

The Effect of Health Messages on Job Stress of Nurses Working in Intensive Care Unit

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Abstract

Background: Because of its nature, nursing is one of the stressful jobs. Abundant stressful factors existing in this job cause the occurrence of physical and mental disorders in nurses.

Objectives: Therefore, the aim of this research was to determine the effect of health messages on job stress of nurses working in ICU (intensive care unit).

Methods: This empirical study was performed in ICUs of hospitals in Babol city in 2015 - 2016. The research population included all employed and eligible nurses working in ICUs of hospitals affiliated to Babol University of Medical sciences. After homogenization, the subjects were randomly divided into two groups of 40 named intervention and control groups. The tools for data collection included a demographic form and OSIPOW job stress questionnaire, which were completed by both groups. Then, for the nurses in the intervention group, 2 messages per week were sent regularly with a constant interval for three months. The OSIPOW questionnaire was completed by both groups one day and one month after the completion of the intervention. Statistical analysis was performed using SPSS v 20 software. Shapiro Wilk test was used to examine normal distribution of continuous quantitative variables. The data were evaluated using descriptive and inferential statistics (Mann Whitney and Freedman tests). Significance level was set at $P < 0.05$.

Results: The nurses participating in this study were homogeneously distributed in two groups in terms of job stress levels before performing the intervention. The mean scores of job stress in nurses working in ICU were 242.05 ± 22.72 in the intervention group and 241.80 ± 24.22 in the control group ($P = 0.068$). Also, the mean scores of job stress in nurses in the control group before the intervention, one day, and one month after the completion of the intervention were not significantly different from each other ($P < 0.001$), While the mean scores of job stress in nurses in the intervention group one day after the completion of the intervention meaningfully decreased compared to the control group. Therefore, message-based procedure decreased job stress in nurses working in ICUs ($P < 0.001$).

Conclusions: The findings of this research showed that job stress level in nurses of the case group reduced after the intervention. Therefore, sending health messages can cause a decrease in job stress among nurses working in intensive care units.

Keywords: Health Messages, Job Stress, Nurses, Intensive Care Unit (ICU)

1. Background

Nurses play a vital role in caring and therapeutic system of the country (1).

As the biggest working group in hospitals, nurses are considered the facilitators of hospital-based care (2). The professional mission of nurses, as one of the most important members of health team, is to maintain and enhance the qualitative level of care activities at standard level.

Although nurses are trained to pay attention to the quality of care and life of patients, they rarely are regarded for their personal needs (1). Despite a view that considers nurses as a group with maximum job satisfaction among the working groups in hospital, the obtained results of studies show that they are dissatisfied with their job due to job-borne incidents, inappropriate health conditions of

workplace, low salary level, lack of welfare facilities, no cash and non-cash reward, lack of indirect advantages, as well as job stresses and non-clarity of job perspective (3). Due to the nature of the job, nursing is regarded as one of the most stressful professions.

Abundant stressful factors existing in this job lead to the generation of many physical and mental (psychological) disorders in nurses (4).

According to cooper's definition, job stress is created as a result of interaction between the individual and his/her workplace (5). The stress is a current disease in 21st century. It causes absenteeism (absent without leave), replacement of labor force, occupational conflicts, physical problems, and high health-therapeutic costs (6). The working nurses in intensive care units (ICUs) may suffer from more stress

due to special conditions of the workplace and patients. Some stressful factors of ICUs include the occupational relationship with others and conversation with the patient and his/her companions, need for high levels of knowledge and skill for working in these units, high workload, the necessity for fast and immediate response to emergency conditions, and heavy responsibility resulted from caring the patient (7).

IPP, in his study, showed that ICU nurses experience high levels of job stress (8). The study conducted by Mohammad et al. indicated that 92% of nurses in ICUs complain of disorders related to job and workplace stress (9). In the study of Rezaee et al. 61% of ICU nurses reported high levels of job stress (10).

Also, Rahmani et al. showed that 49.2% of ICU nurses have high levels of job stress (11). Distinguishing occupational problems of nurses and finding some solutions to remove the stressful situations can result in increasing job satisfaction.

From organizational view, by increasing job satisfaction of nurses, service leaving and absenteeism can be reduced. Consequently, the quality of nursing care enhances (12).

Up to now, much research has been conducted regarding job stress of nurses.

