

The Impact of Kobasa and Maddi Hardiness Model on Stress and Hardiness of Iranian Pediatric Nurses: A Clinical Trial Study

Abstract

Background: Pediatric nurses, who take care of ill children and interact with their exhausted and anxious parents, face more challenges for which some strategies must be considered to reduce tensions and improve mental health. This study was conducted to examine the effect of Kobasa and Maddi hardiness model on hardiness and perceived stress among nurses in pediatric units of a hospital in Isfahan – Iran in 2018. **Materials and Methods:** Participants were 57 nurses selected from the staff of pediatric units. They were randomly assigned to intervention and control groups. Data collection was done by means of Kobasa Hardiness Inventory and perceived stress scale. The intervention group attended educational and exercise sessions for 3 months. Data were analyzed through descriptive (frequency, mean, and standard deviation) and analytical (Chi-square, Fisher exact test, Mann–Whitney, and t-tests) statistics. **Results:** Results of study revealed that before the intervention, the mean scores of hardiness and perceived stress of nurses were not significant. However, significant differences were observed after the intervention for hardiness and perceived stress ($t_{2,98} p < 0.004$, $t_{2,4} p < 0.02$), respectively. The mean (SD) hardiness score in the intervention group increased from 65.06 (9.11) to 71.27 (7.44), whereas mean perceived stress score decreased from 26.54 (7.59) to 22.55 (8.39) after the intervention. **Conclusions:** The implementation of Hardiness Kobasa and Maddi Model increased hardiness and decreased perceived stress of the nurses. Thus, nursing managers may implement the Kobasa and Maddi hardiness model before initiating their job and during continuing education.

Keywords: Iran, models, nursing, pediatrics, stress

Introduction

Occupying the most stress bearing part of the health care system jobs, the nurses are the majority of working staff. Stressful environment, such as insufficient staff, taking care of critically ill patients, and physical factors are all the causes of stress among nursing staff.^[1] Pediatric nurses who work in general or in specialized units are faced with various challenges and stressors like performing some procedures or restraining which are very challenging and painful for parents, child, and the nurse. They are always in contact with distressed and anxious parents and are often faced with physical and behavioral misconducts.^[2] A study revealed that more than half of these nurses had stress and 30% of them experienced high and sever stress levels.^[3] Another study in Iran showed that the pediatric nurses have been faced with the most stress and 76% of them

experienced moderate level of stress in the pediatric units.^[4]

Perceived stress is a challenge and is described as unpleasant state of emotional and physiological arousal that nurses experience in critical situations. It can be damaging to their physical and mental status. The results of some studies revealed that perceived stress of nearly 55.4% of the nurses had reduced to moderate level since 35% of them had contemplated quitting the nursing profession and had sought employment in less stressful environments.^[5,6] Thus, there is a need to use strategies to reduce the stress.

Hardiness is a personality trait which acts as a resistance resource in stressful situations. It consists of three psychological components: 1) challenge, 2) commitment, and 3) control. People with low hardiness show severe emotional reactions to life problems and suffer emotionally in the long

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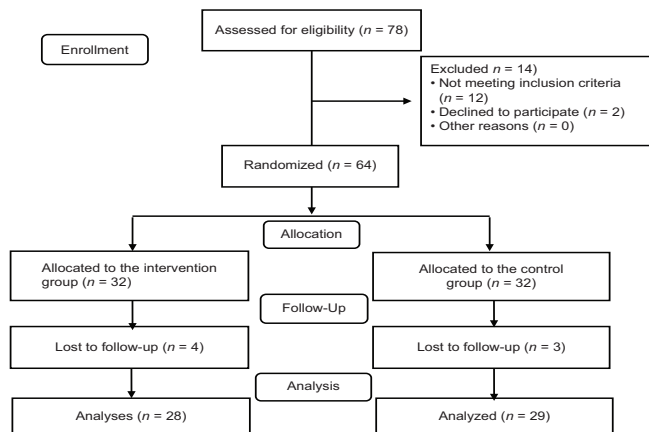


