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The Relationship between Psychological Hardiness and Coping Strategies during Pregnancy

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ABSTRACT

Background & aim: Although pregnancy seems to be a pleasant experience in a women's life, the accompanied physical and psychological changes lead to high levels of stress in mothers. Prenatal stress widely affects the physical and mental health of mothers and infants; therefore, adopting appropriate coping strategies are highly required. Considering the importance of coping strategies in psychological hardiness, we aimed to determine the relationship between psychological hardiness and prenatal coping strategies.

Methods: This correlational study was conducted on 500 pregnant women, referring to the healthcare centers of Mashhad, Iran in 2014. The study subjects were selected via convenience sampling. Data collection tools included Kobasa Hardiness Scale, the Revised Prenatal Coping Inventory and Perceived Stress Scale. For data analysis, Spearman correlation coefficient and regression analysis were performed, using SPSS version 16. The significance level was considered to be 0.05.

Results: Psychological hardiness had a significant positive correlation with planning/ preparation ($r=0.70$, $P<0.001$) and positive/spiritual coping strategies ($r= 0.75$, $P<0.001$). However, a significant negative correlation was found between psychological hardiness and avoidance coping strategy ($r=-0.81$, $P<0.001$).

Conclusion: Considering that psychological hardiness was correlated with planning/preparation and positive/spiritual coping strategies, it is recommended to encourage pregnant women to adopt these adaptive strategies to overcome stress during pregnancy.

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Introduction

Although pregnancy and childbirth are considered as natural, pleasant events in a woman's life, they may be stressful experiences (1, 2). In fact, the stress induced by the birth of the first child is classified as severe stress (3). According to a study by Bahadoran (2006), 27.19% of pregnant women were classified to have medium stress and 58.25% had severe stress (4). Also, a study by Schetter (2012) in California showed that 78% of pregnant women were exposed to low to moderate levels of stress and 6% were exposed to high stress levels (5).

Pregnancy and childbirth induce significant changes in a woman's life including changes in physiological and psychological aspects and the social roles of family members. These changes cause psychopathologic disorders such as stress and anxiety in mothers (6). Failure to comply with pregnancy can cause irreversible negative emotions and psychological problems (7, 8). Stress during pregnancy manifests as vague discomfort and irritation and is often associated with alternations in the autonomic nervous system (3, 5).

The effects of maternal stress during pregnancy on the fetus are as follows: changes in the function of hypothalamus and pituitary gland, increased levels of stress hormones,

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weight loss, abortion (9-11), preterm birth (1, 12), immunosuppression, changes in the number of fetal lymphocytes (10), increased fetal malformations and neonatal mortality. Maternal stress causes sleep disorders, walking and speaking delays, learning and memory difficulties, movement disorders, increased emotional reactions, loss of temper and emotional/ behavioral problems in children (13-15).

The effects of maternal stress during pregnancy on mothers include postpartum depression, mood disorders (1, 16), chronic increase in blood pressure (17), episiotomy site infections (11), increased need for analgesia during labor and increased likelihood of unplanned cesarean section (18). Given the physical and psychological changes, stress-coping strategies are highly required.

Stress coping is a cognitive and behavioral effort to manage a stressful situation (18, 19). According to Lazarus and Folkman, coping with stress can be divided into emotion-focused and problem-focused coping strategies. Yali and Lobel introduced preparation for motherhood as a problem-based coping strategy and positive appraisal and avoidance as emotion-based coping strategies (20).

Stress-coping strategies during pregnancy include three distinct types: planning/ preparation, avoidance and positive/ spiritual coping. In preparation for pregnancy, mothers seek information and knowledge about pregnancy, birth, delivery and pregnancy needs. In positive/ spiritual coping, women are encouraged toward greater religiosity and optimism in order to have a more favorable pregnancy. On the other hand, women who ignore their physical changes caused by pregnancy and try to hide their feelings about pregnancy, use avoidance strategy (18).

Avoidance coping strategies in pregnancy are generally associated with lower mental health, depression, distress, anxiety, higher perceived stress, preterm birth, greater use of cigarettes/ tobacco/ alcohol and depression six to eight weeks after delivery (21).

Huizink et al. (2002) demonstrated that use of appropriate coping approaches reduces pregnancy-associated complications such as nausea and vomiting, back pain, changes in appetite, loss of concentration, emotional disorders, postpartum depression and other adverse pregnancy outcomes (22).

