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Web Based Learning versus Traditional Demonstration Method for Breast Self-Examination Module on Academic Achievement of Female Community Health Nursing Students

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Abstract: **Although continuing education is necessary for practicing nursing, it is very difficult to organize traditional classes because of large numbers of nurses, so the need for the electronic learning is very vital.**

The aim of the study was: to determine web-based learning versus traditional demonstration method for breast self-examination module on the academic achievement of female community health nursing students.

Subjects and Method: The study design was quasi-experimental study design.

Study settings: This study was conducted at the Faculty of Nursing, Tanta University.

Study subjects: The study sample consisted of 200 students divided into two groups: nontraditional group (A) of 100 students studying with web-based learning (WBL) and traditional group (B) of 100 students who studying with traditional demonstration method.

Tools of data collection: Three tools were adapted by the researcher to collect the necessary data.

Tool I: Socio –demographic characteristic of the students.

Tool II: Students' knowledge about breast self -examination.

Tool III: Breast self - examination practice Observational checklist.

Results: The results of this study showed that more than half of female students (59% -57%) for traditional and nontraditional groups respectively had a good level of knowledge with no a statistically significant difference between the two the methods of teaching during immediate posttest (p=0.959). Nearly half (47% and 45% respectively) of the students had a good practice score regarding BSE immediate posttest among both groups.

Conclusion and Recommendation: The present study revealed that, there was no a statistically significant difference between two different of teaching methods regarding knowledge of BSE during immediate and post-test. There was a significant difference between the two groups' pre and post-test only regarding the practice of BSE. This BSE module was more an effective in BSE practice retention. Therefore, a pressing need for updating of the nursing curricula and conducting of health education programs about BSE.

Keywords: **Traditional Demonstration Method- Breast Self-Examination- Web Based Learning- Academic Achievement.**

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I. INTRODUCTION

Nursing education principally concentrates on transmitting nursing knowledge and assisting nursing students to acquire the necessary skills and attitudes associated with nursing practice. To meet the diverse needs of today 's educational climate, nursing educators must develop an understanding of a variety of learning environments and skills in contemporary teaching strategies. Additionally, maintaining the ability of divergent thinking to solve the health problems of the students is very important [(1)]. One way to enhance the nursing education is to determine the effect of the teaching methods on nursing students' achievements and teaching effectiveness at nursing colleges. Moreover, in nursing education, the interest in improving students' achievements and the quality of teaching effectiveness have been increased over the time [(2)].

As the new millennium starts, the educators are facing a challenge unlike any that has come before. Just as the internal combustion engine changed the world, the World Wide Web (WWW) has forever changed the way in which the educators teach the students at all educational levels [(3)]. Despite the rapid advancement of web-based learning in today's institutions of the higher education, however, it would be naive to assume that new teaching technologies available via the web will find widespread acceptance. Many faculty members still view the computer not as an extension of their classroom, but as a foreign object taking up desk space. Few educators can use software packages beyond their basic functions, and many still don't know how to E-mail. This philosophy of sticking with the old and proven methods of educating may obliterate some universities from the face of the educational map [(4)].

Despite the variety of teaching paradigms available to the educators today, the primary goals of the higher education remain the same regardless of the mode of delivery of educational content. These enduring goals include creating a learning environment in which the student is comfortable yet intellectually challenged, providing current and relevant subject content in a professional manner, fostering the concept of life-long learning and leading by setting examples of a high standard [(5)].

There are two methods of teaching, firstly the traditional classroom teaching has a lot of forms including lecture, case studies, and traditional demonstration method and team projects. Learning is conducted in a synchronous environment, meaning that the students must be in the same place at the same time to learn. The traditional classroom has the major advantage of the face-to-face interaction between the student and educator as well as between the students themselves. Students derive motivation from the teacher as well as from the other students. In this environment, learning is enhanced when it is more like a team effort than a solo race. Good learning is collaborative, social, not competitive and isolated [(6)]. In this method, working with others increases involvement in learning. Sharing one's own ideas and responding to others' reactions improves thinking and deepens understanding particularly in small classes, the educator can know and motivate each student on an individual basis. It is this belief in the "human contact" element of teaching that leads many skeptics to discount the possibility that online learning can be as effective as the traditional method of information delivery [(7)].

Secondly, the online learning environments occur in an asynchronous mode, meaning that students can learn independently from anywhere at any time. One advantage of this mode of educational information delivery is that students can set learning at their own pace. In addition, online modes of course delivery offer the student access to the WWW. In this environment, online environments transcend the need for the real classroom, allowing the student to operate in a virtual reality. This opens the chance for the students, who otherwise would be unable to attend a university to gain a higher education by facilitating the busy schedules with which students and educators are all encumbered. It also reduces university constraints due to limited classroom space and limited funding [(8, 9)].

Breast Cancer (BC) is the most common type of cancer in women and the second leading cause of cancer-related deaths, next to lung cancer. Although men can also get breast cancer, cases of male breast cancer account for less than 5% of all breast cancer cases diagnosed. Globally, there are 252,710 new cases of invasive breast cancer, 63,410 new cases of breast carcinoma, 40,610 breast cancer deaths and this number are, unfortunately, rising in developing countries like Egypt [(10)]. Although there is a successful curative treatment for breast cancer, early detection and treatment are very important in reducing mortality rates among women [(11)].

Breast self-examination is considered one of the crucial skills learned in the nursing facilities and schools. It also considered as simple, very low cost, non-invasive with no special tool requirements and it is an effective screening method for breast cancer which only takes five minutes to apply. Female nursing students must be fully oriented about

BSE, so the teaching of it must be very good to meet the student's needs. Nurse educator plays important role in teaching BSE whether by traditional method or advanced methods. Community Health Nurse acts as supervisor, designer, care provider, collaborator and researcher during the teaching of BSE [12].

