Comparing the Effect of Resilience Skills Training and Metacognitive Therapy on Job Stress in Nurses: An Experimental Study

Abstract

**Background:** Nursing is one of the stressful professions. The work-related stressful factors have affected the physical and mental health of nurses seriously. This study aimed to compare the effect of resilience skills training and metacognitive therapy on nurses’ job stress. **Materials and Methods:** This experimental study was conducted on 54 nurses working in intensive care units and the emergency department of Valiasr Hospital, Birjand, Iran, in 2018. Selected participants were allocated via permuted block randomization into three groups: resilience skills training, metacognitive therapy, and control (n = 18 for each group). Both resilience and metacognitive therapy programs were held in eight sessions of 45-min training classes twice a week. The control group received no intervention. The data were collected using a demographic characteristics form and the Expanded Nursing Stress Scale (ENSS) before, immediately after, and one month after the intervention. The data were analyzed using Chi-square, Fisher’s exact test, Analysis of Variance (ANOVA), and repeated measures ANOVA in the Statistical Package for Social Science (SPSS) software. **Results:** Job stress significantly decreased in both resilience (F(2,51) = 123.5, p < 0.001) and metacognitive therapy (F(2,51) = 29.2, p = 0.002) groups over time. However, this decrease was not significantly different between the two groups (p > 0.05). Also, the control group’s job stress mean score increased over time (F(2,51) = 9.35, p < 0.001). **Conclusions:** The findings suggest that both resilience skills training and metacognitive therapy can reduce the job stress of emergency and intensive care nurses. Therefore, it is recommended that both programs be taken into account by managers to reduce nurses’ job stress.

**Keywords:** Metacognition, nurses, occupational stress, resilience, psychological

Introduction

Workplace situations are among the most stressful situations that can harm employees physically or psychologically.[1] Nurses are at the frontline of a health care setting. Thus, they are prone to work-related stress. The nursing profession is complicated, laborious, and has high demands. These demands and other work responsibilities are the main reasons for job stress in nurses.[2] In Iran, the overall prevalence of job stress was estimated to be 60% among nurses.[3] It should be noted that nurses working in intensive care units and Emergency Departments (EDs) may be more likely to tolerate stress. Because EDs are highly dynamic work environments with a high frequency of patients, intensive care units are complex technology-intensive, and patients are seriously ill.[4,5] A previous study has shown that stress can significantly reduce nurses’ efficiency in patient care provision.[6] Outcomes of job stress in nurses include psychosomatic disorders, poor mental health, alcohol and drug abuse, absenteeism, fatigue, abandonment, work accidents, impaired ability to provide medical care, and reduced concentration, attention, and memory.[7]

Given the high prevalence of job stress among nurses and its negative effects, it is important to employ strategies to reduce their stress. Alongside this, Meta-Cognitive Therapy (MCT) has gained increasing popularity as a treatment for different psychological complaints such as stress.[8] Historically speaking, Felavell (1979) was the first one to coin the term “metacognition” to denote the process of “thinking about thinking” as well as our knowledge of what we know and what we do not.[9-11] The theoretical roots of MCT

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can be traced to the self-regulatory executive function model,[10,12] which maintains that psychopathology comes to the fore in response to a perseverative thinking style known as the Cognitive Attentional Syndrome (CAS). The CAS, in turn, comprises dysfunctional coping strategies utilized by someone to manage distressful feelings and thoughts, including worry, avoidance, threat monitoring, rumination, strategies to control thought, and reassurance seeking. In the course of MCT, the therapist identifies and attempts to modify metacognitive beliefs and processes associated with the CAS.[13] The metacognitive approach provides individuals with strategies whereby people can free themselves from the mechanisms that result in maladaptive self-control. It also helps them be prepared to encounter threats and injury via flexible emotional training.[8] The literature suggests the efficacy of MCT in mental disorders and symptoms of psychological complaints.[14] De Dominicis et al.[15] (2021) suggest that MCT can be a sustainable and promising program for work-related stress of individuals suffering from chronic work-related stress. They argued that large-scale Randomized Control Trials (RCTs) needed to be performed to determine the effect of MCT on stress to develop an organized, cost-effective method to help the workforce. Another coping strategy that helps an individual cope with stressful situations is resilience.[16] Resilience denotes an ability to adapt to adversity adaptability and as a form of strength or flexibility in the face of a stressor.[17,18] A high level of resilience acts as a protective factor, whereas a lower level of resilience increases vulnerability to developing pathological outcomes of adverse environmental events.[9] Ramalisa et al.[20] (2018) argued that nurses need to skillfully develop resilience to deal with challenging circumstances and handle unpleasant feelings and situations. In this line, Hezaveh et al.[21] (2020) found that the resilience program employed in their study was conducive to improving the psychological empowerment of intensive care unit nurses. In Iran, a study by Mirzaeirad et al.[22] (2019) showed that resilience skills training reduces stress in nursing staff. Previous research has suggested that resilience can be incorporated into nursing education to empower nurses.[23,24]

