Effectiveness of Motivational Interviewing in Promoting Hand Hygiene of Nursing Personnel

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ABSTRACT

Background: Motivational interviewing (M.I.) is an option for modifying an individual's behavior. It is used as an educational method in recent years. The aim of our study was to indicate whether or not education, using lecture alone and lecture with M.I., would affect the performance of nursing personnel regarding their hand hygiene. If so, which of these two methods were most effective for this purpose?

Methods: This was an interventional study conducted in Bahrami Pediatric Hospital in Tehran. The study population consisted of all nursing personnel in the hospital. Considering the responsibilities of different nurses and their educational status, we divided them into three classes. The participants of each class were randomly assigned to either the control or experiment groups training lecture alone or lecture with M.I., respectively. We used Independent-t, Paired-t, Mann-Whitney U and Wilcoxon signed ranks tests for analysis.

Results: Education using lecture alone improved the hand hygiene performance of nursing personnel only in the first and third classes (P = 0.002 and P = 0.001, respectively). Similarly, lecture combined with M.I. improved the hand hygiene performance of personnel in the first and third classes (P < 0.001 and P = 0.004, respectively). The latter method was more effective compared to lecture alone in the first and third classes (P < 0.001 and P = 0.013, respectively).

Conclusions: Education based on lecturing improves hand hygiene performance among nursing personnel. It will be more effective if combined with M.I.

Keywords: Hand washing, health education, interview, lectures, nursing staff

INTRODUCTION

According to the 2005 report of the World Health Organization (WHO), over 1.4 million people suffer from nosocomial infections worldwide. In developed countries, about 5-10% of patients admitted to hospitals contract nosocomial infections, which is 25% in developing countries. Studies conducted in countries with average income indicate that an annual sum of 8 billion dollars is
spent every year to resolve nosocomial infections. Therefore, WHO has developed different strategies, most importantly hand hygiene as reflected in the motto, “Clean care is safer care, and clean hands are safer hands”. Interventions such as educational programs influence the function of healthcare personnel. In order to improve the function of personnel, it is better to utilize cognitive, behavioral and emotional methods. On the other hand, it is established that hand hygiene is the most important procedure for preventing infection transmission; nevertheless, this simple procedure is largely ignored by healthcare personnel. Compliance with the principles of hand hygiene is particularly important in pediatric hospitals.

M.I. is an option for modifying an individual’s behavior. It was developed by Miller to treat patients with alcoholism issues and then completed by Miller and Rollnick. M.I. is a directive, client-oriented approach to improve an individual’s internal motives for modifying behavior; it facilitates behavioral modification through helping the person identify his/her doubts regarding behavior modification and overcome them. Expressing empathy, developing discrepancy, avoiding argumentation, rolling with resistance, and supporting self-efficacy are the clinical principles of M.I.

The present study attempted to indicate whether or not education, using lecture alone and lecture with M.I., would affect the performance of nursing personnel regarding their hand hygiene. If so, which of these two methods were most effective for this purpose?

METHODS

Study design and setting
This was an interventional study conducted in Bahrami Pediatric Hospital, affiliated to Tehran University of Medical Sciences in 2010. The objective of lecture-based education is to introduce the protocol of hand hygiene and its importance in controlling nosocomial infection to study units. The educational material dealing with hand hygiene was prepared by the researcher and confirmed by the physician in charge of hospital’s infection control (subspecialist in infectious disease and faculty member of our university’s infectious disease department). Hand hygiene education was performed by an infection control nurse via a 2-h lecture; the lecture session was repeated a few times in such a way as to cover all the personnel working in different shifts. In addition to the lecture, individuals in the experiment group participated in M.I., conducted by a health psychology specialist (faculty member of the psychology department, University of Tabriz). Five sessions of interviewing were held, with a maximum of 15 participants and duration of 90 min.

Measurement
Data were collected using hand hygiene checklist, developed by the researchers based on the protocols of the WHO and Center for Disease Control (CDC), Feldman criteria, and Fulkerson activity classification criteria, in 5 sections. The first section contained 8 statements about the participants’ demographic data; the second section contained 6 statements about routine hand decontamination; the third section contained 10 statements about using alcohol rub products, the fourth section contained 12 statements about routine cases; and the fifth section contained 6 statements about evaluation of hand hygiene. Data were collected by the hospital’s infection control supervisor who had received the required training about hand hygiene. Content validity of the tool was confirmed by infectious specialists. We used test re-test to evaluate the reliability of the tool on 30 nursing personnel. So, at first session, the observer completed checklist according to personnel’s activities and scored them and 30 days later she repeated it on the same persons. In next step, we calculated correlation of data. The reliability was acceptable (r > 0.7). These 30 individuals were eliminated from the final sample.

Study sample
The study was conducted in Bahrami Pediatric Hospital and the study population consisted of all nursing personnel in the hospital. The participants were assigned to either the control or experiment groups using the table of random numbers. Considering the responsibilities of different nurses and their educational status, we divided them into three classes: The first one included nurses, operating room technicians, anesthesiology
technicians and nurse-aids; the second one included head nurses; and the third one included assistant nurse-aids. Since direct observation and the personnel’s awareness of the hand hygiene checklist could affect their function, the infection control supervisor completed the checklists without notifying the personnel and during the routine nursing activities. Prior to training with lecture alone and lecture with M.I., the supervisor completed the checklist for each participant in the experiment and control groups; after training, the checklists were completed again by the same person for all participants. It should be noted that in order to prevent information exchange between the two groups, participants in the control group were first educated about hand hygiene and their checklists were completed; subsequently, participants in the experiment groups underwent lecture and M.I. and then had their checklists completed. Once the data were collected, data pertaining to each of the three classes of the control and experiment groups were analyzed separately.

