Original Article

The Effect of Peer Teaching on the Quality of Report Writing Based on the Nursing Process

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Abstract

Background: Considering the importance of report writing and its problems, different teaching methods can be used to improve nurses' knowledge and performance, among which is peer teaching. This study aimed to determine the effect of peer teaching on the quality of report writing based on the nursing process. **Materials and Methods:** This quasi-experimental study examined 60 nurses working in the surgical and cardiac wards of Razavi Hospital in Mashhad during 2019. These wards randomly assigned to intervention (n = 30) and control (n = 30) groups. For 2 weeks, report writing teaching was implemented for the intervention group based on the nursing process through peer teaching. The control group routinely performed report writing. At the beginning and end of the study, we reviewed nursing reports of both groups using a valid and reliable checklist. Data were analyzed using two-way analysis of variance with repeated-measures analysis of variance. **Results:** Before the intervention, there was no significant difference between the two groups in terms of scores of report writing quality in structure, content dimensions, and the total scores ($p > 0.05$). After the intervention, the mean score changes were significantly higher in the structure (Mean Difference (MD) = 4.99, 95%CI: 1. 26–8.72, $p < 0.010$), content (MD = 8.11, 95%CI: 4.91–11.31, $p < 0.001$), and the total quality of report writing (MD = 7.54, CI: 4.56–10.53, $p < 0.010$) in the intervention group than the control group. **Conclusions:** Peer teaching improved the nurses' quality of report writing. The teaching planners are recommended to use this method to train nursing staff.

Keywords: *Documentation, nursing education, nursing process, peer group*

Introduction

The nursing report is an important and basic document and written paper in patients' records. Writing the reports accounts for approximately 30% to 38% of nurses' time.[1] To prevent possible mistakes in the proper design and implementation of nursing care, it is essential to comply with six points including truth, accuracy, completeness and conciseness, dynamism, and being organized and confidential in recording the correct report.[2] Therefore, nurses must convey information about the patient accurately, in a timely and effective way.[3] Despite the importance of nursing reporting, researches indicate the unfavorable status of care registration and the lack of a proper framework for recording nursing care,[4] and the low quality of nursing reporting and documentation.[5,6] Many nurses have not been successful in meeting the existing documentation standards or guidelines.[7]

In a study by Paans *et al*.[8] (2010) in 10 hospitals in the Netherlands, only 28% of nurses provided the satisfactory quality of report writing. Incorrect, incomprehensible, and illegible registrations have no legal value and have caused nurses to be suspected and accused in legal courts because the medical team performance is legally provable by registration.[9]

The nursing process is an organized method and a framework for determining problems and reactions of patients to the disease and treatment.[10] Its proper, scientific, and purposeful implementation leads to complete and comprehensive care for patients.[11] Using the nursing process, patient care can be changed from traditional and old methods to holistic and high quality nursing care.[12]

Even though nurses are trained about report writing during their nursing education years, the current situation needs to be improved because of educational weakness.[13] Teaching is a way to improve

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the current situation and is done in different ways such as peer teaching. In this way, peers work together to maximize the education level for each other and transfer their knowledge to each other,[14] and create a simple and safe learning environment according to the members' similar characteristics who share their experiences about it.[15] Peers have unique opportunities to affect the group[16] and can better share their knowledge and experiences.[17] Therefore, using their experiences to provide a training program for other peers with problems and without the necessary skills, can be useful in learning or improving practical skills.[18] Peer re-teaching courses help maintain the knowledge and skills of health care providers.[14] In this way, a more intimate relationship is created, which can be effective in reducing employees' concerns about their ability to provide the right services.[19] In our search in databased, few studies were found about the use of peer teaching to improve the quality of nursing report writing in Iran.[20] Furthermore, the report writing model based on the five-step nursing process has received less attention.[21] Therefore, in this study, the quality of report writing based on the nursing process with peer teaching was evaluated.

