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Motivational interviews to improve nurses' motivation and self-efficacy for the use of Closed Suctioning System in the ICU

Katayoun Zeinali[1] and Reza Masoudi[2]*

[1]MSc Student in Nursing Education, Islamic Azad University, Isfahan (Khorasgan) Branch, Isfahan, Iran
[2]Assistant Professor, School of Nursing and Midwifery, Shahrekord University of Medical Sciences, Shahrekord, Iran
Corresponding Email: masoodi1383@yahoo.com

ABSTRACT

Nurses play a key role in providing care to mechanically ventilated ICU patients and suctioning their secretions. Endotracheal suctioning is a major nursing procedure. Using closed suctioning systems is preferable to open suctioning systems for several reasons. Enhancing the nurses' motivation for using the closed suctioning system (CSS) can accelerate the patients' recovery. This study uses motivational interviews to enhance ICU nurses' internal motivation for change. ***The*** *present study was conducted to examine the effect of motivational interviews on the level of motivation and self-efficacy for the use of CSS in ICU nurses at Shohada Tajrish Hospital in Tehran in 2015 . the present quasi-experimental pretest posttest intervention study was conducted on a sample population of all the ICU nurses at Shohada Tajrish Hospital in Tehran, selected through census sampling. The subjects were randomly divided into equal groups of cases and control (n=30). Both groups filled out the General Self-Efficacy Scale and the Work Motivation Scale before beginning the study. The intervention consisted of five 90-minute group sessions carried out over three weeks. Three months later, both groups completed the scales once again as the posttest. The analysis of the data was carried out in SPSS-18. Descriptive statistics were then used to describe the data, inferential statistics to test the hypothesis and the Kolmogorov-Smirnov test and the ANVOCA for identifying the relationship between the variables.* ***t****he mean posttest score of job motivation and self-efficacy increased in the intervention group. The results of the ANCOVA also showed that motivational interviews had a meaningful impact on the examined ICU nurses' motivation for the use of CSS (P<0.05). Motivational interviews also had a meaningful impact on the nurses' self-efficacy for the use of CSS (P<0.05). Motivational interviews can therefore be regarded as an effective technique for enhancing motivation and self-efficacy in ICU nurses for the use of CSS.*

Keywords: Motivational interviews, motivation, self-efficacy, CSS, ICU, nurses

INTRODUCTION

Advances in knowledge and technology have changed the methods used for treatment and care. Many patients with critical, acute or chronic conditions are now able to benefit fully or partially from new treatment methods, skilled nurses and advanced technologies [1]. Patients admitted to ICUs require respiratory care, especially endotracheal suctioning for the removal of respiratory secretions and improving respiratory function. Although endotracheal suctioning is essential for ICU patients, it may lead to complications and occasional life-threatening conditions [2].

The complications of endotracheal suctioning include tachycardia, cardiac malfunction, hypertension, increased respiration rate, hypoxia, airway damage, increased intracranial pressure, cyanosis and dizziness [3]. Ventilation-Associated Pneumonia (VAP) is the most common nosocomial infection affecting ICU patients that also increases

pathogenesis, hospital stay, duration of mechanical ventilation and treatment costs [4]. VAP can affect any patient under ventilation for 48 hours or over and is one of the most challenging infections to detect and prevent. Endotracheal suctioning is a procedure that is considered a risk factor for VAP [5]. The prevalence of this infection is 7-21 times higher in intubated patients compared to those not requiring ventilation [6].

Many different techniques have been proposed for reducing the complications of endotracheal suctioning. The Open System Suctioning (OSS) is one of the most common techniques for protecting ventilated patients that involves endotracheal suctioning using a disposable catheter. In the OSS, the patient is disconnected from the ventilator and a regular suction catheter is inserted into the trachea via endotracheal intubation to suction the secretions [5].

Disconnecting ICU patients who require high respiratory support from the ventilator, especially those in need of high positive expiratory-end pressure, always leads to a reduced lung volume oxygenation. To overcome this complication, some researchers have proposed the use of closed suctioning system [2].**(Figure 2)**

Closed System Suctioning (CSS) is an alternative way of suctioning secretions that has been used since 1980 and resolves the need for disconnecting the patient from the ventilator. CSS is performed by connecting the patient to the ventilator and keeping him supported by the machine**(Figure 1)**;given that this method of suctioning keeps a positive pressure throughout the procedure, hemodynamic fluctuations are prevented. Statistics suggest a growing interest in the use of CSS over the last decade, as 85% of hospital ICUs in the US use CSS due to the system's ability to reduce hemodynamic and physiological disorders [1].

