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The effect of blended training (Programmed and Lecture-Based Training) on learning health status assessment course among nursing students



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ABSTRACT

Background: Checking the health status is one of the main components of nursing care. Failing to use active and learner-based educational methods might cause failures in analysis skills and clinical examinations. This study was conducted to know the effect of blended training (programmed and lecture-based training) on learning health status assessment course among nursing students.

Methods: It was a semi-experimental study which consists of 60 freshmen nursing students in two educational centers were selected through convenient sampling method and randomly placed in the intervention (30 people) and control (30 people) groups. As for the intervention group, the instructor held four two-hour of health status course every week in blended method (programmed and lecture-

based education). The same instructor delivered the same content with the same number of sessions through lecturing method. A researcher-made test was used in this study which included demographic information and 40 multiple-choice questions. This study was analyzed by using *Chi-square* and Independent T-test with SPSS ver. 15.

Results: The average post-test scores of health status were obtained for both blended (11.50 ± 1.45) and lecture-based (10.55 ± 2.01) educational methods. In addition, there was a statistically significant difference between both post-test results ($P=0.04$) in the Independent T-test.

Conclusion: Blending lecture-based educational method and individual education methods such as programmed education can enhance the learning quality of students.

Keywords: Training, lecture, programmed training

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INTRODUCTION

The examination is one of the components of comprehensive nursing care and the basis of nursing procedures.¹ Nursing activities are based on diagnosis and examination whereas included data collection and analysis. Data collection is usually accomplished by obtaining nursing records and examining the health status of the patients.^{2,3} Examining the health status lets nursing students apply their theoretical knowledge in different clinical situations.⁴ Although examination of health status one of the main components of nursing care, the evaluation results of each semester point to the low scores level in this course despite already applied for several years at the undergraduate level.⁵ The study conducted by Rolfe (2002) showed that colleges fail to prepare the students in an appropriate way for clinical performance and considerable faults are observed in teaching clinical skills to students concerning obtaining the records and examination of health status.⁶

Lecturing as a traditional method is no longer being an appropriate way to encourage the students to gain a thorough understanding of courses. Thus, the students in the new millennia

cannot rely on their memorization ability to relegate science from theory to Clinique.⁷ The duty and responsibility of lecturers have grown much harder these days than prior and traditional methods of teaching are no longer able to move society and its people to complicated and advanced developments.⁸ Programmed instruction is one of the methods which can be helpful in quick learning of health status examination. Through this method, a particular learning activity will be defined for each individual based upon her progress speed. The learning activity will be in line with the level of skills and interests of each student and enhances mental independence as well as decision-making capability. In fact, an individual educational system which attempts to synchronize learning with the demands of learners.^{9,10} This method is based on a set of behavioral goals and can be considered an application of learning psychology in teaching.^{11,12}

In programmed instruction, complicated and difficult learning materials are divided into small and simple units known as frames. In practice, the content of frames ranges from one or several

sentences to several paragraphs. As a result, the learner no longer faces the difficult and challenging task of learning a bulk of contents which he may find himself incapable of accomplishing. In each step of learning, the programmer asks the learner to demonstrate that he has learned the topic. Each time the learner gives a correct answer, he is reinforced by confirmation of his deed. As a result, the materials of programmed instruction have a higher level of reward than usual instructional methods. The very same fact results in their being more pleasant and enjoyable. Programmed instruction materials can enhance the effectiveness of instruction as they are materials which have been thoroughly evaluated, reviewed, revised and reproduced. Learning is most effective when it is accomplished with least time, effort, energy, and resources. Programmed instruction seems to be capable of achieving such goals.^{9,13,14}

The results point to the fact that students gained higher scores in programmed instruction along with audio and visual materials compared to other methods, particularly lecturing, but there was no significant difference between programmed instruction and other educational methods.¹⁴⁻¹⁶

The current problems of students and considering the scarcity of researches conducted in this field, because of the selection method of nursing students, over the last few years has undergone significant changes. Those are included a large number of nursing students in Iran, the high population of classes, working while studying, students' marriage, having practical courses and participating in an internship. In addition, the apprenticeship in morning shifts and attending classes in the evening despite physical exhaustion, shortage of human resources and educational spaces are also necessary to utilize a modern method to enhance the learning abilities of students. As learning is different across various groups of students, it is essential to use different teaching methods. Thus, the present research seeks to study the effect of blended instruction (programmed and lecture-based instruction) on the learning ability of nursing students and their performance in health status examination course in the educational year 2015-16.

METHODS

It was a semi-experimental study using post-test with control group. The convenient sampling method was conducted in this study, and about 60 participants included. The inclusion criteria of participants were a second-semester student of nursing, no conditional admission, not being

a student of other universities and having health status course in the second semester of the educational year 2015-16. According to the total participants, they were divided into two different groups such as intervention group (30 participants) from Urmia College and control group (30 participants) from Khoy College. In addition, all of the students already sign of informed consent in order to assured of the secrecy and confidentiality of their information

The researchers designed the programmed instruction software for health status course using B.F. Skinner programmed instruction approach according to the principles of cluster model (Figure 1). Based upon the educational topics set by Ministry of Healthcare and Medical Education, its scientific content was categorized into 4 main topics. They are included methods for obtaining a history and conducting clinical examinations, examination of the upper chest and lungs, heart and nerves based on A Guide to Clinical Examinations and Obtaining History (Barbara bits, 10th edition). The software was designed in such a way that students could access their contents only by a private username and password. This possibility would eliminate any chances of information disclosure between intervention and control groups. On the other hand, the two centers selected for research were 180 kilometers far from another. This long distance would make it impossible for the information to be disclosed.