Some interventions have been designed and used to reduce nurses’ work stress in recent years. However, work stress remains an important concern in nursing that affects individuals and organizations.[25] To compare the two programs of resilience and MCT in Iran, we can refer to previous studies by Zamirinejad et al.[26] (2013) on depression of female students and Hasani et al.[27] (2020) on the anxiety of nurses. There was no significant difference between the two groups in the first study, but in the second study, the resilience group showed better results.[26,27] Nevertheless, there is no research, as yet, to compare the effects of these two programs on the work stress of Iranian nurses. This study had two aims: (1) to examine whether resilience skills training and MCT can improve the job stress of nurses working in intensive care units and emergency departments and (2) to compare the effect of these two programs on the job stress of nurses.

Materials and Methods

This experimental study with a pretest/post-test/follow-up design was performed with nurses working in the ED and intensive care units Newborn Intensive Care Unit (NICU), Pediatric Intensive Care Unit (PICU), and Intensive Care Unit (ICU)) of in Valiasr Hospital, Birjand City, Iran in 2018–2019. The required sample size was estimated to be 18 subjects per group according to a similar previous study,[28] with a confidence level of 95% and power of 90% with an attrition rate of 15%, the sample size increased to 21 subjects per group. Out of 120 nurses working in the units under study, 90 nurses at ED and intensive care units were eligible to participate, of whom 63 nurses were selected through convenience sampling. Inclusion criteria comprised willingness to participate in the study; a minimum of 1 year of work experience; nonuse of neurologic medications in the past 1 month; days off for a maximum of 2 weeks in the previous month; no history of psychiatric or physical illness; lack of a second job; and no severe stress experienced in the past 6 months (e.g., severe accident, death of a relative, or separation from the spouse). Nurses were excluded if they met any of the following criteria: absence for at least two sessions from the training classes; leave from work; work shift changed from intensive care ward and ED to other wards/departments, and simultaneous participation in other stress management workshops. Afterward, the study scales were completed for all the participants through interviews by the main researcher (first author). The participants were subsequently allocated to resilience, MCT, and control groups via permuted block randomization (1:1:1) [Figure 1].

The resilience group received resilience skills training presented by the researcher (third author) in eight 45-min sessions held twice weekly from November 2018 to January 2019. The training protocol was derived from Nan Henderson's Resiliency Training Program, developed in 1996 to create safe schools in the United States.[29] The resilience skills training package consisted of self-confidence reinforcement, management of emotions and feelings, coping with stress, anger management, effective communication, problem-solving, decision-making, purposeful, planning to achieve goals, and foresight.[22,29,30] The sessions were held in the conference center of Valiasr Hospital. The contents of the sessions are summarized in Table 1.

