

The Effect of Peer Education on Learning Vaccination Principles among Nursing Students of Shiraz University of Medical Sciences

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Received: 23 May 2020

Accepted: 7 July 2020

Abstract

Background: Peer education is one of the active teaching methods and is rarely used in clinical settings, especially in nursing.

Objectives: This study aimed to investigate the effects of Peer Assisted Learning (PAL) on learning the principles of vaccination in nursing students.

Methods: This quasi-experimental study was performed on 79 (intervention group n=43, control group n=36) nursing students. In the intervention group, seven peer instructors taught the principles of vaccination in two one-hour sessions to other students. The control group received routine education. Data were collected using a questionnaire.

Results: The findings showed that among the students, 43% (n=34) were male and 57% (n=45) were female participants. The difference between the intervention and control groups was significant after the intervention (P<0.001). Besides, the comparison of the average score of the checklist between the two groups showed significant differences (P<0.001).

Conclusion: The results of this study showed the positive impact of PAL on clinical education as well as its reliability and benefits for nursing students.

Keywords: learning, nursing, peer group, students, vaccination

Introduction

Medical Sciences students spend most of their educational programs in clinical settings [1]. Nursing students start clinical training in their first semester [2]. Learning basic psychomotor skills in nursing is one of the most important components of the curriculum in the first years of clinical nursing education [3]. Education in universities is commonly carried out using a teacher-oriented method. In this method, the entire course is presented by a lecturer, and students have to receive and memorize the subjects [4]. Research on nursing education is also based on traditional methods such as classroom lectures that employ behaviorism and passive

learning theories [3,4]. Although these methods have some advantages such as providing a large volume of learning materials in a small period of time, they are much less effective in creating motivation and changing attitudes compared to the cases in novel educational techniques. In addition, old methods misuse resources [3]. Currently, student-based methods that increase students' activity in learning and engender critical thinking are garnering more attention [3,4]. Using these newer methods is also accompanied by a possibility of more durable efficient learning for students as well as the chance of improving interest in learning. One of these methods is Peer Assisted Learning (PAL) [5].

PAL is not a new concept and has significant history in medical education. To date, PAL has attracted more attention in various educational fields. It was considered to be an unofficial method in the past. Currently, however, it is known as an official educational method and is applicable in various medical sciences fields such as nursing [6]. PAL is an educational planning model, which is described as obtaining knowledge and skills by active help and support among a peer group and is used for changing knowledge, vision, and behavior. This model is based on positive characteristics of the peer group, acquaintance with each other, and social interactions [7, 8]. The advantages of this model include improving students' self-confidence, presentation skills [9], teamwork, responsibility, critical thinking skills [10], and grades [11] and increasing opportunities for questioning [12]. It has also been reported that this educational method could enhance inter-group cooperation in delivering health-related information [11-13] and create a positive learning environment for both students and instructors [7]. In addition to enhancing knowledge, skills, and understanding of subjects, PAL complements communicational skills. In fact, teamwork creates mutual connections among students, improves their teaching, leading, and problem-solving skills, and makes them act like role models. It also causes a higher level of security for learning among students [8,13]. In a study on 112 first-year nursing students, most of the students reported more comfort in learning compared to the one in third-year students [6].

Vaccination is one of the most cost-effective preventive strategies against mortality and morbidity among people. After supplying clean drinking water, vaccination has the highest effect on reducing deaths, especially child deaths, and increasing the population [12]. The principles of vaccination are the skills that nursing students have to learn during public health course internship. So far, no studies have been conducted on the use of PAL in teaching vaccination principles. Few studies have investigated the effect of this method on nursing students [14]. Yet, this method is of great importance when dealing with the current cost limitations and increases in technologies [7]. Therefore, the present study aimed to investigate the effect of

PAL, as a novel approach for clinical practice education, on learning vaccination principles among nursing students in Shiraz University of Medical Sciences, Shiraz, Iran.

