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Effects of elaborating feedback cards on students' learning and their satisfaction in the Fundamentals of nursing course

Background: Feedback is a vital component of clinical training and a key responsibility of nursing instructors. The present study was conducted to investigate the effect of elaborating feedback cards on students' learning and their satisfaction in the Fundamentals of nursing course.

Methods: Single-blind semi-experimental study randomly assigned 60 undergraduate nursing students in the fundamental course to a control group and an intervention group. The control group received routine portfolio-based trainings. In addition to the routine training, elaborating feedback cards were used in the intervention group. On feedback cards, student received supplementary explanation in addition to correct response. The students' learning was measured based on the score obtained from their portfolio as well as different dimensions of their satisfaction were measured on a Likert scale. Data analyzing was performed by SPSS V.23 using descriptive and inferential statistics.

Results: A statistically-significant difference was observed in the mean score of the students between the intervention group, i.e. 17.82 ± 0.88 , and that of the controls, i.e. 16.20 ± 2.15 ($P < 0.0001$). The satisfaction score of the students was also significantly higher in the intervention group (49.06 ± 6.53) than in the control group (37.63 ± 7.32) ($P < 0.0001$).

Conclusions: Using elaborating feedback cards in the fundamentals of nursing course can improve learning and satisfaction of the students. This practical, simple and fast method is therefore recommended to be used in clinical trainings.

Key words: elaborating feedback, nursing students, learning, satisfaction

اثر وضع بطاقات التغذية الراجعة على التعلم و رضا الطلاب في أساسيات مقرر التمريض

الخلفية: التغذية الراجعة هي عنصر حيوي في التدريب السريري و مسؤولية رئيسية لمدرسي التمريض. أجريت هذه الدراسة لمعرفة أثر استخدام بطاقات التغذية الراجعة على التعلم و رضا طلاب التمريض في أساسيات مقرر التمريض. الإعداد و التصميم: عينت دراسة شبه تجريبية مفردة التعمية عشوائياً 60 من طلاب التمريض الجامعيين في المقرر الأساسي لمجموعة ضابطة و مجموعة تدخل. الأساليب: تلقت المجموعة الضابطة تدريبات روتينية قائمة على الحافظة. بالإضافة إلى التدريب الروتيني، تم استخدام بطاقات التغذية الراجعة في مجموعة التدخل. يتلقى الطالب في بطاقة التغذية الراجعة شرحاً تكملياً بالإضافة إلى الإجابة الصحيحة. تم قياس تعلم الطلاب بناءً على النتيجة التي تم الحصول عليها من محفظتهم و تم قياس أبعاد مختلفة لرضاهم على مقياس ليكرت. تم إجراء تحليل البيانات في SPSS V.23 باستخدام الإحصاء الوصفي و الاستنتاجي.

النتائج: لوحظ فرق ذو دلالة إحصائية في متوسط درجات الطلاب بين مجموعة التدخل، أي 17.82 ± 0.88 و فرق الضوابط، أي 16.20 ± 2.15 ($P < 0.0001$). كانت درجة رضا الطلاب أيضاً أعلى بشكل ملحوظ في مجموعة التدخل عنها في مجموعة الضوابط (49.06 ± 6.53) ($P < 0.0001$).

الاستنتاجات: إن استخدام بطاقات الملاحظات التفصيلية في أساسيات مقرر التمريض يمكن أن يحسن التعلم و رضا الطلاب. لذلك يوصى باستخدام هذه الطريقة العملية و البسيطة و السريعة في التدريبات السريرية. **الكلمات الأساسية:** صياغة الملاحظات، طلاب التمريض، التعلم، الرضا

تأثير كارت بازخورد بسط یافته بر یادگیری و رضایت دانشجویان در کارآموزی اصول و فنون پرستاری