Coping with stress during pregnancy depends on maternal factors such as personality traits, social support and one's understanding of stress (18). Some psychological characteristics and skills enable individuals to experience less damage under stressful situations and affect the assessment outcomes of stress coping (17, 23).

Psychological hardiness is a set of personal characteristics, constituting a source of strength in face of stressful life events (25). Overall, hardiness is positively correlated with physical and psychological health by reducing the adverse effects of stress and preventing physical and mental disorders (26).

Hardiness consists of three related dispositions including control, commitment and challenge (7, 27). The control disposition is defined as a tendency to believe and act as if one can influence the events surrounding him/ her through effort. The challenge disposition is defined as the belief that change, rather than stability, is the normal mode of life; it constitutes motivating opportunities for personal growth rather than threats to one's security. The commitment disposition is described as a system of beliefs, which aims to minimize the threat of difficult events in life (28).

The results reported by Mohammadi et al. (2011) showed that training increased hardiness and reduced levels of perceived stress (30). Hardiness encourages optimistic views towards different stressors. This feature can be useful in coping with stressful events (31). The evaluation of stress-coping strategies in a particular situation such as pregnancy is not possible with tools commonly used for evaluating stress coping (18, 32).

Since pregnant women are a sensitive group who affect the health of the family and community and are responsible for the next generation, their mental health is of high significance. Women experience many psychological changes during pregnancy and their sensitivity to stress is increased in this period. Given the fact that personality characteristics influence stress coping, we conducted this study to determine the relationship between psychological hardiness and coping strategies in pregnant women.

Materials and Methods

This descriptive, correlational study was conducted on all pregnant women, referring to the healthcare centers of Mashhad in 2014 to receive prenatal care. In total, 500 women (167 women in the first trimester of pregnancy, 166 women in the second trimester and 167 women in the third trimester) were selected via convenience sampling.

The sampling method was multi-stage stratified clustering. The complete list of healthcare centers in five regions of Mashhad (No. 1, 2, 3, 5 and Samen) was prepared. Finally, ten healthcare centers were selected from each region (based on the sampling volume, according to the patient coverage of each center).

For data collection, the researcher visited the selected centers during early morning shifts and invited pregnant women, referring to healthcare centers for prenatal care, follow-up evaluations and pregnancy classes, to participate in the study. If women wished to participate in the study, they were asked to complete the questionnaires with the help of the researcher after obtaining written informed consents.

The inclusion criteria were as follows: 1) being pregnant; 2) willingness to participate in the study; 3) primary level education; and 4) ability to communicate verbally. The exclusion criteria were as follows: 1) drug addiction; 2) history of medical diseases; 3) high-risk pregnancies; 4) history of referral to a psychiatrist or psychologist; 5) use of medications or hospitalization due to mental diseases in recent years; and 6) severe stress during the past six months such as divorce or death of close relatives.

The sample size was calculated, based on a pilot study on 30 pregnant women (10 in the first trimester, 10 in the second trimester and 10 in the third trimester), with a correlation coefficient of 0.29, reliability of 95% (α=0.05) and test power of 80% (β=0.2).

The data collection tools included a demographic & obstetric questionnaire, Kobasa's Personal Views Survey, the Revised Prenatal Coping Inventory and Perceived Stress Scale. Content validity was used to determine the validity of the demographic & obstetric questionnaire.

Kobasa's Personal Views Survey included 50 items. In total, 16 items evaluated commitment, 17 items evaluated control and 17 items assessed challenge disposition. A 4-point Likert scale was used for grading: "not true" (score 0) and "quite true" (score 3). Hardiness was graded as follows: high (126-150), relatively high (76-125), relatively low (26-75) and low (0-25).

In 1994, the validity of this survey was evaluated via face validity by Ghorbani (33). Additionally, Kiamarsi and Abolghasemi reported its validity, using Cronbach's alpha (0.86) (7). In this study, the face validity of this survey was approved by 10 members of the School of Nursing and Midwifery at Mashhad University of Medical Sciences. Cronbach's alpha was determined to be 0.92, 0.85, 0.82 and 0.81 for hardiness, commitment, control and challenge, respectively.

Another data collection tool in this study was the Revised Prenatal Coping Inventory, consisting of 32 items. This questionnaire is used for the evaluation of stress adaptation strategies in pregnant women during the first, second and third trimesters. This scale consists of 15 phrases about planning/preparation, 11 phrases about avoidance coping and 6 phrases about positive/ spiritual coping. A 5-point Likert scale was used for grading (0: never and 4: mostly).

