

The Effect of Problem Based Learning Versus Traditional Method of Learning at Nursing Schools

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Abstract

Background: The incorporation of problem-based learning is now an expected part of the student's learning experiences, and student's learning is the corner stone in all higher education quality. **Aim of the study** was to assess the effect of problem based learning versus traditional method of learning at nursing schools. **Research design:** A quasi-experimental study was used. **Settings:** This study was carried out in El-Nile and Benha secondary technical nursing schools, affiliated to the Health Insurance Organization, in Qalyoubiah Branch. **Subjects:** A convenient sample included (60) students in third grades at the previously mentioned settings. **Tools of data collection: 1)** questionnaire pre/ post format consisted of two parts: **First part** was designed by the researcher to assess socio-demographic characteristics of the student such as; age, father's educational level, etc. **Second part** it concerned with knowledge of nursing students towards iron deficiency anaemia and marasmus. 2) **Likert-type rating scale** concerned students' attitudes regarding problem based learning versus traditional learning. **Results:** The main results showed that, approximately half of students were from rural areas with a mean age of 17.61±1.41 years. There were statistically significant relations between total knowledge regarding problem based learning of the studied students and their age and their parents' educational level. There was no relation between total attitude of the studied students and their residence. Approximately three quarters of studied students total attitude were agree regarding problem based learning. **Conclusion:** As regarded of total attitude of studied students, the current study concluded that, the problem based learning method significantly improved the learning of the nursing students achievements compared with the traditional method. **Recommendations:** Prepare tutors with capabilities and skills required for facilitating and management of group dynamics and use of PBL during the teaching process and Integration PBL as a method of teaching to students receiving pediatric course.

Key words: Problem-based learning, Traditional learning, Technical nursing students, and Nursing education.

Introduction

As we enter the new millennium, continued change in both our personal and professional lives is inevitable. In particular, health care providers and educators will be faced with increasing complexities within their respective systems. One approach to learning will not meet the needs of health professionals being educated to deliver evidence-based care, no will one educational

methods meet the needs of students with varied backgrounds and learning style. Never the less, problem –based learning (PBL) with its emphasis on self-directed learning (SDL) is an appropriate method for developing the attitudes and skills to cope with ever changing environments (Williams, 2014).

Learning is a dynamic and interactive process resulting in some modifications relatively permanent in the way of thinking,

feeling and doing of the learner (**Hagag, 2011**). Meanwhile, teaching is defined as a process of helping or enabling another to learn. It is an interaction between teacher and students under the teacher responsibility in order to bring about an expected change in behavior (**Abd-Elmohsen, 2012**).

Teaching/learning process fosters intellectual growth, critical thinking, and lifelong learning. Teaching and learning are based on the beliefs that each of intellectual inquiry is implemented through effective interpersonal relationships and communication (**Association of Applied Science in Nursing [AASN], (2013)**).

Learning communities have evolved from the traditional classroom to problem based learning in which students come together in a virtual environment to exchange ideas, solve problems, explore alternatives, and create new meanings along a connected journey (**Billings, 2011**).

Problem-based learning has been defined as the learning which results from the process of working towards the understanding or resolution of a problem (**Marion, 2012**).

Most nursing education relies on two main modes of instruction: The traditional classroom instruction and the laboratory session; in each one, the teacher can do a number of things through continually observing students for check out their understanding (**Technical and Vocational School Guide [TVSG], 2012**).

On the other hand, traditional classroom instruction is usually delivered by instructors through different types of learning, such as, lectures, discussions and demonstration. It requires a number of students to be both active listeners and participants in the learning environment. A teacher is present; the role of the teacher is to educate the students on various subjects

and life skills (**Fortun; Shifflett and Sibley, 2013**).

As stated by the **AASN (2013)**, a definition for technical nursing education is a process which guides an individual in the acquisition of nursing knowledge, skills, attitudes, values, and preparation for entry level practice in structured settings with the ever changing health system.

Nursing education is a cognitive activity. Although its practice entails numerous psychomotor and affective skills, the underlying activities are problem solving, decision-making and clinical judgments. An ever-changing society demands its practitioners to be skillful in learning to learn and continually relate nursing practice to developing events. In response, several nursing programmes have adopted PBL in various forms, because it promotes higher thinking skills, and combines theory and practice (**Heliker, 2013**).

More than nursing education has become responsible for shaping practice, not merely responding to changes in the practice environment. Therefore, partnership between nursing education and nursing practice will be the key to quality nursing care (**Abd-Elmohsen, 2012**). One of the goals of education is to help student to learn and to become independent, self-learning is one way to teach students to become self-sufficient (**Mohammed, 2011**).

Nursing education gives students, nurses, fellows, and physicians the opportunity to gain the skills and knowledge they need to treat and serve their patients, the public, and their field (**Lin, Beck and Garbutt, 2011**; Accreditation Council for Graduate Medical Education [**ACGME**], **2011**). It also ensures that patients have access to nurses who have the ability to provide them with safe and effective health care (**Mazmanian, 2010**). Nursing education is meant to serve both the learners

and the patients that they care for (Farley et al., 2011).