Materials and Methods

In this quasi-experimental interventional study, 60 nurses working in general (two wards) and internal heart surgery wards (two wards) of the hospital were included, in 2019. To determine the sample size, we used the results of a pilot study on 20 individuals and the formula for the "comparison of the mean of two independent communities" and considered the highest estimated number. Therefore, we calculated the minimum sample size of 30 using the pilot study (27 individuals in the intervention group and 27 in the control group) based on the formula of comparing the average of the two groups with a 95% confidence and a test power of 80% with a probability of 10% in each group. In total, we studied 60 nurses.

The research sample was selected using convenience sampling based on the inclusion criteria among the nurses of the heart and surgery wards of Razavi Hospital. The research units were randomly allocated into control and intervention groups with the blocks of size two. The random sequencing for the assignment was performed using the Random Allocation Software by a statistician. For masking in allocation, we gave the random sequence to the researcher in charge of allocating patients to the intervention and control groups.

The inclusion criteria of the main participants included: a bachelor's degree in nursing or higher and clinical experience and employment for at least 6 months in one of the surgical or cardiac wards of Razavi Hospital during the study. The exclusion criteria included the withdrawal of the participation in the program and absence or leave in more than two out of 12 work shifts of the intervention.

The inclusion criteria of peers were as follows: a bachelor's degree in nursing or higher, willingness and motivation to participate and cooperate in research, having work experience (at least 5 years), passing a previous training course (at least an in-service training or continuing education). The exclusion criteria for peers were withdrawal from the continuation of the research program, absence or leave in more than two out of 12 work shifts of the intervention.

A researcher-made checklist was used to evaluate the writing quality based on an intra-university guideline and previous studies.[22,23] This checklist assessed both content (32 items) and structure (8 items) of nursing reports. The 32 items on content included time of patient admission at ward, time of starting the initial assessment, patient's age and marital status, chief complaint, initial diagnosis, the method of patient admission in the ward, assessment of consciousness status, history of physical illness, mental health assessment, history of specific disease, the way of performing or following up test results and completing test registration, recording paraclinical procedures and relevant follow-ups, patient's nutritional status and diet, output (diuresis and excretion) status, sleep and rest status, absorption and excretion status, necessary information about drugs and drug records (drug combination), vital signs, and its abnormal results, assessment of the risk of fall and bed sores, pain assessment, patients' educational and self-care needs, the level of care based on the assessment of patients, self-care conditions, nursing diagnoses, Nursing Intervention Classification (NIC), Nursing Outcomes Classification (NOC), and the time of shift handoff.

Furthermore, the field of nursing report structure contained eight items including recording complete and accurate patient details in all file headers, recording nursing reports with no striking out and varnishing, sequence of nursing reports and brevity and completeness of reports, drawing lines at the end of the report, readability and cleanliness of nursing reports, and recording the nurse's stamp and signature along with the date, time, and type of work shift at the end of each nursing report. Each item had three options, namely complete record (score 2), incomplete record (score 1), and non-record (score 0). The qualities of nursing reports were classified into three categories based on the total score: poor (total score of below 40), moderate (total score of 41–69), and high (total score above 70).

To assess the content validity of this checklist, it was given to seven respected professors and faculty members of Mashhad faculty of Nursing and Midwifery to review and correct after investigating the latest guidelines and instructions of the Nursing Deputy, Department of Nursing Service Development, Ministry of Health and Medical Education in the field of research. The necessity of checklist items was assessed by determining the content validity ratio to quantitatively evaluate the validity and ensure

the selection of the most relevant and correct content. To determine the validity of the checklist, we used the content validity index (0.79) and content validity ratio (0.67). Hence, the checklist was prepared after investigating the latest guidelines and instructions of the Deputy of Nursing, Department of Nursing Service Development, Ministry of Health and Medical Education, in the field of research. It was given to 7 respected professors and faculty members of Mashhad School of Nursing and Midwifery for review and correction. After making the necessary corrections, the final form was used to collect the necessary data. To measure its reliability, Cronbach's alpha coefficients were obtained as 0.68, 0.75, and 0.79 for structure, content, and total report writing scores respectively, which confirmed the internal consistency of these dimensions.