Hamilton et al. (2008) confirmed the validity of this questionnaire. In their study, Cronbach's alpha in the beginning, middle and end of pregnancy was 0.82, 0.85 and 0.86 for planning/ preparation, 0.78 , 0.79 and 0.8 for avoidance coping and 0.73, 0.78 and 0.77 for positive/ spiritual coping, respectively (18).

This inventory was translated into Persian and four linguists made revisions in order to confirm its validity. The validity of this scale was also confirmed by 10 members of the School of Nursing and Midwifery and the Faculty of Educational Sciences at Ferdowsi University of Mashhad. Also, its reliability in the first, second and third trimesters was estimated at 0.93, 0.91 and 0.94 for planning/preparation strategy, 0.85, 0.88 and 0.90 for avoidance coping strategy and 0.89, 0.81 and 0.90 for positive/ spiritual coping, respectively.

The Perceived Stress Scale by Cohen et al. consists of 14 items, graded by a 5-point Likert scale: 0 (never) and 4 (mostly). The lowest score is zero and the maximum score is 56, with higher scores indicating higher perceived stress.

In this study, the face validity of this questionnaire was approved by 10 faculty members at the School of Nursing and Midwifery of Mashhad University of Medical Sciences. Darban et al. (1390) also evaluated the reliability of this questionnaire by internal consistency; Cronbach's alpha was estimated at 0.81 (34). In this study, the reliability of this questionnaire was 0.89.

Data were analyzed by SPSS version 16. The normality of quantitative variables was assessed by Kolmogorov-Smirnov and Shapiro–Wilk tests. The relationship between quantitative variables was assessed by Spearman's correlation in case the data were not normally distributed; otherwise, Pearson's correlation coefficient test was applied. To control the confounding variables, multiple regression analysis was used. Nominal qualitative variables were changed to dummy variables for the regression test. In all tests, the significance level was considered less than 0.05.

Results

In this study, the mean age of female participants was 26.9± 5.3 years. The mean gravidity and parity were 2± 1 and 0.8± 0.9, respectively.

In terms of maternal educational level, 4.11% of mothers (n=57) had primary level education, 0.29% (n=145) had secondary education, 2.36% (n=181) had high school diploma and 23.4% (n=117) had academic education. According to the results, 0.76% of mothers (n=380) were housewives and others were employees. The income level of the majority of subjects (75.8%, n=379) was sufficient.

In terms of the spouse's educational level, 0.05% (n=25) were uneducated, 10.4% (n=52) had primary education, 29.4% (n=147) had secondary education, 35.7% (n=179) had high school diploma and 19.4% (n=97) had academic education. The majority of the partners (47%, n=235) were workers. Also, the majority of

Table 1. The mean and standard deviation of psychological hardiness and coping strategies, based on the trimester of pregnancy in pregnant women, referring to healthcare centers of Mashhad

		Trimester of pregnancy				Kruskal-Wallis test
		First	Second	Third	All trimesters	
Psychological hardiness		22.4±85.4	21.6±97.3	23.9±94.8	23.2±92.5	Chi-square: 27.4 df=2 P<0.001
Coping strategies	**Planning/Preparation**	11.9±31.3	11.0±36.0	13.1±37.3	12.3±34.9	Chi-square: 23.3 df=2 P<0.001
	Avoidance coping	8.5±17.8	8.6±11.6	10.1±13.3	9.5±14.3	Chi-square: 51.8 df=2 P<0.001
	Positive/ spiritual coping	5.2±15.3	6.0±18.4	5.2±18.2	5.7±17.3	Chi-square: 38.3 df =2 P<0.001

Table 2. The mean scores of coping strategies during pregnancy in women with relatively low, relatively high and high psychological hardiness

		Psychological hardiness			Kruskal-Wallis test
		Relatively low	Relatively high	High	
Coping strategies	**Planning/preparation**	11.4±22.0	9.4±37.6	3.3±50.6	Chi-square=177.5 df=2 P<0.001
	Avoidance coping	8.1±25.9	6.6±11.3	3.2±4.7	Chi-square=205.5 df =2 P<0.001
	Positive/spiritual coping	5.1±11.1	3.7±18.7	7.5±23.9	Chi-square=198.3 df=2 P<0.001

