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Original Article

Perceived Psychological Traumatic Childbirth in Iranian Mothers: Diagnostic Value of Coping Strategies

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ABSTRACT

Objectives: The aim of this study was to investigate the diagnostic value of a stress coping scale for predicting perceived psychological traumatic childbirth in mothers.
Methods: This cross-sectional study was performed on 400 new mothers (within 48 hours of childbirth). Psychological traumatic childbirth was evaluated using the 4 diagnostic criteria of Diagnostic and Statistical Manual of Mental Disorders. Coping was measured using Moss and Billings' Stress Coping Strategies Scale.
Results: The overall mean score of stress coping was 29 ± 14.2. There were 193 (43.8%) mothers that had experienced a psychological traumatic childbirth. A stress coping score ≤ 30, with a sensitivity of 90.16 (95% CI = 85.1-94.0), and a specificity of 87.44 (95% CI = 82.1-91.6), was determined as a predictor of psychological traumatic childbirth. So that among mothers with stress coping scores ≤ 30, 87% had experienced a psychological traumatic childbirth.
Conclusion: Investigating the degree of coping with stress can be used as an accurate diagnostic tool for psychological traumatic childbirth. It is recommended that during pregnancy, problem-solving and stress management training programs be used as psychological interventions for mothers with low levels of stress control. This will ensure that they can better cope with traumatic childbirth and post-traumatic stress in the postpartum stage.

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Introduction

Important life events often bring about a lot of stress which requires coping and adaptation for the individual [1]. Coping refers to cognitive and behavioral efforts of an individual to deal with mental stress which allows them to adapt to that situation, and prevents negative consequences of stress in the future [2]. Individuals that are resilient to stress can quickly and efficiently respond to a detrimental event by removing the stressor [3,4], enabling restoration of their psychological balance [5]. The type of coping strategy individuals use not only affects their physical health, but also their mental health. This is because when they are confronted with stress, they struggle to minimize stress complications (they cannot withstand and overcome the situation) [6], and avoiding its negative consequences [7]. To describe coping within stressful situations, there are 2 proposed styles of coping; problem-focused and emotion-focused. In problem-focused coping, attempts are made to deal directly with the problem itself, and it involves strategies to resolve the situation. This style is used

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when the stressor can be controlled by the individual. Emotion-focused coping is used when nothing can be done to control or manage the stressor. The focus is on managing emotions and anxiety which is associated with stressful experiences [2,8]. For example, avoidance behaviors that a person shows to escape from emotional distress are a form of emotion-focused coping [8]. The unpredictability of some major life events makes it impossible to plan for, and confront the negative consequences of stress.

Childbirth is a complex and potentially traumatic event that would benefit from interventions designed to minimize postpartum traumatic consequences [9]. A psychological trauma is a stressful event in which a person perceives experiences of feeling threat, injury, or death for themselves or their loved ones. Moments after a stressful event, they experience psychological trauma and have a traumatic perception. If the individual concerned had a good level of coping, the event that caused the stress will no longer be stressful within a month. In contrast, individuals with a low level of coping may experience post-traumatic stress disorder (PTSD) [10], which occurs in the delivery room for some mothers. Psychological traumatic delivery is when the birthing mother feels life-threatening danger for herself or the life of her baby during labor and delivery [11,12].

In Iran, the prevalence of traumatic childbirth during the first 48 hours after delivery was reported as 47% [13]. Of these cases, about 1% - 6% become postpartum PTSD and this has negative effects on the psychological and mental health of the mother [14,15]. People who suffer from PTSD experience symptoms such as generalized anxiety, feelings of guilt and depression [16]. These symptoms are often associated with other psychological problems, with a decline in quality of life [17], which negatively affects their relationship with their spouse and children [18]. Other complications of postpartum PTSD include depression [19], diminishing the quality of the mother-infant relationship and potentially impairing the cognitive development of the baby [20]. Therefore, early intervention during traumatic delivery naturally reduces postpartum post-traumatic stress, and highlights the importance of early diagnosis during traumatic childbirth [21].

