

Original Article

The Effects of Stress Inoculation Training on Coping Strategies among Midwives in Primary Health-care Centers

Maryam Navaee, Hadis Kaykha

Pregnancy Health Research Center, Zahedan University of Medical Sciences, Zahedan, Iran

ORCID:

Maryam Navaee:
0000-0002-9138-2395

Hadis Kaykha:
0000-0003-3370-7005

ABSTRACT

Background: Effective coping with stress is the main component of interpersonal communication. It helps people overcome their conflicts and problems in their interpersonal and social relations. **Objectives:** This study sought to examine the effects of stress inoculation training (SIT) on coping strategies among midwives in primary health-care centers. **Methods:** In this two-group, quasi-experimental study, eighty midwives were randomly selected from health-care centers in Zahedan, Iran, and were randomly allocated to an intervention and a control group. The study intervention was an SIT program offered in two 4-h workshops weekly held in 2 consecutive weeks. Participants in both groups responded to the Coping Responses Inventory (CRI) before, immediately after, and 1 month after the intervention. Data were analyzed using the independent-sample *t* and the Chi-square tests as well as the repeated-measures analysis of variance. **Results:** The mean score of coping strategies statistically significantly increased in the intervention group from 36.20 ± 7.50 at pretest to 47.22 ± 9.97 1 month after the intervention ($P < 0.001$). One month after the intervention, there were significant between-group differences in the CRI respecting the mean scores of coping strategies and all its subscales ($P < 0.05$), except for the problem-focused coping subscale ($P = 0.06$). **Conclusion:** SIT can be used to improve midwives' coping with stress.

KEYWORDS: Coping skills, Mental health, Midwife, Stress inoculation training

INTRODUCTION

Stress is a psychological response a person may show when he/she cannot balance his/her personal abilities and capacities with environmental demands and requirements.^[1,2] Stress caused by occupational factors is called occupational stress.^[3]

Workers who deal with human health at their work may experience high levels of occupational stress.^[3] Occupational stress is particularly higher among midwives and nurses^[4] who are responsible for the delivery of >80% of direct patient care.^[5] Occupational stress among them may reduce care quality and endanger patients' lives.^[5,6] Previous studies reported that the rates of severe and moderate occupational stress among midwives were 58.7%^[7] and 73.1%^[8] respectively.

The Health Reform Plan which began in 2014 in Iran is considered one of the main factors behind occupational

stress among health-care providers, particularly nurses and midwives. This plan was developed and is implemented to financially support health-care system clients, provide clients with equal access to health-care services, and improve the quality of health-care services. However, it has expanded health-care providers' workload and had increased their occupational stress.^[9]

People may cope with stressful life events through coping strategies.^[10,11] There are two main types of strategies for coping with stress, namely problem-focused coping strategies and emotion-focused coping strategies.^[12] Problem-focused coping strategies

Address for correspondence: Ms. Maryam Navaee, Department of Midwifery, Pregnancy Health Research Center, Zahedan University of Medical Sciences, Mashahir Street, Zahedan, Iran.
E-mail: helennavaee@gmail.com

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How to cite this article: Navaee M, Kaykha H. The effects of stress inoculation training on coping strategies among midwives in primary health-care centers. *Nurs Midwifery Stud* 2019;8:176-82.

Access this article online	
Quick Response Code: 	Website: www.nmsjournal.com
	DOI: 10.4103/nms.nms_71_18

include strategies for direct modification of the environment in order to modify threatening conditions. On the other hand, emotion-focused coping strategies involve activities or thoughts to control unpleasant feelings caused by stressful situations.^[13] Effective coping with stress is associated with better mental health,^[14] whereas ineffective coping can cause personal dissatisfaction, reduce work capacity, undermine professional commitment, and thereby, negatively affect the quality of patient care.^[15]