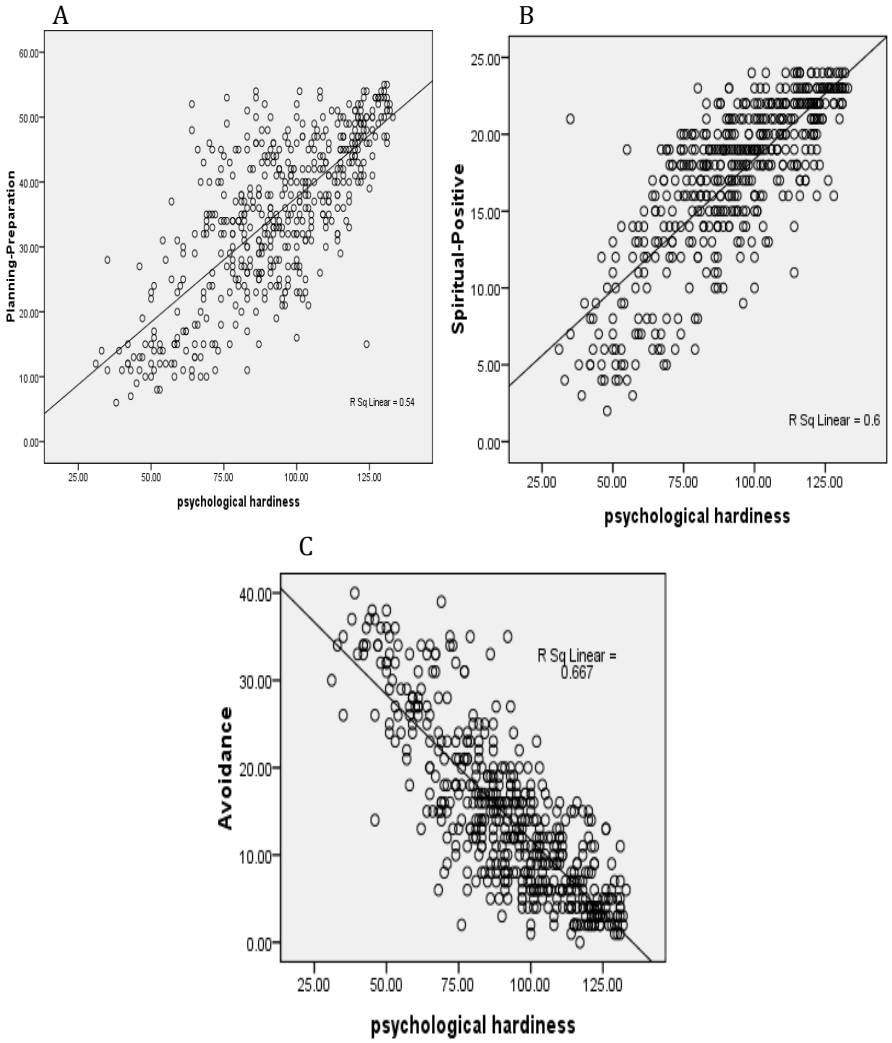

Figure 1. The relationship between psychological hardiness and coping with stress in pregnant women referring to healthcare centers of Mashhad; A) planning/preparation, B) positive/spiritual coping, C) avoidance coping

subjects (49.6%, n=248) were living in a rental house.

According to the results, 23% of women had relatively low hardiness, 70.8% had relatively high hardiness and 2.6% had high hardiness; none of the subjects had low hardiness. The mean scores of psychological hardiness and coping with stress in three trimesters of pregnancy are presented in Table 1.

Based on Spearman's test results, there was a significant positive linear relationship between psychological hardiness and planning/preparation for pregnancy (r=0.70, P< 0.0001). Also, there was a similar relationship between psychological hardiness and positive/spiritual coping strategy (r=0.76, P<0.0001). On the other hand, there was a significant negative linear relationship between psychological hardiness and avoidance coping (r=- 0.81, P<0.0001) (Fig 1).

The mean scores of coping strategies in women were correlated with relatively low, relatively high and high hardiness, according to Kruskal-Wallis test. By increasing maternal hardiness scores, planning/preparation and positive/spiritual coping strategies increased, while avoidance coping decreased (Table 2).