Figure 1: The flow diagram of the study

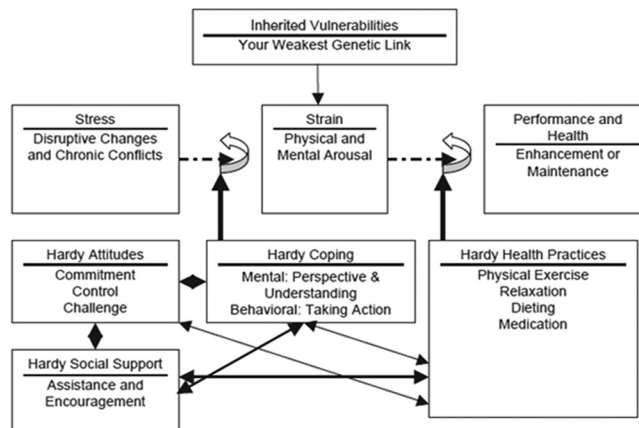


Figure 2: The Hardiness Model for Performance and Health Enhancement, © Copyright 1986-2006

terms. Committed persons know what they are doing and value it. Those who are strong in self-control believe that life events are predictable and are under their own control. Finally, strong people consider the challenge as an essential part of the life and an opportunity to learn and grow rather than a threat to their safety and well-being. These attitudes provide effective coping with stressful events.^[7-9] Meantime, hardiness education, based on hardiness model, could be a strategy for stress management which leads to increased efficacy in nurses. This model is based on theoretical education, research, and practice.^[7]

Nursing is the top stressful health profession as stated before and considering the fact that stressful factors could reduce physical and mental health of nurse's hardiness training and enhancement of this personality trait is necessary for them. Also, despite previous investigations there are few studies examining the effect of hardiness training about stressful factors of the workplace on pediatric nurses and most of these studies have been qualitative in design.^[10-12] Considering the importance of nurses' physical and mental health, the aim of the present study was to investigate the effect of hardiness education on hardiness and perceived stress based on hardiness model among the nurses in pediatric units.

Materials and Methods

This is a clinical trial study with registration number IRCT20190213042705N1. All nurses working in pediatric internal units of pediatric hospital of Isfahan University of Medical Sciences were selected as the census sampling method in 2018-2019. The sample size was estimated 32 nurses at a confidence level of 95% interval with a precision of at least $d = 0.49^2$ ($z_1 = 1.96$, $z_2 = 0.84$). The number of the nurses was considered to be 10% more; therefore, 35 nurses were considered for each group of the study. Inclusion criteria were basic literacy skills, age over eighteen, 6 months minimum work experience in pediatric units, and no history of psychiatric disorder and medications. The exclusion criterion was the absence from training sessions for more than two times according

to which seven nurses were excluded from the study. The nurses were randomly allocated to intervention group ($n = 28$) and control group ($n = 29$) using drawing cards. The study adheres to Consort guidelines [Figure 1].

A three parts questionnaire was used for data collection including: 1) demographic data, 2) Kobasa hardiness, and 3) perceived stress scale. Hardiness was measured using the questionnaire developed by Kobasa and Colleagues in 1979. It included 50 questions in three subscales: challenge, commitment, and control,^[7,8] based on a four-point Likert scale with scores ranging from 0 to 3. The total hardiness score is 100 (0-33 low, 34-66 moderate, and 67-100 high hardiness). Reliability of the questionnaire was confirmed by Kobasa with a Cronbach's alpha 0.78.^[7] Perceived stress scale, consisting of 14 questions, was used to measure perceived stress. This is a five-point Likert scale from never to very often the scores of which range from 0 to 4. The range of score is from 0 to 56 (0-18 low, 18-36 moderate and 36-56 high) for this scale. A Cronbach's alpha 0.70 was calculated.^[13] Al-Sunni and Latif also reported reliability of the questionnaire with a Cronbach's alpha 0.74.^[14]