Significance of the Study:

Many recent research have clearly indicated that problem based learning has become an important part in modern learning methods, effective learning strategy recommended using problem based learning as a vision for nursing education. So, this study could be helpful for nursing students to make them problem solving learner, critical thinker, able to take their decision and review the instructional content as often as needed and encourage them to explore their opinions toward problem based learning (Ahmed, 2005).

Aim of the study

The study aimed to assess the effect of problem-based learning versus traditional method of learning at nursing schools through the following:

- 1- Assess knowledge and attitude of the nursing students regarding the problem based learning versus the traditional learning.
- 2- Designing and implement problem based learning module.
- 3- Evaluate the effect of the problem based learning module on the nursing students.

Research Hypothesis:

The problem-based learning is more motivating and stimulating to pediatric nursing students versus traditional method.

Subjects and Methods:

Research design:

A quasi-experimental design was used.

Setting:

This study was carried out at El-Nil and Benha Technical Nursing Schools affiliated to Health Insurance Hospitals in Qalyoubiah Branch.

Sample:

Convenient sample included (60 students in third grades at the previously mentioned settings. They were divided randomly into two equal groups, the first (30) was the experimental from El-Nile Nursing School and the second (30) was the control from Benha Nursing School. Students in both groups were subjected to the same traditional method provided by the study setting staff while the PBL module directed to the students of the experimental group only. **Tools of data collection:**

Two tools of data collection were used as follow;

I- Questionnaire: (pre/post format).

It was designed by the researcher after reviewing the related literature to gather data concerned with characteristics and knowledge of nursing students. The pre and post tests were carried out on individual basis by interviewing each study subject to assess their knowledge towards iron deficiency anaemia and marasmus. It was written in simple Arabic language. It consists of two parts to assess the following data:

Part I: It was concerned with socio-demographic characteristics of the studied students, such as; age, fathers' educational level, mothers' educational level and residence.

Part II: concerned with knowledge of nursing students towards iron deficiency anaemia and marasmus (definition, causes, signs &symptoms, complication and nursing care) after and before the implementation of the two different methods (problem based learning versus traditional learning.

❖ **Scoring system** of students' knowledge:

Regarding the knowledge of the students related to anaemia and marasmus. The students answers were checked with a key model answer then their answers were categorized into three levels: good knowledge (more than 75%), average knowledge (from 60-75%), poor knowledge (less than 60%).

2- Likert-type rating scale: It was adapted from **Kaseem and Hassan, (2010)** and modified by the researcher, it was written in Arabic language to suit all student categories. It consists of (12) questions concerning students' attitudes regarding problem based learning versus traditional learning.

❖ **Scoring system:**

According to the studied subjects responses were checked against a three-points liker scale that range from agree to disagree. On each question the student rates her attitude regarding problem based learning from 1 to 3, with 1 representing disagree, 2 representing neutral and 3 representing agree. The total attitudes scale for each respondent is calculated taking into consideration all the attitudes items.

The total attitudes grades were divided and categorized as the following:

- Total score more than 75% is considered agree.
- Total score from 60% to 75% is considered neutral.
- Total score less than 60% is considered disagree.

Content Validity:

Tools will be reviewed by 5 experts in the field of pediatric to ascertain relevance and completeness of the study.

Pilot study:

A pilot study was carried out before starting the data collection in January 2018 for two weeks, to test the applicability and the clarity of the study tools. It was applied on 10% of students from both schools, involving 6 students which were included in the main sample to evaluate the content validity of the study tools and estimate the time needed to fill in the tools. No modifications were done for the study tools according to the obtained results from the pilot study.

Field work:

The actual field work of the study started from the beginning of March 2018 up to end of April 2018 for data collection. The researcher was available in the study sitting 4 days/week from 9 am to 2 pm (Sundays and Monday) in El-Nile Nursing School; and (Wednesdays and Thursday) in Benha Nursing School.

The PBL module were performed in (4) phases:

Assessment phase: Assessing students knowledge regarding iron deficiency anemia and marasmus ('pretest'); this phase started with the students' interview (individually). The researcher introduced herself to students, at the beginning the aim of the study were explained to gain their cooperation. Oral consent was obtained from each student, they were assured about the anonymity of their answers and that the information given will be used for scientific research only and be treated with strict confidentiality.

Preparation phase:

The module was designed by the researcher, then revised and modified by supervisors based on an extensive review of related literature to inform the students by the process of the problem based learning application for previous mentioned topics.

Implementation phase:

The researcher collected the data during break time by using the following tools. Questionnaire (pre/post format) took 20 minutes to fill out the questionnaire. Likert-type rating scale took 10 minutes to fill out the scale. The students discussed their expectation about the study then they carried out the pre-test exam. Any clarification needed for students was given by the researcher.

Students were divided randomly into two equal groups (control and experimental). Students in both groups were exposed to the same traditional method provided by the study setting staff while the PBL module directed to the students of the experimental group only by the researcher.

The researcher gave information related to iron deficiency anemia and marasmus carried out through two sessions.