There are different methods to alleviate stress and promote the use of effective coping strategies in stressful situations.^[16] These methods include, but are not limited to, group reality therapy, problem-solving, and communication skill promotion.^[16-18] Stress inoculation training (SIT) is another potentially effective method for stress management among health-care providers. As a type of cognitive behavioral therapy, SIT includes a wide range of techniques such as cognitive reconstruction, problem-solving, and environmental modifications. SIT is presumed to increase the formation of “psychological antibodies” (i.e. coping strategies) in individuals and thereby, improve their flexibility to stressful situations.^[17] Previous studies reported the positive effects of SIT on occupational stress^[18] and job burnout.^[19] Another study also reported that cognitive behavioral SIT significantly promoted problem-focused coping but had no significant effects on emotion-focused coping.^[20] After the Health Reform Plan, the workload of Iranian midwives and all health-care providers has significantly increased. This has caused health workers (including midwives) to be more exposed to occupational stress. Yet, there is no information about the effects of SIT on coping strategies among midwives. Therefore, it is still unknown whether SIT can significantly improve coping among midwives. The present study was conducted to fill this gap.

Objectives

This study aimed to examine the effects of SIT on coping strategies among midwives in primary health-care centers.

METHODS

Design and participants

This two-group, pretest-posttest, quasi-experimental study was conducted in 2017. The study population consisted of all the 160 midwives who were working in primary health-care centers in Zahedan, Iran. Sample size was calculated based on the results of a Darban study in which the pretest and the posttest mean scores of nurses' stress were 44.93 ± 10.4 and 56.8 ± 14.03 , respectively.^[10] Accordingly, with a μ_1 of 44.93, a μ_2 of 56.8, an S_1 of 10.4, an S_2 of 14.03, a confidence level of

95%, and a power of 90%, the sample size calculation formula for the comparison of two means indicated that 28 participants per group were needed. Yet, the sample size was increased to forty per group in order to increase the validity of the study, enhance the generalizability of the findings, and prevent the effects of participants' probable attrition on the study findings.

Sampling was done randomly. Accordingly, a list of all the 160 midwives who were working in the study setting was created and then, eighty eligible midwives were randomly selected through drawing lots. First, with the help of the administrative department, a list of employed and qualified midwives of Zahedan health-care centers was provided. Then, from among the qualified midwives, the sample size was randomly selected by draw, which was again randomly assigned into intervention and control groups. Eligibility criteria were an age of 22–50 years, associate degree or higher in midwifery, work experience of at least 6 months in urban health-care centers, no leave of >2 weeks in the past 2 months, no use of psychiatric medications, no history of divorce or widowhood, no history of pregnancy or stressful life events (such as significant losses, severe familial dysfunction, or severe financial problems) in the past 6 months, and not being a student at the time of the study. Exclusion criteria were experiencing any important life events during the study, participation in other stress management programs, or failure to attend >10% of the sessions of the study intervention.

To prevent between-group information leakage, we initially conducted the study on participants in the control group and then, on their counterparts in the intervention group.

Instrument

The study instruments were a demographic questionnaire and the Coping Responses Inventory (CRI). The demographic questionnaire contained 13 items on age, education level, marital status, work experience, employment status, home-workplace distance, daily physical exercise, daily sleep, nighttime sleep, job satisfaction, spouse occupation, family income, and number of children. The (CRI-Adult Moos, 1993) includes 32 items in five subscales, namely appraisal-focused coping (five items), problem-focused coping (three items), emotion-focused coping (eleven items), social support-focused coping (four items), and physical inhibition (nine items). Item scoring was done on a 4-point scale as follows: 0: “Never;” 1: “Sometimes;” 2: “Often;” and 3: “Always.” Thus, the total score of the inventory can range from 0 to 96. A former study reported that the Cronbach's alpha of the CRI and its subscales was 0.79, 0.68, 0.90, 0.65, 0.90,

and 90, respectively (22). Cronbach's alpha of the CRI in the present study was 0.81.

