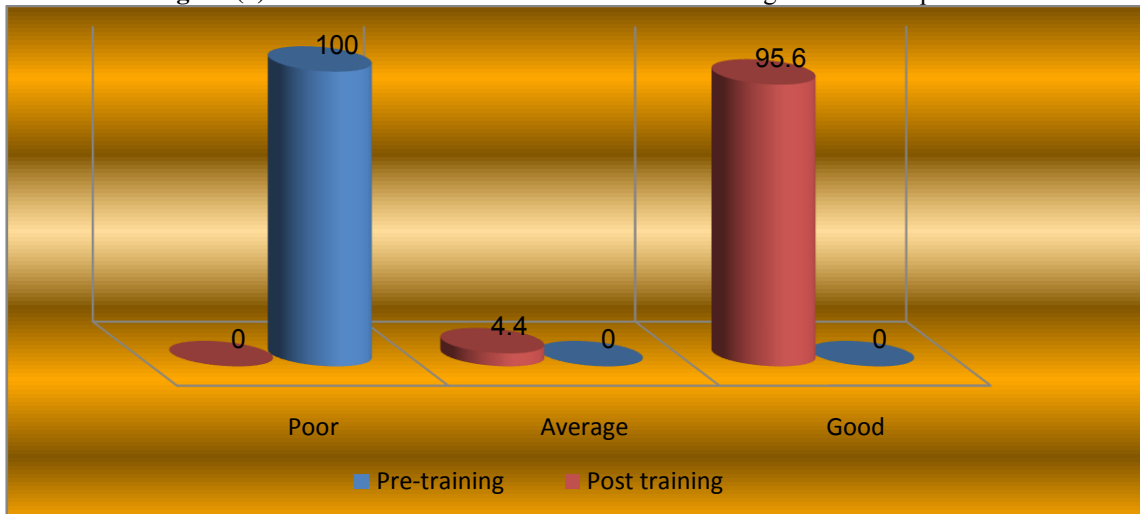| Topic	Study group(90)				Control group(90)				X^2 test	p
	Pre training		Post training		Pre training		Post training			
	No.	%	No.	%	No.	%	No.	%		
Satisfactory	2	2.2	80	88.9	0	0.0	77	85.6		
Unsatisfactory	88	97.8	10	11.1	90	100	13	14.4	159.564	.000
Total	90	100	90	100	90	100	90	100		

Table (4): Distribution of the studied students practice regarding phototherapy, oxygen, length, weight and drug administration, at pre and post training (study and control n=180)

Items	Study group(No.86)					X^2 test	p	Control group(No.86)					X^2 test	p
	Pre training			Post training				Pre training		Post training				
	Done correctly %	Done incorrectly %	Not done %	Done correctly %	Done incorrectly %			Done incorrectly %	Not done %	Done correctly %	Done incorrectly %	Not done %		
Phototherapy	3.3	6.7	90.0	92.2	7.8	155.49	.000	2.2	97.8	83.3	13.3	3.3	161.53	.000
Oxygen therapy	0.0	6.7	93.3	95.6	4.4	170.40	000	3.3	96.7	83.3	14.4	2.2	162.43	000
length	0.0	4.4	95.6	95.6	4.4	172.00	000	1.1	96.7	66.7	30.0	3.3	164.53	000
Weight	1.1	4.4	94.4	93.3	6.7	168.04	000	3.3	95.6	85.6	11.1	3.3	159.16	000
Drug administration	1.1	12.2	86.7	95.6	4.4	164.31	000	12.2	87.8	91.1	8.9	0.0	161.11	000

