

### Effect of Teaching Nursing Process Using Integrated Method (Concept Map and Advance Organizer) on Nursing Students' Clinical Learning

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**Background:** Learning the key issues in providing nursing care requires new instructional strategies that prevent superficial learning of students and improve meaningful and high level learning in them. The aim of this study was to determine effect of teaching the nursing process in composing method on nursing students and their clinical learning.

**Methods:** In a quasi-experimental study with two groups, pre-test post-test design, all fifth and Seventh semester nursing students were selected by census method and randomly divided into two control and case groups. Both groups control and case received education using routine and integration method, respectively, for 6 hours. Both groups cared patients a week. Students' performance was evaluated during the clinical course. Data were collected by nursing process record evaluation form and pre-test post-test, then analyzed with chi-square, Mann-Whitney and T test.

**Results:** Assessment scores in pre and post test scores of two groups showed that composing method in the field of knowledge is more than routine method and the Mann-Whitney test showed statistically significant difference between control and intervention groups ( $p = 0/002$ ). The chi-square test showed not a significant difference between the group and nursing process record (before and after intervention).

**Conclusions:** According to study results and more students participate in education, using a combination of training methods is recommended.

**Keywords:** Integrated Method; Nursing Process; Clinical Learning; Nursing Student

### درابه تأثیر تعلیم التمريض باستخدام الاللوب التلفیقی (الخریظه المفرومیه و النوزج المصمم من قبل) علی التعلیم السریری عند طاللب التمريض.

**المقدمه:** إن تعلم المسائل الاساسیه فی المراقبات السریریة فی التمريض تحتاج الی استراتيجیات جریده فی التعلیم . حتی یصبح لهنالك ارتقاء و رفع مستوى فی التعلیم . لذا سیرف هذه الدراره الی تعیین مستوى تأثیر الاللوب التلفیقی فی مجال التعلیم السریری عند طاللب التمريض .

**الاللوب:** فی هذه الدراره النصف تجربیة من نوع ما قبل الاختبار و ما بعد الاختبار اشترك ۳۳ من طلبة التمريض فی الفصل السابع فی کلیه تمريض جامعه بیرجند و ۳۳ من طلبة التمريض فی الفصل الخامس فی کلیه التمريض فی جامعه قاین. تم تدريس الفریقین لمدة ۶ ساعات یواسطه اسلوبین العادی و التلفیقی (الخریظه المفرومیه و النوزج المصمم من قبل) و تم دمجهم فی اقسام المستسفی لمراقبه المرضی لمدة اسبوع. تم جمع المعلومات عبر استمارات و استخدام برنامج SPSS و اختبارات مجزور کای و من وینتی و T المستقبل لتحصیل المعلومات .

**النتائج:** اشارت المعلومات المكتسبه فی الاختبار المسبق و اللاحق الی ان علامات الاللوب التلفیقی كانت اعلى فی مجال المعرفة نسبتا الی الاللوب التقليدی و اشاراختبار من وینتی الی اختلاف ذوقیه من جریه احصائیه بین الفریقین ( $p=0.002$ ) لم یسیر اختبار کای سکور الی اختلاف احصائی ذوقیه ( $P>0.05$ ).

**الاستنتاج:** نظرا الی النتائج الی اشارت الیها هذه الدراره نوصی باستخدام الاللوب التلفیقی فی مجال التعلیم و ایضا نوصی باجراء دراسات علی دروس و اختصاصات و بمعاییر اخرى و حتی اجراء دراسات ذو زمن اطول حتی یستنی متابعه نقاط القوه و الضعف بشكل کبر .

**الكلمات الرئيسية:** التعلیم التلفیقی، التمريض، التعلیم السریری، طالب التمريض.

### بررسی تأثیر آموزش فرایند پرستاری به روش تلفیقی (نقشه مفهومی و الگوی پیش سازمان دهنده) بر یادگیری بالینی دانشجویان پرستاری

**مقدمه:** یادگیری مسائل اساسی در ارایه مراقبت های پرستاری نیازمند استراتژی های جدید آموزشی است، تا از یادگیری سطحی دانشجویان جلوگیری کرده و باعث ارتقای یادگیری معنی دار و سطح بالا در آنها شود. لذا این مطالعه با هدف تعیین تأثیر آموزش فرایند پرستاری به روش تلفیقی بر یادگیری بالینی دانشجویان پرستاری انجام شد.