Sampling was performed from December to March 2019 after providing the informed consent form for the included nurses. In-service training courses for nurses were held and the necessary training was given for the nurses in their student course about report writing and the nursing process. Thus, the same educational content, including general information about the correct principles of recording and report writing based on the nursing process, the importance of record and report writing in nursing, legal issues relating to record and nursing report writing was taught in two sessions (2 h per session) in the control and intervention groups to further emphasize and ensure that all nurses participating in the study learned the correct way of report writing.

In the control group, report writing by nurses was routinely done for 2 weeks, and nursing reports were examined using the checklist to evaluate the nursing reports (pre-test and post-test) in at least three cases by the researchers' assistant. It should be noted that we collected the data of the control group before the intervention in the intervention group to prevent the contamination.

In the intervention group, we selected a peer for the nurses of the intervention group in 3-4 individual groups from nurses of the same ward and shift, with work motivation (understanding the importance of report writing and teaching), work experience (at least 5 years), and previous training (at least one in-service training or re-teaching course). The educational content of report writing based on the nursing process was provided for peers in person and face to face by the researcher based on items of the researcher-made checklist in 4 1-h teaching sessions (theoretical and practical). The peers also were taught about proper report writing based on the nursing process and the way of transferring the knowledge to nurses in their groups. The peer teaching was performed in 3-4-individual groups of nurses for 12 shifts (2 weeks). During the intervention, the researcher's assistant (an MSc of nursing, who was blind about the control and intervention groups), monitored the implementation of the program daily for 2 weeks. Finally, the data analysis was performed on 30 individuals per group.

Statistical analyses was performed using IBM SPSS Statistics 26 (IBM Corp. Armonk, New York). The independent *t*-test and Chi-square were used to compare the baseline variables and baseline values. The intra-group comparison of variables was performed by repeated-measures analysis of variance (ANOVA). Two-way repeated-measures ANOVA was used to investigate the interaction of the measurements and Mauchly's test of sphericity to examine the sphericity and used the Greenhouse–Geisser test to correct its non-establishment.

Analysis of covariance was used to evaluate the effect of intervention in the two models: Model 1: Adjustment for baseline values, and Model 2: Adjustments for values and possible confounders, including age, gender, education level, occupation, work experience, and job characteristics. In all analyses, the significance level was considered as 0.05.

Ethical consideration

Ethics committee of Mashhad University of Medical Sciences (MUMS) approved this research (code: IR.MUMS.NURSE.REC.1398.039). We explained the research purpose and the freedom to participate in the study and obtained the informed written consent from the participants. It was ensured that the information was confidential without the participants' full names in all questionnaires and checklists.

Results

Figure 1 represents a diagram of the sampling steps of the study. Ultimately, 30 individuals in each group were included in the analysis. There was no statistically significant difference between the groups in terms of demographic and contextual variables, including age, gender, education level, work experience in the nursing profession in the current ward, and simultaneous employment in other hospitals. Both groups were homogeneous in terms of characteristics [Table 1].

The results of the independent *t*-test indicated that there was no significant difference between the intervention and control groups in scores of structure and content dimensions and the total scores of report writing ($p > 0.05$ in all cases). The nurses were similar in terms of the characteristics at the beginning of the study [Table 2].

Based on the results of two-way repeated-measures ANOVA, the time-group interaction was significant for the structure, content dimension scores, and the total report writing scores ($p < 0.05$ in all cases). In other words, the intervention trend was different from the pre-intervention between the intervention and control groups [Table 2].

The results of intra-group analysis based on the repeated-measures analysis of variance indicated a significant difference between scores of structure and content, and the