It is important to understand how coping with stress helps to prevent traumatic childbirth [22]. In Iranian health facilities, pregnant women do not have a psychological assessment. In addition, there is not a valid psychological scale for assessing and predicting a traumatic childbirth. Moreover, most mothers are discharged from hospital without being screened for psychological traumatic childbirth. This study aimed at investigating the diagnostic value of stress coping in mothers to predict psychological traumatic childbirth and prevent stress and postpartum PTSD.

Materials and Methods

This cross-sectional study was conducted between June to September 2015, in Nohom-e-Day Hospital in Torbat-e-Heydarieh (northeast of Iran). There were 400 mothers who were transferred to the postpartum ward to stay for the first 48 hours after childbirth. Written informed consent was obtained from those who were eligible for this study. In the first stage, all eligible mothers were selected by convenient sampling then mothers were screened for traumatic delivery. Meanwhile, the standard Stress Coping Strategies Scale was completed by all mothers. This information was used to examine the extent of coping with stress by mothers who experienced traumatic childbirth, and those who did not experience traumatic birth.

1. Ethical considerations

The present study was approved by the Ethics Committee of Shahroud University of Medical Sciences with a code of IR-SHMU.REC.1394.42.

2. Inclusion and exclusion criteria

All Iranian mothers that were admitted to the postpartum ward with whose fetus had a gestational age more than 22 weeks were included in the study. Exclusion criteria included a mothers' tendency to leave the study, their requirement for the special care unit for their baby, a history of severe stressful events during the last year, having mental illnesses or taking medication associated with mental and neurological problems.

3. Research instruments

3.1. Moss-Billings stress coping strategies scale

This scale included 19 Likert items (0-3) where the score ranged between 0 and 57 [23]. A higher score indicated that the individual used more coping strategies in dealing with stressors. Factor analysis by Moss and Billings showed that this scale included 2 constructs of problem-focused strategies (8 statements with scores that ranged from 0 to 24) and emotion-focused strategies (11 statements with scores that ranged from 0 to 33). The validity and reliability of Persian version of Moss-Billings Stress Coping Strategies Scale was assessed in women [24,25].

3.2. Screening for psychological traumatic childbirth

Based on the definition of a traumatic event in the Diagnostic and Statistical Manual of Mental Disorders, traumatic delivery was identified in mothers by a qualified expert midwife trained in psychological counseling for 2 years [10]. In order to facilitate the screening of mothers for traumatic delivery, 4 questions were designed which could include all aspects of this definition for traumatic delivery and could be adapted to

the definition of a traumatic event. The reliability and validity of these questions have been confirmed by psychiatrists in different studies [13,26]. The inclusion criteria for psychological traumatic childbirth were based on Diagnostic and Statistical Manual of Mental Disorders and mothers were asked 4 questions;

1. Do you think during labor, your life or your baby's life was at risk?
2. Do you think during labor you, or your baby could be physically harmed?
3. Do you think this childbirth was a hard and uncomfortable experience for you?
4. During labor or delivery, did you feel panicked, worried, or helpless?

A traumatic childbirth was indicated by positive answers to both items 1 and 2, and either item 3 or 4 [26,27]. Gamble also asked the mothers about the characteristics of a traumatic event based on the Diagnostic and Statistical Manual of Mental Disorders to screen for traumatic childbirth [12].

In line with the objectives of the study a questionnaire was used to collate participant demographic features such as age and education of the mother and her husband. After explaining the goals of the research and receiving written consents, the scales and questionnaires were completed for each of the mothers.

4. Statistical analysis

The data were analyzed using the *t* test using SPSS 18.0 (SPSS Inc., Chicago, IL, USA), and the sensitivity and specificity of the data calculated. The ROC curve was used to determine the cut-off point for coping with stress in the diagnosis of traumatic childbirth. The Youden index [28] was used to determine the optimal threshold, and the most appropriate diagnostic criterion. According to the formula (sensitivity + specificity-1), a criterion with the highest value was the most appropriate diagnostic criterion.

Results

This study showed that the mean age of mothers was 26.96 ± 6.3 years with a range of 15-43 years. The average number of years in education for the mothers was 7.5 ± 3.5 years (with a range of 0 to 18 years), and for the spouse it was 7.7 ± 3.5 years (with a range of 0-18 years). In this study, 193 (43.8%) mothers had experienced a psychologically traumatic childbirth.