**مواد و روش ها:** در این مطالعه ی نیمه تجربی از نوع پیش آزمون- پس آزمون، ۳۳ دانشجوی ترم ۷ پرستاری دانشکده ی پرستاری-مامایی بیرجند و ۳۳ دانشجوی ترم ۵ پرستاری دانشکده ی پرستاری و مامایی قاین به روش سرشماری انتخاب و هر کدام به طور تصادفی به دو گروه مداخله و کنترل تقسیم شدند. دانشجویان هر دو گروه شاهد و تجربی به مدت ۶ ساعت به ترتیب تحت آموزش با روش سنتی و آموزش تلفیقی (نقشه مفهومی و الگوی پیش سازمان دهنده) قرار گرفتند و سپس به مدت یک هفته در قالب کارآموزی به مراقبت از بیمار پرداختند. داده ها با استفاده از فرم ارزشیابی ثبت فرایند پرستاری و پیش آزمون و پس آزمون، جمع آوری و با استفاده از SPSS و آزمونهای مجزورکای، من وینتی و تی مستقل تجزیه و تحلیل شد.

**نتایج:** بررسی نمرات کسب شده در پیش و پس آزمون دو گروه نشان داد که نمرات مربوط به اجرای الگوی آموزش تلفیقی در حیطه آگاهی نسبت به آموزش سنتی بیشتر بوده و نتایج آزمون من وینتی نیز نشان دهنده اختلاف معنی دار آماری بین دو گروه کنترل و مداخله بود ( $P=0/002$ ). اما نتایج آزمون کای اسکور نشان داد بین گروه و ثبت مراحل فرایند پرستاری (قبل و بعد از مداخله) ارتباط آماری معنی داری وجود ندارد ( $P>0/05$ ).

**نتیجه گیری:** با توجه به نتایج مطالعه و شرکت بیشتر دانشجویان در امر آموزش، استفاده از این روش آموزش تلفیقی توصیه می شود. انجام مطالعات دیگر به منظور بررسی تأثیر این روش آموزش تلفیقی در دروس رشته پرستاری و دیگر رشته های علوم پزشکی، در مدت زمان بیشتر، هم چنین در ترکیب با الگوهای دیگر و بررسی نقاط قوت و ضعف این شیوه تدریس پیشنهاد می گردد.

**واژه های کلیدی:** آموزش تلفیقی، فرایند پرستاری، یادگیری بالینی، دانشجوی پرستاری

### نرسنگ کی تعلیم اور کلینیکل تجربیوں پر کانسیپٹ میپ اور پیشگی تنظیم کی روش کے اثرات کا جائزہ.

**بیک گراؤنڈ:** نرسنگ میں بنیادی مسائل کی تعلیم دینے کے لئے نئی تعلیمی استراتيجیز اپنائی پڑتی ہیں تا کہ طلباء گہرائی سے اس شعبے کی تعلیم حاصل کرسکیں اور ان کی پڑھائی معنی دار اور پائدار ہوسکے۔ اس تحقیق کا ہدف نرسنگ اسٹڈیز اور کلینیکل پروگراموں پر کانسیپٹ میپ اور پیشگی پلاننگ کے اثرات کا جائزہ لینا ہے۔

**روش:** اس تحقیق میں بیرجند میڈیکل یونیورسٹی میں نرسنگ اور مڈوائفری کے تینتیس تینتیس طلباء نے شرکت کی۔ ان طلباء کو دو گروہوں میں تقسیم کیا گیا تھا۔ ان گروہوں کو چھ گھنٹوں تک روایتی تعلیم و تربیت اور جدید روش سے تعلیم دی گئی اور اس کے بعد ایک ہفتے تک انہوں نے کلینیکل پریکٹس کی۔ ڈیٹا کا تجزیہ ایس پی ایس ایس سافٹ ویئر سے کیا گیا۔