Intervention

Participants in the intervention group were grouped into small subgroups sized 5–10 persons. Then, participants in each subgroup were provided with SIT in two 4-h weekly workshops held in 2 consecutive weeks by the second author under the supervision of a clinical psychologist. Educational materials were presented using the lecture, question-and-answer, group discussion, and slide presentation methods.^[21] In the first session, the participants were provided with information about the characteristics of stress and its consequences and causes, the most common coping strategies, relaxation techniques, and negative thoughts. At the end, they were given assignments to complete during the week after the session. Accordingly, they were asked to explain stress–anxiety difference, find the best picture depicting stress, and write about stressors which affected them during the week. They were also asked to practice relaxation techniques on a daily basis. In the second session, they were provided with instructions about cognitive reconstruction and time management. Then, they were encountered with a hypothetical stressful situation and were asked to use the best coping strategies for it. During the first 1-month period after the second session, we made biweekly telephone contacts with each participant for follow-up reinforcement. Participants in the control group did not receive any stress-related training. All participants in both groups completed the study instruments before, immediately after, and 1 month after the study intervention.

The workshop was held at the conference hall of the provincial health center and at 12–16 pm to prevent disturbing the care of visitors based on the viewpoint of the research team and through coordination with the participants.

Ethical considerations

The Ethics Committee of Zahedan University of Medical Sciences, Zahedan, Iran, approved this study (code: IR.ZAUMS.REC.1396.113). Permissions for conducting the study were obtained from Zahedan Faculty of Nursing and Midwifery. The participants were briefed about the study objectives and the voluntariness of participation in and withdrawal from it and were ensured of the confidentiality of their data. Moreover, we strived to protect participants' rights in the study according to the Declaration of Helsinki. Written informed consent was obtained from all the participants. Finally, the SIT program was offered to participants in the control group 2 months after the study end.

Data analysis

Data were analyzed using the SPSS software (v. 16.0, SPSS Inc. Chicago, IL, USA). Data description was done using measures such as mean, standard deviation, and absolute and relative frequencies. The Kolmogorov–Smirnov test was used to examine the normal distribution of numerical variables and revealed that the main variables were normally distributed. The Chi-square test was used to compare the groups respecting nominal and categorical variables, whereas the independent-sample *t*-test was used to compare the groups respecting numerical variables. Moreover, the repeated-measures analysis of variance was conducted to determine the effects of the intervention during the three measurement times. $P < 0.05$ was considered statistically significant.

RESULTS

In total, eighty midwives participated in this study [Figure 1]. Most participants in the control and the intervention groups were married (72.5% vs. 72.5%) and held bachelor's degree (82.5% vs. 92.5%). Most of the participants in the control group (42.5%) had a work experience of 1–6 years, whereas a majority of the intervention group (42.5%) had a work experience of <12 years. There were no significant between-group differences respecting participants' demographic characteristics [$P > 0.05$; Table 1].

The independent sample *t*-test showed that the groups did not significantly differ from each other respecting the pretest mean score of coping strategies ($P = 0.863$). However, the mean score of coping strategies in the intervention group was significantly greater than that of the control group both immediately after and 1 month after the intervention [$P < 0.001$; Table 2].

The repeated-measures analysis of variance was performed to assess the variations of coping strategies' mean score across the three measurement time points. The result of the Mauchly's test of sphericity was significant. Therefore, the Greenhouse–Geisser method was used

