The Effect of Stress Management Training through PRECEDE-PROCEED Model on Occupational Stress among Nurses and Midwives at Iran Hospital, Iranshahr

MAHNAZ DIDEHVAR[1], IRAJ ZAREBAN[2], ZAHRA JALILI[3], NOUR-MOHAMMAD BAKHSHANI[4],
MAHNAZ SHAHRAKIPOOR[5], ABBAS BALOUCHI[6]

ABSTRACT

Introduction: Occupational stress is a major factor in hindering the performance of nurses and midwives and developing physical and mental complications in them. Given that these two groups are in direct contact with patients more than other medical staff and stress management training can be effective in the reduction of occupational stress among the nurses and midwives.

Aim: This study was set out to compare the effect of a PRECEDE-PROCEED based stress management training program on the occupational stress of the nurses and midwives.

Materials and Methods: This quasi-experimental study was conducted on the aforementioned nurses and midwives. Data collection instruments included the Nursing Stress Scale (NSS). The training program was held in two 4-hour-long sessions for three months from 1st January to 31st March 2013.

Results: The results showed a significant increase in the PRECEDE scores of both groups by the end of the program, as compared to the baseline. A significant decrease was also observed in the stress scores of both groups. There was no difference between groups in these regards.

Conclusion: The PRECEDE-based stress management training is effective in the reduction of occupational stress among the nurses and midwives.

INTRODUCTION

Nursing is a stressful job, insufficient manpower is a factor contributing to job dissatisfaction, stress, burnout and ultimately leaving the nursing profession [1]. Nurses are regularly affected by workplace stressors, which can jeopardize their physical and mental health [2]. The US National Council for Occupational Safety and Health has introduced nursing among the top 40 high-stress jobs [3]. According to statistics announced by the Iranian Nursing Organization (INO), 75% of nurses are suffering from stress, depression and a variety of physical and mental disorders [4].

There are several stressors against midwives in the delivery room, including the undesirable environment, suffering patients, dealing with obstetric emergency, burden of keeping the patients safe, rotating work shifts and lack of interest in the profession [5]. Considerable evidence suggests that the quality of obstetric experience is greatly correlated with the midwife-pregnant relationship, even though little research has been conducted on the emotional issues among midwives [6]. According to a study by Mackin et al., 78% of midwives stated that insufficient time to carry out their responsibilities is an important stressor [7,8]. A study conducted by Hauck on Australian midwives, the stressors were identified to be dissatisfaction with the working conditions, feelings of worthlessness and adequate support [9].

According to a comparative study on the stressors among nurses and midwives, it was revealed that factors such as inadequate resources, night work, unorganized work and shift work were more frequent among midwives than nurses, whereas other factors such as shortage of personnel, unexpected situations, incurable patients and conflict with colleagues were more frequent among nurses. Moreover, the stress levels were nearly identical in factors such as unreasonable expectations of patients and modern technology [10]. The two groups were different in terms of collaboration in doing tasks, supervisor support, occupational autonomy, and workload and role clarity.

Stress management involves an increase in an individual's self-control ability when facing situations, people, events and excessive demands. In a study by Chan on stress management among the nursing and midwifery students, it was found that Chi Kung (a traditional Chinese exercise) was effective in reducing stress [8]. In their study, Bruneau et al., demonstrated that stress management programs had little effect in reducing stress among nurses [11].

The PRECEDE model is a framework for the process of systematic development and evaluation of health education programs. The first 5 phases are:

Phase 1 - Social Diagnosis (Community Forums, Nominal Groups, Focus Groups, Surveys and Interviews),

Phase 2 - Epidemiological Diagnosis (vital statistics, years of potential life loss, disability, prevalence and morbidity),

Phase 3 - Behavioural and Environmental Diagnosis (personal and environmental factors),

Phase 4 - Education and Organizational Diagnosis (Predisposing Factors (knowledge, beliefs and values), Enablers (accessibility, availability and skills),

Phase 5 - Administrative and Policy Diagnosis (the analysis of policies, resources and circumstances prevailing organizational situations that could hinder or facilitate the development of the health program) [12].