Some approaches have been suggested to improve job stress. However, a few studies have been performed using message-based programs to deal with the problems of nurses, especially those working in ICUs. Information and communications technology (ICT) is one of the fundamental distinguishing aspects between current and previous communities. The extent of its development and application in all fields, especially in training, is regarded as one of the most important parameters for advancement (13). There is a consensus that using ICT can increase the quality of teaching and learning (14).

In the study of Godly (2010), a continuing caring program using telephone along with an ordinary pursuing program was applied on the consumers of narcotic materials. The results indicated that individuals who were under the care and pursued by telephone reported more satisfaction with the intervention; and they participated in the program two times more frequently than the individuals who were under ordinary pursuing care program. Also, they reported fewer times for consuming narcotic materials compared to the other group (15). In the study of Strood (2009) performed to evaluate the nurses' use of digital programs, it was shown that medicinal programs had the most frequent application among the nurses. Using pocket computers had an effective role in clinical decision making and enhancing the safety and health of patients (16). During recent years, interest in learning through the

application of mobile phones and using portable equipment in different sizes from laptops and notebooks to cell phones has increased (11).

Among the different equipment applied in training, cell phone is considered as the most appropriate tool.

This is due to its low price compared to other portable equipment such as laptops, popularity, and capability to transfer different files such as texts, voices, images as well as its role in social interactions, among other advantages (17).

Message service, as one of the lateral services of a cell phone, has found a special position among the users because of easiness, flexibility, cheapness, and obvious characteristics of verbal and non-verbal communications; that is why the number of sent short messages is several times greater than the number of calls by a user. The results of the performed research represent that the message service can be used as a live and useful method for training and educational conversations (18). Since using the new methods has caused the easiness of notification, it seems that using message-based programs can be effective in decreasing some problems of nurses, especially ICU nurses.

2. Objectives

The aim of this research was to determine the effect of health messages on job stress among nurses working in ICUs.

3. Methods

This empirical study was performed during the years 2015 - 2016 in two hospitals (Ayatollah Roohani and shahid Yahya-nejad) of Babol city aiming to determine the effects of health messages on job stress of nurses working in ICUs. The research population included all nurses working in ICUs of the mentioned hospitals which were affiliated to Babol University of Medical sciences. The eligible selected nurses were divided into two groups of 40 named control and intervention groups. The census method was used to select the subjects as follows: Among the available hospitals with ICUs in Babol city based on lottery drawing, one hospital (Shahid Yahya-nejad hospital) was designated for intervention group and the other one (Ayatollah Rohani hospital) for control group.

All the eligible and employed nurses in the ICUs of these two hospitals were studied by randomized allocation. The criteria for inclusion of ICU nurses in the study are as follows:

1) having B. S. degree in nursing, 2) having at least one year experience of working in ICU and, 3) having no history

of mental or psychological diseases and consumption of neuro-psychological drugs.

Before data collection, the ethics code numbered IR.SHAHED.REC.1394.94 was acquired and the permission from Iranian registry of clinical trials (IRCT 2016050227722N1) was obtained. Then, after referring to hospitals and receiving the allowance, the researcher spoke with the working nurses in ICUs of these hospitals and obtained their satisfaction with participation in the research. To collect data, first, the nurses' demographic questionnaire was completed and then, homogenization was performed. In the next stage, OSIPOW job stress questionnaire was completed by them. Then, for the nurses of intervention group, 2 messages per week were sent in the fixed intervals for three months. Also, all nurses of treatment group were explained about details including the number of sent messages during a week and implementation of the presented strategies.

Also, a phone number was available for the nurses of intervention group to contact the researcher if they had question. Immediately after the end of the training period (on one day) and one month later, the same questionnaire was completed by both groups.

It should be mentioned that the procedure of messages' preparation was as follows: first, some subjects were prepared in the form of messages on the tips to reduce job stress. Then, they were evaluated by 10 experts including psychiatrists, psychologists, and psychological nurses (psycho-nurses). Each of the ten persons gave a score from 0 to 10 to each message based on its possible effect on individuals in order to decrease job stress. The messages that gained higher scores were selected as the desired messages (The least acceptable score was 7).

OSIPOW job stress questionnaire includes 60 questions. The questions were assessed based on a five-point Likert scale. The questionnaire is organized in six dimensions. Each dimension includes 10 descriptions. The first dimension, i.e. workload of the role, is related to the quality of the individual's response (responsiveness) to the workplace demand. The second dimension, i.e. insufficiency of the role, is related to the proportion of the level of skill, education, and educational and empirical characteristics of the individual to the needs of workplace.