**نتیجے:** پری ٹیسٹ اور پوسٹ ٹیسٹ کے نتائج سے معلوم ہوتا ہے کہ نئی روش سے استفادہ کرنے کے بعد طلباء کی کارکردگی بہتر ہوئی ہے۔

**سفارشات:** اس تحقیق سے پتہ چلتا ہے کہ طلباء کی کارکردگی کو بہتر بنانے کے لئے نئی روش فائدہ مند ہے اور سفارش کی جاتی ہے کہ اس روش سے دیگر شعبہ ہائے طب میں بھی استفادہ کیا جائے۔

**کلیدی الفاظ:** پیشگی تنظیم، کلینیکل تجربے، نرسنگ .

## INTRODUCTION

In the 20<sup>th</sup> century, life expectancy has prolonged due to the increase of public health level and development of education and technology. A way to increase life expectancy is to increase the quality of patient care. For this purpose, learners of medicine, who determine the future of medical council and health, including medical and nursing students should be lead to new educational methods and meaningful learning (1).

According to the researches in Iran, 72% of nursing professors use inactive methods in teaching. However, 92% of nursing students greatly prefer active and new learning methods to traditional and passive methods (2). Since the ultimate goal of professional nursing is to provide psychological, biological and social care of high quality to the patients, surface approaches to learning and insufficient information of students influence their performances and lead to patients complaints that is one of the biggest concerns of nursing managers. Hence, preventing such problems, nursing teachers should provide new teaching methods in order to prevent surface learning of nursing students and upgrade critical thinking skills, problem solving and retention of information and knowledge (3).

Although any planned change is important in different sections of educational system, they should upgrade teaching methods otherwise will not lead to success. Designing and developing different teaching methods and integrating models are important actions conducted in recent years (4). Integrated teaching method used in the current research includes two training models: concept map and advance organizer. Concept map method is an active teaching method that can help nursing teachers to train graduates with critical thinking and problem solving skills. Theoretical framework of concept map training method is based on Ausubel meaningful learning theory. Ausubel focused on meaningful learning, as a clearly articulated and precisely differentiated conscious experience that emerges when potentially meaningful signs, symbols, concepts, or propositions are related to and incorporated within a given individual's cognitive structure. The knowledge learned with this meaningful method like a concept map prolongs longer in the mind and upgrades critical thinking and problem solving skills among nursing students (3, 5, and 6).

Concept map is a schematic and two-dimensional tool to present a set of concepts in propositions frameworks. In fact, concept map presents scheme of communication concept with other concepts and also their relation with a special subject which is organized in hierarchal model (7). Different studies have been conducted to analyze the influence of designing concept map on B.S. nursing students' critical thinking, increase of courses' significance, comprehension and the ability to summarize text. The results show the positive influence of concept map in learning (1, 8, and 9).

In advance organizer model, the main role of the learner is to dominate opinions and information. Advance organizers present concepts and principles directly to learners. Advance organizer model is designed to strengthen the learners' cognition structure. In Ausubel opinion, the main factor to determine the extent of new material significance and the

delivery and retention in mind is the existing cognitive structure in an individual. Stability and clarity of learner's previous knowledge should be augmented before providing new materials influentially. Consequently, through empowering learners' cognitive structure, delivering and retention of information becomes easier. For this purpose, the concepts dominating the information can be presented to learner (5). Accordingly, since no study has been conducted on this subject in Iran, the purpose of the present research is to determine the influence of teaching nursing model with integrated model on nursing students' clinical learning.

## METHODS

In a quasi-experimental study with two groups, pre-test and post-test design, all seventh semester nursing students of Birjand Nursing and Midwifery School and fifth semester nursing students of Ghaen Nursing and Midwifery School were selected by census method and randomly divided into two control and case groups. Because it was not possible to select students in the same semester from the two schools, awareness score of the two groups was evaluated in order to equalize the students from this confounding variable. It should be mentioned that the students who were absent more than one day were extracted from the study and all participants were present in all sessions in this research.