Intervention was planned based on Kobasa and Maddi hardiness model. This model has two levels which were lectured in two educational workshops (12 h) in 2 days with 2 weeks gap. Stressful factors, causes of stress, types of stress and symptoms of severe stress, stimulation, inefficiency, and hardiness concepts were the contents of the first level. Resistance resources in facing with stress including hardy coping (problem solving instead of denial and avoiding), use of supportive social interactions, healthy practices (nutrition and exercise), and hardy attitudes were educated in the second level^[7] [Figure 2]. A clinical psychologist, two academic members and a pediatric nurse lectured the subjects of psychological components (challenge, commitment, and control) and some strategies for stress management in the educational workshops. In order to increase the effectiveness of the intervention, participants were asked to do some practices along with role playing, creating

scenarios, question and answer, and educational movies amid the two workshops. Moreover, telemedicine was used to follow up the workshop trainings to make sure for correct implementation. In order to reinforce the information and motivate the participants, educational contents were sent to them in the form of movies, animations, and motivational messages on a daily basis until 1 week after the end of the second workshop. The intervention lasted 3 months from October to December 2018. One week after the end of the intervention, the researcher personally attended in the work shifts and the nurses of the both groups responded to post-test questionnaires. For ethical purposes, participants in the control group were also provided with educational CDs after the intervention and were requested to fill the questionnaires.

The measures of descriptive statistics (frequency, mean, and standard deviation) were used for data description. The Chi-square, Fisher exact test, Mann–Whitney, and T-tests were performed to compare the groups regarding categorical and numerical data, respectively. The level of statistical significance was set at less than 0.05. Data were analyzed using SPSS software, version 22.

Ethical considerations

For ethical considerations and confidentiality of the information, the questionnaires were used anonymously. A written consent was obtained and participants were assured of confidentiality. The project was approved by the Ethics Committee of Isfahan University of Medical Sciences. (IR.MUI.RESEARCH.REC.1397. 328).

Results

Fisher exact test, Mann–Whitney, and independent t-tests showed no significant difference between the two groups in terms of demographic characteristics ($p > 0.05$) [Table 1]. Independent t-test revealed that the mean score of hardiness and its dimensions was not significantly different between the two groups before the intervention ($p > 0.05$). The mean (SD) score of hardiness in both groups was nearly 65 (9) before interventions. However, after the intervention, the mean score of hardiness and its components was significantly higher in the intervention group as compared to the control group ($t = 3.76, p < 0.001$). The mean (SD) score of hardiness increased to 71 (7) after the intervention [Table 2]. Independent t-test showed no significant difference before the intervention in terms of perceived stress between the two groups ($p > 0.05$) with mean (SD) score of 26 (7) in both groups ($t = 0.07, p < 0.95$). However, the mean score of perceived stress in the intervention group was significantly lower as compared to the control group after the intervention ($p < 0.05$) and the mean score decreased to 22 ($t = 2.40, p < 0.02$) [Table 3].

Discussion

The results of the present study revealed that the education

of hardiness components based on Kobasa and Maddi model increases the hardiness. This is consistent with a study by Maddi and Colleagues which showed that hardiness training was effective in increasing the level of hardiness among college students.^[15] Also, Mavarani *et al.* (2017) in a study, titled as the effect of group hardiness training to high school students, showed a higher level of hardiness as a result of the intervention.^[16] Zabihi *et al.* reported the positive effect of hardiness education on increased learning of self-regulation in the students.^[17] However, Jameson studied the impact of hardiness education on hardiness and perceived stress in nursing students and showed that the hardiness education did not have a significant effect on increasing hardiness scores but did have a statistically significant effect on decreasing perceived stress scores.^[18] Therefore, it could be concluded that applying this model, associated with increased knowledge and awareness of stressful factors, is effective in the first level. However, in the second level which is associated with attitudes more practice is needed in longer terms. In fact, a regular credit course needs to be hold in the hospital to train the component of control, challenge, and commitment. We believed the model would have conceptually influence on many ongoing aspects of nursing performance in the pediatric ward.