The third dimension, i.e. duality of the role, is related to the awareness of the individual about the priorities and expectations of workplace and the evaluation criteria. The fourth dimension, i.e. range of the role, is related to the personal conflicts in terms of working conscience and the role which is expected by him/her. The fifth dimension, i.e. responsibility, is related to the feeling of personal responsibility in terms of the efficiency and welfare of others in the workplace.

The sixth dimension, i.e. physical environment, is related to unpleasant conditions of physical environment where the person is exposed to (19).

This standard questionnaire was first used by Osipow et al. (1984). It was labeled by his name as a measurement scale for job stress. It has been frequently used by different researchers inside the country and abroad.

Its validity and reliability was confirmed by Cronbach's alpha coefficient of 86% (19).

The Persian version of this questionnaire was detected reliable and valid by Khaghanizade et al. in 2008 by giving the Cronbach's alpha value of 89% (20). Statistical analysis was performed using Shapiro Wilk test in SPSS v. 20 software to study the normal distribution of continuous quantitative variables. The data were evaluated using descriptive and inferential statistics (Mann Whitney and Freedman tests). The significance level was set at $P < 0.05$.

4. Results

Regarding the findings of the present research, it was determined that most nurses attending the study were formal personnel (40 persons, 50%). Mean age of the nurses was 32.19 years ($SD = 6.445$). Most personnel had overtime hours over 150 hours (36 persons, 45%). 64 nurses (80%) had circular working shift. Table 1 shows the personal characteristics of the nurses in the research.

The studied nurses in two groups were homogenous in terms of the level of job stress before performing the intervention. The mean scores of job stress were 242.05 ($SD = 22.72$) in the intervention group and 241.80 ($SD = 24.22$) in the control group. The mean scores of job stress in the control group were 242.40 one day after the completion of intervention and 241.32 one month after the completion of intervention. There was no meaningful difference compared to the case group before performing the intervention.

On the other hand, the mean scores of job stress in ICU nurses in intervention group were 146.90 one day after the completion of intervention and 144.80 one month after the completion of intervention.

Therefore, the level of job stress had a meaningful decrease compared to the control group (Table 2). Regarding data in Table 2 it was determined that the message-based intervention performed on the case group caused a decrease in job stress compared to the control group ($P < 0.001$).

5. Discussion

The present research was performed to determine the effect of health messages on job stress of working nurses in

Table 1. Demographic Characteristics of the Subjects^a

| Variable | Group | | P Value | |
|---------------------------------|----------------|--------------|-----------|--------------------|
| | Control | Case | | |
| Gender | Male | 18 (45) | 19 (47.5) | 0.502 |
| | Female | 22 (55) | 21 (52.5) | |
| Marital status | Single | 9 (22.5) | 11 (27.5) | 0.606 |
| | Married | 31 (77.5) | 29 (72.5) | |
| Education | B.S. | 35 (87.5) | 36 (90) | 0.723 |
| | M.S. | 5 (12.5) | 4 (10) | |
| Organizational position | Nurses | 8 (20) | 10 (25) | 0.817 |
| | Under Contract | 12 (30) | 10 (25) | |
| | Formal | 20 (50) | 20 (50) | |
| Overtime hours | 0 - 50 | 1 (2.5) | 0 | 0.712 ^b |
| | 50 - 100 | 10 (25) | 8 (20) | |
| | 100 - 150 | 12 (30) | 13 (32.5) | |
| Working Shift | > 150 | 17 (42.5) | 19 (47.5) | 0.034 |
| | Morning | 2 (5) | 3 (7.5) | |
| | Evening | 2 (5) | 0 | |
| Adequacy of financial resources | Night | 8 (20) | 1 (2.5) | 0.436 |
| | In circulation | 28 (70) | 36 (90) | |
| | Low | 10 (25) | 11 (27.5) | |
| Age | Middle | 17 (42.5) | 21 (52.5) | 0.726 |
| | Enough | 13 (32.5) | 8 (20) | |
| Years of experience | | 32.17 ± 6.44 | 8 ± 20 | 0.453 |

^aValues are expressed as mean ± SD or No. (%).

^bThe significance level was estimated based on Fisher's exact test.

Table 2. Mean Score (SD) of Job Stress Among Working Nurses in Intensive Care Units in Both Case and Control Groups, Before the Intervention, One Day, and One Month After the Intervention^a

| Job stress | | Before Intervention | One Day After Intervention | A Month After Intervention | P Value |
|------------|----------------|---------------------|----------------------------|----------------------------|---------|
| | | Case | 242.05 (22.72) | 146.90 (25.31) | |
| Control | 241.80 (24.22) | 242.40 (24.63) | 241.32 (23.57) | | |
| P value | | 0.068 ^c | 0.557 ^c | 0.531 ^c | |

^aValues are expressed as mean (SD).