**Ethical consideration**

The informed consent was obtained from all participants. The study complied with current ethical considerations in accordance with the rules of the ethical review board of Tehran University of Medical Sciences.

**Statistical analysis**

We used Independent-t, Paired-t, Mann-Whitney U and Wilcoxon Signed Ranks tests for analysis. Alpha was considered lower than 5%.

**RESULTS**

A total of 128 individuals were selected for the study, with 64 in the experiment group and 64 in the control group. 12 (9.4%) were male and 116 (90.6%) were female.

**Experiment group**

The mean age (± standard deviation) of the participants was 35.83 ± 7.184 years. As for education, 6 (9.4%) were below diploma, 8 (12.5%) had high school diploma, 1 (1.6%) had an associate degree, and 49 (76.6%) had a bachelor’s degree or higher. Regarding marital status, 11 (17.2%) were single and 53 (82.8%) were married. As for organizational position, there were 42 (65.6%) nurses, 3 (4.7%) nurse aids, 1 (1.6%) operating room technicians, 1 (1.6%) anesthesiology technicians, 5 (7.8%) head nurses, and 12 (18.8%) assistant nurse-aids.

**Control group**

The mean age (± standard deviation) of the participants was 34.58±7.946 years. As for education, 6 (9.4%) were below diploma, 9 (14.1%) had high school diploma, 3 (4.7%) had an associate degree, and 46 (71.9%) had a bachelor’s degree or higher. Regarding marital status, 10 (15.6%) were single and 54 (84.4%) were married. As for organizational position, there were 41 (64.8%) nurses, 2 (3.1%) nurse aids, 2 (3.1%) operating room technicians, 2 (3.1%) anesthesiology technicians, 5 (7.8%) head nurses, and 12 (18.8%) assistant nurse-aids.

The mean ± standard deviation of hand hygiene scores of first class of participants was 13.55 ± 2.59 before intervention and 14.8 ± 3.36 after intervention in the control group, and 14.26 ± 3.50 before intervention and 20.51 ± 7.40 after intervention in the experiment group. The hand hygiene scores of first class of participants in the control and experiment groups were significantly different before and after intervention [Table 1].

The mean ± standard deviation of hand hygiene scores in second class of participants of the control group was 14.4 ± 0.89 before intervention and 16.6 ± 4.77 after intervention, whereas in the experiment group, it was 14.4 ± 1.34 before intervention and 14.6 ± 1.14 after intervention. The hand hygiene scores of second class of participants were not significantly different before and after intervention in head nurses of both control and experiment groups [Table 2].

The mean ± standard deviation of hand hygiene scores in third class of participants of the control group was 13.25 ± 2.99 before intervention and 14.2 ± 3.15 after intervention, whereas in the experiment group, it was 13.08 ± 3.45 before intervention and 19.25 ± 6.58 after intervention. The hand hygiene scores of third class of participants were significantly different before and after intervention in both control and experiment groups [Table 3]. We compared the improvement in hygiene scores before and after the intervention (lecture alone and lecture with M.I. for the control and experiment groups, respectively) between first class of participants of the control and experiment...
groups, and we found a statistically significant difference ($P < 0.001$). Subsequently, we compared the improvement in hygiene scores before and after the intervention (lecture alone and lecture with M.I. for the control and experiment groups, respectively) between second class of participants of the control and experiment groups, and we found no statistically significant difference ($P = 0.366$). In next step, we compared the improvement in hygiene scores before and after the intervention (lecture alone and lecture with M.I. for the control and experiment groups, respectively) between third class of participants of the control and experiment groups, and we found a statistically significant difference ($P = 0.013$) [Table 4].

**DISCUSSION**

In this study, we compared the hand hygiene performance of three classes of hospital personnel before and after educating them in two different methods. Education using lecture alone improved the hand hygiene performance of nursing personnel

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<th>Table 1: Comparing hand hygiene scores before and after intervention in the two groups consisting of first class of participants</th>
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M.I. = Motivational interviewing

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M.I. = Motivational interviewing

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M.I. = Motivational interviewing

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<th>Table 4: Comparing the improvement in hand hygiene scores before and after education between the two groups consisting of three classes of participants</th>
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Microorganisms are colonized on patients’ skin and carry Gram negative bacilli, and studies reported that personnel might acquire these microorganisms and transmit to the next patient or the tools. Previous studies indicated that healthcare personnel carry different microorganisms and nosocomial infections. The approach to hygiene improvement should address the issue through a variety of aspects, as most authors believe this method to be optimal for modifying individuals’ behaviors. It is particularly suitable for modifying the behavior of individuals who resist the change.

M.I. is a method for modifying individuals' behaviors. It is particularly suitable for modifying the behavior of individuals who resist the change. Dilorio et al., observed that M.I. improved the adherence of patients with AIDS...
to antiretroviral therapy in 2003. LaBrie et al., demonstrated the effectiveness of M.I. in modifying the behavior of American students regarding their alcohol intake.

**Study limitations and strength**

Our research had some limitations. We studied only nursing personnel of a subspecialty pediatric hospital in capital of our country. So, the external validity of study was not high. Furthermore, although we achieved a randomized controlled clinical trial, we did not have any blinding.

**CONCLUSIONS**

Our findings indicate that education based on lecturing improves hand hygiene performance among nursing personnel. Furthermore, we analyzed that education will be more effective if combined with M.I.

**REFERENCES**


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