Based on Pearson's correlation results, there was a significant negative relationship between maternal psychological hardiness and perceived

Table 3. The results of multiple regression test for determining the relationship between planning/preparation coping, psychological hardiness, demographic characteristics and pregnancy history

Variables	P	t	SE β	β
Hardiness	0.001	17.56	0.63	0.33
Parity	0.001	4. 52	0.34	5.04
Income (sufficient)	0.001	4.22	0.18	4.79
Gravidity	0.001	-4. 06	-0.31	-3.78
Maternal educational level (diploma)	0.001	4.22	0.24	3. 15
Educational level of the spouse (diploma)	0.039	2.06	0.11	1.34
(Constant)	0.001	3.32	3.51	11.70

Table 4. The results of multiple regression analysis for determining the relationship between avoidance coping strategy, psychological hardiness, demographic characteristics and pregnancy history

Variables	P	t	SE β	β
Hardiness	0. 001	-24.4	-0.76	-0.32
Parity	0.001	-4.52	-0.34	-3.89
Income (sufficient)	0.001	3.84	-0.17	-3.36
Gravidity	0.001	4.65	0.34	3.33
Maternal educational level (diploma)	0.001	-4.64	-0.26	-2.67
Spouse's occupational status (employee)	0.035	-2.11	-0.09	-0.85
(Constant)	0.001	11.31	2.71	30.69

Table 5. The results of multiple regression test for determining the relationship between positive/spiritual coping, psychological hardiness, demographic characteristics and pregnancy history

Variables	P	t	SE β	β
Hardiness	0.001	21.27	0.73	0.16
Income level (sufficient)	0.001	3.97	0.18	2.16
Parity	0.001	3.63	0.29	1.94
Gravidity	0.001	-3.63	-0.28	-1.62
Maternal educational level (diploma)	0.001	4.25	0.25	1.52
(Constant)	0.001	5.40	1.69	9.13

stress (r=-0.77, P<0.0001).

To control the confounding variables, multiple regression analysis was applied. Tables 3, 4 and 5 present the results of multiple regression analysis for determining the relationship between hardiness, planning/preparation coping strategy, avoidance coping, positive/spiritual coping, demographic characteristics and pregnancy history, respectively.

Discussion

The obtained results showed that the mean± SD of women's hardiness during pregnancy was 92.5± 23.2, which was slightly higher than the results reported by Beyrami and colleagues in 2012 (84.24±15.40) (7).

In this study, we demonstrated a significant positive relationship between psychological hardiness and planning/preparation strategy during pregnancy. Also, there was a similar relationship between psychological hardiness and positive/spiritual coping. On the other hand, there was a significant negative relationship between psychological hardiness and avoidance coping. Subjects with higher psychological hardiness used active coping strategies such as planning/preparation and positive/spiritual strategies more than avoidance coping strategies.

In this regard, Feyze A. showed a positive relationship between psychological hardiness and problem-based coping strategies. However, the relationship between psychological hardiness and emotion-based coping strategies was negative (35); similar results were reported

by Delahaij (36). Kobasa (1979) stated that individuals with high psychological hardiness try to assess stressors realistically and have a comprehensive understanding of the contributing factors. Consequently, they are able to identify and select appropriate strategies to eliminate or hinder stress-causing factors. On the other hand, individuals without hardiness in face of stressful events try to inhibit or eliminate their unpleasant emotions (37).

Soderstrom indicated that hardiness is positively correlated with active strategies, while it is negatively associated with perceived stress and avoidance strategies (19). Subramanian showed that students, who scored high on hardiness, were more likely to engage in active problem-focused coping strategies such as "positive refocusing", "refocus on planning", "positive reappraisal" and "putting into right perspectives with positive interpretation". Students, who scored very low in hardiness, were more likely to engage in distant, avoidant and emotion-focused coping strategies such as "self-blame", "blaming others", "ruminating" and "catastrophizing".

Psychological hardiness is a personality structure which enables individuals to remain healthy, despite confronting stressful situations (38). However, the results obtained by Bahadori (2012) revealed a significant positive association between hardiness and avoidance strategies ($P<0.0001$). Also, there was no relationship between hardiness and problem-focused coping strategies, which was contradictory to previous studies; this inconsistency could be due to the fact that the study population included only students. In fact, students live in an unpredictable society and may learn avoidance and problem-based coping strategies due to exposure (24).

The results of this study showed that psychological hardiness is positively associated with positive/spiritual coping strategies in pregnancy. These findings were in accordance with the results reported by Yasami Nejad et al., who showed a positive relationship between hardiness and religious orientation (31).