The **significance of the study**. **First**, understanding the effect on the academic achievement of the female community health nursing by using two different methods of teaching, one method by using breast self -examination module through (web-based method) and another through using traditional demonstration method**. Second,** studying of breast self-examination is very important because it is one of the three screening methods of breast cancer, also breast cancer constitutes the second cause of death worldwide. **Third**, to fully prepare of female nursing students for their future role as a nurse with an in-depth understanding of all aspects of the screening method (BSE) including (definition, objectives, time of starting, warning signs, risk factors and steps or procedures of breast self-examination [13].

The aim of the study: Was to determine web-based learning versus traditional demonstration method for breast self- examination module on the academic achievement of female community health nursing students. **Research hypothesis:** Web-based learning is expected to be effective on the academic achievement of female Community Health Nursing students for breast self-examination module rather traditional demonstration method.

II. MATERIALS AND METHOD

Research design: Quasi – Experimental study design was used in this study.

Setting: The study was conducted at Community Laboratory in the Faculty of Nursing at Tanta University.

Subjects: All female students were selected who studied of the Community Health Nursing Course (fourth degree) in the second semester during the academic year (2016-2017). The total study sample was 200 students. These students assigned into two groups; Nontraditional teaching group of 100 students studying with web-based learning (WBL) and the traditional teaching group of 100 students who studied with the traditional demonstration method. The sample subgroups chosen randomly from the previous setting by proportion allocation method representing approximately 0.5%. These students were selected according to inclusion criteria.

Inclusion Criteria: all students who accepted to participate in this study after doing interview for all female community health nursing students.

Tools of data collection: Three tools were used in this study according to developed web-based module for breast self -examination by researcher based on literature review.

Tool I: **Socio-demographic Characteristic of the Students:** This tool established by Eqtait et al., (2015) [14] and it was adapted by the researcher. This tool include data about the study sample such as: age, residence, marital status, the family history of breast cancer, source of information about breast self-examination.

Tool II: **Student's Knowledge about Breast Self-Examination**: This tool was established by Rizvi et al., (2013) [15], and was adapted by the researcher. This tool aimed to assess students' knowledge about BSE. It covered the following items: - Advantage of doing breast self- examination, Ideal age to start breast self –examination, Time of doing it every month, Frequency of doing breast self –examination, Warning signs of breast cancer, Proper techniques and positions for doing breast self –examination.

Scoring System: The questionnaire had two categories: one category with response (yes or no). One point was being awarded for response (yes answer) and zero for response (no answer) and another category with multiple options. Each question had a group of answer points, one point was being awarded for each correct answer and incorrect answer took take zero. The correct responses were summed up to get the total knowledge scores for each student. The total knowledge score of this part was 21 and the total score was converted into a percent.

Knowledge score had been classified into three categories as follows:

- Poor knowledge 0- < 60% of the total score of knowledge.

- Fair knowledge 60 - < 75% of the total of knowledge.

- Good knowledge 75% or more of the total of knowledge**.**

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Tool III: Breast Self -Examination Practice Observational Checklist: This tool was established by Khalil et al., (2014) [16], and was adapted by the researcher. The students' practice was observed through using observational performance checklist which composed of 22 items which contained positions and technique of practice. This checklist had two categories, one category in the form of (done) and another category in the form of (not done).

The scoring system for practice:

- A zero (0) score for the items which was not done, one score for the items that was done correctly.

- The total scores for breast self – examination procedure was 22 degrees, 7 degrees for in front of mirror position, 5 degrees for shower position and 10 points degrees for lying down position and the total score was converted into a percent.

- Theses scores were summed up get a total practice scores for each student then convert into a percent score. The higher score indicated a greater level of student's practice.

Scoring for BSE practice observation check list of students was done as follows**:**

- Poor performance 0- < 60 % of the total score of practice.

- Fair performance 60 - < 75% of the total score of practice.

-Good performance 75% or more of the total score of practice.

Method:

The operation of the study was carried out as follows:

(1)- Administrative approval.

An official permission to conduct the study was obtained from the Dean of Faculty of Nursing, in Tanta University.

(2)- Developing the tools:

Study tools were developed by the researcher based on literature review. The interview sheet was reviewed and revised by the supervisors, and then tools of the study were introduced to jury committee (three professors of Community Health Nursing at the Faculty of Nursing in Tanta University, and two professors of Public Health in the Faculty of Medicine, Tanta University) before conducting the study for testing the face and content validity**.**

(3)- The pilot study:

- A pilot study was carried out on 10% of female nursing students (20 students), who studied Community Health Nursing course to test the clarity and applicability of the tools to detect any obstacles that might be encountered during data collection and to determine the length of time needed to collect the data from each student. The necessary modifications were done according to pilot study. Those students were excluded from the study sample. **To assess reliability**, the study tool was given to 20 students (pilot study), test and retest was done two weeks later by using Cronbach's Alpha test. Cronbach's Alpha was computed, and it was found to be = (0.761) (the same result in the test and retest).

(4)- Ethical and legal considerations: -

-Every student was informed about the purpose, nature and benefits of the study at the beginning of data collection and asked to share in the study willingly.

- Informed consent was obtained from the students to participate in the study.

- Confidentiality and privacy were taken into consideration regarding the data collection

(5)- Developing the educational program. The following steps were followed to develop the program.

- **Assessment phase**: The data was collected using the previously mentioned tools (I, II and III) for both groups. For nontraditional group, web-based learning for breast self -examination module was administered to collect the base line data as pretest. For traditional group, the data was collected through interviewing each student individually in predetermined setting to collect the base line data as pretest assessment. The pretest was collected for both groups within two weeks.

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• **Planning phase:** A breast self-examination module for nontraditional group was constructed, but for traditional group, a traditional demonstration method was used to determine the effective method of learning. The planning phase included the following parts: -

a) Formulating Objectives: The general objectives of the module were to improve the nursing students' knowledge and practice regarding breast self -examination.

b) Preparing and organizing the breast self -examination module and breast self -examination demonstration method content. Based on the students' needs which were determined in the pre-assessment and the objectives of the health education intervention, the researcher reviewed the related literature that covered the various aspect of the health education intervention.

- The health education intervention was developed by the researcher based on the results obtained from the interviewing sheet, as well as literature review.

- Organizing content of the module to facilitate learning activities to achieve the objectives.