زمینه و هدف: بازخورد جزء حیاتی آموزش بالینی، به ویژه در رشته پرستاری و از مسئولیتهای مهم مربیان است. در این مطالعه تاثیر استفاده از کارت بازخورد بسط یافته بر یادگیری و رضایت دانشجویان در کارآموزی اصول و فنون پرستاری بررسی شده است. **روش:** در یک مطالعه نیمه-تجربی یک سو کور، 60 دانشجوی کارشناسی پرستاری در کارآموزی اصول و فنون پرستاری، به روش تصادفی در دو گروه کنترل و مداخله قرار گرفتند. آموزش گروه کنترل بصورت روتین و بر اساس کارپوشه بود ولی برای گروه مداخله علاوه بر روش روتین از کارت بازخورد بسط یافته نیز استفاده شد. در کارت بازخورد، دانشجو علاوه بر پاسخ صحیح توضیحات تکمیلی را نیز دریافت می کند. یادگیری دانشجویان با نمره حاصل از کارپوشه و رضایت دانشجویان در چند جنبه با مقیاس لیكرت سنجیده شد. تحلیل آماری با استفاده از نرم افزار SPSS 23 و آزمونهای آماری توصیفی و تحلیلی انجام شد.

یافته ها: میانگین نمره کارآموزی دانشجویان در گروه مداخله، $M=17/82$ ($SD=0/88$) بیشتر از گروه کنترل ($M=16/20$, $SD=2/15$) بوده است، این اختلاف از نظر آماری معنی دار بوده است ($p=0/000$). رضایت دانشجویان هم از کارآموزی در گروه مداخله به طرز معنی داری بیشتر از گروه کنترل بود. (به ترتیب $M=49/06$, $SD=6/53$; $M=37/63$, $SD=7/32$; $P=0/000$).

نتیجه گیری: استفاده از کارت بازخورد بسط یافته در کارآموزی اصول و فنون دانشجویان پرستاری، می تواند یادگیری و رضایت دانشجویان را افزایش دهد. لذا توصیه می شود تا از این روش کاربردی، آسان و سریع در آموزش بالین استفاده گردد.

واژه های کلیدی: بازخورد بسط یافته، دانشجوی پرستاری، رضایت، یادگیری

نرسنگ کے اصول و فنون میں انٹرنشپ میں طلباء کے تعلیم اور توسیع شدہ فیڈ بیک کارڈ کا اثر

پس منظر اور مقصد: فیڈ بیک طبی تعلیم کا ایک اہم جز ہے، خاص طور پر نرسنگ کے شعبے میں اور یہ اساتذہ کی اہم ذمہ داریوں میں سے ایک ہے۔ اس مطالعہ میں، نرسنگ کے اصول و فنون میں طلباء کے سیکھنے اور انٹرنشپ میں توسیع شدہ فیڈ بیک کارڈ کے استعمال کے اثرات کی چھان تلاش کیا گیا ہے۔

طریقہ: ایک نیم تجرباتی مطالعہ میں، نرسنگ کے 60 انڈرگریجویٹ طلباء کو نرسنگ کے اصول و فنون کی انٹرنشپ میں کنٹرول اور مداخلت کے دو گروہوں میں تصادفی طور پر تقسیم کیا گیا۔ کنٹرول گروپ کی تربیت معمول کی تھی اور پورٹ فولیو پر مبنی تھی، لیکن مداخلت کرنے والے گروپ کے لیے، معمول کے طریقہ کار کے علاوہ، ایک توسیع شدہ فیڈ بیک کارڈ بھی استعمال کیا جاتا تھا۔ فیڈ بیک کارڈ میں، درست جواب کے علاوہ، طالب علم کو اضافی وضاحتیں بھی موصول ہوتی ہیں۔ طلباء کے سیکھنے کی پیمائش پورٹ فولیو کے اسکور اور طلباء کے اطمینان کو لیکر پیمانے کے ساتھ کئی حوالوں سے کی گئی۔ شماریاتی تجزیہ SPSS 23 سافٹ ویئر اور وضاحتی اور تجرباتی شماریاتی ٹیسٹوں کا استعمال کرتے ہوئے کیا گیا۔