The PRECEDE-PROCEED model is the most prominent tool for designing and administering an experimental intervention to change high-risk behaviours. Designed by Green and Kreuter [12], the PRECEDE-PROCEED model has been adopted within long-term, experimental health promotion programs. It provides a framework that helps health planners and policy-makers

effectively design health programs based on the assessment and analysis of situations. The most basic assumption in this model is the active participation of the audience. According to a research by Hazavei et al., stress management based on the PRECEDE-PROCEED model affected the nurses through time management, problem-solving and relaxation [13]. Unlike the aforementioned research, the application of the PRECEDE-PROCEED was not effective in reducing the Taenia infection in Nepal due to non-behavioural factors such as wrong government policies [14]. Study of Moeini et al., about "The impact of cognitive behavioural stress management training program on job stress in hospital nurses: Applying PRECEDE Model" showed training programs based on PRECEDE model might be effective in decreasing job stress in nurses [15]. Although study of LiChi Chiang et al., that conducted on Parents with asthmatic children in Taiwan revealed, the theory based educational program had a good effect on self-management behaviours. From the repeat measurement analysis, we can understand the changing trend of the determinants, behaviours, and outcome indicators [16].

Nurses and midwives are two groups of medical staff in direct contact with patients more than others. They closely touch the patient's pain, suffering and even death. Hence, the stress on nurses and midwives is undeniable. Given that nurses and midwives experience a great deal of stress every day, appropriate measures should to be taken to maintain their performances at optimum levels. With regard to the fact that nurses and midwives are stressed differently, this study attempted to figure out whether a PRECEDE-PROCEED-based stress management training course can reduce stress in both groups.

MATERIALS AND METHODS

Design and Participants
This was a quasi-experimental, intervention research carried out on nurses and midwives working at Iran Hospital in Iranshahr. The training program was held in two 4-hour-long sessions for three months from 1st January to 31st March 2013.

The sample involved a total of 62 participants of whom 40 were nurses and 22 were midwives. In the first stage, the samples with moderate to high stress levels were selected and the inclusion criteria were applied. The inclusion criteria were, holding a bachelor's degree in nursing or midwifery, regular, contract, project or plan employment, lack of mental illnesses, owning a mobile phone, no history of participation in stress management courses. The exclusion criteria were, refusal from completing the questionnaire or attending the educational classes. Having obtained the consent of subjects in both groups, the questionnaires were handed out and then received.

Instrument
The data collection tools included questionnaires containing several items about demographic characteristics, Nursing Stress Scale (NSS) and a questionnaire designed based on PRECEDE-PROCEED aimed at assessing the current situation. Designed by Gary-Toft and Anderson [17], the NSS contains 34 items measuring the occupational stress among nurses. The items were scored on a 5-point Likert scale. Scores less than or equal to 68 indicated low stress, between 69 to 103 indicated medium stress and more than or equal to 104 indicated high stress. The NSS contains 34 clauses covering seven areas including-suffering and death of patients seven, conflict with physicians five, inadequate preparation three, lack of support three, conflict with other nurses five, job pressure six uncertainty about treatment five. The content validity of the NSS was achieved through translation and back-translation by language specialists. Then, the validity of the questionnaire was confirmed by 11 proficient professors from schools of nursing and midwifery at Iran University of Medical

Sciences, Tehran University of Medical Sciences, Shahid Beheshti University and Tarbiat Modarres University, whose opinions and modifications were applied to the content [18].