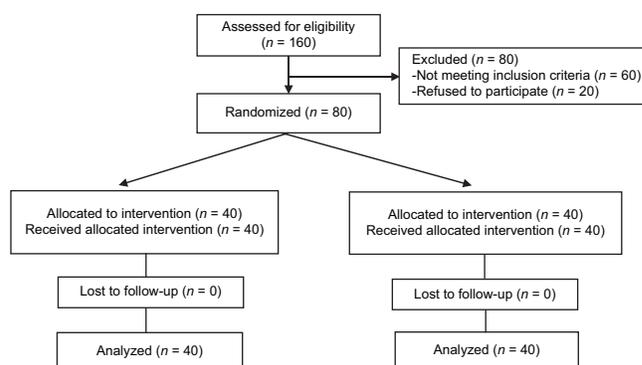


Figure 1: The flow diagram of the study

to correct sphericity of violation. Its results showed that the interaction of time and group and the effects of group were statistically significant [$P < 0.001$; Table 2]. Within-group comparison in the intervention group using the repeated-measures analysis of variance also showed a significant difference in the variations of the mean score of coping strategies across the three measurement time points. *Post hoc* analysis via the Bonferroni's test revealed that all pair-wise comparisons between different measurement time points in this group were statistically significant [$P = 0.001$; Table 2]. However, despite the downward trend of the mean score of coping strategies in the control group, no statistically significant change was observed in this group ($P = 0.057$).

The results of the independent sample *t*-test showed no statistically significant difference between the groups respecting the pretest mean scores of all the five subscales ($P > 0.05$). Immediately after the intervention, the mean scores of the appraisal-focused coping, problem-focused coping, and physical inhibition subscales in the intervention group were

statistically significantly greater than that of the control group ($P < 0.05$), while there were no statistically significant between-group differences respecting the mean scores of the emotion-focused coping and the social support-focused coping subscales ($P > 0.05$). One month after the intervention, except for the problem-focused coping subscale, the mean scores of all the other subscales of coping strategies in the intervention group were statistically significantly greater than that of the control group ($P < 0.05$). The repeated-measures analysis of variance revealed that the interactions of time and group respecting the variations of the mean scores of all subscales were statistically significant. Moreover, the within-group variations of the mean scores of all subscales were statistically significant in the intervention group ($P < 0.05$) and statistically insignificant in the control group [$P > 0.05$; Table 3].

DISCUSSION

The findings indicated significant improvement in the total mean score of coping strategies in the intervention group and insignificant change in this mean score in the control group across the three measurement time points. Moreover, the mean scores of all the five subscales of coping strategies significantly increased in the intervention group and did not significantly change in the control group. Similarly, previous studies reported the effectiveness of stress-coping training programs in reducing stress response and improving coping skills among students.^[22-24]

The study findings indicated a significant between-group difference respecting the mean score of problem-focused coping immediately after the intervention; however, there was no significant between-group difference respecting this mean score 1 month after the intervention. On the other hand, although the between-group difference respecting the mean score of emotion-focused coping was not statistically significant immediately after the intervention, this mean score in the intervention group was statistically significantly greater than the control group 1 month after the intervention. Contrarily, Simi *et al.* reported the effectiveness of a ten-session SIT program in improving problem-focused coping and its insignificant effects on emotion-focused coping.^[20] One

Table 1: Between-group comparisons respecting participants' demographic characteristics

Characteristics	Group		P
	Intervention, n (%)	Control, n (%)	
Educational level			
Associate	3 (7.5)	7 (17.5)	0.311 ^a
Bachelors	37 (92.5)	33 (82.5)	
Marital status			
Single	11 (27.5)	11 (27.5)	0.999 ^b
Married	29 (72.5)	29 (72.5)	
Employment status			
Conditional contractual	13 (32.5)	7 (17.5)	0.292 ^b
Contractual	9 (22.5)	10 (25)	
Conditional permanent	18 (45)	23 (57.5)	
Home-workplace distance			
Long	15 (37.5)	17 (42.5)	0.916 ^b
Short	25 (62.5)	23 (57.5)	
Work experience (year)			
1-6	17 (42.5)	10 (25)	0.245 ^b
6-12	10 (25)	13 (32.5)	
>12	13 (32.5)	17 (42.5)	
Age	32.60±6.10	34.8±6.0	0.108 ^c

^aFisher's exact test, ^bChi-square test, ^cIndependent sample *t*-test

Table 2: Between-group comparisons respecting the total mean score of coping strategies