نتائج: انٹرنیشن گروپ (17.82 ± 0.88) میں طلباء کی انٹرنشپ کا اوسط اسکور کنٹرول گروپ (16.20 ± 2.15) سے زیادہ تھا۔ یہ فرق شماریاتی لحاظ سے اہم تھا ($p = 0.000$)۔ انٹرنیشن گروپ (49.06 ± 6.53) میں انٹرنشپ کے ساتھ طلباء کا اطمینان کنٹرول گروپ (37.63 ± 7.32) سے نمایاں طور پر زیادہ تھا۔

نتیجہ: نرسنگ طلباء کے اصولوں اور مہارتوں کی انٹرن شپ ٹریننگ میں توسیع شدہ فیڈ بیک کارڈ کا استعمال طلباء کے سیکھنے اور اطمینان کو بڑھا سکتا ہے۔ لہذا، طبی تعلیم میں اس عملی، آسان اور تیز طریقہ کو استعمال کرنے کی سفارش کی جاتی ہے۔

مطلوبہ الفاظ: توسیعی تاثرات، نرسنگ طالب علم، اطمینان، سیکھنا

INTRODUCTION

Feedback has been referred to as an essential learning element and the lifeblood of learning that promotes individual and professional development (1). Feedback constitutes an active process between a sender (usually teacher) and a receiver (usually learner) for stabilizing positive behaviors through encouraging their repetition and modifying negative behaviors through encouraging a change (2). This process compares students' performance observed with the relevant standard to promote their performance (3). It is worth noting that feedback is different from evaluation. In fact, feedback is a consistent process that functions to develop and promotes performance through experiencing practical situations, whereas evaluation refers to a formal assessment and judgment about students' strengths and weaknesses (1).

Feedback plays a key role in clinical work as an integral part of the curriculum in the nursing profession, which actively involves the students in learning the skills applied in their profession (1). These skills are taught during the fundamentals of nursing program as the primary and fundamental unit in the nursing profession, the foundation of all nursing trainings and skills and the first professional course undertaken by the students (4). Any deficiencies in this program can negatively affect behavioral development in the students and their attitude towards the perception of nursing (5). A review of literature suggests students and instructors to acknowledge the benefits of feedback for learning, which include improving self-assessment skills, determining individuals' performance versus the standards, developing a functional program for achieving the goals, promoting the learning discourse between students and instructors, encouraging students to promote their self-confidence in learning, acquiring clinical competency through modifying or reinforcing clinical performance (6) and promoting critical thinking (7). In contrast Van de Ridder (2015) investigated the effect of positively and negatively framed feedback messages on self-efficacy and performance. The results showed that self-efficacy, and performance decreased after feedback (3).

In the nursing profession, different methods are used for teaching and clinically evaluating the students. Although feedback is essential for medical education, the students appear not to have adequately learnt the use of feedback, and the outcomes appear suboptimal in some cases (2). In addition, although high-quality feedback is an essential learning component of medical sciences, the students and instructors are dissatisfied with certain feedback-associated activities (8). The reasons for this dissatisfaction obtained from a review of literature include inadequacy of the feedback, ineffective teacher-student communication (6), failure to teach the feedback process, fears of damaging the students' self-esteem, complexity of clinical programs, rising number of students, and lack of privacy.

As instructors with over 15 years of experience with the clinical teaching of fundamentals of nursing to undergraduate nursing students, the authors also found that conventionally teaching clinical procedures without using

planned feedback cannot entail adequate learning and satisfaction. Moreover, the students complained a lot about not receiving appropriate feedback and failure to properly solve the problems.

One of the different methods of achieving positive feedback outcomes includes elaborating feedback. "Elaborating feedback" refers to any feedback method in which students receive explanations in addition to correct responses. In addition to the correct response, this type of feedback can encompass supplementary information required for developing a more profound learning, including providing explanations and follow-up questions, referring students to the response in a textbook or a combination of different materials (9); for instance, Finn et al. (2019) found adding complete explanations and examples of simple feedback can improve learning ability and recall.

Different feedback models emphasize the feedback process principles, and include:

1. Sandwich model
2. Pendleton's rule model
3. PEARLS model
4. ARCH model

The present study used elaborating feedback as a modified ARCH model in the fundamentals of nursing course. The advantages of this model included determining the students' learning requirements and facilitating learning by combining self-assessment and goal-setting (1).