Similarly, the MCT group received eight 45-min sessions of MCT training based on Wells’ metacognitive model[13] held every week. In this program, the training provided in the previous session was first reviewed, and new training was subsequently delivered. Moreover, the questions were answered at the end of each session. Each training session
was reiterated once more during the week to allow for the participation of those who could not attend the main session for any reason, including the working shift. The control group did not receive any intervention. The contents of the MCT sessions were based on Wells’ guidelines on generalized anxiety disorder, where all individual treatments were performed for group members. The pieces of training were delivered through discussion, lecture, problem-solving, and question and answer. The sessions were held in the conference center of Valiasr Hospital. The contents of the sessions are summarized in Table 2. To minimize biases, the intervention implementation and data collecting were performed by two different researchers (third author and first author). Also, the data collector was blinded to the group assignment. In both programs, a separate pamphlet was prepared for each skill. These contents were collected upon reviewing the related sources and studies and approved by six nursing faculty members. The control group received no intervention. However, after completing the intervention, an educational package including contents on resilience and MCT was presented to them.

The study scales were completed for the participants in the two groups immediately and one month after the intervention through interviews. The data were collected using a demographic form and the Expanded Nursing Stress Scale (ENSS). The items of the demographic form were age, gender, marital status, education, employment type, work shift, work experience, overtime work condition, and domicile. The ENSS was developed by Gray–Toft and Anderson (1981) and is the first tool designed to measure nursing stress rather than generalized job stress.[31] In 2000, French et al.[32] revised it to include stressful situations not included in the nursing stress scale. The final version comprised 57 items rated on a 5-point Likert scale from 1 = never stressful to 4 = extremely stressful and 0 = does not apply. It consists of nine subscales: potentially stressful situations related to death and dying (7 items with a score range of 0–28), inadequate preparation (3 items with a score range of 0–12), uncertainty about treatment (9 items with a score range of 0–36), conflict with physicians (5 items with a score range of 0–20), problems with supervisors (7 items with a score range of 0–28), problems with colleagues (6 items
Table 1: A summary of resilience sessions

| Session | Contents |
|---------|----------|
| 1       | Orientation: Goal statement, rules, and framework of the group, definition of resilience. |
| 2       | Self-confidence and self-reliance reinforcement: A simple and clear definition of self-awareness, self-awareness components, identifying strengths and weaknesses, contributors to self-esteem, the importance and effect of self-esteem in life, self-esteem techniques. |
| 3       | Coping with stress: The concept of stress, coping strategies. |
| 4       | Anger management: Explaining the concept of anger, causes and consequences of anger, anger management techniques. |
| 5       | Effective communication: Understanding the communication process, correct communication with colleagues and clients. |
| 6       | Problem-solving: Understanding problem-solving stages, ways to apply problem-solving procedures. |
| 7       | Decision making: Criteria for a good decision, the importance and value of a correct decision, predicting the outcomes and consequences of decisions. |
| 8       | Summary, answering participants' questions, running the post-test. |

Table 2: A summary of Wells’ MCT* sessions

| Session | Contents |
|---------|----------|
| 1       | Personal case formulation, the introduction of the model, experimental implementation of thought suppression, uncontrollable beliefs or challenges, practicing detached mindfulness, introducing techniques to delay concern. |
| 2       | Continuing with preparation, implementing verbal and behavioral redocumenting techniques on uncontrollable homework beliefs: continuing with the techniques of delaying worries, and familiarity with loss of control experiments. |
| 3       | Continuing with uncontrollable beliefs or challenges by providing contradictory evidence, conducting a loss of control experiment, examining and stopping non-conforming control, and homework avoidance behaviors: continuing to delay worrying, reversing anxiety avoidance behaviors, and losing control experiment. |
| 4       | Continuing with uncontrollable beliefs and challenges if necessary, risk-related challenges and beliefs, attempts to lose control and self-harm through anxiety testing. |
| 5       | Continuing with challenge risk beliefs, emphasizing reversing any remaining nonconforming strategies. |
| 6       | Positive beliefs or challenges about worry if the patient's beliefs in negative issues approaches to zero. |
| 7       | Continuing with challenge positive beliefs, implementing disproportionate strategy at treatment session. |
| 8       | Working on a treatment plan (relapse prevention), reinforcing alternative programs, scheduling support sessions. |

* Metaconitive therapy

with a score range of 0–24), patients and their families (8 items with a score range of 0–32), and discrimination (3 items with a score range of 0–12). The total score of ENSS ranges from 0 to 228. Higher scores represent more stress. No specific cut-off scores for this scale and subscales have been defined in previous studies. In Iran, previous research on nurses confirmed the validity of the ENSS and reported a desirable reliability coefficient, with a Cronbach’s alpha of 0.96. In the present study, the alpha coefficient for the ENSS was 0.81.