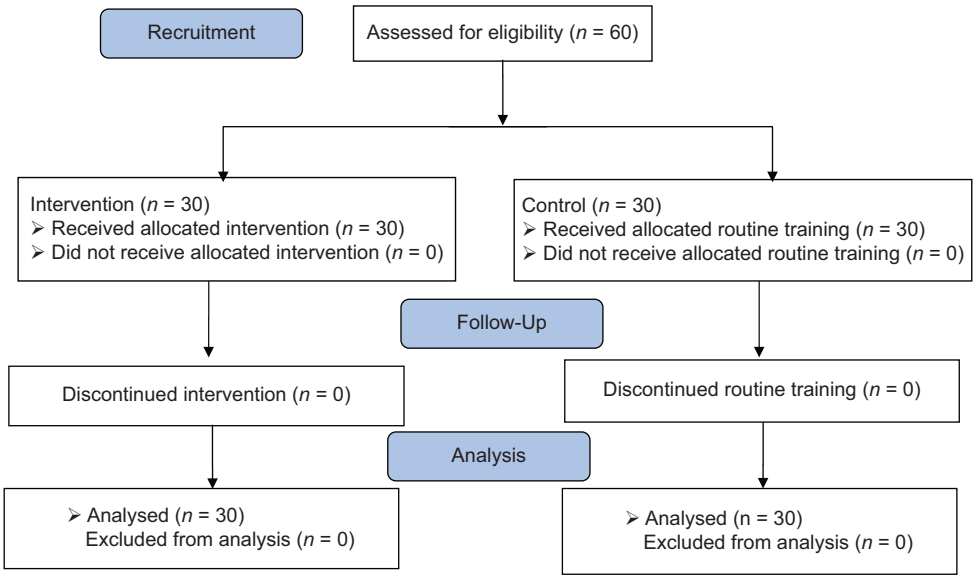

Figure 1: Flow diagram of the quasi-experimental study

Table 1: The nurses' profile in intervention and control groups

Variables	Intervention (*n*=30)	Control (*n*=30)	p-value
Age (year)	35.50 (6.30)	33.60 (6.10)	0.23*
Working Experience in current position (year)	4.60 (2.90)	4.20 (1.90)	0.50*
Working Experience nursing (year)	6.50 (5.90)	8.5 (6.50)	0.21*
Gender (female)	27 (90.00%)	23 (76.60%)	0.16 **
Education level (Bachelor of science)	29 (96.70%)	28 (93.30%)	0.99 **
Working in other hospitals	28 (93.30%)	25 (83.30%)	0.42 **

*Data are expressed by mean (SD) and *p* value based on independent t-test **Data are expressed by frequency (percent) and *p* value based on exact Chi-squared t-test

total scores of report writing in the intervention group before and after the intervention ($p < 0.05$). A significant increase was observed in scores of the dimensions and total scores of report writing, however, there was no significant difference between the scores before and after the measurements in the control group ($p > 0.05$ in all cases) [Table 2].

The results of the analysis of covariance based on Model 1 (adjustment of baseline values) indicated the significant effects of the intervention on scores of structure, content, and the total report writing scores. A significant increase was found in scores of dimensions and the total scores in comparison with the control group ($p < 0.05$ in all cases). The results of analysis of covariance based on model 2 (adjustment of baseline values and potential confounders, including age, gender, education level, occupation, work experience, and job characteristics) indicated a significant effect of the intervention on the scores of structure, content, and total report writing scores. Thus, a significant increase was found in scores of the dimensions and total scores of report writing in comparison with the control group after adjustment of the confounders ($p < 0.05$ in all cases) [Table 2].

Discussion

In this study, the effect of peer teaching on the quality of report writing based on the nursing process was examined. Due to the lack of exactly similar studies, available articles in the related fields are reviewed here. For example, Peer education (based on peer evaluation) has been introduced as an effective training method to increase the quality of nursing reporting process[20] and holding continuous peer teaching courses could help maintain the knowledge and skills of health care providers.[14] Inconsistent results has been reported by Amini *et al*.[24] (2018). The possible reason is that perhaps the students of the her lecture teaching group were more effective than the peer teaching group, thus, their mean scores increased compared to the other group. The results of Amini's study and the results of this study were not in line owing to the environmental and cultural conditions inducing the do's and don'ts of choosing behaviors. Hence, any type of teaching, whether through peer group or other methods, could not change the way of choosing the behaviors relating to a specific topic. Moreover, there was a need for longer-term training or other teaching methods. Safabakhsh *et al*.[25] also doubted the effectiveness of the peer teaching method that was inconsistent with this study. They found that the use of the peer teaching method could not affect the dimensions of student health-promoting behaviors. Although, some authors believe that learning from peers with a similar level of knowledge or skills can be considered,[26] but these findings support the necessity of using better trained peer tutors, especially for clinical nursing skills.[27] When used the 4th year nursing students as peer-educators, better performance score was achieved.[28]