The mean score of coping with stress among postpartum mothers was 29 ± 14.29 with a range of (6-57). In addition to the total score of coping, the degrees of problem-focused and emotion-focused coping were also investigated. Table 1 showed that during the first 48 hours after delivery there was a significant difference between the mean score of coping with stress (emotion-focused coping score and problem-focused coping score) in mothers who experienced traumatic delivery and those mothers who had a non-traumatic delivery.

The ROC curve was used to determine the cut-off point for stress coping in the diagnosis of traumatic delivery. As shown in Figure 1, a larger area under the curve indicated that coping has higher sensitivity and specificity. The area under the curve was 0.927 (confidence interval of 95% 0.897-0.951).

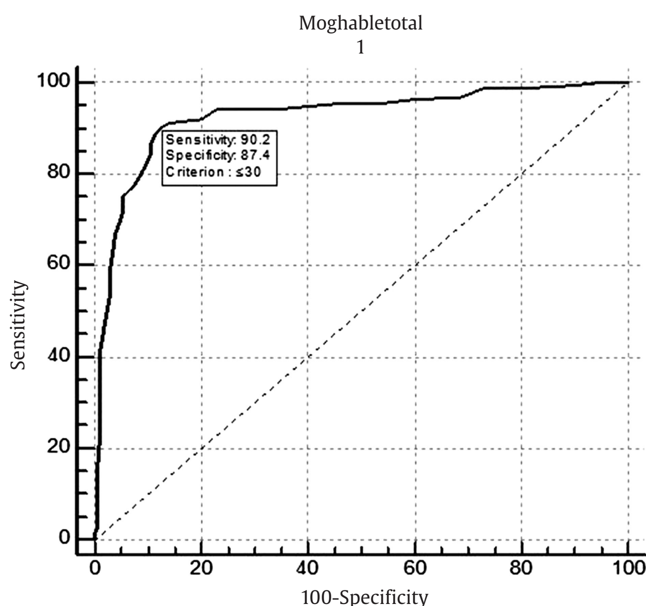

Figure 1. Receiver operating characteristic (ROC) curve for stress coping for the diagnosis of Traumatic delivery.

Table 1. Mean ± SD of stress coping and its 2 sub-constructs with traumatic and non-traumatic childbirth .

	Non-traumatic	Traumatic	*t*	*p*
Stress coping (total)	39.7 ± 9	17.6 ± 9.2	24.1	0.001
Problem-focused coping	16.7 ± 4.5	7.4 ± 3.9	21.6	0.001
Emotion-focused coping	23 ± 5.3	10 ± 5.8	9/22	0.001

With respect to the cutoff points defined in the ROC curve, it was concluded that the cut-off point of 30 had a better sensitivity and specificity than points 29 and 31; therefore, 30 was chosen as the cutoff point (Table 2).

Comparison between frequency of psychological traumatic childbirth according to a stress coping score ≤ 30, and psychological interviewing, showed that those who have a stress coping score of less than or equal to 30 have an 87% probability of having a traumatic delivery (positive predictive value of the test), and among those with a score of over 30, only 19 people (9.5%) had traumatic deliveries (Table 3).

In this study, the cut-off points for problem-focused and emotion-focused coping scores, were also determined for the diagnosis of traumatic childbirth. The 2 sub-constructs of stress coping were investigated, and for the problem-focused coping, the cutoff point of 11 was determined, and for the emotion-focused coping, the cutoff point of 17 was identified (Table 4).