The first session (60 Minutes): the aim of this session was to inform the students with definition, causes, signs & symptoms, diagnosis, complication and nursing care of iron deficiency anemia.

The second session (60 Minutes): the aim of this session was to inform the students with definition, causes, signs & symptoms, diagnosis, complication and nursing care of marasmus.

Different methods of teaching were used as lectures, group discussion and brain storming for both groups. Suitable teaching aids were prepared and used during the PBL module' implementation such as; posters and pictures videos and then the hand out material were distributed for experimental group.

Each session started with the summary feedback about the previous session, simple words and Arabic language were used to suit the students' level of understanding.

For experimental group, the researcher asked the students to organize themselves into two equal groups. Then the researcher presented them with the content related to pediatric nursing (iron deficiency anemia and marasmus) and gave them about fourteen minutes to organize the information they would need. Each group of them had a leader.

The researcher asked the students for reading, through the library (books, magazines, researches...etc), computers and net researches. The researcher worked as a facilitator during these periods, the researcher supervised, followed the students and answered their questions to facilitate the process the PBL.

The researcher asked the students for feedback meeting, written assignment obtained from each group then each team member presented her assigned topic to all students in other group.

Evaluation phase:

Evaluation was done to evaluate all students in the experimental group through using the same previous mentioned tools to evaluate the students' knowledge regarding iron deficiency anemia and marasmus after PBL implementation.

Ethical consideration

All the students rights were secured. Oral consent was obtained from each student. The researcher explained the aim and objectives of the study to the students. The researcher maintained anonymity and confidentiality of data. Students were informed that they have the right to withdraw from the study at any time without giving any reason.

Results

Table (1): shows that 56.7% of the studied students were in the age group of 18-

<19 years & 10.0% of them were in age group of 19+ years. The table also shows that both of fathers and mothers 50.0% & 56.7% respectively have moderate level of education in control group and 53.3% of studied students were from rural in experimental group.

Table (2): This table indicates that, **56.7% & 50. %** respectively in both the control & experimental groups had a poor knowledge about treatment of marasmus in children at pre test. Their was statistical insignificant difference between control & experimental groups in relation to their knowledge about treatment of marasmus in children at pre test.

Table (3): Reveals that 50.3% of the studied students (experimental) had a poor knowledge about complications of marasmus in children at pre test. As well the same table shows that 63.3% of the studied students (experimental) had a good knowledge about complications of marasmus in children at post test. Their was highly statistical significant difference between pre & post test in experimental group in relation to their knowledge about complications of marasmus in children

Table (4): Reveals that **10.0% & 46.7%** respectively of the studied students in both the control & experimental groups had a good knowledge about nursing care

during blood transfusion to child with iron-deficiency anemia at post test. While their was statistical significant difference between control & experimental groups in relation to their knowledge about nursing care during blood transfusion to child with iron-deficiency anemia at post test

Figure (1): reveals that, highly statistical significant differences was observed between the control and experimental groups as a regards to their total knowledge regarding marasmus and anemia at post test. **Table (5)** Reports that the highest percent **46.7% & 76.7** of the studied students in both control and experimental groups were agreeing regarding the problem based learning develops my abilities on scientific thinking and problem solving skills more than attending class, however, the least percent **3.3% & 0.0%** of them disagreed regarding problem based learning increases co-operation atmosphere more than competition among students in traditional method at post test.

Table (6): indicates that, there is a statistically highly significant relation between total attitudes of the studied students and their mother educational level p-value <0.001 and there is no statistically significant relation between total attitudes of the studied students and their residence.

Table (1): Number and percentage distribution of the studied students (control & experimental) according to their socio-demographic data (N=60).

Socio-demographic data	Control		experimental		Total	
	No.	%	No.	%	No.	%
Age (years)						
17- <18	10	33.3%	10	33.3%	20	33.3%
18- <19	17	56.7%	17	56.7%	34	56.7%
19+	3	10.0%	3	10.0%	6	10.0%
Father educational level						
Illiterate	0	0.0%	0	0.0%	0	0.0%
Read and write	8	26.7%	9	30.0%	17	28.3%
Average education	15	50.0%	14	46.7%	29	48.3%
High Education	7	23.3%	7	23.3%	14	23.3%
Mother educational level						
Illiterate	3	10.0%	4	13.3%	7	11.7%
Read and write	8	26.7%	8	26.7%	16	26.7%
Average education	17	56.7%	18	60.0%	35	58.3%
High Education	2	6.6%	0	0.0%	2	3.3%
Residence						
Rural	15	50.0%	16	53.3%	31	51.7%
Urban	15	50.0%	14	46.7%	29	48.3%

Table (2): Number and percentage distribution of the studied students (control & experimental) according to their knowledge regarding marasmus at pre test.