The new questionnaire constructed under the PRECEDE-PROCEED framework contained 11 items about stress and coping strategies scored on a range from 0 to 22, where correct responses were assigned 0, I Don't Know was assigned 1 point and incorrect responses were assigned 2 points. The attitude questionnaire contained nine items, scored on a 5-point Likert scale from 9 to 45, where higher scores indicated more positive attitude towards the dangers of stress and importance of coping strategies. The enablers included four items about adoption of coping skills and availability of educational resources (scored zero and one), access to educational resources (scored zero and one) and skills to utilize the resources properly, somewhat properly and improperly (scored from zero to two). The reinforcers questionnaire contained four items concerning the encouragement of others and positive feeling after stress coping behaviours (scored zero and one). The stress coping behaviour questionnaire contained 12 items, 8 of which were responded as Yes-No scored zero and one, one item was scored from 0 to 2, another item was scored from 0 to 3 and the other four assessed the desirable behaviours scored from 0 to 3. The minimum and maximum scores given to the behavioural items were 0 and 26. The validity of the questionnaire was achieved through a panel of experts. Z Hosseini et al., in study on nurses revealed reliability of NSS approved in Cronbach's alpha 0.97 [19]. The enablers were notification of weekly educational messages about the material discussed in workshops and sending SMS on stress management, distribution of free relaxation CDs and posting materials on the educational board. The reinforcers were trainer's internal incentive and encouragement of both groups to adopt stress management behaviours and individual positive feeling after such behaviours. A poster addressing the participants was hung on the entrance gate of the hospital. Process evaluation and review of progress toward preset goals were carried out during the implementation of the training course. The effectiveness was evaluated based on completing the PRECEDE-PROCEED questionnaire and the checklists one month after the training. In the final evaluation, the questionnaires and checklists were completed again three months after the training course. The variable in both groups were assessed based on the questionnaires in three stages of before, one month after and three months after the training course. Given that the participants worked on a shift basis, the sessions were held in a way to avoid interfering with their routine jobs. The training sessions were arranged in three groups of 20, 21 and 21 members on separate days. The variables were measured and compared in both groups. The design constraints included the nature of shift work at the hospital and the fact that nurses and midwives could not participate simultaneously in the classes. Hence, the course was held for three groups containing 20, 21 and 21 subjects separately. Due to insufficient manpower and tight work shifts, some of the nurses could not participate in the sessions on two consecutive days. This issue was resolved by asking the nurses to attend classes held for other groups.

STATISTICAL ANALYSIS
The data were analyzed through SPSS 16.0 using descriptive statistics, t-test and repeated measures.

Ethical Consideration
The ethical considerations in this research project involved the right to withdraw and announcement of the results to participants and authorities. This study approved in ethics committee of Zahedan University of Medical Science.

RESULTS

The average age was 31.4±5years for nurses and 29.6±6.27 years for midwives. Moreover, 60% of nurses were married and 40% were single, while 59.1% of midwives were married and 40.9% were single.

In terms of employment status, 15% of nurses were regular, 80% were contract-based, 2.5% were agreement-based and 2.5% were plan-based. As for the midwives, 27.3% were regular, 59.1% were contract-based, 9.1% were agreement-based and 4.5% were plan-based. The average work experience was 4.5±0.92 (Year) for nurses and 5.5±0.04 (Year) for midwives. In terms of work shift, the 17.5% of nurses were morning fixed and the rest were rotating shift, whereas 9.1% of midwives were morning fixed and 90.9% were rotating shift. Concerning the number of night shifts, 17.5% of nurses had no night shifts, 12.5% had less than 5 night shifts a month, 10% had 10 night shifts a month, and the rest had over 10 night shifts. As for the midwives, 9.1% had no night shifts, 4.5% had less than 5 night shifts a month, 27.3% had over 10 night shifts a month and the rest had 6-10 night shifts. The groups were matched in terms of age, marital status, work experience, shift work, employment status and the number of night shifts. Moreover, the p-values in all variables were greater than 0.05.

Before the intervention, there were no statistically significant differences between the nurses and midwives in terms of mean scores of predisposers, reinforcers, enablers, behaviour and occupational stress (p>0.05). After the intervention, the mean scores of awareness, attitude, reinforcer, enable and behaviour indicated a significant increase in the two stages (one month and three months after the training) in the two groups. Moreover, the mean score of stress significantly decreased (p<0.05). In comparison of the two groups of nurses and midwives, the mean scores of all constructs except awareness indicated no significant difference after intervention. The mean score of awareness was greater in midwives than nurses [Table/Fig-1-3].

The pearson correlation test showed no significant relationship between the scores of behaviour and demographic characteristics such as age, marital status, spouse's education, employment status, work experience, shifts and the number of night shifts. Moreover, the Pearson correlation test showed that there is a significant relationship between the change in the score of behaviour, changes in the enabler and attitudinal change among midwives. However, the change in the score of behaviour among nurses was only correlated with change in the score of enabler. According to the NSS, the greatest stress levels among nurses and midwives involved uncertainty about treatment both before and after treatment.

