

MANDATORY VS. VOLUNTARY RE-DEMONSTRATION OF LEARNT PROCEDURES IN THE CLINICAL FUNDAMENTALS OF NURSING COURSE

Dr. Mohammad A. Al-Motlaq,¹ Khyria Alkilani²

¹ PhD, MBS, BSN, RN (Correspondence author), Assistant professor, School of Nursing, Hashemite University, Jordan

² Teaching and research assistant, School of Nursing, Hashemite University, Jordan

ABSTRACT

A quasi-experimental design was used to examine the effect of mandatory versus voluntary approach of teaching fundamentals of nursing course on students' performance. A total of 159 first-year baccalaureate nursing students were included in the study. Students were assigned into two groups; mandatory and voluntary groups. At the end of the semester, students' performance was calculated by taking the mean score of each group in the midterm and final clinical examinations. No significant difference in student's performance was found between the two groups at the midterm examination ($t(146) = 0.176, P > 0.05$). Similarly, there was no significant differences ($t(146) = 0.33, P > 0.05$) in students performance in the final examination in relation to the used teaching approach, the difference was also insignificant even when students that changed groups were excluded ($t(103) = 0.14, P > 0.05$). Although there was a medium positive relationship ($r = 0.31, n = 43, P < 0.05$) between students scores in the midterm and final examinations, a significant decrease in students performance ($t(42) = 4.12, P < 0.0001$) from midterm to final examination was found for students who changed groups. Students' performance has improved when mandated to re-demonstrate the learnt procedures. Additional studies are required to explore the effect of mandatory clinical education.

Key words: Mandatory, voluntary, higher education, clinical education, nursing

INTRODUCTION

Educational institutions work in collaboration with the clinical health sector to produce nursing individuals that are qualified and prepared for practice. Through its theoretical and clinical courses, Bachelor's of nursing programs aim for preparing the technical, interpersonal and emotional dimensions of nursing students. To achieve program accreditation, the clinical part of a Jordanian nursing program should account for at least 40% of the total course credit hours (Higher Education Accreditation Commission, 2011) which includes hospital training and clinical training laboratories, referred to later as "labs". Before students begin their field clinical training, they undergo a preliminary clinical education at on-campus labs through which they learn the basics of nursing work and gain the necessary skills that qualify them to train in the hospital. One

important course is the Clinical Fundamentals of Nursing course, a challenging and demanding course for novice nursing students.

Throughout the years, nursing educators have focused on fostering a learning environment in which students may apply the acquired knowledge in the clinical setting. To overcome the problem of 'teachers who do not listen' and 'students who do not talk' a set of solutions were recommended by the literature; of note are the small group education and the mandatory attendance policy. It is known among nursing educators that insufficient basic training affects students' success in subsequent hospital training courses. Therefore, to ensure competence, enhance quality outcome and to overcome any future weakness among nursing students, small group labs with mandatory redemonstration approach was integrated in teaching the clinical course. An evidence based teaching approach adequately applied in teaching nursing students is important to produce nursing students with highly professional quality in the course of nursing education. The primary aim of this study was to evaluate the efficacy of the selected approach in enhancing quality outcome in the clinical Fundamentals of Nursing course. This study is thought to provide essential knowledge to restructure the teaching strategy of clinical nursing courses.

LITERATURE REVIEW

Previous research showed that students have succeeded in their courses regardless of their entry qualifications (Wharrad et al., 2003; Jacob, Chapman, Birks and Al-Motlaq, 2011) and this was attributed mainly to the teaching methods (Abu Hasheesh et al., 2011). Abu Hasheesh et al. (2011) concluded that enhancing nursing student's achievement and teaching effectiveness require nursing educators to shift from traditional teaching methods that promote passive learning to non-traditional methods that encourage active learning where students participate in the analysis, synthesis, and evaluation of the material. Different presenters in the recent 2011 Global Education Conference in Northern Cyprus supported the notion of adopting non-traditional methods of education. Non-traditional methods require a clinical teacher who understands students' needs and appreciates innovative modes of teaching (Nahas et al., 1999). Having effective clinical teacher and students who are willing to learn promoted

the learning experience. In this regard, a retrospective study of nursing graduates concluded the importance of providing both content and emotional support as a way to foster the whole learning experience rather than just what is taught (Rochester, Kilstoff & Scott, 2005). In Jordan, Gharaibeh (2006) considered the high number of students compared to faculty members and clinical placements as points of weakness that threatened the educational process. These were coupled with lack of educational resources and adopting traditional models of curricula (Gharaibeh, 2006). Gharaibeh proposed strategies for advancing nursing education which included advancing quality of education with evidence-based research, an approach widely used for evaluating the efficacy of non-traditional education methods.