The obtained findings showed a significant inverse relationship between psychological hardiness and mothers' perceived stress during the last month of pregnancy. In other words, pregnant women who scored high in hardiness experienced less stress. These findings were consistent with the results reported by Soderstrom, who showed that hardiness is negatively correlated with avoidance coping and perceived stress (19).

Moreover, Shirbim et al. (2008) showed a positive significant relationship between mental health and students' hardiness; however, there was a negative significant relationship between the components of mental health (i.e., physical symptoms, anxiety, social dysfunction and depression) and psychological hardiness. These findings were in accordance with the present results (39).

According to the results reported in Table 1, the highest mean score of avoidance coping was related to the first trimester of pregnancy. Also, the highest scores of positive/spiritual and planning/preparation coping were reported during the third trimester of pregnancy. These results were consistent with the findings reported by Anja, who revealed that pregnant women for coping with stress used problem-based coping styles in the first trimester of pregnancy and emotion-based coping strategies in the third trimester of pregnancy (40).

According to a study by Lazarus and Folkman, stress coping can be divided into emotion-based and problem-based coping strategies. Yali and Lobel indicated preparation for motherhood as a problem-based coping strategy and positive appraisal and avoidance as emotion-based coping strategies. Also, the most commonly used strategy in pregnancy was praying and the least used strategy was avoidance coping.

According to a previous study, preparation for motherhood in early pregnancy (24-26 weeks) reduces distress in women with high-risk pregnancies, whereas avoidance strategies increase distress in these women (20). These results were in consistence with the current findings and the study by Jada (2008), who showed that pregnant women used positive/ spiritual coping more than avoidance strategies (18). Furthermore, the results were in line with the findings reported by Borcherding et al., who revealed that pregnant women used praying more than avoidance coping or emotion-based strategies (41).

Anja et al. (2002) demonstrated that maternal stress level is directly related to coping strategies.

Best coping strategies during early pregnancy included emotion-based strategies, which reduced the level of stress and anxiety in women. However, in late pregnancy, problem-based coping strategies were preferable (40); these findings were in line with the present results.

Yali et al. (1999) also showed that women, who were able to cope with the stress caused by changes of pregnancy, used positive appraisal and praying as coping strategies. The results of this study showed that the mean and standard deviation of positive/spiritual and planning/ preparation strategies were higher in women with high hardiness, compared to women with relatively low hardiness.

Also, in the present study, the mean (SD) score of avoidance coping was lower in women with high hardiness, compared to women with relatively low hardiness (Table 1). In other words, by increasing psychological hardiness, the mean scores of planning/preparation and positive/spiritual coping increased; however, by decreasing hardiness, the mean score of avoidance strategy increased.

It should be noted that avoidance coping strategies in pregnancy generally lead to lower mental health, depression, anxiety, higher perceived stress, less positive attitudes toward pregnancy, potential child abuse, preterm labor, more use of tobacco and alcohol during pregnancy (to deal with pregnancy-associated complications) and postpartum depression six to eight weeks after delivery (21). Therefore, pregnant women should try to effectively deal with stress during pregnancy (18).

Maternal coping strategies have attracted great attention, given their correlation with mother's and child's well-being. In fact, maternal coping has been shown to predict the quality of mother-child interactions and child developmental outcomes (44).

The limitations of this study were individual differences and variations in subjects' psychological states, which affected their responses to the questionnaires. The researcher tried to control this situation by providing a relaxing environment and gaining the subjects' trust. Also, the researcher trusted the subjects' statements regarding the history of medical diseases and psychological problems. It is suggested that future studies focus on psychological hardiness and coping strategies in women with high-risk pregnancies and determine the factors associated with hardiness and coping strategies in pregnant women.

Conclusion

According to the results, psychological hardiness had a positive relationship with positive/spiritual and planning/preparation coping strategies. However, there was a negative relationship between psychological hardiness and avoidance coping.

Application of the results

According to the results of this study, healthcare planners and authorities should provide more training classes for midwives and pregnant women about pregnancy and coping strategies. It should be noted that there was a significant relationship between psychological hardiness and coping strategies. Therefore, we should help mothers improve their psychological hardiness. However, further research is still required on this subject.

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Conflicts of interest

The authors declare no conflicts of interest.