The same instructor was used in both centers. The instructor began teaching four two-hour sessions a week in intervention group through traditional and lecture-based methods similar to the previous years. Programmed instruction software was provided for the students since the very beginning of the period. The students in the intervention group were free to take the necessary measures for complementary learning either individually or as a group after usual classes. The same instructor taught the same materials with the same number of the session through traditional and lecture-based methods in the control group. The same level of emphasis was put on the main concepts and points by the instructor in both groups. At the end of the educational period, a post-test was held using the researcher-made questionnaire in both centers in the pre-specified time.

The researcher-made questionnaire composed of two parts: the first part mostly dealt with demographic information and the second part comprised of 40 multiple-choice questions in line with the content and behavioral goals of the research. This test was used to measure the cognitive learning of

health status course by students. The validity of tool was determined using Kuder-Richardson method and giving an internal correlation coefficient around 0.83 where it is acceptable for the scientific reliance of the tool.

SPSS 15 was utilized to analyze the data. Kolmogorov-Smirnov test was used to assure the normal distribution of variables, and then independent t-test was utilized to study the mean of scores among groups. Chi-square test was also used to measure the significance of the study results

RESULTS

This study consists of 60 nursing students which divided into the control (n=30) and intervention (n=30) groups. The mean age of the participants was 20.71 ± 2.59 . In terms of gender distribution, 60% of the participants were female. According to Table 1, the results of Chi-square test showed no significant difference between genders in both control and intervention groups ($P = 0.39$). Besides, the independent t-test also pointed to no statistically significant difference regarding with the mean age of both groups (Table 2).

The average post-test scores of health status in blended instruction group and lecture based learning group were 11.50 ± 1.45 and 10.55 ± 2.01 respectively. In addition, the Independent T-test results suggested a statistically significant difference the post-test results of both groups ($P=0.04$) (Table 3).

DISCUSSION

There is no statistically significant difference found between intervention and control groups regarding with background variables. Thus, we may conclude that the two groups were homogeneous regarding these variables (P value > 0.05). According to the final results achieved in this research, the average scores of health status course after blended instruction which entailed blending both traditional and individual and active learning methods in the intervention group were higher than the control group. Independent T-test showed a statistically significant difference in the average scores of these two groups. These results indicate the positive effect of programmed instruction on the learning level and scores. So that, this study is entirely in line with the research conducted by Shahsavari et al. as a statistically significant difference was observed between the post-tests of the intervention and control group regarding learning levels of second-semester students in the Infection Control course.¹⁷ In the current research as well as a study which conducted by Shahsavari, the study population included second-semester students of nursing. The methodological difference of these two types of study was conducting a pre-test in both groups before intervention; however, no pre-test was conducted in this study. Explaining the cause of this measure, we need to point to the fact that only those students who had not passed Health Status course or had failed it and had not retaken were included in our study. In this way, the effect of the previous knowledge of students in Health Status course was discarded from our research. Thus, the study was designed using post-test only. The other difference between this study is that only programmed and lecture-based instruction methods were compared against in the study carried out by Shahsavari et al. According to it, it indicates that the intervention group had just used programmed instruction for learning, while the intervention group has used a mixture of both lecture-based and programmed instruction for learning in the current study. Various studies have pointed to the fact that programmed instruction using audio-visual materials blended with other methods such as lecturing

Table 1 Comparing the qualitative demographic information among both the intervention and control groups

Variable	Group	Intervention Number	Control	Chi-square test P-Value
Gender	Male	19	17	0.79
	Female	11	13	

Table 2 A comparison between the mean age of the participants in both control and intervention groups

Intervention group	Control group	Independent T-test
20.40 ± 0.81	21.03 ± 3.57	$P=0.34$

Table 3 A comparison of learning health status course in intervention (blended instruction) and control (lecture-based instruction) groups

Group	Average	SD	T statistics	Df	Mean difference	Upper bound	Lower bound	p-value
Blended instruction (programmed and lecture-based instruction)	11.50	1.45	2.09	58	0.95	0.04	1.85	0.04
Lecture-based instruction	10.55	2.01						

will be more effective.^{18,19} The programmed instruction was designed in the form of a computer software and presented to the students. However, the programmed instruction was accomplished by offering 3 instructional booklets to students in the study carried out by Shahsavari et al. If programmed instruction method uses computer and frames of this instructional method are capable of reviewing and studying on computer, the attractiveness, durability and access level of this individual learning method will be much more than the active method. The results of a study carried out by Vivekananda et al showed that the virtual CD of patient's health status analysis for Rheumatology had a positive influence on skeletal-muscular clinical examination skills of medical students.²⁰

Several types of research have studied the effectiveness of programmed instruction method in various groups.^{16,21} Opponents of programmed instruction believe that such methods fail to show real instruction as the role of the instructor is reduced to a minimum. They also believe that instructional situations in these methods are cold, mechanical and inhumane as there is no vital and spontaneous face to face interactions between the instructor and learners as well as among learners.²² Based on the current study results, it can be concluded that this method blended with other methods and used along with other instructional methods can play a major role in enhancing the students' learning efficiency in various courses such as health status and clinical examinations in nursing.

CONCLUSION

Not using active and learner-based instruction methods in courses such as health status analysis reduces the students' motivation and desire to learn key materials. Overcoming this problem and using a mixture of programmed learning methods can enhance the motivation and learning efficiency of students.

CONFLICTS OF INTEREST

All authors declare there is no conflict of interest regarding publication of this manuscript.

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