The present study was conducted to determine the effect of elaborative feedback cards on students' learning and their satisfaction in the Fundamentals of nursing course.

METHODS

This project was funded by the National Agency for Strategic Research in Medical Education, Tehran, Iran Grant No: 972868 and approved by the ethical committee of Mazandaran University of Medical Sciences (IR.MAZUMS.REC.1399.6239 code).

The present single-blind semi-experimental study measured learning and satisfaction of nursing students in the fundamentals of nursing internship. These 60 students were selected using the census, and assigned to two groups using a random-number table. All of the nursing students who participated in fundamental course included in this survey and students with clinical work experiences were excluded.

To prevent the transfer of information to the intervention group, this group received training after the control group did. The course began by briefing both groups on the course objectives, scope of duties of students, expectations of the instructor and portfolio-based assessments. Both groups were trained by the same instructor (first Author, PhD in Nursing).

Both groups were taught using the conventional training method. According to this method, the students in both groups were taught in a general surgery ward based on the nursing curriculum and the same lesson plan. No interventions were performed in the control group, although they received irregular and unplanned feedback. The intervention group received feedback using an elaborating feedback card as a simple 8×13-cm card (10) divided into

two parts on the front side; the first part was designated for student self-feedback, and the second for peer-to-peer feedback. The back of the card was assigned to the instructor to provide both students with feedback.

This card was obtained by modifying the ARCH model by peer feedback, which involves: 1. Asking the student for self-assessment, 2. Emphasizing (reinforcement) the positive points, 3. Providing corrective points, including requirements, and 4. Helping the student develop an improvement plan (1). In fact, this model is based on Pendleton's rules of feedback, including student's self-assessment and emphasizing positive items and giving advice on correcting errors by the instructor (11). In simple terms, this research is based on combination of feedback model in feedback card and combination of instructor feedback with peer feedback in fundamental nursing course as a student-centered method.

This method was implemented in a general surgery ward. The principal procedures in this part included observing sterilization principles, washing hands, dressing, drain care and care before and after surgery. These procedures were reviewed on the first day of the training program using "Fundamentals of Nursing" book by Taylor (12). These skills had already been taught to the students in the skill lab. The instructor and a peer student observed these procedures as performed by the student in the surgery ward. Upon the procedure completion, immediately the student first reflected on his performance, and actually he fed back to himself his weaknesses and strengths as recalled. The peer then fed back to the student on both the procedure and reflection. The instructor ultimately provided both the students with feedback by correcting them on the back of the

card as soon as possible. When repeating the procedure, every student observed and recalled the content of their previous card/cards and then proceeded with the procedure. Fig 1 shows the feedback process. The number of feedback cards used was not limited.

At the end of the course, learning was measured as a final score out of 20 obtained from a portfolio-based evaluation of the students' activity. This portfolio designed and evaluated by nursing academic member and its compliance with educational goals and content validity was approved in nursing faculty. Satisfaction was evaluated by the students in anonymous forms on a five-point Likert scale ranging from completely satisfied to completely dissatisfied, including student satisfaction with the overall performance of the instructor and course duration as well as learning levels, degree to which the course goals were achieved, the relationship between theoretical courses and practical skills, encouraging further studies, answering questions and clarifying ambiguities, organizing the clinical training, receiving effective feedback, and gaining valuable educational experiences. Scores of below 50% were interpreted as dissatisfaction, 50%-70% as relative satisfaction and over 75% as complete satisfaction. Cronbach's alpha coefficient for this questionnaire was 0/89.