References

1. Karacam Z, Ancel G. Depression, anxietyandinfluencingfactorsinpregnancy: a studyinaTurkishpopulation. Midwifery. 2009; 25(4):344-56.
2. Salehi H, Simber M, Abolghasemi A, Abdi A. A Comparison of Postpartum Depression among Low-risk-pregnant Women with Emotion- and Problem-focused Coping Strategies. Qom University of Medical Sciences Journal. 2013; 7(2):35-40.
3. Frozande N, Delaram M, Deris F. The quality of mental health in pregnancy and its risk factors in women referred to health centers of Shahrekord. Journal of Reproduction and Infertility. 2003:

4(2):146-155.
4. Bahadoran P, Mohammad Beygi N. Stress and anxiety in pregnancy. Iranian Journal of Nursing and Midwifery Research. 2005; 10(2):7-12.
5. Schetter CD, Tanner L. Anxiety, depression and stress in pregnancy: implications for mothers, children, research, and practice. Current opinion in psychiatry. 2012; 25(2): 141-148.
6. Dolatian M, Mirab Zade A, Frozan AS, Sajadi H, Alavi Mahd H, Moafi F, et al. Correlation between self-esteem and perceived stress in pregnancy and coping strategies with it. Pajoohandeh Journal. 2013; 18(3): 148-155.
7. Beyrami M, Zahmatyar H, KHosroshahi JB. Prediction Strategies for coping with stress during pregnancy on components of hardiness and social support in nulliparous pregnant women. Iranian Journal of Nursing Research. 2013; 7(27):1-9.
8. Duman NB. Socio-Demographic and Obstetric Factors Associated With Depression During Pregnancy in Turkey. American International Journal of Contemporary Research. 2012; 2(11):17-26.
9. Goland RS, Jozak S, Warren WB, Conwell IM, Stark RI, Tropper PJ. Elevated levels of umbilical cord plasma corticotropin-releasing hormone in growth-retarded fetuses. The Journal of Clinical Endocrinology & Metabolism. 1993; 77(5):1174-1179.
10. Couret D, Jamin A, Kuntz-Simon G, Prunier A, Merlot E. Maternal stress during late gestation has moderate but long-lasting effects on the immune system of the piglets. Veterinary immunology and immunopathology. 2009; 131(1):17-24.
11. Mulder EJ, de Medina PR, Huizink AC, Van den Bergh B, Buitelaar JK, Visser G. Prenatal maternal stress: effects on pregnancy and the (unborn) child. Early human development. 2002; 70(1):3-14.
12. Nasiri Amiri F, Soleyman H, Haji Abadi M, Ahmadi AM. The relationship between maternal anxiety in the incidence of spontaneous preterm birth. Babol University of Medical Sciences. 2009; 11(4):42-48.
13. DiPietro JA, Hodgson DM, Costigan KA, Hilton SC, Johnson TR. Fetal neurobehavioral development. Child Development. 1996; 67(5):2553-2567.
14. Kohman RA, Tarr AJ, Day CE, McLinden KA, Boehm GW. Influence of prenatal stress on behavioral, endocrine, and cytokine responses to adulthood bacterial endotoxin exposure. Behavioural brain research. 2008; 193(2):257-268.
15. Correia LL, Linhares MBM. Maternal anxiety in the pre-and postnatal period: a literature review. Revista latino-americana de enfermagem. 2007; 15(4):677-683.
16. Austin MP, Tully L, Parker G. Examining the relationship between antenatal anxiety and postnatal depression. Journal of affective disorders. 2007; 101(1):169-174.
17. Nik Rahan GR, Kajbaf MB, Nori A, Zarean E, Naghshine E. The relationship between personality traits, coping styles and stress levels pregnant women. Department of Psychology, Faculty of Educational Sciences of Isfahan University. 2010; 49-57.
18. Hamilton JG, Lobel M. Types, patterns, and predictors of coping with stress during pregnancy: Examination of the Revised Prenatal Coping Inventory in a diverse sample. Journal of Psychosomatic Obstetrics & Gynecology. 2008; 29(2):97-104.
19. Soderstrom M, Dolbier C, Leiferman J, Steinhardt M. The relationship of hardiness, coping strategies, and perceived stress to symptoms of illness. Journal of Behavioral Medicine. 2000; 23(3):311-328.
20. Giurgescu C, Penckofer S, Maurer MC, Bryant FB. Impact of uncertainty, social support, and prenatal coping on the psychological well-being of high-risk pregnant women. Nursing Research. 2006; 55(5):356-365.
21. Guardino CM, Schetter CD. Coping during pregnancy: a systematic review and recommendations. Health Psychology Review. 2013; 8(1):70-94.
22. Huizink AC, de Medina PG , Mulder EJ, Visser GH, Buitelaar JK. Coping in normal pregnancy. Annals of Behavioral Medicine. 2002; 24(2):132-140.
23. Khoda yari Fard M, Parand A. Stress AND coping style. 28th ed. Tehran. university of Tehran press; 2007.
24. Bahadori E, Kheir M. The relationship between psychological hardiness and family flexibility with coping styles with stress in female students. Journal of Psychological methods and models. 2012; 2(7):1-18.
25. Poursardar N, Poursardar F, Panahande A, Sangari A, Abdi Zarin S. Effect of Optimism on Mental Health and Life Satisfaction: A Psychological Model of Well-being. Hakim Medical journal. 2013; 16(1):42-49.
26. Kobasa SC, Maddi SR, Zola MA. Type A and hardiness. Journal of Behavioral Medicine. 1982; 6(1):41-51.
27. Maddi SR, Khoshaba DM, Persico M ,Lu J, Harvey R, Bleecker F. The personality construct of hardiness: II. Relationships with comprehensive tests of personality and psychopathology. Journal of Research in Personality. 2002; 36(1):72-85.
28. Shokohifard S, Hamid N, Sodani M. The Effect of Hardiness Training on Quality of Life of Teacher