Interestingly, in the present study, the mean score of three components was increased after the intervention. Hardiness training engages cognition and emotion in the stressful situations; the feedback is deepening in commitment, control, and challenge. Also, this study revealed that using hardiness model leads to reduced perceived stress in pediatric nurses which is in line with Sadeghpour's *et al.* (2017) study who examined the effect of hardiness skills education on increased general health and job satisfaction and, consistent with our results, concluded that hardiness training increases general health.^[19] Other studies stated a reverse association between perceived stress and social support. Moreover, training hardiness can decrease psychology disorder in a group of depressed soldiers.^[20-22] To decrease the upraised stressfulness of challenging situations in the pediatric wards, it is important to have a broader perspective and take a decisive action to cope with them. Hardiness training improved the coping strategies through the pediatric nurses in this study. Therefore, the result of the study revealed that hardiness educational intervention based on hardiness model on hardiness and perceived stress was positively effective among the nurses.

There were some limitations to our study. Being the nurses reluctant to attend the workshop and follow the model for practice was the first limitation. But it was turned to their willingness for cooperation when the objects of the study were explained to them. Small sample size was the next limitation. The study could be arranged for more participants. There is only one pediatric hospital in the city and we could not prevent of information leakage. Being different in virtue,

Table 1: Nurses' demographic characteristics in two groups

Variable		Experimental group		Control group		Chi-square test	
		Number	Percent	Number	Percent	χ^2	<i>p</i>
Sex	Female	27	98.40	28	100	-	0.50
	male	1	1.60	-	-		
Shift type	Fix	4	14.80	4	13.80	-	0.60
	Cycle	23	85.20	25	86.20		
Employment status	Full	25	92.60	25	89.30	-	0.52
	Half	2	7.40	3	10.70		
Post	Nurse	28	100	26	92.90	-	0.24
	Head nurse	-	-	2	7.10		
Employment status	Official	19	67.90	13	48.20	2.84	0.24
	Contract	6	21.40	7	25.90		
	Other	3	10.70	7	25.90		
Marital	Married	20	71.40	16	55.20	3.64	0.16
	Single	7	25	3	44.80		
	Divorced	1	3.60	-	-		
Education	Bachelor	25	89.30	26	89.70	0.04	0.96
	Master	3	10.70	3	10.30		
		Experimental group		Control group		Independent <i>t</i> -test	
		Mean	Standard deviation	Mean	Standard deviation	<i>t</i>	<i>p</i>
Age (Year)		32.79	5.22	30.71	7.19	1.33	0.22
Reputation		7.68	3.65	6.21	5.61	1.13	0.26
Children		0.69	0.18	0.66	0.16	0.15	0.88

Table 2: comparison of the mean score of hardiness and its components (of 100) before and after the study between the two groups

	Hardness Dimensions	Control group	Experimental group	Test	
		Mean (SD)	Mean (SD)	<i>t</i>	<i>p</i>
Before intervention	Commitment	75.9 (13.07)	75.22 (9.72)	0.22	0.82
	Control	73.19 (10.43)	71.26 (10.43)	0.65	0.52
	Challenge	47.40 (11.30)	48.24 (12.22)	0.27	0.79
	Total number	65.06 (9.11)	65.41 (9.33)	0.14	0.89
After intervention	Commitment	82.57	73.93 (10.18)	3.10	0.003
	Control	77.85	71.19 (11.80)	2.68	0.01
	Challenge	55.29	48.21 (9.46)	2.46	0.02
	Total number	71.27	64.85 (8.72)	2.98	0.004

Table 3: The mean score of perceived stress before and after the intervention in both groups

Group Intervention time	Control Mean (SD)	Intervention Mean (SD)	<i>t</i> test	
			<i>t</i>	<i>p</i>
Before	26.54 (7.59)	26.41 (6.69)	0.07	0.95
After	22.55 (8.39)	26.93 (4.90)	2.40	0.02

the nurses did not learn and follow the instructions similarly that was another limitation to our study.

Conclusion

Based on the present results, hardiness training was effective among pediatric nurses. Therefore, hardiness leads to

increased resistance in coping with unexpected events with progressive and purposeful hardy people. Conducting the education led to increased hardiness and lower perceived stress among the nurses. Therefore, it is recommended to integrate skills of stress management including problem solving, anger management, social support, and self-care in periodic in-service trainings in order to increase hardiness and decrease stress. It is suggested to use the Kobasa hardiness model for internship students who need to improve their competences in their professional future.

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Conflicts of interest

Nothing to declare.

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