Knowledge of students regarding marasmus	Control Pre		Experimental Pre		Chi-square test	
	No.	%	No.	%	x ²	p-value
1. The commonest mal-nutrition diseases in children						
Poor	14	46.6	13	43.3	0.326	0.849
Average	8	26.7	10	33.3		
Good	8	26.7	7	23.3		
2. Definition of marasmus in children						
Poor	6	20.0	5	16.7	0.371	0.831
Average	7	23.3	9	30.0		
Good	17	56.7	16	53.3		
3. Marasmus incidence in children						
Poor	11	36.7	12	40.0	0.096	0.953
Average	10	33.3	9	30.0		
Good	9	30.0	9	30.0		
4. Causes of marasmus in children						
Poor	10	33.3	10	33.3	0.100	0.951
Average	11	36.7	10	33.3		
Good	9	30.0	10	33.3		
5. Signs and symptoms of marasmus in children						
Poor	10	33.3	9	30.0	0.343	0.842
Average	13	43.3	12	40.0		
Good	7	23.3	9	30.0		
6. Diagnoses of marasmus in children						
Poor	14	46.7	14	46.7	0.130	0.937
Average	9	30.0	10	33.3		
Good	7	23.3	6	20.0		
7. Treatment of marasmus in children						
Poor	17	56.7	15	50.0	0.315	0.854
Average	10	33.3	11	36.7		
Good	3	10.0	4	13.3		
8. Complication of marasmus in children						
Poor	12	40.0	15	50.0	0.622	0.733
Average	10	33.3	8	26.7		
Good	8	26.7	7	23.3		
9. Prevention from of marasmus in children						
Poor	12	40.0	13	43.3	0.093	0.955
Average	10	33.3	9	30.0		
Good	8	26.7	8	26.7		
10. Nursing care to a child with marasmus						
Poor	11	36.7	11	36.7	0.106	0.948
Average	10	33.3	11	36.7		
Good	9	30.0	8	26.6		

Table (3): Number and percentage distribution of the studied students (experimental) according to their knowledge regarding marasmus at pre/post test.

Knowledge of students regarding marasmus	Experimental Pre		Experimental Post		Chi-square test	
	No.	%	No.	%	x2	p-value
1. The commonest mal -nutrition diseases in children						
Poor	13	43.3	4	26.7	8.286	0.016*
Average	10	33.3	10	33.3		
Good	7	23.3	16	40.0		
2. Definition of marasmus in children						
Poor	5	16.7	2	6.7	6.261	0.044*
Average	9	30.0	3	10.0		
Good	16	53.3	25	83.3		
3. Marasmus incidence in children						
Poor	12	40.0	2	20.0	11.374	0.003*
Average	9	30.0	8	26.7		
Good	9	30.0	20	53.3		
4. Causes of marasmus in children						
Poor	10	33.3	0	13.3	13.956	0.009*
Average	10	33.3	9	30.0		
Good	10	33.3	21	56.7		
5. Signs and symptoms of marasmus in children						
Poor	9	30.0	1	16.7	8.862	0.012*
Average	12	40.0	12	40.0		
Good	9	30.0	17	43.3		
6. Diagnoses of marasmus in children						
Poor	14	46.7	5	30.0	7.024	0.029*
Average	10	33.3	12	40.0		
Good	6	20.0	13	30.0		
7. Treatment of marasmus in children						
Poor	15	50.0	4	13.3	10.250	0.006*
Average	11	36.7	15	50.0		
Good	4	13.3	11	36.7		
8. Complication of marasmus in children						
Poor	15	50.0	3	10.0	13.538	<0.001**
Average	8	26.7	8	26.7		
Good	7	23.3	19	63.3		
9. Prevention from of mursmus in children						
Poor	13	43.3	6	20.0	4.709	0.095
Average	9	30.0	9	30.0		
Good	8	26.7	15	50.0		
10. Nursing care to a child with marasmus						
Poor	11	36.7	7	23.3	1.689	0.429
Average	11	36.7	11	36.7		
Good	8	26.6	12	40.0		

*p-value <0.05 S; **p-value <0.001 HS

Table (4): Number and percentage distribution of the studied students (control & experimental) according to their knowledge regarding anemia at post test.

Knowledge of students regarding anemia	Control Post		Experimental Post		Chi-square test	
	No.	%	No.	%	x ²	p-value
11. Definition of anemia						
Poor	12	40.0	3	10.0	7.745	0.021*
Average	8	26.7	9	30.0		
Good	10	33.3	18	60.0		
12. Causes of iron-deficiency anemia in children						
Poor	12	40.0	3	10.0	0.341	0.843
Average	9	30.0	9	30.0		
Good	9	30.0	18	60.0		
13. Rate of hemoglobin causing iron-deficiency anemia in children						
Poor	12	40.0	5	16.7	6.921	0.031*
Average	12	40.0	10	33.3		
Good	6	20.0	15	50.0		
14. Signs and symptoms of iron-deficiency anemia in children						
Poor	8	26.7	2	6.6	6.228	0.044*
Average	13	43.3	11	36.7		
Good	9	30.0	17	56.7		
15. Diagnoses of iron-deficiency anemia in children						
Poor	15	50.0	5	16.6	10.556	0.005*
Average	11	36.7	11	36.7		
Good	4	13.3	14	46.7		
16. Treatment of iron-deficiency anemia in children						
Poor	12	40.0	2	6.7	9.995	0.007*
Average	8	26.7	9	30.0		
Good	10	33.3	19	63.3		
17. Complication of iron-deficiency anemia in children						
Poor	13	43.3	5	16.7	5.841	0.049*
Average	7	23.3	7	23.3		
Good	10	33.3	18	60.0		
18. Prevention from of iron-deficiency anemia in children						
Poor	12	40.0	5	16.7	4.038	0.133
Average	9	30.0	12	40.0		
Good	9	30.0	13	43.3		
19. Nursing care to a child with iron-deficiency anemia in children						
Poor	19	63.3	9	30.0	6.881	0.032*
Average	4	13.3	6	20.0		
Good	7	23.3	15	50.0		
20. Nursing care during blood transfusion to child with iron-deficiency anemia						
Poor	13	43.3	5	16.6	11.033	0.004*
Average	14	46.7	11	36.7		
Good	3	10.0	14	46.7		