- The content of the module was organized in three lessons to be provided for the nontraditional group. These lessons were as follow:

❖ Breast self - examination module contained of 12 slides about knowledge and practice of breast self- examination. Also included of a lot of animation, videos and picture about breast self- examination**.**

• **Lesson 1:** It was contained the goal and the objectives of this module. **Lesson 2:** It was contained the following items **(**Definition, Importance and Age of starting the breast self – examination). **Lesson 3:** It was contained the following items **(**Ideal time for performing, methods for Performing, techniques and Procedures for performing breast self- examination). Every lesson was supplied by animation, videos and pictures. Finally Quiz about BSE knowledge and practice.

❖ **Traditional demonstration method for control group**.

A traditional demonstration method was used. The students of traditional groups were divided into three groups, each small group composed of 35 students except one group composed of 30 students**.** This method contained three sessions. **The sessions were as follow**: **Session 1**: The aim of this session was to orient the students about the importance of the program, its session and expectation of each session. **Session 2**: The aim of this session was to increase the students' knowledge about breast self- examination (definition, objectives, age, frequency and time of BSE and high-risk groups and warring signs of BC). **Session (3):** The aim of this session was to clarify for the students how to perform the correct steps of BSE through lectures, group discussion, demonstration and re- demonstration as teaching methods. Each session took from 30-45 minutes including periods of discussion according to students' progress and feedback**.** All sessions were administered three times per week to all students of traditional group. Every group from the students of the traditional group took all sessions at one time per day throughout three days per week.

c) Selecting teaching strategies: Traditional demonstration method was used for traditional group, while web-based learning was used for the nontraditional group through asynchronous method. This module was submitted to the students at implementation phase. **Lecture**: Lecture was presented in a concise manner and simple language. It took only 10 minutes from each session. **Group discussion**: It helped the researcher to offer practice in verbal expression, quick thinking and helped learner to talk freely about their problem and encourage understanding and feedback. In addition, the researcher was able to direct the group by asking stimulating questions, listen to all comments and opinions and from time to time summarizing important points. **Demonstration and re-demonstration**: Demonstration and re- demonstration method was used to illustrate performance for breast self- examination. Simulation using student and doll was adopted. Enough time was offered for interpretation, re- demonstration and discussion.

Web based learning through asynchronous method was used. It helped researcher to offer knowledge and practice about BSE in an easily, attractive and stimulating manner without limitation with place and time.

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- **Implementation phase:**

The BSE module was submitted to the nontraditional group through WBL within one week through E-learning program via this website (http://cms2.nulc.edu.org.) and groups of faculty students on the Facebook. The students took a chance for one week to enter and surf the breast self -examination module. After one-week, immediate posttest was collected within one week. After one month, posttest was collected within one week. For traditional group, a traditional demonstration method was administered within one week; immediate posttest was collected within one week later. The week that researcher gave the module for control group, was the same week that the researcher gave BSE with demonstration method for the traditional group. After one month, posttest was collected within one week. Implementation phase for breast self- examination module and traditional demonstration method.

- **Evaluation phase:** The aim of this phase was to determine the effect of the web-based learning versus traditional demonstration method for breast self- examination module on academic achievement of female community health nursing students.

Evaluation Phase was done three times; by using tool (I, II and III).

1-First time (pretest): Before implementation of the web breast self-examination module and traditional demonstration method using tools (I, II and III) for both groups**.**

2-Second time**:** For nontraditional group**,** immediately after one week after submit BSE module using tool (II and III)**.** For traditional group, students were evaluated after one week after teaching by traditional demonstration method**.**

3-Third time (post-test): One month after submitting of BSE module and traditional demonstration method using tool (II and III) for both groups**.**

(6)- Statistical analysis:

The collected data were organized, tabulated and statistically analyzed using (Statistical Package for the Social Science, (version 20, spss Inc., Chicago Il, USA). For qualitative data, comparison between two groups was done using Chi-Square testing (X^2). For quantitative data, the range, mean and standard deviation were used. Comparison between more than two means of parametric data, the F value of analysis of variance (ANOVA) test was calculated where Schiffer test was performed to compare between each two means. Correlation between variables was evaluated using Pearson's correlation coefficient (r). Significance was adopted at $p < 0.05$ for interpretation of results of tests of significance.

III. RESULTS

Table (I): Distribution of the students according to their socio-demographic characteristics

Socio –demographic characteristics		Groups			T-Test or Chi-Square
		Traditional group Percent %	Nontraditional group Percent %	T or X^2	P-value
Age in (years)	Range	21-24	21-24	T= 0.396	0.692
	Mean ±SD	22.090 ± 0.668	22.050 ± 0.757		
Residence	Urban	54	47	0.980	0.322
	Rural	46	53		
Marital Status	Single	79	72	1.325	0.250
	Married	21	28		
Family history of breast cancer	Yes	19	18	0.033	0.856
	No	81	82		

***Significant value (p <0.05).**

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Table (I): Distribution of the students according to their socio-demographic characteristics: It shows that the age for both groups ranged from 21-24 years with the mean age of the traditional group was 22.090 ± 0.668 years compared to 22.050 ± 0.757 years for the nontraditional group. There was no statistically significant difference between two groups regarding mean of the age of the students (p =0. 692). In relation to the residence and the marital status, about half (47%) of the nontraditional students were living in the urban area compared to more than half (54%) of the traditional students. About three quarters of the nontraditional and traditional groups (72% -79% respectively) were single. As regarding family history of breast cancer. Most of the nontraditional and traditional groups (82% - 81% respectively) didn't have family history of breast cancer.

Table (II): Distribution of the students according to their history performance of BSE

Items		Traditional group %	Nontraditional group %	Pearson Ch. Square (X^2)	P-value between traditional and nontraditional groups
History performance of BSE	**Yes**	49	57	1.749	0.257
	No	51	43		

*** Significant value (p <0.05).**

Table (II): Distribution of The Students according to History Performance of Breast Self -Examination

The table (II): Represents the distribution of the students according to history performance of breast self –examination. This table reveals that nearly half of the traditional students (49%) performed BSE compared to more than half of students (57%) among the nontraditional students. There was no statistically significance difference between two groups regarding the history of the performance of BSE (p= 0.257).