Variable	Time	Mean and standard deviation for nurses	Mean and standard deviation for midwives	Independent T
Awareness	Before intervention	11 ± 2.39	11.5 ± 2.77	p= 0.554
	One month after intervention	19 ± 2.1	20.6 ± 1.2	p= 0.002
	Three months after intervention	14 ± 3.13	17.3 ± 2.3	p=0.002
RM ANOVA		p<0.05	p<0.05	
Attitude	Before intervention	38 ± 3.34	38.4 ± 3.3	p=0.929
	One month after intervention	42.07 ± 4.53	41.45 ± 3.27	p=0.574
	Three months after intervention	43.67 ± 6	41.13 ± 5.7	p=0.109
RM ANOVA		p<0.05	p=0.009	

[Table/Fig-1]: The mean scores of predisposes (awareness, attitude) among nurses and midwives at Iran Hospital, Iranshahr.

Variable	Time	Mean and standard deviation for nurses	Mean and standard deviation for midwives	Independent T
Reinforcer	Before intervention	1.22 ± 1.14	1.18 ± 0.66	p= 0.872
	One month after intervention	3.77 ± 0.47	3.6 ± 0.65	p=0.345
	Three months after intervention	3.90 ± 0.37	3.9 ± 0.37	p=0.923
RM ANOVA		p<0.05	p=0.0001	
Enabler	Before intervention	12.7 ± 1.1	9.5 ± 1.4	p=0.494
	One month after intervention	16.5 ± 1.02	16.09 ± 1.26	p=0.843
	Three months after intervention	16.55 ± 1.19	16.13 ± 1.16	p=0.194
RM ANOVA		p<0.05	p=0.0001	
Enabler	Before intervention	1.27 ± 1.8	0.95 ± 1.6	p=0.494

[Table/Fig-2]: The mean scores of enablers and reinforces among nurses and midwives at Iran Hospital, Iranshahr.

Variable	Time	Mean and standard deviation for nurses	Mean and standard deviation for midwives	Independent T
Behaviour	Before intervention	12.025 ± 3.34	10.9 ± 2.5	p= 0.208
	One month after intervention	15.875 ± 4.77	15.4 ± 3.8	p= 0.725
	Three months after intervention	16.37 ± 4.4	15.5 ± 4	p= 0.451
RM ANOVA		p=0.0001	p=0.0001	
Job stress	Before intervention	112.8 ± 17.46	112 ± 17.4	p=0.235
	One month after intervention	103.85 ± 25.52	105 ± 20	p =0.856
	Three months after intervention	93.15 ± 28.79	86.8 ± 25	p=0.39
RM ANOVA		p=0.00209	p=0.00041	

[Table/Fig-3]: The mean scores of behaviour and job stress among nurses and midwives at Iran Hospital, Iranshahr.

DISCUSSION

The findings showed that the changes in the scores given to the constructs of PRECEDE-PROCEED Model increased and the stress score decreased significantly in both groups of nurses and midwives after the training compared to before training. Similar study of Moeini et al., about "The impact of cognitive behavioural stress management training program on job stress in hospital nurses: Applying PRECEDE Model" showed training programs based on PRECEDE model might be effective on decreasing job stress in nurses [15]. However, the comparison of the two groups of nurses and midwives revealed no significant differences in the scores given to reinforcers, enablers and attitudes after the training course. Nonetheless, there was a significant difference in the score of awareness, so that the mean score of awareness in midwives was higher than that in nurses after the training course. In three months after the training course, the stress score decreased in midwives compared to nurses, even though it was statistically insignificant. There was no research found similar to the current one.

The reinforcers in this study were self-encouragement and encouragement by others and individual positive feeling after adopting stress management strategies. The mean score of the reinforcer in both groups of trained nurses and midwives significantly increased after the training course, even though the two groups progressed equally, indicating an insignificant difference. In their study, Hazavei et al., identified an increase in the mean score of the enabler as a factor contributing to the modification of oil consumption pattern [20]. The consistent studies in this regard

are those conducted by Nazari, Nadrian et al., and Mohebbi et al., [21-23].

This study identified the learning skills and their level of adoption as enablers. The mean score of this construct indicated a significant increase in two intervention groups after training, even though there were no significant differences between the two groups.

Consistent with this study were the results obtained by Shauna et al., [24]. Unlike this study, Zigheymat found no significant difference between the mean scores of enablers in the experimental group and the control after intervention [25].