Methods

This quasi-experimental study was approved by Shiraz University of Medical Sciences on 01/05/2016 (ID: IRCT2016061227216N3 and ethics number: IR.SUMS.REC.1395.21). It was performed on 79 third- or fourth-semester nursing students who had passed public health course internship in two terms from September 2016 to October 2017. To control the relationship between both groups, they were selected from different semesters. By applying the sample size formulation, considering $\alpha=0.05$ and power=0.85, and using the results of similar studies (15), we selected a sample size consisting of 66 subjects for the study (33 subjects in each group). Considering a loss rate of 20%, we estimated a sample size of 79 individuals.

$$n_1 = n_2 = \frac{2(Z_{1-\alpha/2} + Z_{1-\beta})^2 S_p^2}{(\mu_1 - \mu_2)^2}$$

The research population included the entire nursing students who took the public health course in 2016-2017. Based on the time spent in the internship, 36 students enrolled in the control group (consisting of six internship groups, and each group had six students) and 43 students were recruited in the intervention group (consisting of six internship groups each including six students and one seven-student group) by means of simple random sampling. The inclusion criteria were being a second-year nursing student, willingness to participate in the trial, and negative history of participation in vaccination courses. On the other hand, the exclusion criteria were losing one or more sessions and no willingness to continue the trial. At first, a questionnaire was prepared by researchers using the related resources and the previous studies on the issue. The content validity of the questionnaire was confirmed by five experts (CVI=0.8, CVR=0.69). Its reliability was also determined by conducting a pilot study on 40 students, revealing Cronbach's alpha coefficient of 0.73. The questionnaire consisted of two parts: 1. Demographic characteristics and 2. Multiple-choice questions regarding vaccination principles

(15 questions). Correct answers received one point, while wrong or no answers received 0 points. Accordingly, the total score could range from 0 to 15.

After signing written informed consents, both groups were asked to complete the study questionnaire. In the intervention group, the peer instructor was selected from among the students based on pretest scores as well as appropriate presentation skills and responsibility. Totally, seven peer instructors (one from each internship group) were trained by the teachers through presenting lecturing methods, offering a pamphlet, and teaching vaccination principles. Consequently, they taught vaccination principles to other students through two 1-hour sessions and discussed the topic in small groups of internship. The peer instructors did not teach in the control group. On the other hand, the control group students were trained by teachers. Immediately after the intervention, the questionnaires were filled out by the control and intervention groups. The subjects that were taught included general practical and theoretical principles of vaccination, process of safe vaccination, immunization program in Iran, and vaccination in specific situations and groups.

Per-protocol analyses were performed using SPSS software version 22 (IBM, Armonk, NY, USA).

Table 1: The mean score of vaccination principles before and after intervention between the two groups

Group	M±SD before the intervention	*P-Value	M±SD after the intervention	*P-value
intervention	6.16±2.24	0.685	11.62±2.19	<.001
control	6.38±2.68		9.55±2.03	

*Independent t test; P<0.05 was considered as statistically significant

Discussion

The results of this study showed the positive impact of PAL on clinical education as well as its reliability and benefits for nursing students. Due to the concentration of educational systems on student-based methods, PAL is used as an independent method or in conjunction with other methods in various courses and groups of students [16]. It is also gaining increasing recognition in medical and health-related sciences. In this context, students evolve in cognitive growth, psychomotor competency, and decision-making skills [17]. In a cross-sectional study on dental students in South Africa, the researchers asked the opinions of students and lecturers about appropriate education methods through two

Descriptive measures were expressed as mean and frequency (percentage). Independent and paired t tests were run after confirming the normality of the data via Kolmogorov-Smirnov test. And, P<0.05 was considered as statistically significant.

Results

The sample mean age was 20.75±1.55 years. Additionally, 43% of the students (n=34) were males and 57% (n=45) were females. Moreover, 51.9% (n=41) and 48.1% (n=38) of the students were in their third and fourth semesters, respectively. Based on the results of the independent t-test, no significant difference was found between the two groups regarding the demographic characteristics such as age (P=0.109) and sex (P=0.109). None of the students in the two groups had an experience in peer education. Based on the paired t-test, the mean score of vaccination principles knowledge in the intervention group was 6.75± 1.95 and 11.62±2.19 before and after the education, respectively, which was significant (P<0.001).