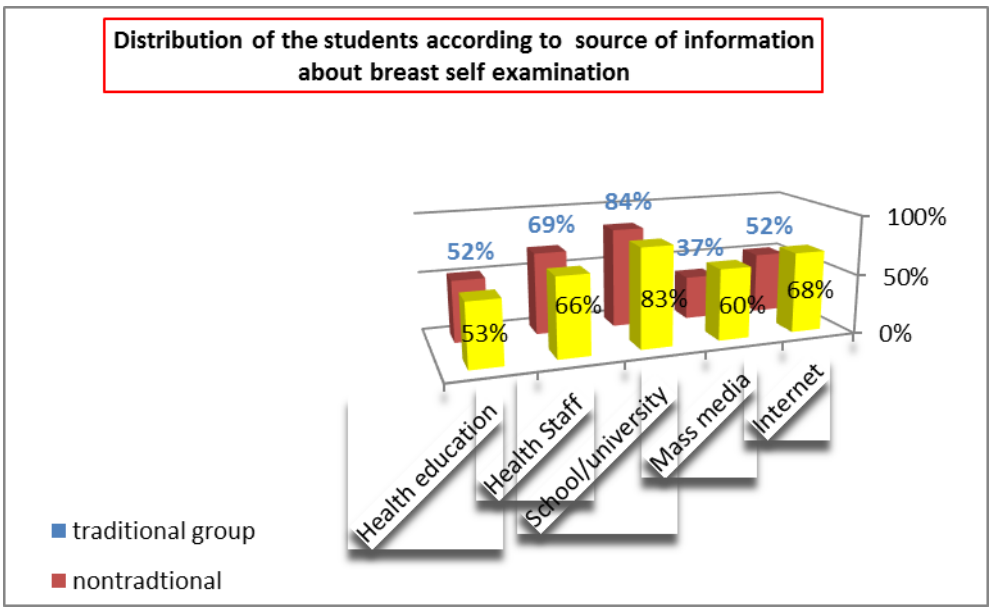

Figure (I): Distribution of the students regarding to source of Breast Self-Examination information

Figure (I): represents distribution of the students regarding to source of Breast Self - Examination information. This figure illustrates that the majority of the students for both groups had the same answer that the school and university curricula (83%, 84% for traditional and nontraditional group respectively) were the most source of information regard BSE. More than two thirds of the traditional students (68%) reported that internet was the second source of information compared to half of the nontraditional students (52%). Health staff was the second source of information for more than two thirds (69%) of the nontraditional group compared to nearly two thirds of the traditional students (66%). About half (53%- 52%) from the traditional and nontraditional groups respectively stated that health education materials were other sources of the information regarding BSE.

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Table (III): Distribution of the total knowledge scores of the students regarding Breast Self-Examination

		Total knowledge scores						Test	
Groups	**Knowledge**	**Pre (n=100)**		**Immediate (n=100)**		**Posttest (n=100)**		**Chi-Square**	
		N	**%**	**N**	**%**	**N**	**%**	**X^2**	**P-value**
Traditional	**Poor**	26	26.00	1	1.00	12	12.00	55.359	**<0.001***
	Fair	60	60.00	40	40.00	48	48.00		
	Good	14	**14.00**	59	**59.00**	40	**40.00**		
Nontraditional	**Poor**	40	40.00	1	1.00	14	14.00	59.744	**<0.001***
	Fair	39	39.00	42	42.00	39	39.00		
	Good	21	**21.00**	57	**57.00**	47	**47.00**		
Chi-Square	**X^2**	8.824		0.083		1.648			
	P-value	**0.012***		0.959		0.439			

***Significant value (p <0.005).**

Table (III): presents that three fifths of the students (60%) for the traditional group had fair level of knowledge compared to nearly two fifths of the students (39%) among nontraditional group during pretest with statistically significant difference between both groups (p= 0.012), only about one fifth of the students (14%) had good level of knowledge among traditional group compared to more than one fifth of students (21%) among nontraditional group. After BSE intervention immediately posttest, it was found that nearly three fifth of the students (59%-57%) for traditional and nontraditional group respectively had good level of knowledge but the traditional demonstration method gets high percentage, with no statistically significance difference between the two the methods of teaching during immediate posttest (p= 0.959). After one month (posttest), nearly half of the students (48%) among traditional group had fair level of knowledge compared to nearly two fifths of students (39%) among the nontraditional group. On the other hand, about half of the students (47%) among the nontraditional group had good level of knowledge compared to two fifth of students (40%) among traditional group with no statistically significant difference between the two methods of teaching during posttest regarding BSE (p=0.439).

Table (IV): Distribution of the total practice scores of the students regarding Breast Self- Examination

		Total Practice Score						Test	
Groups	**Practice**	**Pre (n=100)**		**Immediate (n=100)**		**Post-test (n=100)**		**Chi-Square**	
		N	**%**	**N**	**%**	**N**	**%**	**X^2**	**P-value**
Traditional	**Poor**	95	95.00	20	20.00	31	31.00	155.543	**<0.001***
	Fair	5	5.00	33	33.00	51	51.00		
	Good	0	**0.00**	47	**47.00**	18	18.00		
Non-traditional	**Poor**	85	85.00	21	21.00	33	**33.00**	95.155	**<0.001***
	Fair	9	9.00	34	34.00	35	35.00		
	Good	6	**6.00**	45	**45.00**	32	**32.00**		
Chi-Square	**X^2**	7.698		0.083		6.959			
	P-value	**0.021***		0.959		**0.031***			

*** Significant value (p<0.005).**

Table (IV): Represents that Almost all the students (95%) among the traditional group had poor level of practice compared to (85%) of the students among the nontraditional group in the pretest with statistically significant difference between both groups (p= 0.021). After BSE intervention, the study revealed that nearly half of the students (47%) had good level of practice and about one third (33%) had fair level of practice among traditional group. Nearly half of the students (45%) had good level of practice and more than one third (34%) had fair level of practice among the nontraditional group, there was no statistically significant difference between the two methods of teaching during immediate posttest (p=0.959). After one month later (posttest), this study revealed that more than half of the students among traditional group (51%) had fair level of the practice and only less than one fifth (18%) of them had good level of the practice. On the other hands among the nontraditional group, about one third (35%) of the students had faire level of practice and about one third (32%) of them had good level of practice. There was statistically significant difference between two methods of teaching during posttest (p=0.031). There was highly statistically significant improvement difference for each group (p <0.001) pre, immediate posttest and posttest.