The data were analyzed using the statistical package for social science (SPSS) software version 19 (SPSS Inc. Chicago, IL, USA) at a significance level of 0.05. The descriptive statistics, including mean, standard deviation, and frequency, were used to describe the participants' demographic characteristics and their responses to study measures. Given the normal distribution of the data, statistical analysis was performed using one-way ANOVA, Tukey’s posthoc test, analysis of variance with repeated measures, Bonferroni posthoc test, Chi-square, or Fisher’s exact test.

Ethical consideration

The study was approved by the Ethics Committee of Birjand University of Medical Sciences (BUMS), Birjand, Iran (code: IR.BUMS.REC.1397.193). The study objectives and confidentiality of data management were explained to all participants, and their informed consent was obtained.

Results

Out of 63 nurses participating in the research, three participants were excluded from each group (lack of willingness to continue the research). Finally, 54 participants entered the final analysis (18 for each group). The age means (SD) of the nurses in the resilience, MCT, and control groups were 31.6 (5.4), 31 (5.90), and 31.50 (6) years, respectively. There was no statistically significant difference in the age means between the three groups (F = 0.06, p = 0.94). Tenure mean (SD) values were not significantly different (F = 0.05, p = 0.95) across the resilience group (7.50 (6.40) years), the MCT group (7.40 (2.90) years), and the control group (7.50 (1.10) years). There was no significant difference between the three groups in terms of gender, marital status, education, working shift, employment status, ward/department, and housing status (p > 0.05) [Table 3].

According to Table 4, statistical analysis revealed that the mean job stress scores had a significant difference between the three groups in the three-time points (p < 0.001). Tukey’s posthoc test showed that the stress means score before intervention in the resilience training group was significantly higher than that of the control group (F = 4.27, p = 0.02). At the same time, it was significantly lower immediately after the intervention in the resilience than in the control group (F = 6.35, p = 0.002).
One month after the intervention, the mean stress scores in the resilience and MCT groups were significantly lower than in the control group ($F_{2,51} = 15.40, p < 0.001$).

The results showed that the job stress means score decreased in both the resilience and MCT groups over time ($p < 0.001$), whereas the job stress means score increased in the control group over time ($F_{2,51} = 9.35, p < 0.001$). The results of the Bonferroni posthoc test showed that in both resilience and MCT groups, the job stress means score decreased significantly immediately and one month after the intervention compared to before the intervention and one month after the intervention compared to before and immediately. In the control group, the job stress mean score was significantly increased immediately and one month after the intervention compared to the baseline ($p < 0.05$). [Table 4]

A comparison of mean score changes of job stress in the three groups showed that the scores before and immediately after the intervention and before and one month after the intervention were significantly higher in nurses of the resilience and MCT training groups than the control group ($p < 0.001$). Also, mean changes in job stress scores were significantly higher in nurses in the MCT compared to the resilience and control groups immediately after intervention and 1 month later ($p < 0.001$) [Table 5].

**Discussion**

This study aimed to compare the effect of resilience skills training and MCT on the job stress of nurses working in ED and intensive care units. The results showed that the mean score of job stress in the resilience group decreased significantly over time. This finding is consistent with

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**Table 3: Comparison of demographic characteristics of nurses in the study groups**