Training Female Students. Knowledge & Research in Applied Psychology. 2013; 14(52):14-25.
29. Sinclair RR, Tetrick LE. Implications of item wording for hardiness structure, relation with neuroticism, and stress buffering. Journal of Research in Personality. 2000; 34(1):1-25.
30. Mohammadi Hasel K, Abdolhoseini A, Ganji P. Hardiness Training and Perceived Stress among College Students. Procedia-Social and Behavioral Sciences. 2011; 30(1):1354-1358.
31. Yasami Nejad P , Gol Mohammadian M,Feli B. Examine the relationship between the religious orientation and Psychological hardiness in Student. Research Issues in Islamic education. 2011; 19(12):119-137.
32. Carver CS, Pozo C, Harris SD, Noriega V, Scheier MF, Robinson DS, et al. How coping mediates the effect of optimism on distress: a study of women with early stage breast cancer. Journal of Personality and social psychology. 1993; 65(2):375-390.
33. Narimani M, Abasi M. The relationship between psychological hardiness and resiliency with Job Burnout. Journal of beyond Management. 2010; 2(8):75-92.
34. Mazlom SR, Darban F, Modares GHorori M, Kashani Lotfabadi M, SHad M. The effect of Stress Inoculation Program (SIP) on nurses' Perceived stress in psychiatric wards. Journal of Evidence Based Care. 2012; 2(2):35-34.
35. Feyze A, Taher Neshat T, Naeli H. The Relationship between of Hardiness and Coping Strategies. Journal of psychology. 2002; 5(4):303-315.
36. Delahaij R, Gaillard AW, van Dam K. Hardiness and the response to stressful situations: Investigating mediating processes. Personality and Individual Differences. 2010; 49(5):386-390.
37. Kobasa SC. Stressful life events, personality, and health: an inquiry into hardiness. Journal of personality and social psychology. 1979; 37(1):1-11.
38. Subramanian S, Nithyanandan M. Hardiness and optimism as moderators of cognitive emotion regulation strategies in coping negative life events by adolescents. Department of Psychology, Bharathiar University. 2007; 6(41):1-19.
39. SHirbim Z, Sodani M, SHafie Abadi A. The relationship between mental health and hardiness The students. Scientific Information Database journal. 2009;13(4):7-16.
40. Huizink AC, de Medina PGR, Mulder EJ, Visser GH, Buitelaar JK. Does coping mediate the effects of stress in pregnancy? Prenatal stres. 2002; 12(45):103-104.
41. Borcherding KE. Coping in healthy primigravidae pregnant women. Journal of Obstetric, Gynecologic, & Neonatal Nursing. 2009; 38(4):453-462.
42. Yali AM, Lobel M. Coping and distress in pregnancy: An investigation of medically high risk women. Journal of Psychosomatic Obstetrics & Gynecology. 1999; 20(1):39-52.
43. Alderdice F, Lynn F. Stress in pregnancy: identifying and supporting women. British Journal of Midwifery. 2009; 17(9):552-559.
44. Eisengart SP, Singer LT, Kirchner HL, Min MO, Fulton S, Short EJ, et al. Factor structure of coping: two studies of mothers with high levels of life stress. Psychological assessment. 2006; 18(3):278-288.