Table (V): Relation between the mean score knowledge of the students and their socio- demographic characteristics

Knowledge	Groups		Pre (n=100)		Immediate (n=100)		Posttest (n=100)	
			Mean ± SD	P-value	Mean ± SD	P-value	Mean ± SD	P-value
Residence	traditional	Urban	13.426 ± 2.574	0.746	15.833 ± 1.969	0.056	14.222 ± 2.833	0.151
		Rural	13.587 ± 2.334		16.630 ± 2.143		14.957 ± 2.118	
	nontraditional	Urban	13.404 ± 2.841	0.477	16.234 ± 1.772	0.051	15.362 ± 2.793	0.169
		Rural	12.981 ± 3.054		15.566 ± 1.611		14.566 ± 2.932	
Marital Status	traditional	Single	13.316 ± 2.426	0.148	16.051 ± 2.087	0.165	14.519 ± 2.551	0.756
		Married	14.190 ± 2.502		16.762 ± 1.998		14.714 ± 2.572	
	nontraditional	Single	13.250 ± 3.020	0.705	16.000 ± 1.720	0.263	14.847 ± 3.192	0.608
		Married	13.000 ± 2.802		15.571 ± 1.687		15.179 ± 1.887	
Family history of breast cancer	traditional	Yes	12.263 ± 2.705	**0.014***	16.895 ± 2.514	0.106	14.105 ± 2.979	0.389
		No	13.790 ± 2.317		16.037 ± 1.946		14.667 ± 2.439	
	nontraditional	Yes	13.667 ± 2.787	0.442	15.444 ± 1.042	0.235	15.278 ± 3.250	0.585
		No	13.073 ± 2.989		15.976 ± 1.819		14.866 ± 2.810	
History of BSE performance	traditional	Yes	13.714 ± 1.860	0.395	16.455 ± 2.192	0.088	14.612 ± 2.462	0.773
		No	13.294 ± 2.921		15.706 ± 1.767		14.455 ± 2.740	
	nontraditional	Yes	13.579 ± 3.306	0.120	15.921 ± 1.744	0.759	15.391 ± 2.634	**0.036***
		No	12.651 ± 2.329		15.811 ± 1.681		14.139 ± 3.155	

***Significant value (p < 0.005).**

Table (V) As regard to the residence, it was observed that those of the traditional group from rural area recorded the highest mean score of knowledge in immediate posttest and posttest compared to those from the urban area (16.630 ± 2.143 and 14.957 ± 2.118 respectively), while among the nontraditional group, it was observed that those of the urban area recorded the highest mean score of knowledge immediately posttest and posttest compared to those from rural area (16.234 ±1.772 and 15.362 ± 2.793 respectively). As regard to the marital status, it was observed that the highest mean score of knowledge was recorded for married students among the traditional group during immediate posttest (16.762± 1.998) compared to the married students among the nontraditional group (15.571 ± 1.687).

Regarding the family history of breast cancer**,** it was observed that, there was statistically significance between family history of breast cancer and mean score of knowledge among traditional group during pretest (p= 0.014), with the highest mean score of knowledge for students who had family history of breast cancer among the traditional group during immediate posttest (16.895 ± 2.514).

In relation to history performance of breast self - examination, it was found that the students among traditional group who reported performance of BSE had the highest mean score of knowledge during immediate test (16.455 ± 2.192) compared to the students among nontraditional group (15.921 ± 1.744). There was statistically significant difference between the mean score of knowledge and performing of breast self- examination between both groups during posttest (p= **0.036)**.

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Table (VI): Relation between mean score practice of the students and their socio- demographic characteristics

Practice	Groups		Pre		Immediate		Post	
			Mean ± SD	P-value	Mean ± SD	P-value	Mean ± SD	P-value
Residence	traditional	Urban	9.389 ± 2.674	0.065	16.741 ± 4.248	0.445	14.444 ± 3.219	0.559
		Rural	8.348 ± 2.892		16.043 ± 4.853		14.804 ± 2.864	
	nontraditional	Urban	11.234 ± 3.946	0.319	15.915 ± 4.185	0.918	14.894 ± 3.613	0.537
		Rural	10.509 ± 3.291		15.830 ± 3.979		15.321 ± 3.286	
Marital Status	traditional	Single	8.481 ± 2.717	**0.003***	16.013 ± 4.289	0.081	14.658 ± 3.178	0.761
		Married	10.524 ± 2.620		17.952 ± 5.152		14.429 ± 2.580	
	nontraditional	Single	10.639 ± 4.001	0.351	16.083 ± 3.924	0.402	15.347 ± 3.374	0.291
		Married	11.393 ± 2.315		15.321 ± 4.406		14.536 ± 3.574	
Family history of breast cancer	traditional	Yes	9.105 ± 2.470	0.738	17.947 ± 3.628	0.102	14.421 ± 2.931	0.766
		No	8.864 ± 2.897		16.062 ± 4.659		14.654 ± 3.095	
	nontraditional	Yes	10.056 ± 2.879	0.305	17.278 ± 2.866	0.104	16.111 ± 3.596	0.177
		No	11.024 ± 3.748		15.561 ± 4.225		14.902 ± 3.380	
History of BSE performance	traditional	Yes	9.388 ± 2.928	0.096	16.045 ± 4.881	0.251	14.851 ± 2.991	0.263
		No	8.451 ± 2.641		17.147 ± 3.702		14.121 ± 3.160	
	nontraditional	Yes	11.561 ± 4.213	**0.023***	15.270 ± 4.480	0.053	14.984 ± 3.471	0.601
		No	9.907 ± 2.348		16.892 ± 2.998		15.361 ± 3.399	

***Significant value (p < 0.005).**

Table (VI) As regard to the residence, it was observed that those from the urban area had the highest mean score of practice in immediate posttest more than those of rural among two groups (16.741 ± 4.248 for the traditional group) and (15.915 ± 4.185 for the nontraditional group), but during the post test, the students who lived in the rural area had the highest mean score of practice for both groups (14.804 ± 2.864 for the traditional group and 15.321 ±3.286 for the nontraditional group). Regarding marital status among traditional group, there was a significant relation between mean score practice and marital status in pretest (p =0.003), with no statistically significant relation among the traditional and nontraditional groups in immediate posttest and posttest (p= 0.081, 0.402 & 0.761, 0.291) for marital status.