Figure 1: suction connection depending on the patient and ventilator

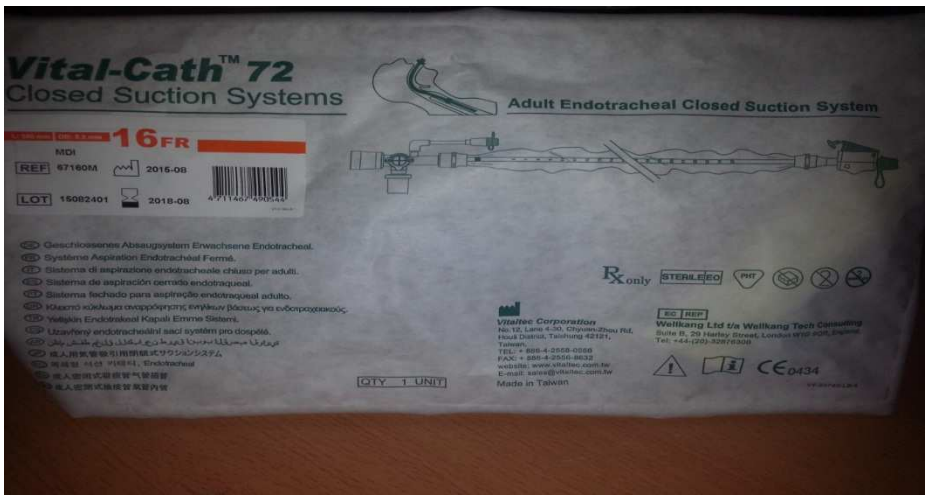

Figure 2: closed suction catheter

Given that CSS presents a lower risk of contamination through personnel's hands and the hospital equipment, it can reduce the risk of VAP compared to when OSS is used [7]. Nurses are the core of care provision and their motivation and efficacy is vital to the provision of optimal care. Nurses are also the main healthcare personnel involved in caring for patients under mechanical ventilation and their motivation and efficacy in their specific role of providing (intensive) care to ICU patients and performing an effective suctioning of pulmonary secretions can result in a better infection control and ultimately a more effective care [8].

Motivation implies dynamism and movement. In organizational terms, motivation refers to the inner cause that affects behavior change within the organization and movement toward the accomplishment of organizational goals [9]. Occupational motivation is a set of invigorating forces originating from the inner self and beyond the self that initiate work-related behavior and determine its form, direction, intensity and persistence [11]. In addition to planning and organization, motivation also plays a major role in determining employees' performance, which, in turn, determines how effectively and efficiently organizational goals are realized [10].

Self-efficacy is the confidence that the individual will perform a specific behavior successfully and reach reasonable results. The feeling of self-efficacy is formed in people through standing up to challenges and the consecutive and step-by-step performance of a set of acts. Self-efficacy is a tool for the promotion of health and education in patients [13]. According to Bandura, self-efficacy is the main prerequisite for behavior change, including health behavior change [14].

Self-efficacy is the individual's belief that he can perform the behavior required for the successful accomplishment of a goal. With the increase of self-efficacy, motivation for progress can also be expected to increase. An individual with a high level of self-efficacy is more hopeful and successful in carrying out tasks. It does not matter how capable an individual actually is; rather, what matters is how capable he is of "believing in himself". One of the strategies and mechanisms affecting people's motivation is to assess their sensitivities and fears through interviews and discussing the subject. Motivational interviews provide a fully new intervention model that is not separate from other models and instead combines the principles and techniques derived from an extensive set of psychotherapy and behavior change models [12].

Motivational interviewing is a client-centered method for improving the intrinsic motivation for change through exploring, identifying and resolving doubts and ambivalence. The conceptual model of motivational interview is based on Prochaska and DiClemente's Stages of Change Model, Rogers' Protection Motivation Theory of ambivalence and doubt about health beliefs, Janis and Mann's model for making balanced decisions, Brehm's Theory of Reactive Action, Bem's Self-Perception Theory, Kanfer's Theory of Self-Regulation and Rokeach's Theory of Values[15].

Motivational interviewing is a promising intervention for eliciting positive health behavior change in medical, health and psychiatry fields that is highly accepted by patients and that facilitates health professionals' performance of their job [16].