RESULTS

Females accounted for 48.3% of the students and males 51.7%, and they had a mean age of 20.42 years. The Chi-square test showed no significant differences between the two groups in terms of gender (P=0.4, df =1, Chi-square:0.4). A statistically-significant difference was observed in the mean course score of the students between the

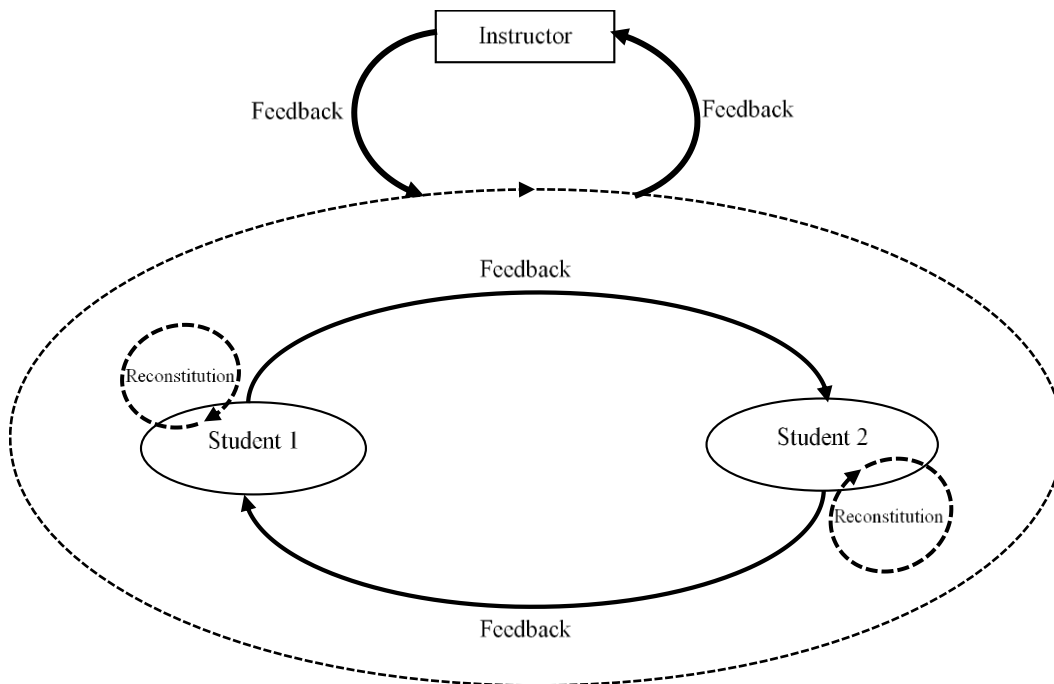


Figure 1. The feedback process

Table 1. Comparing the mean learning score of the students between the intervention and control groups

Group	Number	Mean (SD)	Degree of freedom	t	P
Control	30	17.82 (0.88)	85	3.80	<0.0001
Intervention	30	16.20 (2.15)			

Table 2. Comparing the mean satisfaction scores of the students between the intervention and control groups

Group	Number	Mean (SD)	Degree of freedom	t	P
Control	30	37.63 (6.5)	58	6.73	<0.0001
Intervention	30	49.06 (7.3)			

Table 3. Comparing satisfaction levels in the students by group

Satisfaction level	Intervention group	Control group	Overall	P
Dissatisfaction	3 (10%)	14 (46.6%)	28 (28.3%)	<0.0001 df=2 Chi-square=2.51
Relative satisfaction	14 (46.6%)	16 (53.4%)	30 (50%)	
Complete satisfaction	31 (43.4%)	0	13 (21.7%)	
Total	30 (100%)	30 (100%)	60 (100%)	

intervention group, i.e. 17.82 ± 0.88 , and that of the controls, i.e. 16.20 ± 2.15 ($P < 0.0001$). Table 1 compares the mean learning score of the students between the two groups. The satisfaction score of the students was also significantly higher in the intervention group (49.06 ± 6.53) than in the control group (37.63 ± 7.32) ($P < 0.0001$). Tables 2 and 3 compare their mean satisfaction scores.

DISCUSSION

The present findings suggested that using elaborating feedback cards involving a combination of reflection and peer's and teacher's feedback positively affects students and improve their learning and satisfaction. These outcome measurement criteria were used to analyze satisfaction at the reaction level and learning at the performance level based on the Kirkpatrick model.