As regard to the family history of breast cancer, it was observed that those who had family history of breast cancer had the highest mean score of the practice more than those who mentioned that no history of the breast cancer among two groups in immediate posttest (17.947 ± 3.628) for the traditional group and (17.278 ± 2.866) for nontraditional group), without a statistically significant difference between family history and mean score practice (p= 0.102 & 0.104). In relation history performance of BSE, it was found that there was a significant relation between history performance of BSE and mean score of practice among the nontraditional group during pretest (p= 0.023), without, statistically significant relation between the previous performing of BSE and the mean score of practice among two groups immediate posttest & posttest and pre only for the traditional group (p=0.251, 0.053,0. 263,0.601 & 0.096).

Table (VII): Correlation between the total knowledge and practice scores of the students

Groups	Time		Knowledge	
			r	P-value
traditional	Pre	Practice	0.150	0.136
	Immediate		0.001	0.995
	posttest		0.352	**<0.001***
Non-traditional	pre	Practice	0.189	0.059
	Immediate		0.047	0.641
	posttest		0.081	0.421

***Significant value (p < 0.005).**

Table (VII): shows that there was a statistically significant a positive correlation between the total scores of knowledge and the total score of the practice (r=0.352, p < 0.001) in the posttest among traditional group. Also, there was no statistically significant positive correlation between total score of knowledge and total scores of the practice among traditional group during pre and immediate test (p= 0.136- 0.995 respectively). On the other hand, there was no a significant correlation between the total score of knowledge and the total score of practice among nontraditional group pre, immediate and posttest (p= 0.059- 0.641-0.421 respectively).

1V. DISCUTION

Breast cancer is the most common cancer in women worldwide and its incidence is increasing in many countries. Nursing students are the future nurses who will have the opportunity to encourage and influence women to be breast aware. Breast-self- examination is a simple and easy way to help women to detect any changes in the breasts [(10)]. Nursing students should have the necessary knowledge, skills and behavior about BSE as students act as role models for the society to learn, adopt and practice the preventive and improving actions about health. In addition, the students' awareness about their own bodies should be formed and their responsibilities about personal health activities should be developed at a young age [(17)].

The present study showed that the age for both groups ranged from 21-24 years with the mean age of the traditional group was 22.090 ± 0.668 years compared to 22.090 ± 0.757 years for the nontraditional group. About half of the nontraditional students were living in the urban area compared to more than half of the traditional students. About three quarters of the nontraditional and traditional groups were single. The majority of the students from the traditional and nontraditional students had no family history of breast cancer (table I). A study done by **Eqtait et al., (2015)** [(14)], who mentioned that more than one half of the students had age from eighteen to twenty years old and the majority had negative family history with breast cancer. Nearly half of them lived in urban area and in the first academic year.

As regarding the history performance of breast self-examination, the present study showed that nearly half of the traditional female students performed BSE compared to more than half of the students among the nontraditional group. There was no a statistically significance difference between the two groups (table II). The level of the performance among the female nursing students for BSE was low because BSE subject was included among the third-year curricula of the obstetrics and gynecological course and this course has a lot of contents, so focus on BSE subject is very low, this lead to low knowledge and practice offered to these students. Also, there were a lot of barriers for not perform it, like fear from find lump in the breast, not find time to perform it and procrastination, all these items affected the performance of BSE.

This is consistent with the study made by **Dullat et al., (2016)** [(18)], who found that only one third of the students had ever performed breast self-examination. Another study made by **Al-Sharbatti et al., (2013)** [(19)], revealed that less than one third of the female university students in Ajman were performing BSE monthly. A study done by **Juanita et al., (2013)** [(20)], who found that the percentage of BSE performance was about one third only among nursing students and the resting not perform it. Furthermore, A study performed by **Bayumi (2016)** [(21)], stated that about two thirds of the nursing students didn't perform BSE, only less than one fifth had regular performance of BSE and about one fifth of nursing students reported irregular performance of BSE.

In relation to the source of information for BSE, it was found that the majority of students for both groups had the same answer that the school and university curricula were the most source of information regard BSE. This is normal because the school and university curricula are the first line of learning for our nursing students, students first take nursing or medical topics then they search about them in books, internet or in the media. More than two thirds of traditional students reported that internet was the second source of information compared to half of nontraditional students. Health staff was the second source of information for more than two thirds of nontraditional group compared to nearly two thirds of traditional students. About half of the students stated that health education materials were other sources of information regarding BSE, (figure I).

This is similar to the study done by **Yakout et al., (2014)** [(22)], who found that nearly half of the nursing students had their source of knowledge regard BSE from college curricula. This is in contrast with **Eqtait et al (2014)** [(14)], who reported that the main source of information obtained from mass media with nearly two thirds of students and relatives with (3,4 %). Similar observation was reported by **Bassey et al., (2011)** [(23)], who stated that nearly two thirds of the students' first source

of information was obtained from television/ radio. Another study done by **Tawfeeq et al., (2012)** [24], who revealed that the media was played a significant role as the main source of information about breast cancer. Therefore, an important effort should be intensified in using these media to create breast cancer awareness.