|                        | Resilience n (%) | MCT* n (%) | Control n (%) | statistical test | df | p   |
|------------------------|------------------|------------|---------------|------------------|----|-----|
| Gender                 |                  |            |               |                  |    |     |
| Female                 | 16 (88.90)       | 17 (94.40) | 13 (72.20)    | 3.34**           | 0.24|     |
| Male                   | 2 (11.10)        | 1 (5.60)   | 5 (27.80)     |                  |    |     |
| Marital status         |                  |            |               |                  |    |     |
| Single                 | 4 (22.20)        | 5 (27.80)  | 7 (38.80)     | 1.24***          | 2   | 0.54|
| Married                | 14 (77.80)       | 13 (72.20) | 11 (61.10)    |                  |    |     |
| Education              |                  |            |               |                  |    |     |
| Bachelor of nursing    | 18 (100)         | 16 (88.90) | 18 (100)      | 2.78**           | 0.32|     |
| Master of nursing      | 0 (0)            | 2 (11.10)  | 0 (0)         |                  |    |     |
| Working shift          |                  |            |               |                  |    |     |
| Rotated                | 18 (100)         | 16 (88.90) | 18 (100)      | 2.78**           | 0.32|     |
| Fixed                  | 0 (0)            | 2 (11)     | 0 (0)         |                  |    |     |
| Employment status      |                  |            |               |                  |    |     |
| Permanent              | 6 (33.30)        | 6 (33.30)  | 5 (27.80)     | 8.65**           | 0.12|     |
| Conditional permanent  | 12 (66.70)       | 12 (66.70) | 9 (50)        |                  |    |     |
| Short-term conditioned | 0 (0)            | 0 (0)      | 4 (22.20)     |                  |    |     |
| Ward/Department        |                  |            |               |                  |    |     |
| Emergency              | 5 (27.80)        | 7 (38.90)  | 10 (55.60)    | 7.21**           | 0.30|     |
| PICU                   | 2 (11.10)        | 2 (11.10)  | 2 (11.10)     |                  |    |     |
| ICU                    | 7 (38.90)        | 5 (27.80)  | 2 (11.10)     |                  |    |     |
| NICU                   | 4 (22.20)        | 4 (22.20)  | 4 (22.20)     |                  |    |     |
| Domicile               |                  |            |               |                  |    |     |
| Personal house         | 11 (91.10)       | 10 (55.60) | 10 (55.60)    | 0.15***          | 2   | 0.93|
| Rental house           | 7 (38.90)        | 8 (44.40)  | 8 (44.40)     |                  |    |     |

* Metaconitive therapy ** Fisher's exact test, *** Chi-square test

**Table 4: Comparison of the mean scores of job stress before, immediately after, and one month after the intervention in the study groups**

|                        | Before intervention (a) Mean (SD) | Immediately after (b) | One-month after (c) | F     | df   | p     |
|------------------------|----------------------------------|------------------------|---------------------|-------|------|-------|
| Resilience             | 206 (22.81)                      | 134.30 (30.22)b        | 130.22 (26.70)b     | 123.55*** | 2    | <0.001** |
| MCT*                   | 199.42 (29.20)                   | 134.30 (30.31)b        | 29.25***            | 2     | <0.001** |
| Control                | 176.45 (41.10)                   | 182.14 (35.90)b        | 9.35***             | 2     | <0.001** |
| F                      | 4.27****                         | 6.35****               | 15.40****           |       | -    |       |
| df                     | 2                                | 2                      | 2                   |       |      |       |
| p                      | 0.02**                           | 0.003**                | <0.001**            |       |      |       |

*Metaconitive therapy **Significant at $p<0.05$, ***Repeate measure ANOVA, ****ANOVA
the studies of Babanaj et al. (2019) and Mistretta et al. (2018). They reported that resilience training was effective in reducing the stress of nurses working in ICU and health care workers, respectively. A review of research regarding resilience training in an organizational context carried out by Scheuch et al. (2021) revealed that resilience skills training could alter employees’ resilience positively.

Furthermore, some evidence from previous research indicated that stress and resilience are correlated negatively. According to McGowan and Murray (2016), individual resilience skills warrant that nurses are successful in their profession and can support themselves in difficult and challenging working conditions. Because resilience can increase positive emotions and decrease negative emotions and feelings, thereby making it easier to cope with difficult living conditions and improve the ability to overcome problems, consequently reducing stress.

Werneburg et al. (2018) concluded that increasing one’s resilience level and tolerance threshold by shifting perceptions of what is considered stressful can foster one’s ability to become aware of reactive stress responses and provide potential choices in their response. Furthermore, establishing resilience by creating psychological acceptance reduces workplace-related stress.