*p-value <0.05 S

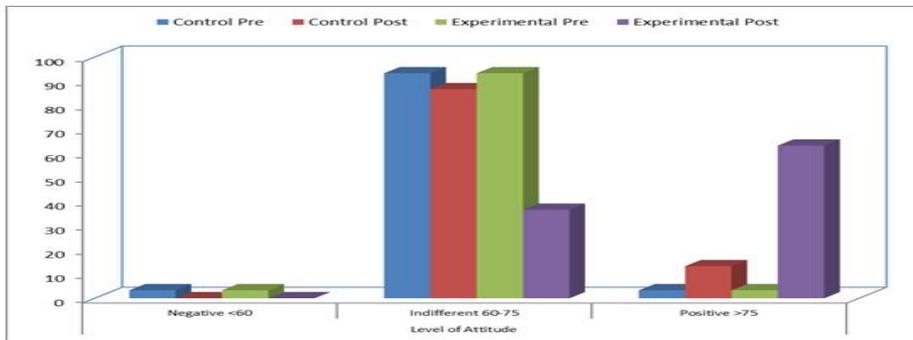


Fig. (1): Number and percentage of the studied students (control & experimental) according to their total knowledge regarding marasmus and anemia at pre/post test.

* Pre control versus Pre experimental (χ^2 : 0.069; p0.792)

Post control versus Post experimental (χ^2 : 15.241; p <0.001**)

@ Pre experimental versus Post experimental (χ^2 : 26.048; p <0.001**)

Poor < 60

Average < 60-75
Level of Attitude

Good >75

Table (5): Number and percentage distribution of the studied students (control & experimental) according to their attitude regarding problem based learning at post test.

Students' attitudes regarding problem-based learning	Control Post		Experimental Post		Chi-square test	
	No.	%	No.	%	x ²	p-value
1. Better use of problem based learning than the traditional learning method as school books & lectures.						
Disagree	0	0.0	0	0.0	22.217	<0.001**
Neutral	27	90.0	8	26.7		
Agree	3	10.0	22	73.3		
2. I see that problem based learning increases my understanding to a subject better than the traditional way						
Disagree	3	10.0	0	0.0	22.206	<0.001**
Neutral	25	83.3	11	36.7		
Agree	2	6.7	19	63.3		
3. I can understand the nursing subjects better in problem based learning than the traditional method of teacher						
Disagree	8	26.7	1	3.3	10.148	0.006*
Neutral	12	40.0	8	26.7		
Agree	10	33.3	21	70.0		
4. Problem based learning increases my self-confidence in interpreting data than the traditional method in learning						
Disagree	11	36.7	1	3.3	13.083	<0.001**
Neutral	9	30.0	7	23.3		
Agree	10	33.3	22	73.3		
5. Better use of problem based learning method in the search for different information.						
Disagree	2	6.7	1	3.3	11.304	0.004*
Neutral	20	66.7	8	26.7		
Agree	8	26.6	21	70.0		
6. The problem based learning develops my abilities on scientific thinking and problem solving skills more than attending class.						
Disagree	2	6.6	1	3.3	5.723	0.057*
Neutral	14	46.7	6	20.0		
Agree	14	46.7	23	76.7		
7. I see that problem based learning increases co-operation atmosphere more than competition among students in traditional method						
Disagree	1	3.3	0	0.0	8.781	0.012*
Neutral	22	73.3	12	40.0		
Agree	7	23.3	18	60.0		
8. I see that the intellectual maturation of the student and culture are not through problem based learning						
Disagree	0	0.0	0	0.0	4.389	0.036*
Neutral	17	56.7	8	26.7		
Agree	13	43.3	22	73.3		
9. Problem based learning develops communication skills among students more than traditional method.						
Disagree	7	23.3	0	0.0	19.289	<0.001**
Neutral	21	70.0	14	46.7		
Agree	2	6.7	16	53.3		
10. I think that problem based learning reduces the role of the teacher in the educational process.						
Disagree	12	40.0	13	43.3	0.080	0.960
Neutral	5	16.7	5	16.7		
Agree	13	43.3	12	40.0		
11. I see that problem based learning motivates me to continue to learn nursing materials more than attending lectures.						
Disagree	7	23.3	5	16.6	10.444	0.005*
Neutral	22	73.3	14	46.7		
Agree	1	3.3	11	36.7		
12. I see that problem based learning facilities constantly up date my information helps me to keep up with the progress of knowledge in the field of my study than books than traditional methods in learning.						
Disagree	7	23.3	8	26.6	6.791	0.034*
Neutral	14	46.7	5	16.7		
Agree	9	30.0	17	56.7		

*p-value <0.05 S; **p-value <0.001 HS

Table (6): Relation between students attitudes regarding total attitude and their socio-demographic data in post study (n=30).

