



Competency- Based Mastery Learning: The Planned Clinical Experience for Nursing Students

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Abstract: *Introduction: Clinical education is one of the most important and crucial parts of Nursing education. Successful clinical education needs to adopt effective approaches that are based on up to date knowledge, clients' and patients' needs. Therefore, it can prepare the learners for learning. The aim of this study was to investigate the effect of model of Competency- Based Mastery learning on practical learning of nursing students. Material and methods: In a quasi-experimental study using pre-test and post-test with two group design, 28 nursing students were selected through census sampling method and placed randomly in 2 control and 2 experiment groups, each group containing 6 to 7 people. After taking the cognitive skills pre-tests, control group received traditional education and experiment group went under clinical education using Competency- Based Mastery Learning program for 12 days. As final step, the post-test cognitive skills were held and behaviors skill checklist were observed. Data was analyzed using SPSS software using Wilcoxon and Mann Whitney tests and Pearson correlation coefficient. Results: The findings showed that the participation of the Competency- Based Mastery Learning has been effective in promoting of their knowledge and skill. The mean scores of them significantly differed before and after the participating in Competency- Based Mastery Learning. and compare the clinical competency nurse training differed before and after in group of traditional education and Competency- Based Mastery Learning Group. Conclusion: Competency- Based Mastery Learning promises high level of learning for students, it seems Competency- Based Mastery Learning structured approve to maximizing opportunities for learning and professional development and clinical competency.*

Keywords: *Competency- Based Learning- Clinical Competency-Nursing Student*

INTRODUCTION

Clinical education is one of the strategies through which nurses achieve clinical competence, but unfortunately, the results of studies on nursing education in Iran have shown that the quality of clinical education is not favorable and there are deficiencies (Thompson et al., 2013). More than 50% of nursing curricula are devoted to clinical education Nursing curriculum planners consider clinical education to be the main part of nursing education (Oshvandi et al., 2013). Definite educational program of this method will encourage the student for self-oriented learning and also determine the drawbacks of the educational program. The ability to identify the controversial items, focusing on the relationship between the educational program and clinical skills are other advantages of this educational method. It also determines the educational continuity for each educational period from the low to high levels and also professional advances.

This method will result in regular results and the program can be regulated from the beginning till reaching to the arbitrary goals. By expressing the anticipated results, this method has high potential to obtain the required outcomes. In the other words, it determines description of everything, parameters and the routs to achieve them (Oshvandi et al., 2013).

One of the main concepts of competency-based mastery learning system is the clinical and professional competency. Competency has been defined as the degree to which the people can use their professional knowledge and skills for a wide range of situations. Concepts such as knowledge, skill and standards are among the main concepts of professional competency (Ying et al., 2007).

Performance level difference of these two types of training with other methods can result in better development of scientific and experimental concepts and that's why it has replaced the conventional methods (Dowding and Thompson, 2003).

Bradshaw expressed that the concept of mastery is one of the main concepts of this system. Competency-based mastery learning systems is focused on students' learning and also their performance. The concept of performance has to be clear and understandable for the students of this system. In this way, the education will result in enhancement of basic and expert skills (Torre et al., 2006).

He also said that the competency based mastery learning is the reflection of these three items:

1. What students know (their basic knowledge level)
2. What they can do according to their skill and performance capacity in clinical situations (level of basic skills)
3. Their self-confidence and ability to play the roles and achieve to the goals of competency-based mastery learning system (specialized knowledge and skills levels) (Torre et al., 2006).

Today, many of clinical trainers are searching for educational methods by which it is possible to teach the clinical skills to the students. The best method in this regard is application of a method in which the learners could actively participate in learning and be able to receive a proper feedback from their learning items. Mastery learning is the learning method up to becoming a master in the mentioned field (Morrison, 2005). Speady referred that it is important to know that competency-based mastery learning is to provide clear statements of learning which assure us that the education process is specifically designed for obtaining the anticipated outcomes. This type of education will result in flexibility in presentation and let the programmers design their programs based on their achievements without following the conventional methods (Leung and Diwakar, 2002).

The performances should be a reflection of educational content quality and the learners should be able to learn the items based on the predicted timetable and according to the factors of competency-based mastery learning. They should also enhance their performance skills (Fan et al., 2014).

Calmenhein et al. conducted a research on the concept of competency-based mastery learning in cancer care unit which was designed to train the nurses of these units with new method. They determined 4 levels to reach to the clinical competency: specialized education, skills of conducting specific treatments, quality of care and treatments and organization of the clinical role and its evaluation (Pijl-Zieber et al., 2014). They concluded that achievement-based educational method formed a framework of clinical competency in these units by which the nurses can apply high quality decision making and cares for all the patients and present their specialized, supporting, treatment and management roles in a higher quality level (Pijl-Zieber et al., 2014). Mastery learning is rooted in the thoughts of John Karol. He believed that what differentiates the learners is their required time for learning. By giving adequate time, all learners can learn to a proper level.