Regarding the distribution of the total score of knowledge of the studied students regarding BSE. The present study revealed that three fifths of the students for traditional group had fair level of knowledge compared to about two fifths among nontraditional group during pretest. (table III). There was statistically difference between two group, only about one fifth of the students of the traditional group had good level of knowledge compared to more than one fifth of the students among nontraditional group (table III). The low level of knowledge between the two groups due to lack of special program for the nursing students in the Faculty of Nursing; also, there is no updating of nursing curricula regarding BSE.

After BSE intervention immediately post-test, it was found that nearly three fifths of the students among both groups had good level of knowledge, but the traditional demonstration method gets high percentage, with no statistically significance difference between the two methods of teaching during immediate post-test. (Table III).

During post-test one month later, the present study revealed that nearly half of the female students among the traditional group had fair level of knowledge and about two fifths of the students had good level of knowledge among the same group. On the other hand, about two fifths of the students in the nontraditional group had fair level of knowledge, while nearly half of them had good level of knowledge with no statistically significant difference between the two methods of teaching during posttest regarding BSE. The possible explanation of no statistically significance difference between two groups during immediate post-test and follow up test regarding knowledge of BSE, was the existence of direct feedback, supervision and interaction with the students in demonstration method which is effective, with the existence of videos, animation, figures and pictures with BSE module which added the same effectiveness as given in the traditional demonstration method, so no difference between the two methods of teaching.

This is in the line with a study done by **Ozturk et al., (2016)** [25], who found that there was no statistically significant difference between the web-based education method and the demonstration method regarding the student knowledge. Also, a study done by **Aleman et al., (2011)** [26], who mentioned that both groups had similar results as regard to the knowledge acquisition and retention in the comparison between computer assisted learning versus the traditional learning among medical surgical nursing students. Furthermore, a study done by **Medhard (2011)** [27], who observed that the web-based learning is as effective as traditional face to face learning in similar achievement and course satisfaction.

This finding is in contrast with the findings of **Tuzun (2016)** [28], who found that the web-based learning is better than traditional learning regarding to the academic achievement and retention of technical knowledge program. Also, a study done by **Ercan et al., (2014)** [29], who found that the using of the web-based course better than traditional learning in enhancing of academic achievement and attitudes. Another study done by **Saini (2014)** [30], who found that the using of web-based learning is more effective and beneficial than using face to face method of learning. While, **Papastergiou et al., (2012)** [31], revealed that the web-based multimedia course used in combination with the conventional face to face instruction was more effective than using one method of learning alone in increasing of cognitive abilities of students regarding to their subject. **MCnet et al., (2012)** [32], concluded that the active learning is achieved via the combination of traditional and innovative approaches that facilitate learning.

As regarding the distribution of the total score of the practice regarding BSE among the students, the current study revealed that almost all the female students among the traditional group had poor level of the practice compared to the majority of the female students among the nontraditional group in the pretest with statistically significant difference between the two groups (table IV). Reason for a poor level of the practice during pre-test was lack of intensive course for breast self-examination in the nursing curricula After BSE intervention, the current study revealed that nearly half of the female students had good level of the practice and more than one third had fair level of the practice among the traditional group, (Table IV). On the other hand, nearly half of the students had a good level of the practice and more than one third had fair level of the practice among nontraditional group. There was no a statistically significant difference between the two methods of teaching during the immediate posttest. These findings could be explained as the result of existence of direct feedback, supervision and interaction with students in the demonstration methods which is considered effective method as existence of videos, animation, figures and pictures with BSE module so there is no difference between two methods of teaching.

During posttest, the current study revealed that more than half of the students among traditional group had fair level of the practice and only less than one fifth of them had good level of practice. On the other hands among the nontraditional group, more than one third of the female students had fair level of knowledge and more than one third of them had a good level of the practice. There was a statistically significant difference between the two methods of teaching during posttest among both groups. Web based learning usage is better than traditional demonstration method in reinforce of skill performance. This may be due to the present of more interest which provoked by new learning environment such as animation, videos, pictures and interested content, repetition of videos when the students want can reinforce of skill performance, students also more motivated when they direct of their own learning experience, being able to focus on specific aspects of learning materials and they can evaluate their performance and reinforce their weakness points, thereby enhancing skill development.

This point of view agrees with **Petti, (2013)** [33], who found that the improvements in student performance by using of online learning method exceeded using of face to face learning method. Also, **Lee et al., (2014)** [34], who stated that online learning method could assist students in acquiring and reinforcing nursing skills at their own pace and schedule. Furthermore, a study done by **Zhang et al., (2017)** [35], who illustrated that the using of the web based assisted technique, enhance the students' performance and skills than those students who not use of computer in comparison of computer assisted technique and traditional learning in promoting assessment on student academic performance.

However, the findings of the current study are in contrast with a study done by **Gowri et al., (2013)** [36], who found that there was no statistically significant difference between the web-based learning and the traditional learning method in comparison of the two instructional methods which used to teach nursing students about obstetrical palpation among second year nursing students. Additionally, there was another study contradicted by **Sangvai et al., (2012)** [37], who found that the web –based modules with limited or no interactivity build into the material did not result in changes in clinical practice by the students.

Regarding the relation between socio-demographic characteristics and the mean score of knowledge about BSE, the findings of the present study showed that there was a statistically significant difference between the family history and knowledge of BSE during pretest among the traditional group with the highest mean for students who didn't have family history of breast cancer, but no statistically significant difference among the nontraditional group. (Table V).

The possible explanation of this may be due to some of doctors did not have full attention about giving detailed information about the disease, but they only focus on management and the care of the disease, so they focused on giving the relatives of patients' instructions about care of their patients like BSE or even management of breast cancer signs and symptoms and surgery. Students who had breast cancer or family history didn't have fully attention about gain information about breast cancer and BSE because they saw the signs and symptoms of breast cancer on their relatives, they only were interested in managing signs, symptoms and performing of BSE to prevent further deterioration of the case. On the other hands students who didn't have history of breast cancer, were very interested in gaining information about breast cancer because they didn't see these signs and symptoms on their relatives.