Learning improvements achieved in the present study as a result of using elaborating feedback were measured as the scores obtained from the clinical portfolio. According to Allen and Molloy (2017), both students and mentors reported improvements in their performance as a result of receiving feedback (6). Research suggests instructors' functions including role playing and providing feedback, significantly affects students' learning and critical thinking (13).

Yazddani et al. (2014) found using feedback to improve learning to help achieve more learning opportunities in cardiology interns (sophomores and juniors) (14). Finn (2019) also found elaborating feedback to improve learning to promote the recall of materials (9). Ineffectiveness of feedback in learning has been, however, reported in literature. Feedback can differently affect learning simply by

differently presenting it to students (3). Van De Ridder found positive feedback to be more effective in learning than negative feedback (3). The card designed in the present study included both negative and positive types of feedback, and the students received a comprehensive correction of their mistakes plus an emphasis on the correct items. Vollmeyer and Rheinberg (2005) explained that feedback improves learning motivation and therefore promotes performance (15).

The present findings showed that elaborating feedback cards can increase student satisfaction in different dimensions. The students' positive reaction can be motivating and stimulate learning and commitment. In separate studies, Van De Ridder (2015) (3) and Ahmadi et al. (2015) (16) found providing positive feedback for students to improve their satisfaction. On the other hand, feedback cards were used as a final evaluative strategy by Adamson (2018) (17); however, in the present study feedback cards were used for learning rather than evaluating the students.

In this study, we used elaborative feedback, in which students receive explanations in addition to correct responses. According to De Beer and Martensson (2015), receiving critical and constructive feedback exerts more profound effects on student satisfaction compared to confirming or rejecting the responses (7). According to van de Ridder (2015), feedback is more effective in combination with other reliable resources such as training and guidance (3). The results of many studies conducted in the past decade to determine the most effective type of feedback suggest a global consensus on more effective help with learning provided for students when feedback received by them is

accompanied by explanations compared to the time when they only receive a response (9). These explanations help students acquire more information compared to receiving a mere response and more easily correct their mistakes, which probably increases their satisfaction.

Analyzing the increases in learning and satisfaction of the students in their first experience of a clinical course as fundamentals of nursing suggests a kind of active and informal group learning given the requirements for studying before entering the course to complete the cards and the need for correcting other students' cards. In fact, educational organization was accomplished, relationships were established between theory and practice, the course targets were met, valuable educational experiences were achieved by the students, and they were encouraged to study more. In addition, providing an opportunity to reflect and correct mistakes by keeping the cards at hand and frequently reviewing previous mistakes improved satisfaction and learning in the students. The values of using this card included paying attention and being sensitive to other students' mistakes.

The feedback exchanged in the present study included confirmatory feedback emphasizing positive points and critical or corrective feedback addressing negative points. A card that encourages students and is completed and reviewed by them when performing every procedure can pave the way for the exchange of feedback between students and instructors. Using this card was simple, and consequently helped the students achieve the ability of self-regulation and self-assessment. These results, which suggest the effectiveness of feedback in learning, can significantly contribute to educational designs and planning. On the other hand, these cards should not be excessively used so as to prevent them from appearing repetitious and avoid the dependence of student on instructor and excessive attention to behavioral details of students (6, 16).

Blindness could not be ensured in the present study, given that the same instructor was in charge of performing clinical

training in both groups and evaluation could not be performed by an uninformed instructor, which was the study limitation; nevertheless, the same portfolio was used to evaluate the students in both groups to reduce bias and increase the objectivity of the students' scores. Low sample size is another limitation that requires further studies with higher sample size. The students anonymously completed the satisfaction questionnaires before receiving their scores, and the relationship between their satisfaction and scores could not be therefore investigated.

Combination of feedback with other teaching-learning method for beginner medical students can be a way to improve, activate, and motivate learning process so that the result will be the promotion of learning and satisfaction.

Ethical Considerations:

Ethical issues including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc. have been completely observed by the authors. This project was approved by the ethical committee of Mazandaran University of Medical Sciences, Sari, Iran (IR.MAZUMS.REC.1399.6239 code).

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Conflicts of interest: None

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