The study of self-efficacy and motivation as influential concepts in nursing is essential and can help improve the overall quality of nursing care. The effective suctioning of pulmonary secretions is crucial to ICU infection control and empowering nurses in this area is particularly helpful. The present study was therefore conducted to use motivational interviews for assessing nurses' motivation and self-efficacy in using closed system suctioning.

MATERIALS AND METHODS

The present quasi-experimental study was conducted on 65 ICU nurses working at Shohada Tajrish Hospital in Tehran in 2015. The study inclusion criteria consisted of having at least three months of clinical work experience at the ICU, having a BSc or MSc in nursing and willingness to participate in the study. The study exclusion criteria consisted of unwillingness to participate, finishing the workforce project or leaving the job.

The study sample size was calculated using Cochran's formula. A total of 30 nurses (with a 5% rate of error and a confidence interval of 95%) were assigned to the trial group and the control group was also assigned the same number of samples. Data were collected using the General Self-Efficacy Scale and the Work Motivation Scale. The validity of the scales was assessed using the content validity method by ten faculty members of the School of Nursing and Midwifery of Islamic Azad University, Isfahan (Khorasgan) Branch, and of Shahid Beheshti University in Tehran. The reliability of the scales was confirmed by 20 eligible candidates and through the calculation of the Cronbach's alpha values (α=79.6% for the General Self-Efficacy Scale and α=88% for the Work Motivation Scale).

The General Self-Efficacy Scale contains ten items scored based on a 4-point Likert scale (not at all true, hardly true, moderately true, and exactly true).

The Work Motivation Scale consists of 28 items scored based on a 4-point Likert scale (not at all true, hardly true, moderately true, and exactly true). The scale includes items on age, gender, marital status, work experience, position and monthly income and overtime and consists of questions on the work environment at the hospital, the quality of the work life and the relationships with the doctors and nurses.

After obtaining a letter of introduction from the Research Deputy of the School of Nursing and Midwifery and the Director of Graduate Studies at Islamic Azad University, Isfahan (Khorasgan) Branch, and a letter of permission from the Head of Shohada Tajrish Hospital in Tehran, the subjects were selected through census sampling and were then randomly divided into a trial and a control group. Both groups completed written consent forms and the data collection tools. The trial group then underwent motivational interviews in groups of ten and in five 90-minute sessions over two days in a week. Ideally, these group interviews should be held with 8 to 12 members, and based on the researchers' years of clinical experience and the standard number of nurses per shift (15 on average), the groups were formed with ten members each. In the motivational interviews, the researcher empathized with the participants without being judgmental or critical and this acceptance facilitated change. The researcher then lectured the participants on the difference between the current behaviors and the personal values. This information increased the personal motivation for change. Arguing was not used as a strategy to affect change, and instead, new perspectives were presented to but not imposed on the participants. In the meantime, the researcher supported participants' self-efficacy and thus fostered a belief for change in them. The researcher listened contemplatively to the participants and complemented their speech through statements of appreciation so as to encourage and support their change. Ultimately, without appearing as if he was advocating change, the researcher extracted those statements of the participants that favored change (i.e. sentences that implied a desire or need for change or that reflected on the reasons for change and a commitment and compulsion to it). The final assessment was carried out in both groups three months after the intervention and through a second completion of the scales. The data extracted from the scales were collected and statistically analyzed, and the two groups were compared in terms of the impact of the motivational interviews on their motivation and self-efficacy in the use of CSS.

Data Analysis

The data obtained from the study were analyzed and compared in SPSS-18. Descriptive statistics including frequency and percentage, mean, standard deviation and charts were used for describing the data, statistical inference was used to test the hypotheses and the Kolmogorov-Smirnov test and covariance were used to find the relationship between the study variables.

RESULTS

Women were the most frequent gender among the participants (73.33%) and 61.67% of them were married. The highest mean age (48.33%) pertained to the below-30 age group. The most frequent work experience observed among the participants (36.67%) was less than 5 years, the highest frequency of the work shifts (75%) pertained to rotating shifts, and the highest frequency of employment contract (50%) pertained to permanent employees. The

highest frequency of monthly overtime observed (48.33%) was 50 to 100 hours, and the highest frequency of income (78.33%) was 1 to 2 million Tomans. **Tables 1 and 2**comparethe trial and control groups in terms of motivation and self-efficacy.