This finding isn't corresponded to another study conducted by **Omotara et al., (2012)** [38], who showed that those who had knowledge about BSE because one of their family members had suffered from breast cancer**.** Also, the present study revealed that there was statistically significant difference between the history of performance of BSE and mean score of knowledge during the post test for study group with mean (15.391 ± 0.036) for the students who reported that they had performance of BSE at home. After the students took the accurate and correct knowledge about BSE during BSE intervention, this increase self-efficacy to perform of BSE correctly at home and when the student took accurate knowledge about something and make application about it, this help in confirming of knowledge, so the students who performed BSE after BSE intervention, had high level of knowledge during posttest. This finding of the present study means that the web learning methods has better effect on long term knowledge retention for the students who have previous performing of BSE. This is similar to study made by **Hassan et al., (2015)** [39], who mention that the performance of BSE had positive relation with knowledge of BSE checklist.

Corresponding to the relation to socio- demographic and mean score of the practice**;** the present study revealed that there was a highly statistically relation between the marital status and the mean score of the practice with high mean for married students during the pretest for the traditional group but there was no statistically significant difference during post-test (table VI).

From the researcher point of view, the cause that married women could perform BSE more than those who didn't reported that, married women more susceptible to a lot of problems especially reproductive and breast problems during reproductive periods, so they more active and had curiosity to prevent themselves from problems especially when they were from medical or nursing staff who were oriented about complications of these diseases, so they had care about their breast so the practice of married women were high than those not married but after BSE intervention, the effect of intervention make no statistically significant difference between married and non-married. This is in the line with study done by **Frie et al., (2013) [40],** who emphasized that the women who were not married (single/divorced/widowed) had less likely practiced BSE regularly than married individuals.

Additionally, another study done by **Al-Dubai et al., (2012) [41],** who reported that married women were found out more likely to practice BSE. This contrasts with the study done by **Gaballah, (2011)** [42], who found that the majority of the non-married participants were aware of BSE (82.9%) compared with 18 % of the married participants.

Performance of BSE was a good indicator for enhance the practice of BSE. The present study revealed that there was also significant relation between the previous performing and the practice of BSE, the female students who performed BSE before had high mean score than those who didn't perform it previously for the nontraditional group during pretest (table VI). Female students, who perform breast self-examination before, had experience about steps, different positions and procedures of BSE, so the students who perform BSE before had the high level of the practice regard BSE. This is similar to the study done by **Hassan et al., (2015)** [39], who mention that performing of BSE before had a positive relation with the practice of BSE checklist.

Residence didn't act as a significant predictor in the students' practice, the present study revealed that there was no statistically significant difference between the mean score practice and the residence of the students among both groups during the immediate posttest and posttest with the highest mean score practice for the students who lived in the urban area during immediate posttest for both groups. This is normal because students from urban area are easily to have resources to acquire information and practice of BSE like maternal and child centers, also they are easily to reach the internet centers to know any subject compared to the students from rural area who live farther than healthy facilities and had bad socio-economic status that prevent them to go to internet centers who need a lot of money.

Other socio-demographic characteristics as the family history, there was no statistically significant difference between family history and the mean score of the practice during the three phases (pre, immediate and posttest) for both groups with the highest mean score practice for the students who had positive family history among both groups during immediate posttest. (table VI). This finding is in line with **Fidelis and Manalo (2013)** [43], who revealed that the family history of breast cancer and the residence weren't predictors of practice of BSE However, in another study done by **Al-Naggar et al., (2011)** [44], who presented that there was statistically significant difference between the family history and the practice of BSE in a study of practice and barriers toward breast self-examination among young Malaysian women.

The correlation between the total score of knowledge and the total score of the practice for both groups, the results of the current study revealed that there was statistically significant correlation between the total score of knowledge and the total score of the practice for the traditional group during posttest only, but there was no statistically significant difference for nontraditional group during pre, immediate posttest and posttest (table VII). Reason for not existence of statistically significant difference between both groups during pre and immediate posttest isn't availability of time for data collection as it obtained after clinical area or in between lectures and during these periods clinical area or lecture just started, and they were very intensive for the students, so they may know knowledge about BSE, but they made incorrect answer to get out to catch lectures.

Also, observational check list is too long contained three position of BSE, so the female students might know knowledge about it but not prefer to perform all the position of BSE, so no association found between knowledge and practice. After one month, data collection was very simple as clinical area and lectures were relatively finished so, the female students had enough time to stay to fill questionnaire. For traditional group, the effect of feedback, direct supervision and link between knowledge and practice obtained during lecture, but for the study group, the students might read the content without looking for videos or seeing videos without content seeing due to lack of director supervision so no relation between knowledge and practice.

This finding is in accordance with the study done by **Sarfo et al., (2013)** [45], who illustrated that there was statistically significant difference between overall knowledge score and the practice of BSE regarding to knowledge, attitude and practice of female university students in Presbyterian University College, in Ghana. Another study done by **Pengpid (2014)** [46], reported that there was a significant association between knowledge of BSE and practice. The respondents who had a good knowledge of BSE practice than those who did not. This is in contrast with a study done by **Gwarzo et al., (2009)** [47], who reported the existence of a wide gap between knowledge of BSE and practice of BSE, as only 2% of their respondents practiced BSE whereas one quarter of the students had knowledge of BSE. In the light of these conflicting research findings, it is not clear under what circumstances knowledge of BSE can translate to the practice of BSE.

V. RECOMMENDATIONS

Based on the results of the presents study, the following recommendations are suggested:

1- Integration between traditional methods of teaching with active non- traditional method as web-based learning should be used in teaching academic nursing education.

2- Further research is required to investigate the effect of using a combination of traditional learning methods with active learning methods and use of one learning methods alone on academic achievement of nursing students.

3- There is an urgent need to update the nursing curricula and regular update of courses for the students' nurses and nurses on health maintenance practice are also recommended.

4- Conducting seminars, workshops, training programs and breast self- examination campaigns for nursing students and their families to create awareness about importance of breast self- examination and help to improve their knowledge and practice with providing honest information about the effective use of breast self - examination.

5- School health education is an ideal approach, which should be properly utilized to enhance the adolescent awareness regarding breast self –examination.

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