Firstly, the researcher explained the purposes of the study and filled in the personal information forms of nursing students. Before training, Gordon form and nursing process sheet (attached to it) was distributed in order to assess students' performance in clinic. Moreover, at the end of the same day, when internship time was over (in surgery section), care sheets were collected by researcher. After finishing the first step of sampling, training sessions were held during 2 days for 6 hours. In the first session of training, a questionnaire was firstly distributed to determine the level of students' awareness of nursing process. In each training session, different steps of nursing process were explained (integrated method for experimental group and traditional method for control group).

The checklist of evaluating nursing process includes five steps. Each step consists some parts including: analyzing the step (3 parts), diagnosing nursing (5 parts), planning (5 parts), implementation (3 parts), and evaluating (2 parts). Each part has 5 scores and the total score is 85. In front of each step of nursing process there were two options: "Did" and "Didn't do". If the student gains 80 percent of the score in each step of nursing process he/she got "did" and otherwise he/she gained "Didn't do".

Questionnaire of students' awareness level of nursing process includes two parts: 1) Case Introduction: demographic information, patient medical history, signs and symptoms of disease and physical examination. 2) 10 questions: all of the questions are multiple-choice, only the first five questions are related to case introduction. The true answer to each question has 1 score that is presented from 0 to 20 in order to become easier to explain.

The validity of personal information questionnaire, checklist of evaluating nursing process recording and the questionnaire of

students' awareness were confirmed by content validity in educational research (2012). The reliability of the checklist was evaluated by Cronbach's alpha  $\alpha=74$  and the reliability of awareness questionnaire was validated by test-retest  $r=0.81$  in educational research (2010) (10).

Steps of education in experimental group (integrated method) included:

1. First step: presenting organizer:

- Clarifying purposes of the course
- Presenting organizers (nursing and concepts of nursing process including examining patient, diagnosing existing and probable problems, planning to solve the problem, intervention and assessing nursing actions based on Taylor's Principles of Nursing.

2. Second step: presenting materials, learning and connecting with organizers, including main concepts to explain and reminding the lessons (according to presented concept map)

3. Third step: Empowering cognitive structure:

- Using principles of reconstructing
- Critical trends toward lesson
- Clarifying theories
- Activating theories

This step was conducted on a hypothetical patient.

4. Fourth step: reminding materials; finally, main issues in conducting nursing process was reviewed for the learners. Then, at the end of each session students were asked to conduct the steps on the patients in the hospital wards. At the end of the last session, awareness questionnaire was distributed again as posttest. In the control group, training course was presents by lecturing, question-answer and practice methods. Then, the students had internship for a week and cared the patients.

At the end of internship, clinical learning level (performance) of the students was evaluated via first step and using the checklist of nursing process recording by the researchers. It should be mentioned that the researchers were the same in both schools (two instructors for the two schools).

Data were analyzed with chi-square, Mann-Whitney, T-test and SPSS software (with confidence interval 95%). Comparing the two groups average in the cases that data were not distributed normally, Mann-Whitney test was used.

## RESULTS

The students' ages were between 19 and 40. Most of the participants in both case (51.5%) and control (54.5%) groups were female. Most of the participants in both groups stayed

in dormitory (84.8%). In both groups, 27.3 % of students had clinical experiences. Interest in nursing was on average level: control group (39.4 %) and case group (51.5 %). The results of Mann-Whitney test showed that average score of control group was  $15.6 \pm 1.4$  and the case group was  $15.8 \pm 1.3$ . According to Chi-square and Mann-Whitney tests both groups are equal variables including age, gender, marital status, total average, clinical work experience, place of living and interest in nursing and there was no significant difference between the two groups that influence the results. Chi-square results showed that there is no significance difference ( $P > 0.05$ ) between the two groups in nursing process recording (before and after intervention).