Several researchers have evaluated the impact of using non-traditional modes of education on student performance. For example, group discussion plays a major role in educating nursing students, whether in theory classes or clinical labs and placements. Having small groups makes it easier for students to express themselves and establish closer contact with the teacher. It can enhance skills development, encourage sharing of ideas, teach team work, and more importantly, give students the chance to monitor their own learning and thus gain a degree of self direction and independence in their studies (Jaques, 2003, Peteani, 2004). With small groups, teachers and students interact more effectively (Emerson, 2006). The literature also indicates the positive relationship between mandatory attendance and student performance. Mandatory attendance was proved effective in improving students earnings (Lang & Kropp, 1991; Keueger & Angrist, 1986). The previous empirical literature indicates that an enforced mandatory attendance policy significantly reduces absenteeism and improves performance (Marburger, 2001; 2006). Although not previously evaluated, adding the mandatory redemonstration part to the teaching approach is thought to enhance students' skill competence.

The intervention: Small groups with mandatory redemonstration teaching approach

Traditionally, Jordanian universities offer the Fundamentals of Nursing course during the second semester of the first year in 3-hour once a week session. Each session is presented by a group of instructors (2-3 teachers) trained in the principles of patient care

in a clinical learning laboratory setting. Each instructor is assigned to a specific material to present with general demonstration in front of all students (10-15 students). Due to time constraints, each class presentation is followed by a selective demonstration of procedures by a selected number of students. Students are offered the opportunity to electively revisit the lab during the week and engage in unsupervised self-directed redemonstrations (voluntary redemonstration).

For clinical teachers to offer a sound presentation of basic nursing concepts and precise coverage of step-by-step clinical procedures, small group with mandatory redemonstration approach has been introduced. By reducing the overall number of students supervised by each instructor, students received an intensive training with practice sessions that ensured all students have understood the procedures and their purposes. Each instructor presented and organized direct demonstration of each procedure while involving all students in mandatory redemonstrations. Clinical handbook with step by step presentation of each procedure was also developed by the school teachers as a valuable reference tool for both students and instructors. Having small groups is believed to encourage active discussion and stimulate excitement in first year nursing students, hence potentially enhance their willingness to improve. The mandatory redemonstration approach is also believed to foster students concern to learn all basic nursing skills, interact effectively with their teachers, and develop themselves to strongly start subsequent courses. It is also expected to improve their learning abilities and prepare them to become clinically competent.

Purpose of the study

The purpose of this study was to evaluate the efficacy of adopting the mandatory redemonstration approach of teaching the clinical Fundamentals of Nursing course. The effectiveness of the approach was evaluated by comparing the difference in students' performance in the clinical course.

METHODS

Design

A non-equivalent control group quasi-experimental design was used. The target population included all first year students undertaking the course during the academic year 2010-2011 in one Jordanian university. The only criterion for selecting students into the study was first year student enrolled in the course for the first time. The exclusion criteria applied were students who changed labs during the semester or failed the course for non-academic reasons such as failing to attend an examination. The main outcome measure is students' performance in the clinical course. Students' performance was calculated by taking the mean score of each group in the midterm and final clinical examinations.

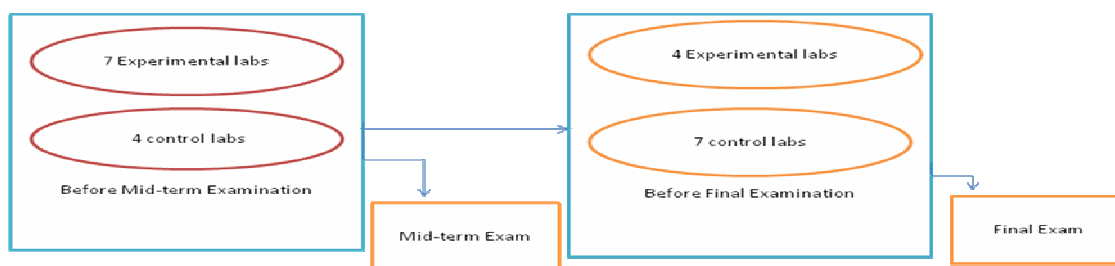


Figure 1: Flowchart of groups included in the study.