^bFriedman test.

^cMann-Whitney U.

ICUs. In this study, 80 ICU nurses were divided into two intervention and control groups. Table 1 shows the personal characteristics of the participants in this research in terms of age, gender, marital status, number of children, level of education, years of experience, overtime hours, working

shift, and sufficiency of financial resources.

Before performing the intervention, both intervention and control groups completed OSIPOW job stress questionnaire.

The obtained results of the questionnaire showed that

both groups were homogenous in terms of job stress before performing the intervention.

The mean score (standard deviation) of job stress was 242.05 (22.72) in the intervention group, while it was 241.80 (24.22) in the control group. The mean scores had no statistically significant difference. Based on stress division, nursing is placed in the category of highly stressful jobs.

One day after performing the intervention, the given questionnaire was again completed by both case and control groups. The level of job stress in the control group was the same as before the intervention.

The mean score (standard deviation) was 242.40 (24.63), which showed no statistically meaningful difference; and categorized nursing in the category of highly stressful jobs. On the contrary in the intervention group, job stress significantly decreased. The mean score (standard deviation) decreased to 146.90 (25.31), which showed a statistically meaningful difference compared to the score before intervention.

In the classification of stress, it was located in the category of jobs with normal stress. One month after the completion of intervention, the same questionnaire was again completed by both case and control groups. In this stage, job stress in the control group had not a meaningful change compared to before the intervention. The mean score (standard deviation) was 241.32 (23.58), and it was placed in the category of highly stressful jobs. While in the intervention group, the level of job stress meaningfully reduced. The mean score (standard deviation) reached 144.80 (22.37), and it was placed in the category of jobs with normal stress. The findings of this research showed that the level of job stress of nurses in the intervention group reduced after the intervention, so that the mean score of job stress of nurses working in ICUs decreased both one day and one month after the completion of intervention compared to that of before the intervention. The comparison of job stress scores among ICU nurses between the case and control groups showed a significant difference ($P < 0.001$).

However, the scores of job stress among ICU working nurses in the control group before the intervention, one day after the completion of intervention, and one month after the completion of intervention had not significant change.

The results obtained from the present study have congruity with those of the study of Navvabi which examined the effect of a caring program by sending messages on burnout of working nurses in Baghiyatollah Al-A'zam hospital (18). Also, our results had congruity with Mallaki-Fard's study findings which examined the effect of sending messages to patients with attention deficit hyperactivity disorder to make them compliant with their treatment

(21). Moreover, we found congruity with a study performed by Enayati et al. which addressed the application of cell phone in presenting educational content to university students (15) as well as with a study performed by Rezaee et al. who examined the effect of training about the use of peak flow meter and pursuance by messages on self-control of asthma patients (10). The findings obtained in the study of Navvabi showed that before the intervention, there was no meaningful difference in terms of burnout between treatment and control groups.

However, after making the intervention through sending messages, a difference was seen between the groups, so that the mean level of burnout in the treatment group meaningfully decreased. Therefore, making intervention through an ongoing care program by sending messages caused a decrease in burnout in the intervention group. In a study performed by Mallaki-fard it was observed that patients in the group receiving messages had more number of referring and more faithfulness to the consumed drug compared to the group not receiving any message (21).

Therefore, using a sending-message system for reminding led to increased number of referring and enhanced level of faithfulness to the consumed drug among patients with attention deficit hyperactivity disorder. In a study by Enayati et al. who addressed the effect of the use of cell phone to present educational contents to the university students, it was determined that learning in the university students had no meaningful difference between intervention and control groups before the intervention (13). However, after performing the intervention, there was a meaningful difference in the case group compared to before the intervention. It was demonstrated that transferring curricular subjects through cell phone in the form of short messages is effective in learning among university students.

In a study performed by Razi to examine the effect of training on the use of peak flowmeter and following up by short messages on self-control of asthma patients, it was determined that the training caused an enhancement in the self-control of asthma patients. The findings of the present study also showed that sending health messages can cause a decrease in job stress in ICU working nurses. In addition, this method is easier compared to other educational methods. Thus, a great number of nurses working in ICUs can be covered by this program within a wide geographical domain. Therefore, it is suggested to use the method of texting health messages to help resolve other problems related to nurses' society.

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Footnotes

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