Table 2: Comparing reporting main and the domains score between intervention and control groups

Variables	Time	Intervention (*n*=30) Mean (SD*) *p*	Control (*n*=30) Mean (SD) *p*	MD** (95% CI***) *P****	MD (95% CI) *p******	*p* for interaction
Reporting Structure Score	Before	90.63 (11.22)	92.29 (7.64)	-1.67 (-6.63,3.30) 0.50****	-----	0.02
	After	96.67 (5.86)	92.08 (8.83)	4.99 (1.26,8.72) 0.01*****	4.70 (0.60,8.74) 0.02	
	Change *	6.04 (2.32, 9.76), <0.001	-0.21 (-3.93, 3.51), 0.91			
Reporting Content Score	Before	78.79 (19.40)	85.71 (7.14)	- 6.92 (-14.47,0.64) 0.07	-----	<0.001
	After	95.31 (4.30)	87.22 (7.26)	8.11 (4.91,11.31) <0.001	7.50 (4.15,10.85) <0.001	
	Change$	16.53 (10.77,22.28), <0.001	1.52 (-4.24, 7.27), 0.70			
Reporting Total Score	Before	81.20 (17.48)	87.07 (6.73)	-5.87 (-12.71,0.98) 0.09	-----	0.001
	After	95.58 (4.03)	88.20 (6.80)	7.54 (4.56,10.53) <0.001	6.94 (3.78,10.09) <0.001	
	Change$	14.38 (9.25,19.52), <0.001	1.13 (-4.01,6.26), 0.66			

*SD: standard deviation; **MD: Mean difference; ***CI: confidence interval; ****p values for between group comparisons at baseline were computed using independent t-test; ***** Model1: p values for between group comparisons after intervention based on the analysis of covariance (ANCOVA) after controlling for baseline measures; ******Model2: p values for between group comparisons after intervention based on ANCOVA after controlling for baseline measures and confounders (including age, gender, education level, occupation, working experience and working conditions); Significant differences are shown in Bold.

The findings indicated that the quality of report writing in both content and structure dimensions after peer nursing teaching had higher scores than before, and the scores of the intervention group were significantly different from the control group. The nurses' limited knowledge about report writing and their educational needs has been studied.[29] Holding in-service teaching courses about recording nursing documents and increasing supervision and support by effective authorities are recommended to improve the quality of nursing documents.[30]

Studies have been conducted on the relationship between the quality of nursing reports and contextual variables. For instance, Hemmati Maslakpak *et al*.[2] found no significant relationship between contextual variables such as age, marital status, and employment with the status of nursing reports. Their results were consistent with this study. Yousefi *et al*.[31] (2014) found a significant relationship between the numbers of report writing mistakes and gender and the higher number of mistakes in men than women. These results were consistent with this study. Due to the special personalities and emotional status of women, they are more careful and diligent in recording and documenting the status and actions taken for patients. Further studies are necessary to make an accurate assessment of this issue.

Nouhi *et al*.[5] (2014) found that report writing mistakes of nurses with higher work experience were higher than nurses with lower work experience. In other words, the quality of nursing report writing decreased as their experience increased, maybe because of spending a lot of time from their educational years. This result was different from our results. This may be due to the less work experience of our participants, compared to the mentioned study.

In this study, nurses' fatigue or high workload, personal characteristics, and personality traits in learning the lessons, education level, and previous educational background might affect the results. We tried to control or monitor the factors (such as fatigue, high workload, personal characteristics and personality traits of nurses) as much as possible. We controlled the limitation by information exchanging between nurses in the control and intervention groups by selecting samples from different wards of the hospital and completing the report-writing checklist of the control group before the intervention.

Conclusion

Peer teaching improved the quality of report writing based on the nursing process. As peer teaching is an effective way to improve the nurses' knowledge level and quality of report writing, we suggested considering it as a complementary method to promote clinical education in nurses. Future studies are required to compare the effect of peer teaching with other teaching methods on the quality of report writing in a larger population. As nurses did not choose teaching tools in this study, we suggested considering their preferences in selecting the teaching tools.

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Conflicts of interest

Nothing to declare.

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