Our results showed that the mean score of job stress decreased significantly over time in the MCT group. Although no research could be found to directly assess the impact of a metacognitive program on nurses’ job stress, the results of the following studies can be interesting. Rochat et al. (2018) assessed the efficacy of single-case studies of MCT in a meta-analytic review, reporting that these studies support the therapeutic efficacy of MCT for anxiety, depression, and other psychopathological symptoms. Fisher et al. (2019) found that a brief MCT program could improve emotional distress in adult cancer survivors.

A study by Pournamdarian et al. (2013) indicated a significant positive relationship between stress and all dimensions of metacognitive beliefs. In fact, one of the variables that can play a significant role in perceived stress is metacognition. Most metacognitive theorists believe that when armed with a metacognitive weapon, an individual can easily improve performance by reducing the severity and levels of perceived stress from different situations.

According to the results, the mean score of total job stress increased significantly in the control group over time. This result may be attributed to the repetition of the response to the stress scale in the three-point times. Furthermore, the nature of the stress scale and the internal challenges posed by thinking about its items make it possible to expect such outcomes. It can also be explained that since no intervention was performed for the control group, workplace stressors existed as in the past and made a significant impact over time.

To the best of our knowledge, this is the first study to compare the effect of resilience and MCT training on job stress in nurses working in intensive care units and EDs. We hope that the present study’s findings generate new outlooks in the creation and development of job stress reduction interventions for nursing managers and researchers.

The study has some limitations. Therefore, caution should be exercised when generalizing the results to other nursing populations. First, only nurses working in intensive care wards and the EDs participated in the present study. Second, the participants were selected from only one hospital. Therefore, the dissemination of information between the groups may have occurred. Future studies can investigate the impact of these two approaches presented in the present study on other factors such as anxiety, emotional exhaustion, and burnout in nurses.

**Conclusion**

The findings suggest that both resilience and MCT training programs can alleviate the job stress of intensive care units’ and EDs’ nurses. The study results highlight possible directions for future research and offer useful insights for job stress reduction programs in health care settings. Nursing managers and policy-makers can implement these two programs alone or as tailored, effective, and low-cost programs for nurses. Also, the results of this study can prepare helpful data for investigators to carry out evidence syntheses, such as meta-analysis concerning the effects of resilience and MCT training on the job stress of nurses.

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### Table 5: Comparison of mean score changes of job stress before, immediately after, and one month after intervention in the study groups

|                      | Resilience (A) Mean (SD) | MCT* (B) Mean (SD) | Control (C) Mean (SD) | F     | df | p       |
|----------------------|--------------------------|--------------------|-----------------------|-------|----|---------|
| Before and immediately after intervention | - 71.72 (29.24)c | - 46.38 (47.11)c | 4 (4.52) | 25.92** | 2 | <0.001 |
| Before and one month after intervention | - 75.78 (26.80)c | - 65.16 (36.96)c | 5.72 (6.65) | 49.86** | 2 | <0.001 |
| Immediately and one month after intervention | - 4.08 (4.51) | - 18.77 (23.94)c | 1.72 (5.97) | 0.57** | 2 | <0.001 |

*Meta-Cognitive Therapy; **ANOVA
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Conflicts of interest

Nothing to declare.