Figure (1): Distribution of the studied student's according to their total attitude toward mobile device with quick response code
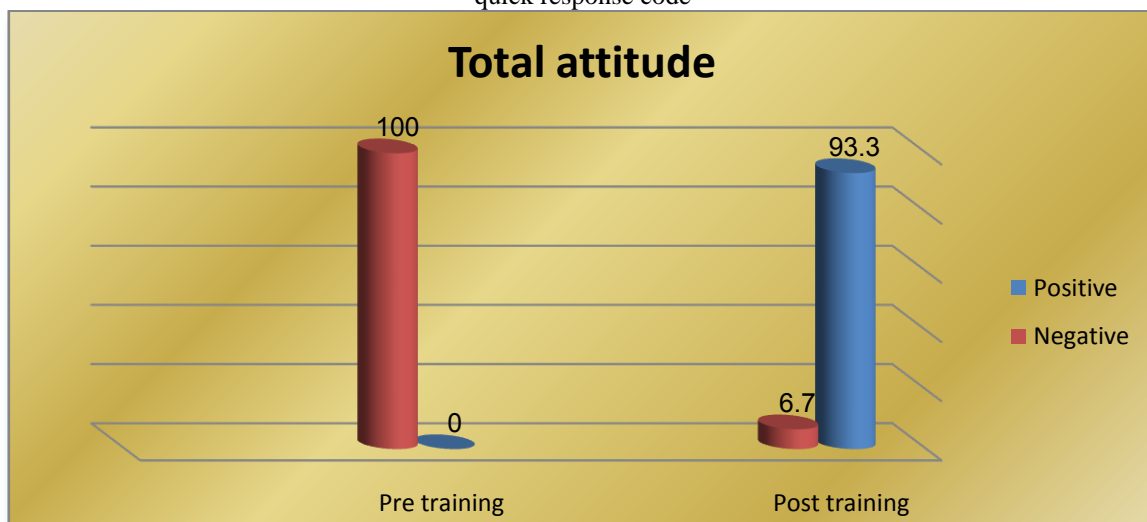
Figure (2): Distribution of the studied student's according to their total practice

Table (5) Distribution of total knowledge, practice and attitude scores of studied students regarding mobile devicewith quick response code during the training phases (No 180).

Topic	Study group(90)				Control group(90)				X^2 test	P value
	Pre-training		Post training		Pre-training		Post training			
	No.	%	No.	%	No.	%	No.	%		
Total knowledge score										
-Satisfactory	2	2.2	80	88.9	0	0.0	77	85.6	159.56	.000
-Unsatisfactory	88	97.8	10	11.1	90	100	13	14.4		
Mean± SD	17.88± 14.23				1.5722 ±.496					
Total practice score										
Good	0	0.0	86	95.6	0	0.0	29	32.2	180.00	0.001
Average	0	0.0	4	4.4	0	0.0	58	64.4		
Poor	90	100.0	0	0.0	90	100.0	3	3.3		
Mean± SD	1.97± .991				1.64± .744					
Total attitude									356.14	0.001
Positive	0	0.0	84	93.3	-	-	-	-		
Negative	90	100.0	6	6.7	-	-	-	-		

II. Discussion

Technology has brought a lot of changes incorporating in education. Nursing educators needs to face these challenges by designing a new learning experience to practice in an altering health care environment. Mobile devices can enhancenursing students tolearncontent and improve how nurses practice to safe patient care **(Gapp, 2015)**. The nurse educators should be explore the use of mobile with QR code technology to support nursing students in clinical training can enable student involvement and provide rich and rapid feedback **(Rahman, et al., 2015)**.

Concerning knowledge of studied student toward mobile device with quick response code (table1), the results of the studyshowed that, there was a highly statistically significant differencebetween study and control groups in knowledge score regarding using of mobile device with quick response code at post training as compared to pretraining implementation.This finding of the study in a concurrence with**Raman, (2015),** whichstudy titled "mobile technology in nursing education,"who illustrated that, all of the students (100%) being very knowledgeable in the use mobile web QR code. All studentswere easy scanning QR codes, 90% they found the QR codes to be more helpful than traditional textbook pictures. Students in the study group indicated high levels of total engagement of 79.8 (≥66.5, highly engaged), with a mean score of 4.18 (>3.4, highly engaged). The highest mean (SD) scores for the engagement subcomponents were emotion, followed by performance, skills and participation.In the line of this study accordance with**Law. and So, (2010),**which study titled"QR codes in education," who showed that,more than 90% (n = 15) had desired to continue using QR technology in the classroom. In addition, 98% thought that the codes covered the necessary informationand

beneficial in the clinical setting. All of the students had satisfaction with QR codes as a learning activity, most (92%) indicated that, they were strongly satisfied with the exercise.

This result were supported by the findings of **Zurmehly and Adams(2017)**,which study titled " using quick response codes in the classroom," who reported that,students scanning QR codes was easy and felt that the QRcodes helped improve their learning ofcardiac rhythm strips and feeling most engaged when course work activities could be applied to real-life situations.

This may be attributed to all students from children till college enters lecture and using textbook for studyingwithout the experience of new technology.