According to (Table 1), no significant difference was found between the two groups regarding the mean score of vaccination principles before the intervention. However, this difference was found to be statistically significant after the intervention (P<0.001).

separate questionnaires. Based on the results, the students preferred cooperative and student-based methods. This finding validated the use of active educational methods such as PAL instead of traditional methods [18]. The results of the present study showed a significant difference in the scores of the intervention group before and after the intervention. Hence, it can be inferred that PAL improved learning in the intervention group. In the same line, Khaw studied the outcomes and acceptability of PAL in teaching clinical skills to medical students using descriptive methods. The results revealed that both instructing and learning students approved this method to be acceptable and useful in medical training. Indeed, teaching physical examination

skills and history taking was significantly associated with PAL [19]. A previous research also indicated that medical students as instructors of other students were perfectly able to perform their roles. Therefore, this method was accompanied by positive educational and behavioral advantages [20]. In another study in Switzerland, the researchers aimed to investigate the effect of PAL on puncturing peripheral veins in interdisciplinary education of medical students. The findings indicated that this educational method was a positive one for both students and instruction groups. Indeed, successful implementation of this course led to its recommendation to other institutes [21].

The results of the present study showed a significant difference between the PAL and control groups, who were trained in the usual way, and intervention group had better learning. Consistently, Pålsson analyzed the effects of peer learning in clinical practice education on the self-rated performance of nursing students. The results indicated that peer learning was a useful technique, which improved the self-efficacy of nursing students to a greater degree compared with the one in traditional methods [14].

Heydari et al. investigated high school girl students and showed that the PAL has a positive impact on urinary tract infection preventive behaviors [22]. Yu also conducted a systematic review to examine the existing evidence on the effectiveness of PAL in learning and reaching educational goals among medical students [17]. Among the 19 selected papers, 15 concentrated on student-learner outcomes and four on student-teacher learning outcomes. The results demonstrated that PAL had scientific and professional benefits for both students and lecturers in medical schools. However, its long term effects need further investigation [4,17]. Numerous other studies have also analyzed PAL and its impacts on various groups, and the results indicated different levels of effectiveness [23].

In the present study, most of the students were females and in their second year of education. The results showed no significant difference between the two groups regarding the demographic and educational characteristics. However, in another study on nursing students' opinions about using PAL in teaching physical examination, most of the students were satisfied, and third-year students

were more comfortable with PAL compared to freshmen. Additionally, male and non-Asian students were more receptive in this method [2]. The reason for the difference between the results might lie in the fact that the present investigation only included second-year students, while the one conducted by Wearn involved both first- and third-year students that led to better comparisons [23]. Bergs performed a systematic review of 19 papers on PAL. The papers were categorized into three groups, namely teacher-based education, PAL, and peers as instruction complements. The results showed that learning improved when peers were employed. Nonetheless, the accuracy of this method, compared to other methods, and improvement of students' performance need further studies [16]. Overall, it seems that PAL leads to reaching educational goals and improvement of students. Thus, it can be used in various theoretical and applied training areas in all levels of medical fields. Yet, further research on expertise for using this method, the way it can be implemented, and its differences with other methods can shed light on its less known aspects. Due to the limitations such as non-randomization of the peer instructors, more studies are necessary on this issue. The peer instructors and students stated that they learned the topic perfectly, enjoyed this method, and had more satisfaction and motivation. However, we did not measure their attitudes through a reliable and valid psychometric instrument. In future studies, this issue can be considered.

It seems that due to the growing number of students, lack of faculty members, and limitations in scientific resources, PAL is garnering more attention as a solution throughout the world. Aside from affecting the learning process of students and reducing the workload of lecturers, PAL causes more effective communication, higher self-confidence, and lower stress levels for students as opposed to those in teacher-based methods. However, further studies are required to be conducted on larger groups of students for more accurate evaluation of educational and non-educational effects of PAL.

Acknowledgements

Funding for this study was provided by Vice-chancellor of research of Shiraz University of Medical Sciences (No: 94-01-08-10909).

The authors would like to thank Vice-chancellor of research of Shiraz University of Medical Sciences and appreciate all research participants.

Conflict of interest

All authors declared no potential conflicts of interest.

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