Procedure

Approval to conduct the study was obtained from Hashemite University IRB and the deanship of the involved School of Nursing. Prior to conducting the study, teachers of the course were provided with details of what the study entails. Teachers' opinion on the study was explored during the pre-semester meeting. Eleven teachers aged between 25 and 37 years with an average teaching experience of 5.5 years (range 2-7 years) participated in the discussion group on the study. All teachers agreed that using small groups with mandatory redemonstration approach is more effective as a learning environment. Teachers recommended providing enough equipment for each procedure to match the objectives of the new method.

All clinical students who have registered in the course were included in the study. The mandatory redemonstration mode of education (experiment group) was integrated in seven randomly selected laboratories while the remainder four labs continued as usual using elective redemonstration (control group). These labs were taught by the same instructors but on different days during the week. To add more strength into the design, three experimental labs adopted the elective redemonstration approach after the midterm examination (Fig. 1). This provided an opportunity to analyse results on both directions; within and between groups.

Students' performance among the intervention and control groups was compared using post-test only design. Two standardized testing sessions were conducted to evaluate students' performance in the course. Testing sessions involved the midterm and final interview examinations where a student was asked to demonstrate a procedure that was selected randomly from all procedures they've learned during the course. The student performance was examined by a committee of two evaluators using standardized evaluation checklist previously prepared by the course coordinator. The course coordinator was asked to provide the research team with the scores of each student in the midterm and final exams.

Students' scores on each examination were entered into SPSS 19.0 statistical program for analysis (SPSS, Chicago, IL). Preliminary analyses were performed to check accuracy of data input and to examine distribution of scores. The differences of the mean scores between the intervention and control groups were examined using the independent-samples t-test. To assess the effect of the intervention on the group that adopted the approach halfway, paired sample t-test was used to compare students' scores in the midterm and final examinations. Probability values of 0.05 and less were considered to be significant.

RESULTS

A total of 159 students registered in the 11 labs of the Fundamentals of Nursing course were recruited into the study. From these 11 enlisted labs seven randomly selected labs adopted the mandatory redemonstration mode with a total of 96 students while the remainder four labs continued using the elective redemonstration mode with a total of 63

students. Eleven students didn't meet the inclusion criteria and were excluded leaving a total of 148 students. The sample included 43 males (29.1%) and 105 females (70.9%) distributed over the 11 labs. All students included in the study were evaluated twice; midterm examination and final examination. The following show the results of each exam.

Results at the midterm examination

A total of 148 students were examined in the middle of the semester and scored an average of 16.3 out of 25 ranging between 3 and 24. Eighty nine of these were the experimental group and scored a mean of 16.2 ($SD=3.9$). Concurrently, the reminder 59 control students were examined and scored a mean of 16.3 ($SD=4.3$). An independent sample t -test was conducted to compare the midterm examination average score for both groups. There was no significant difference in scores for the experimental group and control group; $t(146) = 0.176$, $P = 0.86$. The magnitude of the difference in the means (Mean difference) = 0.12, 95% CI: -1.22 to 1.46.

Results at the final examination

A total of 148 students were examined and scored an average of 22.5 out of 40 ranging between 3 and 39. Forty six of these were the experimental group and scored a mean of 22.8 ($SD=7.7$). Concurrently, the reminder 102 control students were examined and scored a mean of 22.4 ($SD=7.6$). An independent sample t -test was conducted to compare the final examination average score for both groups. There was no significant difference in scores for the experimental and control groups; $t(146) = 0.33$, $P = 0.73$. The magnitude of the difference in the means (Mean difference) = 0.46, 95% CI: -3.13 to 2.22.

To exclude the effect of the labs that changed groups, the test was repeated to compare means only between students who didn't change groups after the midterm examination. There was also no significant difference in scores for the experimental group ($M=22.84$, $SD=7.7$, $n=46$) and control group ($M=22.6$, $SD=7.4$, $n=59$); $t(103) = 0.14$, $P = 0.88$.

The relationship between midterm and final examinations was investigated using Pearson product-moment correlation coefficient. There was a medium positive

correlation between the two variables, $r= 0.41$, $n=105$, $P< 0.0001$ with high score on the midterm examination associated with high score on the final examination.