Socio-demographic data	Level of attitude				Chi-square test	
	Indifferent 60-75% (N=9)		Positive >75% (N=21)		x2	p-value
	No.	%	No.	%		
Age (years)						
17- <18	5	55.6%	5	23.8%	3.529	0.172
18- <19	4	44.4%	13	61.9%		
19+	0	0.0%	3	14.3%		
Father educational level						
Read and write	7	77.8%	2	9.5%	14.429	0.006*
Average education	2	22.2%	12	57.1%		
High Education	0	0.0%	7	33.3%		
Mother educational level						
Illiterate	4	44.4%	0	0.0%	21.710	<0.001**
Read and write	5	55.6%	3	14.3%		
Average education	0	0.0%	18	85.7%		
Residence						
Rural	8	88.9%	8	38.1%	1.539	0.214
Urban	3	33.3%	11	52.4%		

*p-value <0.05 S; **p-value <0.001 HS

Discussion

The complexity of teaching, learning and assessment strategies remain a problem in nursing education especially with the changes in new curricula. Nursing education has shifted from the biomedical approach towards using a human scientific model. At the same time, the traditional role of nurses has changed towards professionalism owing to the development of nursing science (Jung, 2007).

Traditionally, students learn by listening to lectures and reading are assessed on their ability to recall and communicate what they have learned. While in PBL, students are assessed on their ability to go through a problem solving process (Severiens & Schmidt, 2009).

The problem based learning is a total approach to education, it is both a curriculum and process. The curriculum consists of carefully selected and designed problem that demand from the learner acquisition of critical knowledge, problem solving proficiency, self directed learning strategies and team participation skills (Degallow, 2010).

Regarding characteristics of studied nurses, in the current study, the socio-demographic characteristics of the studied students revealed that, more than half of all students are living in rural areas, and more than half of their parents had moderate level of education. This finding was supported by Nasser, (2010), who studied assessment of nursing student's attitude toward the use of problem based learning in clinical nursing practice; Nasser found that, most of the studied students are living in rural and nearly two thirds of their fathers had moderate level of education.

In relation to the studied students knowledge about marasmus in children, the finding of the current study **table (2)** proved that, approximately half of studied students in both the control & experimental groups had a poor knowledge about treatment of marasmus in children at pre test. While their

was statistical insignificant difference between both groups, This could be due to that was the first time for the studied students to know this method of learning (PBL) and may be due to lack of knowledge about malnutrition diseases. These findings were agreeing with Barbeite and Weiss, (2004), who recommended that, the quality of problem- based learning training courses is also considered a significant factor in students learning and their learning satisfaction.

Moreover, these finding was agreeing with Wu; Tennyson & Hsia, (2010), who stated that, a higher level of individual computer self-efficacy is positively associated with a higher level of learning performance which increases the use of problem-based learning. These findings were also supported by those of a study done by Mohammed, (2011), who studied a number of important aspects of the problem of the use of computers among students in Saudi Arabia, Mohammed found that, about one-third of the students reported that, they do not have any experience in the field of problem-based learning, and about half of the students do not use the computer, the computers were not available to them for use at school lab or in college, they did not receive any training courses on how to use the computer and the internet in searching and that there is a deficit in the implementation of problem-based learning.

In relation to the studied students knowledge about marasmus in children, the finding of the current study **table (3)** showed that, approximately more than half of experimental group was had a good knowledge about complications of marasmus in children at post test. Their was highly statistical significant difference between pre & post test in experimental group in relation to their knowledge about complications of marasmus in children. This could be due to the responsibility of each student at the process of learning, interpersonal communication skill and presentation skills. This finding is in

contrast with a similar study that was carried out by **Geri & Susan, (2005)** who found that there was no statistically significant difference in the post test of the two groups. Also this finding is supported the finding of **Hwang and Kim, (2006)**, in a similar study entitled a comparison of problem based learning and lecture- based learning in an adults health nursing course, who found that the students knowledge in the PBL group was significantly higher than that of students in the lecture group.

The finding of the current study **table (4)** revealed that, most of studied students in both the control & experimental groups had a poor knowledge about nursing care to a child with iron-deficiency anemia in children at pre test and less than one quarter of the studied students in control group had a good knowledge about nursing care during blood transfusion to child with iron-deficiency anemia at post test. While near of half of studied students in experimental group had a good knowledge in the same item. In addition, there was statistical insignificant difference between control & experimental groups in relation to their knowledge about nursing care to a child with iron-deficiency anemia in children at pre test.