Table 1: The results of the analysis of covariance for work motivation

Variance Source	Sum of Squares	Degree of Freedom	Mean of Squares	F-Value	Level of Significance
Modified Posttest Model	**3193.008**[a]	**1**	**3193.008**	**49.248**	**.005**
Posttest Disconnection	**795929.408**	**1**	**795929.408**	**12276.145**	**.009**
Group	**3193.008**	**1**	**3193.008**	**49.248**	**.002**
Error	**7650.583**	**118**	**64.835**		
Sum	**806773.000**	**120**			
Total	**10843.592**	**119**			

Table 2: The results of the analysis of covariance for self-efficacy

Variance Source	Sum of Squares	Degree of Freedom	Mean of Squares	F-Value	Level of Significance
Modified Posttest Model	765.075[a]	1	122944.008	36.171	.011
Posttest Disconnection	122944.008	1	765.075	5812.451	.007
Group	765.075	1	21.152	36.171	.015
Error	2495.917	118			
Sum	126205.000	120			
Total	3260.992	119			

DISCUSSION

In a study conducted by Derakhshanrad et al. (2011) for determining work motivation among occupational therapists based on motivation potential in Fars province of Iran, the highest frequency pertained to the female gender(70.73%) and 31.72% of the participants had 10 to 15 years of work experience [17]. In a study conducted by Moazami and Sultanian (2013) on correct posture in nurses, 82 female nurses were examined in Hamadan and the entire study population thus consisted of women. The results obtained in the cited study are consistent with those obtained in the present study and it can therefore be concluded that the majority of nursing personnel are female. In the cited study, the mean work experience was 9.94 years in the trial group and 9.25 years in the control group [18]. In a study conducted by EbadifardAzar et al. (2013) on the impact of making payments based on the new hospital governance system, 31% of the participants had more than 10 years of work experience. In the present study, the majority of the participants (61.67%) had 5 to 15 years of work experience [19].

According to the results of the analysis of covariance performed on this hypothesis (Table 1), there is a significant difference between the mean scores at this level ($P<0.05$). Motivational interviews therefore elicited motivation among Shohada Tajrish ICU nurses and guided them toward the greater use of CSS. Most of the studies conducted in Iran suggest a need for fostering motivation among nurses; however, only a few of them discuss the actions that need to be taken in order to elicit such motivation, including the study by Habibipour et al. (2009) on nursing managers' use of the Goal-Setting Theory to improve work motivation among nurses, which showed that nursing managers can improve motivation among nurses through establishing programs that have a set goal. Although the cited study used the goal-setting theory and the present one used motivational interviewing, the results obtained in the two studies indicate an improved motivation among the nurses and are therefore consistent with each other [10]. In a study by Madah et al. (2014) conducted to assess the effect of group motivational interviewing on quality of life in patients with colon cancer and permanent ostomy, group motivational interviews were found to improve the patients' social, spiritual and physical health and to thus lead to a better quality of life and a higher motivation [16]. A study by Brodie et al. (2008) on the effect of motivational interviewing on quality of life in patients with chronic heart disease showed an increase in the patients' self-efficacy and motivation scores within five months. Despite the differences in the study populations and the duration of the interventions, motivational interviewing was found in both the present study and the cited study to affect motivation among the nurses [20]and the results are therefore consistent with each other. The results obtained in the study by Salmani et al. (2012) on improving nurses' motivation to use CSS showed that the action research method can change and improve nursing performances. According to the results obtained, the preference for using CSS increased from 5.1% before the intervention to 7.66% after. Despite the two studies' use of different methods of intervention, nurses' motivation to use CSS increased in both, suggesting that improved motivation among ICU nurses can lead to a greater use of CSS and thereby an improved patient care [21].

Based on these results, motivational interviewing is a technique that can be used to increase motivation and job satisfaction in nurses and thereby improve their efficiency.

Since highly motivated and enthusiastic people are more useful and can provide better services, high work motivation among nurses is crucial to improved patient services [22].

In their study on the effect of motivational interviewing based on the constructs of the stages of change model on operating room nurses' proper posture, Moazami & Sultanian (2013) examined 82 operating room nurses in Hamadan hospitals and found that motivational interviews led to a significant improvement in the stage of change in the trial group compared to in the control group (P=0.000). The trial group showed an increase in the score of perceived benefits, self-efficacy and processes of compliance with proper posture and a decrease in the score of perceived barriers (P>0.05). Motivational interviewing thus helped improve compliance with proper posture in the trial group (P=0.000) [18].