References

1. Maulik PK. Workplace stress: A neglected aspect of mental health wellbeing. Indian J Med Res 2017;146:441-4.
2. Sarafis P, Rousaki E, Tsounis A, Malliariou M, Lahana L, Bamidis P. The impact of occupational stress on nurses’ caring behaviors and their health-related quality of life. BMC Nurs 2016;15:1-9.
3. Mohammadi M, Vaisi-Raygani A, Jalali R, Salari N. Prevalence of job stress in nurses working in Iranian hospitals: A systematic review, meta-analysis and meta-regression study. JHSW 2020;10:119-28.
4. Vahedian-Azimi A, Hajiesmaeili M, Kangasniemi M, Fornés-Vives J, Huntsucker RL, Rahimbashar F, et al. Effects of stress on critical care nurses: A national cross-sectional study. J Intensive Care Med 2019; 34:311-22.
5. Kaushik A, Ravikiran SR, Suprasanna K, Nayak MG, Baliga K, Acharya SD. Depression, anxiety, stress and workplace stressors among nurses in tertiary health care settings. Indian J Occup Environ Med 2021;25:27-32.
6. Marshall JC, Boscolo L, Adhikari NK, Connolly B, Diaz JV. What is an intensive care unit? A report of the task force of the World Federation of Societies of Intensive and Critical Care Medicine. J Crit Care 2017;37:270-6.
7. Farquharson B, Bell C, Johnston D, Jones M, Schofield P, Marshall JC. Experiences of an instrument. J Behav Assess 1981;3:11-23.
8. Wells A, Matthews G. Self-consciousness and cognitive failures as predictors of coping in stressful episodes. Cogn Emot 1994;8:279-95.
9. Falavell J. Met cognition and Cognitive Monitoring. Am Psychol 1985;34:765-71.
10. Wells A, Matthews G. Modelling cognition in emotional disorder: The S-REF model. Behav Res Ther 1996;34:881-8.
11. Wells A. Metacognitive Therapy for Anxiety and Depression: Guilford Press; 2011.
12. Normann N, Morina N. The efficacy of metacognitive therapy: A systematic review and meta-analysis. Front Psychol 2018;9:2211.
13. De Dominics S, Troen ML, Callesen P. Metacognitive therapy for work-related stress: A feasibility study. Front Psychiatry 2021;12:668245.
14. Macia P, Barranco M, Gorbeña S, Álvarez-Fuentes E, Iraurgi I. Resilience and coping strategies in relation to mental health outcomes in people with cancer. PLoS One 2021;16:e0252075.
15. Cauchy-Rodríguez T, Ventura-León J, García-Cadena CH, Tomás JM, Domínguez-Vergara J, Daniel L, et al. Evidencias psicométricas de una medida breve de resiliencia en adultos mayores peruanos no institucionalizados.Psycho Interv 2018;27:73-9.
16. Lehrer M, Yehuda R. Trauma across generations and paths to adaptation and resilience. Psychol Trauma 2018;10:22-9.
17. Seifian S, Pramstaller M, La Marca R, Wyss T, Sadeghi-Bahmani D, Annen H, et al. Resilience as a protective factor in basic military training, a longitudinal study of the Swiss Armed Forces. Int J Environ Health Res 2021;18:6077.
18. Ramalisa RJ, de Plessis E, Koen MP. Increasing coping and strengthening resilience in nurses providing mental health care: Empirical qualitative research. Health SA 2018;23:1094.
19. Hezaveh Z, Mardani Hamooleh M, Seyed Fatemi N, Haghani S. The effect of resilience training on the psychological empowerment of ICU nurses. JIN 2020;33:22-34.
20. Mirzaeirad SZ, Arsalani N, Dalvandi A, Rezasoltani P, Hoseini SD. The effect of resilience skills training on nursing stress of nursing staff in hospitals of Golestan Province. JHPM 2019;8:41-8.
21. Harries-Kleyenstüber EJ. Moral resilience in nursing education: Exploring undergraduate nursing students perceptions of resilience in relation to ethical ideology. SAGE Open Nurs 2021;7:23779608211017798.
22. Chow KM, Tang WK, Chan WH, Sit WH, Choi KC, Chan S. Resilience and well-being of university nursing students in Hong Kong: A cross-sectional study. BMC Med Educ 2018;18:13.
23. Asplund S, Ahlín J, Aström S, Lindgren BM. Experiences of work-related stress among highly stressed municipal employees in rural northern Sweden. Int J Qual Stud Health Well-being 2022;17:2056957. doi:10.1080/17482631.2022.2056957.