Group	Time			P ^b		
	Before ^a	Immediately after ^a	1 month after ^a	Time	Group	Time × group
Control	36.5 ± 8.08	34.65 ± 8.01	33.97 ± 8.33	<0.001	<0.001	<0.001
intervention	36.2 ± 7.5	41.3 ± 8.27	47.22 ± 9.97			
P ^c	0.863	<0.001	<0.001	-	-	-

^aData presented as mean±SD, ^bRepeated-measures analysis, ^cIndependent sample *t*-test. SD: Standard deviation

Table 3: Between-group comparisons respecting the mean scores of the subscales of coping strategies

Subscales/group	Time ^a			P ^b
	Before	Immediately after	1 month after	
Appraisal-focused coping				
Control	9.15 ± 2.97	8.92 ± 3.48	8.72 ± 3.58	0.52
Intervention	9.9 ± 2.3	11 ± 2.46	11.52 ± 2.76	<0.001
P ^c	0.21	0.003	<0.001	-
Problem-focused coping				
Control	4.42 ± 1.78	4.12 ± 1.77	4.60 ± 2.18	0.69
Intervention	4.45 ± 1.74	5.02 ± 1.85	5.47 ± 2.01	0.023
P ^c	0.94	0.02	0.06	-
Emotion-focused coping				
Control	12.5 ± 4.5	11.76 ± 3.08	11.25 ± 3.45	0.11
Intervention	11.3 ± 3.6	12.45 ± 3.5	15.65 ± 4.61	<0.001
P ^c	0.19	0.34	<0.001	-
Physical inhibition				
Control	7.47 ± 3.76	6.8 ± 3.26	6.62 ± 3.76	0.24
Intervention	7.55 ± 3.71	9.3 ± 3.93	10.87 ± 4.25	<0.001
P ^c	0.92	0.002	<0.001	-
Social support-focused coping				
Control	2.95 ± 1.44	3.13 ± 1.45	2.78 ± 1.42	0.57
Intervention	2.82 ± 1.59	3.52 ± 1.55	3.7 ± 1.45	0.02
P ^c	0.85	0.23	0.02	-

^aData presented as mean±SD, ^bRepeated-measures analysis, ^cIndependent sample *t*-test. SD: Standard deviation

justification for this contradiction may be the fact that participants in that study were single female adolescents with potential emotional instability, whereas our participants were mostly older than 30, married, and able to reach emotional stability. Another justification may be the difference between these studies in terms of the number of SIT sessions.

Zenuzian *et al.* also reported the effectiveness of problem-solving training program on students' coping strategies.^[15] This is in line with our findings which showed significant improvement of problem-focused coping strategies in the intervention group. The SIT helps individuals understand how stress affects them, teaches them how consider stressors as solvable problems, and reduces their avoidance from stressors. Thereby, they possess greater control over their environment and higher resistance to stressors. In other words, the SIT helps them focus on stressors, plan for their management, and feel better control over them. Considering a stressor as a solvable problem prevents and reduces stress and helps individuals focus on resolving it.^[25,26] On the other hand, although our findings revealed a significant increase in the mean score of emotion-focused coping in the intervention group, Zenuzian *et al.* found that that this mean score did not insignificantly change in their study.^[15] This contradiction might be attributable to the facts that while our participants were mostly married and aged more than 30, their participants were single university students with a mean age of 19.

In line with our findings, Ata and Doğan^[27] also found that their seven-session stress management intervention for the caregivers of patients with schizophrenia significantly increased the mean scores of problem-focused and emotion-focused coping strategies. However, their findings contradicted our findings because their intervention caused a greater increase in problem-focused coping than emotion-focused coping, while the amount of increase in the mean score of problem-focused coping in our study was less than that of emotion-focused coping. This contradiction is attributable to the greater number of training sessions in that study compared with our study.^[27] Sandler *et al.* noted that although problem-focused strategies are associated with better psychological outcomes than emotion-focused coping strategies, this is not always true. For instance, they found that while distraction is not a problem-focused coping strategy, it helps cope with different situations.^[28] Legerstee *et al.* also found that people who experience greater anxiety and stress use emotion-focused strategies more than task-focused strategies. Emotion-focused strategies are more helpful in stressful situations, the management of which is beyond afflicted individuals' control and capabilities.^[29] At their stressful health-care settings, midwives may experience high levels of stress and hence, it is natural for them to primarily use emotion-focused strategies and then resort to problem-focused strategies to cope with stressful situations.