In their study on the effect of motivational interviewing on self-efficacy in relation to air pollution preventive behaviors in pregnant women, Araban et al. (2013) examined 110 pregnant women admitted to health centers in Tehran and divided randomly into a trial and a control group (n=55 in each) and performed one session of motivational interview for the trial group and assessed all the participants one month later and found a significant difference between the two groups in terms of their self-efficacy score (P<0.001). Educational interventions based on motivational interviewing can therefore be effective in improving self-efficacy in relation to air pollution preventive behaviors in pregnant women. Despite the differences in the means of performing the motivational interviews and in the self-efficacy scales used, and since most of the participants in the present study were also female, motivational interviewing can be said to have affected behavior change in both studies through improving self-efficacy and the two studies are therefore consistent. The cited study was different with the present one in that it only held one motivational interview session and had a follow-up period of only one month. Educational interventions based on motivational interviewing appear to be effective in improving self-efficacy in relation to air pollution preventive behaviors in pregnant 11 women [23].

According to the results of the analysis of covariance shown in (**table 2)**, there is a significant different between the scores obtained at this level (P<0.05).

Motivational interviewing was therefore found to improve self-efficacy in Shohada Tajrish ICU nurses and to thus increase their use of CSS. Performing thus intervention on nurses can lead to a greater use of CSS and more successful medical interventions. Very few domestic and foreign studies have been conducted on the effect of motivational interviewing on self-efficacy and the researchers found no studies that examined the relationship between self-efficacy and the use of CSS. The next paragraphs discuss the few studies that obtained similar results to the present study.

In their study on the effect of motivational interviews on weight self-efficacy lifestyle in obese or overweight adolescents, Rezaei et al. (2014) found that both a regular diet training and an intervention comprising of motivational interviewing plus regular diet training improved adolescents' weight lifestyle self-efficacy and elicited weight loss, although the effect was greater in the group that also received motivational interviews. The researchers argued that motivational interviews can have a persisting effect, especially among adolescents, only if they are reinforced with other treatment methods and with a wide range of support. Despite the different intervention methods and self-efficacy scales used in the cited study and the present one, both found that motivational interviews have a positive effect on self-efficacy [24].

The results of the present study are also consistent with those obtained in a study by Dehghani-Firouzabadi et al. (2013) on the effects of group motivational interviews on self-esteem and self-efficacy in female addicts, which examined 30 addicted women presenting to Ayandeh Roshan rehab center in Isfahan and confirmed the effectiveness of motivational counselling in increasing self-esteem and self-efficacy in addicted women [12].

Bass et al. (2003) studied self-efficacy in a group of nurses before and after receiving an 8-hour educational program on nursing care for patients with heart failure. The study subjects consisted of 108 nurses and data were collected using interviews. The results of the cited study revealed a post-intervention improvement in all the aspects of self-efficacy among the nurses. Despite its use of a different method of education, this study also improved nurses' self-efficacy with interventions and is therefore consistent with the results of the present study [25]. As per these findings, self-efficacy can be said to be contribute significantly to a successful nursing performance and may indeed count as a basic skill for nurses [26]. A review of literature shows that, when combined with clinical skills, self-efficacy provides nurses with a sense of adequacy and thus makes them creative in the adoption of more effective decisions for helping patients [27]. The present findings also suggest that self-efficacy has a role in the acquisition of knowledge, the development of skills and the application of academic and professional knowledge and skills. A low self-efficacy contributes to the ineffective use of the skills acquired [28].

Motivational interviews appear to improve self-efficacy in nurses and thus enable them to use their skills to perform proper CSS in their shifts. Individuals with a high self-efficacy tend to believe that they are capable of accomplishing their goals and can affect their environment and find more positive and desirable solutions to their problems. Given the advantages of CSS, including the reduced risk of pneumonia [7] and hypoxia and the subsequent prevention from arrhythmia and death [29], it is crucial to increase nurses' self-efficacy in the use of CSS, so that the complications of OSS can be prevented. Focusing on the role of self-efficacy in the use of CSS among nurses helps improve the quality of intensive care nursing.

Nursing managers' failure to improve clinical self-efficacy in nurses reduces the quality of nursing services and undermines the nursing profession. Nurses who believe in their own professional capacities tend to combine their knowledge and skills so as to develop and implement a comprehensive care plan that matches the patients' conditions.

The present study examined the effect of motivational interviewing on self-efficacy and motivation in ICU nurses as a vital part of the hospital personnel and hopes to provide authorities and researchers with useful information that can help promote nursing services. Further studies are required to confirm and enrich the results obtained in this study. Motivational interviews can be said to have a major role in improving self-efficacy and motivation in nurses and to thus promote the quality of nursing care.

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