Mastery learning method has some stages: determination of the educational goals, primary evaluation, determination of the mastery level, performance of the educational course, developmental evaluation and modification education and concentration evaluation. It has to be mentioned that, like other methods, this method also suffers from some disadvantages like being time-consuming and requiring more help for weaker students as the trainers will spend most of his/her time for them. On the other hand, it has numerous

advantages (Donlin, 2000). Experts believe that the learner has to understand that if he/she wants to advance he/she has to do it even if it requires long time. The most important advantage of this method is that the students will be very capable and you can be sure that they have the minimum requirements of their future duties. Regarding various weak points in the performance of the nursing students and lack of a study on the effect of mastery learning on clinical training of nursing, this study is aimed to compare the conventional training with the mastery learning.

Materials and Methods:

This is a semi-empirical study whose research population included all day-time nursing students of nursing and midwifery faculty, Urmia University who had selected ICU internship in the first semester of 2014-2015 as one of their units.

Data collection was carried out by questionnaires. First, by means of Delphi method, the expected achievements of clinical internship in ICU were determined and then a test was designed according to the research objectives. After determination of the reliability and validity, the necessary coordination was made with the educational authorities of nursing and midwifery faculty and the students were asked to gather in a classroom in a specific time. In that session, the pretesting was conducted and the objectives of the research were explained and the consents of the students to participate in the study were obtained.

After the end of this session, the students were divided into two groups: control and test. The training session of the control and test groups were held in ICU of Taleghani Hospital. The control group received the conventional training while the test group was trained by competency-based mastery learning. After 4 weeks, the evaluation was carried out by checklist. Finally, after the training sessions, the students were asked to participate in a public session and they underwent post-test without previous inform. The results of pre- and post-test were then compared and analyzed.

For evaluation, the results obtained were coded and analyzed by SPSS V 13 software. Descriptive statistical methods such as frequency distribution tables, mean, variance and standard deviation along with analytical statistics methods such as even T-test, single sample T test, correlation coefficient, Wilcoxon and U Mann-Whitney tests were employed. For completing the checklists, the obtained scores of each student were completed by observation and then calculated. Calculation of the scores involved score of 1 for complete and correct performance of the task while in case of incorrect performance the score of 0 would be considered for the students.

Findings:

In both groups, girls were the majority (60%). However, in terms of U Mann-Whitney tests, there was no difference between the genders in terms of their and the type of training.

Table 1: distribution of the research units in control and test groups in terms of clinical skills

Clinical skill	Control group	Test group
Mean and standard deviation before training program	15.2±3.21	17.45±5.70
Statistical test result	P=0.47>0.05	

Table 2: distribution of the research units in control group in terms of their clinical skills before and after conventional training

Clinical skill	Control group
Mean and standard deviation before training program	16.3±4.24
Mean and standard deviation after training program	18.45±5.30
Statistical test result	P=0.40>0.05

Table 3: distribution of the research units in test group in terms of their clinical competency before and after competency-based mastery learning

Clinical skill	Groups	Test group
Mean and standard deviation before training program		17.67±4.90
Mean and standard deviation after training program		26.42±3.00
Statistical test result		P=0.001<0.01

Table 4: distribution of the research units in control and test groups in terms of clinical skills after he training

Clinical skill	Groups	Control group	Test group
Mean and standard deviation after training program		18.45±5.30	26.42±3.00
Statistical test result		P=0.011>0.01	

Based on Table 1 and T-test, regarding the amount of P-value (P=0.46) there was no statistically significant difference between the means of the control and test groups before the training program. Table 2 expresses that based on the T-test results of the two dependent samples (P=0.40), there is no statistically significant difference between the mean values of control group before and after the conventional training.

Table 3 shows that that based on the T-test results of the two dependent samples (P=0.001), there is a statistically significant difference between the mean values of test group before and after the training.

Table 4 says that based on the T-test results and P-value of the samples (P=0.011), there is a statistically significant difference between the mean values of control and test groups after the conventional training.

Discussion and Conclusions:

Although the mentioned results and comparison of the findings indicate the key role of nursing education programs, especially competency-based mastery learning, in enhancement of professional competency, but this subject that whether application of competency-based mastery learning programs in nursing-related education can resolve all the weak points of classic training and education and fulfill all the needs of the nursing students including their professional knowledge and skills needs further studies and investigation.

As the results of this study revealed that the performance the control and test group (receiving conventional and competence-based mastery learning, respectively), therefore it is recommended to address the underlying reasons of such differences from the view point of the students.

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