Our findings also revealed the positive effects of SIT on social support-focused coping strategy. In line with this finding, Hartmann *et al.* reported that problem-solving training significantly improved social support-focused coping among patients with breast cancer.^[30] Zenuzian *et al.* also found that their problem-solving training intervention significantly improved the mean score of social support-focused coping by three times.^[15] The greater effectiveness of the intervention in their study compared with our study may be because their participants were young female students. It has been shown that the level of perceived social support depends on gender and sociocultural status. Evidence suggests that women heavily rely on their female peers for social support and hence, they are more intimate with their peers compared with men.^[31] This fact can explain the effectiveness of our intervention in significantly promoting social support-focused coping.

We also found that the mean score of the physical inhibition subscale in the intervention group significantly increased during the study. These findings denote significant increase in the incidence of maladaptive physical consequences of stress after the intervention, which may be due to our participants' greater use of emotion-based coping strategies. Moreover, SIT is a cognitive-behavioral therapy and hence, it may not be effective in reducing the physical consequences of stress.^[29] Therefore, combining SIT with other stress management interventions is needed to effectively manage the physical consequences of stress. In contradiction with our findings, Lesley^[31] and Zenuzian *et al.*^[15] reported the effectiveness of problem-solving in reducing the physical consequences of stress.

Our findings also showed a significant increase in the mean score of appraisal-focused coping of the intervention group during the study. Contrarily, Zenuzian *et al.* reported the insignificant effects of problem-solving on appraisal-focused coping.^[15] Puskar *et al.* also found that the mean score of appraisal-focused coping significantly reduced by, respectively, 14.42%, 16.1%, and 14% immediately after, 6 months after, and 12 months after their group cognitive-behavioral therapy.^[32] Modification of the cognitive appraisal of stress is a slow process which requires training and modification of thinking style from irrational to rational as well as the internalization of problem-solving skills.^[4] Significant improvement of appraisal-focused coping, as found in the present study, can facilitate the use of problem-focused coping strategies.

Short follow-up was one of the limitations of this study. Therefore, studies with longer follow-up are recommended. Moreover, as participants in the

intervention group were studied after their counterparts in the control group, participants in these groups might have differed from each other respecting their work conditions. The other limitations of the study were its nonblind design, small sample size, and short intervention. It is noteworthy that there were limited number of eligible midwives in the study setting and some of them refused participation due to their heavy workload.

CONCLUSION

This study concludes that SIT is effective in improving midwives' coping and thereby, preventing the adverse effects of stress on them. Because midwives are one of the major providers of health-care services, they should be in a good mental and psychological situation to be able to provide care to clients in a desirable manner. Therefore, attention should be paid to the level of occupational stress of midwives. It is suggested that the effect of a stress management program on coping skills, professional performance, and quality of life of midwives working in health centers should be investigated in future studies. In addition, considering the stressfulness of midwifery job and according to the findings of this study, which indicate the low level of familiarity with stress-coping methods among midwives working in health centers of Zahedan as well as their interest in stress immunization training programs, it is suggested to design and implement educational intervention programs at comprehensive health centers and even at hospitals.

Acknowledgment

This article was extracted from a Master's thesis approved by Zahedan University of Medical Sciences, Zahedan, Iran. The authors would like to thank this university for its financial support of this study as well as the midwives who participated in the study.

Financial support and sponsorship

The Research Deputy of Zahedan University of Medical Sciences financially supported this study.

Conflicts of interest

There are no conflicts of interest.

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