The mean scores of awareness before training were identical with no significant difference between the two groups, even though it indicated a significant difference after training unlike the other constructs. This could probably be due to the researcher's job in a closer contact with midwives rather than nurses. Mohebbi et al., conducted a study on enhancing awareness in assertiveness training on decisiveness of high-school students [23]. Orooji et al., examined the higher awareness after training based on the PRECEDE-PROCEED Model in preventive behaviours against brucellosis among adolescents living in Khomein [26]. In another study, Polcyn employed the PRECEDE-PROCEED Model to identify factors associated with smoking among adolescents, indicating that there is a significant difference between the experimental and control groups in terms of awareness [27].

In the present study, the mean of attitude significantly increased before and after intervention in the intervention group. After intervention, however, the difference was not significant despite the increase in the mean increase in the intervention group. In the research by Hazavehei et al., there was no significant difference between the mean scores of awareness before and after intervention in the experimental and control groups [20]. According to a study by Deren et al., on the effect of PRECEDE-PROCEED Model on prediction of HIV risky behaviours among injecting drug addicts, the mean score of behaviour increased [28].

In a study conducted by Chiang in Taiwan, two teaching methods were compared for children with asthma. One of the methods was outpatient education and the other was based on PRECEDE-PROCEED Model. The means of behaviour in teaching based on PRECEDE-PROCEED Model were greater than the outpatient method three and six months after the educational course [16,29]. In a study titled "The effect of PRECEDE-PROCEED training program on the psychological health among adolescents and parent participation", Zendetalab found that the mean score of behaviour increased significantly compared to the pre-intervention [30]. In a study by Sanaeinasab et al., the means of safe behaviour indicated a significant difference between the intervention and control groups one and three months after intervention [31].

This study involved problem-oriented methods such as "problem-solving technique and assertiveness training skills" and emotion-oriented methods such as "relaxation and writing down stressors" in stress management training courses.

In a study by Hosseini et al., on the relationship between occupational stress and PRECEDE-PROCEED Model, it was found out the method based on "problem-solving style, time management, relaxation and deep breathing" was effective in reducing the mean score of occupational stress [19]. In their study, Arjmand et al., found a significant decrease in occupational stress after training [32]. In a study on 129 nurses in Australia, Healy reported that stress management through sense of humor can curtail stress in the workplace [33].

According to a research by Shah Abadi, a training course on cognitive behavioural therapy techniques significantly reduced stress among nurse [34]. In their study on stress management among nurses, Shirbim et al., found that the adoption of problem-solving techniques and assertiveness skills can reduce occupational stress [35]. According to a research by Taylor (1991) exercising and music are equally effective in reducing stress [36]. According to one of the report by Russler, there was no difference between the two groups, one of which receiving a placebo for curtailing stress and the other writing down the stressors [37].

LIMITATION

Limitation of the current study was insufficient participant's contribution for completing the study.

CONCLUSION

Although stress inherently differs in nursing and midwifery from certain perspectives, this study demonstrated that adoption of the PRECEDE-PROCEED Model in stress management planning can be greatly effective for both groups. The stress levels in both groups were more than 104 before training. However, they dropped to the average range (69-103) after training. It is hoped that the authorities arrange for stress management training courses based on the PRECEDE-PROCEED Model, taking a great step in curtailing stress and promoting the health and efficiency of nurses and midwives. It is recommended that other health education models be assessed in further studies on occupation stress among medical staff.

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PARTICULARS OF CONTRIBUTORS:
1. Lecturer, Department of Public Health, Iranshahr University of Medical Sciences, Iranshahr, Iran.
2. Assistant Professor, Department of Public Health, Health Promotion Research Center, Zahedan University of Medical Sciences, Zahedan, Iran.
3. Lecturer, Department of Medical, Faculty of Medical, Science and Research Branch, I.A.U, Tehran, Tehran, Iran.
4. Professor, Department of Clinical Psychology, Children and Adolescent Health Research Center,
   Department of Clinical Psychology, Zahedan Univer, Zahedan, Sistanvbalouchistan, Iran.
5. Assistant Professor, Department of Biological Statistics, Faculty of Health, Zahedan University of Medical Sciences,
   Zahedan, Sistanvbalouchistan, Iran.
6. Student, Department of Nursing, Faculty of Nursing and Midwifery,
   Zabol University of Medical Sciences, Zabol, Sistanvbalouchistan, Iran.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Iraj Zareban,
Assistant Professor, Department of Public Health, Health Promotion Research Center,
Zahedan University of Medical Sciences, Zahedan, Iran.
E-mail: ganjresearch@gmail.com