This finding was consistent with **Khan and Fareed, (2011)**, whom evaluated knowledge retention of third year nursing student of the basic maternal newborn nursing taught by traditional and problem based learning technique, the finding found that the students taught by PBL method had higher score than those taught by the traditional method.

This finding also agreed with the study done by **Edwards et al (2006)**, whom studied the challenges and opportunities presented from the perspectives of both students and tutors in problem based learning course and reported that students subjected to the traditional method required integration of PBL within traditional curriculum to improve their abilities. They

interpret this by the fact that student whom were accustomed to learning by the traditional method need more time to develop their critical thinking skills.

The finding of the current study **table (5)** indicated that, approximately three quarters of the studied students in experimental group was agreeing regarding the problem based learning develops my abilities on scientific thinking and problem solving skills more than attending class. This could be due to that the self –directed learning was helpful for students to take more an active role in their education nurses

This finding were agreeing with **Araz & Sungur, (2007)**, in a similar study entitled effectiveness of problem based learning on academic performance in genetics, who found that, the PBL students had higher performance skills and critical thinking skills scores when compered with those in traditional classes.

This results was in accordance with **Heckmannet et al. (2003)**, who studied the gain in theoretical and practical skills in a group of nursing students during their elective neurology and stated that students who participated in PBL performed significantly better in the end of the course. He explained this by the fact that PBL encourages active learner participation, stimulates actual patient experience, and provides clinically relevant material so the students become much more familiar with the clinical problems and the required practices.

The pervious finding was in contrast with **Newman, (2004)**, finding as studied the effectiveness of problem based learning in a continuing nursing education program and reported that PBL had no significant impact on their practice.

Moreover, this finding was disagrees with **Pugsley & Clayton, (2003)**, who mentioned that students in PBL were less likely to be satisfied with their learning experiences as they experience PBL as stressful and times frustrating for students

with limited group experience or little desire to work in groups.

This result was in contrast with the study carried out by **Furber et al. (2004)**, who found that 54% of the students accept PBL technique than traditional method, he explained that by exposure to PBL make students overwhelmed by required reading, and make them unable to learn large amount of new information effectively in limited period of time.

The results of the present study **table (6)** showed that there is a statistically significant relation between the students' total knowledge and attitude and their parent's educational level. This may be due to that when parents are educated, they influence their children's lives and positively motivate, and encourage them to use modern technology in education. These finding agreed with that of a study done by **Ahmed, (2005)**, regarding the application of problem based learning in some public schools in Cairo. Results had shown that there is a statistically significant relation between the level of education of parents and their children's application to use problem based learning in education, where about two thirds of the parents were highly educated.

Otherwise, this finding disagreed with **Hassan, (2008)**, who stated that, students can complete their education by the use of modern technology in education regardless of their parents level of education. This may be attributed to the internal motivations of the students that motivated them to use problem based learning.

The results of the current study **table (6)** showed that, there is no statistically significant relation between total attitude of studied students and their residence. This may be due to people awareness regarding the importance of problem based learning regardless of their residence, whether rural or urban – village or city. These finding agreed with a study conducted by **Abd- EL Fattah (2011)**, on the use of computer-assisted instructions and internet in cities

compared to its use in the villages, the results showed that, more than half of the studied sample were from city and there is a negative relationship between the use of computers and internet in education and place of residence of students.

Conclusion

Conclusion: It was concluded that, this study represented the first attempt to incorporate problem based learning into an undergraduate nursing course in the nursing schools. The problem based learning method significantly improved the learning of the nursing students achievements compared with the traditional method. In addition, the results of the study supported that the problem based learning is useful instructional method for learning of the nursing students through teaching the content, as well as communication skills to solve the clinical problems.

Recommendation

Prepare tutors with capabilities and skills required for facilitating and management of group dynamics and use of PBL during the teaching process.

- * Prepare and encourage students to be self learners and the staff as well to guide their students.
- * Offer more clinical opportunities and resources to facilitate the use of PBL during the educational process.
- * Integration PBL as a method of teaching to students receiving pediatric course.

Reference

- Abd-EL Fattah, W. (2011):** The use of Computer- assisted instruction and internet in cities compared to its use in the villages. Unpublished Master Thesis, Faculty of Nursing, Benha University, Egypt; pp. 40- 42.
- Abd-Elmohsen, S. (2012):** Assessment the quality of educational process for fourth academic year in secondary technical nursing schools in Qalyoubiah branch for health insurance. Master Thesis, Faculty of