24. Zamirinejad S, Golzari M, Borjali A, Hojjat SK, Akaberi A. The comparison of effectiveness of group resilience training and group cognitive therapy on decreasing rate of depression in female students who live in dorm. J North Khorasan Univ Med Sci 2013;4:638–1.
25. Hasani H, Zarei B, Danaie Z, Mahmoud Rad GH. Resilience skills training versus metacognitive therapy: A Comparison of effectiveness on anxiety in nurses working in intensive care units and emergency department. Mod Care J 2020;17:e106905.
26. Ashoori J. The effect of group meta-cognitive therapy on decrease symptoms of generalized anxiety and increase quality of life in nurses. J Health Breeze 2015;4:13–24.
27. Henderson N, Milstein MM. Resiliency in Schools: Making it Happen for Students and Educators: Corwin Press; 2003.
28. McDonald G, Jackson D, Wilkes L, Vickers MH. Personal resilience in nurses and midwives: Effects of a work-based educational intervention. Contemp Nurse 2013;45:134-43.
29. Gray-Toft P, Anderson JG. The nursing stress scale: Development of an instrument. J Behav Assess 1981;3:11-23.
30. French SE, Lenton R, Walters V, Eyles J. An empirical evaluation of an expanded Nursing Stress Scale. J Nurs Meas 2000;8:161-78.
31. Soltanmoradi Y, Ansari A, Heidari S. Occupational stress among operating room nurses of hospitals affiliated to Kerman universities of medical sciences, Iran (2016): A cross-sectional study. JOHE 2017;6:225-33.
32. Farhadi M, Khalkhali H, Hemmati Maslak P, M J. Job stressors in critical care nurses. Nurs Midwifery J 2014;11:875-83.
33. Babanataj R, Mazdadari S, Hosamzadeh A, Gorji MH, Cherati JY. Resilience training: Effects on occupational stress and resilience of critical care nurses. Int J Nurs Prac 2019;25:e12097.
34. Mistrettas EG, Davis MC, Temkit M, Lorenz C, Darby B, Stommington CM. Resilience training for work-related stress
among health care workers: Results of a randomized clinical trial comparing in-person and smartphone-delivered interventions. J Occup Environ Med 2018;60:559-68.
37. Scheuch I, Peters N, Lohner MS, Muss C, Aprea C, Fürstenau B. Resilience training programs in organizational contexts: A scoping review. Front Psychol 2021;12:1-12.
38. Kermott CA, Johnson RE, Sood R, Jenkins SM, Sood A. Is higher resilience predictive of lower stress and better mental health among corporate executives? PLoS One 2019;14:e0218092.
39. McGowan JE, Murray K. Exploring resilience in nursing and midwifery students: A literature review. J Adv Nurs 2016;72:2272-83.
40. Yi F, Li X, Song X, Zhu L. The underlying mechanisms of psychological resilience on emotional experience: Attention-bias or emotion disengagement. Front Psychol 2020;11:1993.
41. Ferrandez S, Soubelet A, Vankenhove L. Positive interventions for stress-related difficulties: A systematic review of randomized and non-randomized trials. Stress Health 2022;38:210-21.
42. Werneburg BL, Jenkins SM, Friend JL, Berkland BE, Clark MM, Rosedahl JK, et al. Improving Resiliency in Healthcare Employees. Am J Health Behav 2018;2:39-50.
43. McDonald G, Jackson D, Wilkes L, Vickers MH. A work-based educational intervention to support the development of personal resilience in nurses and midwives. Nurse Educ Today 2012;32:378-84.
44. Rochat L, Manolov R, Billieux J. Efficacy of metacognitive therapy in improving mental health: A meta-analysis of single-case studies. J Clin Psychol 2018;74:896-915.
45. Fisher PL, Byrne A, Fairburn L, Ullmer H, Abbey G, Salmon P. Brief Metacognitive Therapy for Emotional Distress in Adult Cancer Survivors. Front Psychol 2019;10:162.
46. Pournamdarian S, Birashk B, Asgharmejad Farid AA. The role of meta-cognitive Beliefs in depression-anxiety – stress Symptoms in nurses of Beast Hospital in Hamedan at 1389-90. Avicenna J Nurs Midwifery Care 2013;21:12-22.
47. Roussis P, Wells A. Psychological factors predicting stress symptoms: Metacognition, thought control, and varieties of worry. Anxiety Stress Coping 2008;21:213-25.