As regards student knowledge regarding pediatric nursing skills (table 2),this table presented that, there was a highly statistically significant   differences between study and control groups in relation to their knowledge about pediatric nursing skills at post training as compared to pre training.In this context**Chaves, (2015),**which study titled"an investigation of the effects of smartphonetechnology characteristics on nurses perceived usefulness and attitudes towards using smartphones for work," who mentioned that, in nursing education smartphone technology can be used for a quick access to course content, educational materials and guidelines during clinical procedures, classes and acquire information related to students' performance. Each student academic success todetermined by their performance during classroom tasks, demonstrations and examinations ideas, skills and knowledge of studentand planned grade clearly indicate the performance of a student.

On investigating student attitude, the present studyshowed that themajority study group had positive attitudes towards mobile device with quick response code in the post training in relation to control group.This result has been support by the findings **De Pietro, and Fronter, (2012),**which study titled "mobile tutoring for situated learning and collaborative learning in AIML application using QR-code," who showed, the mobile devices in learning have positive effect on students' clinical learning in medical sciences education. Ingeneral, there were several instances of positive effects of mobile learning utilization on clinical learning of students. The fieldsthat were affected by mobile learning included nursing process, catheterization, drugs calculation, maintain infant airway, intramuscular injection and chest tube insertion.

Regarding student total knowledge, practice and attitude (table 5),Showed that, there were improvement in knowledge, practice and attitude in study more than control group in post training as compared to pre training, majority of study and control groups had unsatisfactory knowledge in pre training. While more than three quarter of study and control groups hadsatisfactory in post training. In relation to total practice, majority of study and control groups had poor practicein pre training as compared to majority of study group had good practice in post training. Meanwhile,the majority of study group had positive attitudes towards mobile device with quick response code in the post training in relation to control group.This study accordance with finding of**Koohestani, et al. (2017),** which study titled "the educational effect of mobile learning on students of medical science, " who explored that, the effects of mobile learning intervention on students' knowledge of the nursing students in nursing process and improvement of their learning. In this context, **Guo, et al. (2015),** which study titled" An integrative review of the impact of mobile technologies used by health care professionals to support education and practice ," who mentioned that, the integration of mobile technologies in nursing curricula allowed students to actively participate in different learning contexts and reinforce learning at any time or any location. This participation has the potential to increase student achievement, make student attitudes more positive and lead to authentic learning activities that are indicative of the potential benefits derived from here and now mobile learning. Mobile devices assist learners to focus their attention on the context of the learning environment.In addition,**Jabbour, (2014),**which study titled"an analysis of the effect of mobile learning on Lebanese higher education," who indicates that, the learner had a positive attitude toward the use of mobile devices with QR code in the classroom. The regular use of technology improved the level of student comfort and satisfaction in using technology. The use of mobile technology in the classroom has an effect on students' motivation to learn and achievements.

Meanwhile, this study accordance with**Kivisto, (2017),** which study titled" nursing students' experiences in learning with mobile technology," who showed that, improvement in nursing practice happens as the student can use mobile technology. Most of the positive experiences and feelings aroused from the device benefits which these then together enabled learning. Motivation towards learning enhances as they feel comfort using mobile technology. Thus, offering the students with mobile technology learning tools has a great chance to improve learning and future practice.

Also,These findings are consistent with findings **of Joyce and Kellie,(2017),**which study titled"using quick response codes in the classroom," who explored that, using mobile technology can be enhance clinical knowledge. Mobile technology use and including QR codesare increasing in general collegiate classrooms. Overall, the use of QR codes was a creative and positive way to integrate technology into the classroom to provide students with instant positive feedback. Nursing educators should consider incorporating newly

emerging technologies that support student development of clinical reasoning skills to facilitate higher levels of learning. The QR codes served as a cost-effective learning aid to supplement student learning

III. Conclusion

Based on the results of the present study, the study was concluded that, the pediatric nursing students (study group) who utilized mobile devices with quick response code achieved a higher level of academic performance than pediatric nursing students(control group) who received traditional teaching (lecture, demonstration and redemonstration only).

IV. Recommendations

Based on the Findings of the Current Study, the Following Recommendations were deduced

• The teaching staff should be use mobile device with quick response code technology such as guidelines for taking pictures and videos during lectures or clinical practices

• Nursing educators should be preparingeducational material, teaching methodsand activities that are appropriate for mobile with quick response code technology.

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