- Nursing, Benha University, Egypt; pp. 40-43.
- Accreditation Council for Graduate Medical Education [ACGME] (2011):** Program requirements for graduate medical education in pediatric. Available at: http://www.acgme.org/acWebsite/downloads/RRC_progReq/320_pediatic
- Ahmed, S. (2005):** Application to problem based learning in some public schools in Cairo. Unpublished Doctoral Thesis, Faculty of Education, Benha University, Egypt, pp. 22- 27.
- Araz, G. & Sungur S. (2007):** Effectiveness of problem-based learning on academic performance in genetics. *Biochemistry and Molecular Biology Education*, 35 (6):448-451
- Association of Applied Science in Nursing [AASN], (2013):** Mission, philosophy and organizing framework LPN- RN Transition program.
- Barbeite, F. & Weiss, E. (2004):** Computer self-efficacy and anxiety scales for an Internet sample: Testing measurement equivalence of existing measures and development of new scales. *Journal of Computers in Human Behaviour*; 20 (8): 1- 15.
- Billings, D. (2011):** A framework for assessing outcomes and practices in Web-based courses in nursing. *Journal of Nursing Education*; 39 (12): 60- 68.
- De Gallow, (2010):** Director, instructional resources center, Project Director, Hewlett Grant, What the problem- Based Learning? University of California, Irvine – Irvine, CA 92697:949-824-5011. 2011 UC Regents.
- Edwards, C., Hebert, D. & Verhovsek, H. (2006):** Problem based learning: Preparing post RN students for community based care, *Journal of Nursing Education*, 37 (3): 139-141.
- Fortune, M., Shifflett, B. and Sibley, R.E. (2013):** A comparison of online (high tech) and traditional (high touch) learning in business communication courses in silicon Valley. *Journal of Education for Business*; 81 (4): 210- 214.
- Furber, C., Hickie, J., Lee K., and Sutton, A. (2004):** Interprofessional education in a midwifery curriculum: The learning through the exploration of the professional task project (LEAPT), *Midwifery*, 20 (4): 358-366.
- Geri, W. & Susan B. (2005):** The effect of teaching method on long term knowledge retention, *Journal of Nursing Education*, 44 (11): 511-513.
- Hagag, S. (2011):** Factors affecting the academic achievement among first year students at High Institute of Nursing Cairo University Dormitory versus students living with their families, Faculty of Nursing, Cairo University, Egypt; pp. 25- 28.
- Hassan, E. (2008):** Comparison between baccalaureate nurses own expectation, actual role and prescribed role at Cairo University Hospitals, Unpublished Master Thesis, Faculty of Nursing, Cairo University, Egypt; pp. 30- 35.
- Heckmann, J., Bleh, C., Dutsch, M. & Lang, C. (2003):** Dose improved problem based teaching influence students knowledge at the end of their neurology? An observational study, *J Neurol.*, 250 (12): 1464-1468.
- Heliker, D. (2013):** Meeting the challenge of the curriculum revolution: computer-based learning in nurse education *Journal of Nursing Education*; 33, 45- 47.
- Hwang, S. & Kim, M. (2006):** A comparison of problem- based learning and Lecture- based learning in an adult health nursing course. *Nursing Education today*, (26): 315: 321.
- Jung, I. (2007):** Online education for adult learning in South Korea. *Journal of Educational Technology*; 43 (3): 9- 16.
- Kaseem, E. and Hassan, D. (2010):** Attitude of teachers and students toward the use of e-learning in secondary schools of Jordan. Master Thesis, Faculty of Education, Damascus University, Jordan; pp. 1- 15.

- Khan, I. & Fareed, A. (2011):** Problem based learning variant: Transition phase for large institution, *J Pak Med Assoc*, 51 (8): 271-274.
- Lin, G., Beck, D. and Garbutt, J. (2011):** Residents' perceptions of the effects of work hour limitations at a large teaching hospital. *Journal of Academic Medicine*; 81 (1): 63- 67.
- Marion Frost (2012):** An analysis of the scope and value of problem-based learning in the education of health care professionals, *Journal of advanced nursing*, 24: 1047-1053
- Mazmanian, P.E. (2010):** Institute of medicine recommends a continuing professional development institute for U. S. health professions. *Journal of Continuing Education in the Health Professions*; 30 (1): 1- 2.
- Mohammed, G. (2011):** Check the need of teaching staff and students of Teachers College in the Kingdom of Saudi Arabia to training on the use of computers. *Journal of the Teachers' Colleges*; 3 (1): 184- 191
- Nasser, A. (2010):** Assessment of nursing student's attitude toward the application of problem based learning in clinical nursing practice. Master Thesis, Faculty of Nursing, Benha University, Egypt; pp. 50- 55.
- Newman, M. (2004):** Problem based learning, an exploration of the method and evaluation of its effectiveness in continuing nursing educational programme, <http://www.hebes.mdx.ac.uk/teaching/PEPBL/index.htm>
- Pugsley, K. & Clayton, L. (2003):** Traditional lecture or experiential learning: changing student attitudes, *Journal of Nursing Education*, 42 (11): 520-523.
- Severiens S., & Schmidt H., (2009):** Academic and social integration and study progress in problem based learning. *Higher Education*, 58 (1); 56-69.
- Technical and Vocational School Guide [TVSG] (2012):** Online vs. classroom education. Available at: Http://www.Technical-Vocational_Schools.Com/Online_Classroom_Learning.aspx.
- Williams, B. (2014):** Self-direction in a problem based learning prdgram, *Nurse Education today*. 24 (4): 277-285.
- Wu, J. Tennyson, R., & Hsia, T. (2010):** A study of student satisfaction in a blended e-learning system environment, *Journal of Computers and Education*; 55 (1): 155- 164.