Average score of awareness (based on 20) in the control group was  $13.3 \pm 2.1$  and in the case group was  $14.0 \pm 1.7$ . The results of Mann-Whitney revealed both groups are equal and there is no significant difference in scores related to pretest. The average score of awareness (based on 20) in the control group was  $15.2 \pm 3.1$  and in the case group was  $17.6 \pm 1.4$ . Mann-Whitney results showed there is significant difference in the two groups in post test. The average of students' achievement scores in knowledge level was  $3.3 \pm 1.5$  in case group and  $1.8 \pm 3.1$  in control group. The results of T-test present there is significant development in posttest scores of the students ( $p=0.023$ )

## DISCUSSION

The purpose of the current study was to "determine the influence of teaching nursing process with integrated method on clinical learning of nursing students. There was no similar research in this arena (influence of teaching nursing process with integrated method including concept map and advance organizer) in the review of the literature.

According to the hypothesis that all teaching methods are influential on learning, the results of the present study showed that both integrated and traditional methods are influential on upgrading students' clinical learning. However, the average of scores and statistical tests showed that integrated method significantly upgrade students' theoretical learning in the case group.

Researchers believe that no method or educational sources can cover all aspects of education and the appropriate methods should be selected according to the purposes that can help teachers in teaching and learners in learning. The results of the study showed that using a combination of methods is more influential than using only one method (11). The integrated method used in the present study

Table 1. Distribution of students based on nursing process recording in both groups

Chi-square results	Group						
	Total		Case		Control		
	Percent	Number	Percent	Number	Percent	Number	
$\chi^2=0.3, df=1, P=0.58$	27.3	18	24.2	8	30.3	10	Nursing process recording (before intervention)
$\chi^2=0.2, df=1, P=0.602$	66.7	44	69.7	23	63.6	21	Nursing process recording (after intervention)

consisted two patterns: concept map, advance organizer and traditional teaching including lecturing.

All researches conducted show that using concept map makes students more interested and active in educational process (1). Similar to the results of Chularut (2004), Fajonyomi (2002), Rahmani (2004), Bahri (2009), and Ghanbari (2010) studies, concept map can upgrade learners' learning (1, 2, 12, 13, and 14). Khaledi's research (2010) shows that the new integrated teaching method including question-answer, group conversation and advance organizer model are more influential in sustainable learning of students than the traditional lecturing method (11). Rahmani (2004), Ghanbari (2010) and Nejat Nazi (2011) researches represent the influence of concept map on meaningful learning of nursing students (1, 2, and 15). The result of Sarhangi (2010) study indicates that concept map method is more influential than lecturing on gaining high levels of learning (3).

Concept maps are mostly considered as new learning method for students and professors; however, it surely takes time to plan concept map and make it as a strategic learning method for both groups. Another challenge is to help teachers to understand the complementary role of this method in meaningful learning process. Meaningful learning occurs when the student can connect the new knowledge with the previous one that leads to greater combination of cognitive structures (using advance organizer model). A crucial factor that has the most impact in learning is the previous knowledge. An important point in clinical learning is practice. It seems that the current education has not been sufficient in this arena and it is essential that students have the opportunity to practice theories in clinical environment under the supervision of instructors.

The facilities of some wards are limited to hold training sessions. In addition, there are some factors that influence using the new methods of teaching such as personal characteristics and differences of students in communicating with the clinical environment and their tendency to learn professional skills; also they are affected by traditional methods for a long time. It was not possible to select the students in the same semester; therefore, the students' awareness was evaluated before training. It should be mentioned that it was not possible to choose each student randomly because they are categorized by the university; however, the case and control group were selected randomly. According to the results of the study, it can be stated that integrated method of teaching is more influential on upgrading and using knowledge level of nursing students in nursing process in compare with traditional method. However, traditional method can be used in some situations. It is recommended to conduct more researches to analyze integrated method in other courses of nursing and other medical fields for a longer period of time; moreover, this method can be combined with other methods and weakness and strengths should be determined.

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