Results of the three labs that changed groups

The relationship between midterm and final examinations was investigated using Pearson product-moment correlation coefficient. There was a medium positive correlation between the two variables, $r= 0.31$, $n=43$, $P< 0.05$ with high score on the midterm examination associated with high score on the final examination. A paired sample t-test was conducted to assess the difference in students' scores ($n=43$) on the midterm and final examinations. To compare two scores of the same value the compute function was used to convert the midterm examination scores so it matches the final examination scores. To protect against Type I error, Bonferroni adjustment was applied to the alpha level to become 0.017 (Pallant, 2007). There was a statistically significant decrease in students scores from midterm examination ($M= 27.2$, $SD=5.9$) to the final examination scores ($M= 22.1$, $SD=7.8$), $t(42) = 4.12$, $P<0.0001$. The mean decrease in students' scores was 5.1 with a 95% CI ranging from 2.6 to 7.7.

Gender differences

An independent sample t-test was conducted to compare the midterm and final examinations average score between male and female students. The comparison between males and females was first conducted for all students in both experimental and control groups then each group was compared separately. For the total sample, there was no significant difference in midterm examination scores for males ($M=15.9$, $SD=3.9$) and females ($M=16.4$, $SD=4.1$); $t(146) = 0.75$, $P=0.45$, though a significant difference was found in final examination scores between males ($M=20.2$, $SD=7.7$) and females ($M=23.5$, $SD=7.4$); $t(146)= 2.44$, $P<0.01$. The results for each group show no significant difference between males and females for the midterm and final examinations (Table 1).

Table 1: Gender differences for the midterm and final examinations

Group	Gender	N	Midterm exam Mean score	Final exam mean score
Mandatory mode	Male	16	14.8	20.0
	Female	30	15.8 t=0.78 ns	24.4 t=1.87 ns
Elective mode	Male	18	16.44	20.8
	Female	41	16.27 t=0.14 ns	23.4 t=1.3 ns
Labs that changed modes	Male	9	16.6	19.3
	Female	34	17.2 t=0.42 ns	22.8 t=1.2 ns

ns= not significant

DISCUSSION AND CONCLUSION

Clinical education is a very important part of the Bachelor's of Nursing in Jordan, and makes up to 40% of the total credit hours the student is expected to complete. The trend toward quality nursing education has called for a transformed mode of education that fosters learning. A new approach of teaching the course using small groups with mandatory redemonstration of learnt procedures was introduced at one Jordanian university. The aim of this study was to investigate the relationship between mandatory re-demonstration of learnt procedures and students' performance in the clinical course. While previous literature indicated that student performance is positively correlated with enforced mandatory attendance (Marburger 2001; 2006) some authors argued against the case (Clair, 1999). Some might argue that teachers may be compelled to teach but few students are compelled to learn. Similarly, traditional measures mandate only attendance, not learning, and is difficult to measure (Donen, 1998). To overcome the controversy, the current study went beyond the traditional measures of mandatory attendance and included learning measures. Using various methods of teaching including small groups, role playing, case studies and redemonstrations were among the solutions for the drop off students quality. Clinical teachers found these approaches relevant and useful in improving students performance. The proper approach used in this study is thought to address the clinical education needs of nurse students. Therefore, teachers of the course participated actively in integrating the activities of the new approach.

Although no significant difference was noticed between experimental and control groups in both midterm and final examinations, a significant decrease in scores was noticed in those students who changed labs from mandatory re-demonstration to elective re-demonstration. The decrease has occurred even with a medium positive

relationship ($r= 0.31$) between students scores in the midterm and final examinations. Previous studies showed mandatory attendance policies have improved students performance (Marburger, 2001; 2006). As expected, compelling students to redemonstrate the learnt procedures under the supervision of clinical teachers has affected their performance. Given the small sample involved in the study and the nature of groups distribution, the insignificant differences between the major two groups might be related to a sampling error. A logical explanation to the results is using students as their own controls in the case of students who changed labs compared to using others as controls in the case of students in the major two groups. The positive correlation between midterm and final exams was expected. Highly achieving students would generally have high test scores in the midterm and final exams (Jacob, Chapman, Birks, and Al-Motlaq, 2011). For students to deliver an acceptable level of care, the process of teaching should integrate continuous education hence contribute to improved clinical practice. Poor performing students, however, require assistance in changing their attitude toward the educational process. Researchers recommend further examination of the approach using random sample of students with larger samples drawn from a number of universities.

To conclude, using small groups with mandatory re-demonstration of procedures was thought to enhance quality outcome in the clinical fundamentals of nursing course as a prerequisite for other clinical nursing courses. To achieve accreditation, schools of nursing must consider smaller students to teachers ratio while integrating nontraditional methods of teaching the clinical labs.

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