Discussion

In the present study, for non-traumatic childbirths which are not perceived as traumatic or detrimental, the stress coping score was 39.7 ± 9.0, and where traumatic childbirths are experienced and psychological harm has been perceived, the stress copping score was 17.6 ± 9.0. In a study by Bayrami et al [24], the stress coping score during pregnancy was 13.85 ± 2.12, which was very different to this study. In this study, mothers who were more able to cope with stressful conditions, could resolve the psychological trauma during childbirth and perceived their delivery as non-traumatic; however, mothers who did not cope well, perceived their childbirth as traumatic. Coping with stressful conditions can also be seen in studies where the mother had a high-risk childbirth, or the baby suffered from a disorder or a problem. Another study showed that more mothers who were less able to cope with stress experienced postpartum depression, preterm birth, and slower infant development compared to those mothers that could cope [29]. In addition, a study showed that there was a significant relationship between postpartum depression, and the ability to adapt to stressful conditions [30]. In this study coping with stress was used as a tool for predicting psychological traumatic childbirth. In another study this scale was used to evaluate pregnancy outcomes as a predictor variable for preterm birth [31]. The relationship between coping stress score and childbirth problems has been evaluated in several studies. For instance, in a study of 80 Canadian women, it was shown that women who were less able to cope with stressful conditions had more problems during labor and childbirth and had shown emotional conflict during the second trimester of pregnancy, leading to an inverse relationship with the weight of the fetus [32]. However, in another study with African American women, the relationship between stress coping and preterm delivery was not significant [33]. In a retrospective study on 97 Swedish women who had an emergency cesarean section, the participants were compared with 194 women who did not

Table 2. Sensitivity and specificity for different cut-off points for stress coping scores.

Cut-off	Sensitivity	95% CI	Specificity	95% CI
≤ 29	89.64	84.4 - 93.6	87.92	82.7 - 92.0
≤ 30	90.16	85.1 - 94.0	87.44	82.1 - 91.6
≤ 31	91.19	86.3 - 94.8	85.99	80.5 - 90.4

Table 3. Comparison between the frequency of psychological traumatic childbirth according to stress coping score ≤ 30, and psychological interviewing as a gold standard.

Cut-off point	Non-traumatic	Traumatic	Total	Chi square	*p*
Score > 30	181 (90.5)	19 (9.5)	200 (100.0)	240.545	< 0.001
Score ≤ 30	26 (13.0)	174 (87.0)	200 (100.0)		
Total	207	193	400		

Data are presented as *n* (%).

Table 4. Cut-off point in problem-focused and emotion-focused coping.

Type of coping	Cut-off points	Sensitivity	95% CI	Specificity	95% CI	Area under the curve	95% CI
Problem-focused	≤ 11	86.53	80.9-91.0	89.86	84.9-93.6	0.922	0.892-0.947
Emotion-focused	≤ 17	88.60	83.3-92.7	85.99	80.5-90.4	0.917	0.886-0.942

experience pregnancy complications. The study determined that women with poorer coping skills, or those who used avoidance coping strategies may experience a more unpleasant and traumatic birth [34]. Post-traumatic stress coping styles are related to psychological traumatic childbirths [35,36].

The aim of this study was to detect potential cases of traumatic childbirth so that preventative measures could be taken to help the mothers not to perceive their childbirth experience as being potentially traumatic. The findings in this study were consistent with other studies. Observations showed that those who are better at coping with stressful conditions compared with those who are less capable, perceived the events as less traumatic, and their coping functioned as a preventive agent in pathologic responses to stressful events [9,23]. It was recommended that coping strategies and techniques be used to deal with stress during pregnancy to prevent stress and anxiety [37]. In another study, teaching mothers who had preterm labor predictions, how to deal with stressful situations, reduced their stress, and the intervention was recommended as standard care practice [38]. Coping resources, and coping with stressful conditions can reduce the effect of mental tension in those who are at risk of preterm labor [39]. As the results of the present study show, although the psychological trauma caused by harmful life incidents are unavoidable, coping mechanisms and problem-solving methods are important to adapt to stress, and properly understand the events or their unpleasant memories [40,41]. For example, people who are more resilient in stressful conditions use more problem-focused coping strategies, and those with less resilience use emotion-focused coping strategies [42]. People with less capable coping abilities, in the long run, suffer from coronary disease and hypertension [43]. Similarly, in a study by Ford, a cognitive model and stress coping were used as ways to predict post-traumatic stress symptoms [44,45], but the sensitivity and specificity of stress-coping were not determined.

Cross sectional gathering of data and investigation of traumatic childbirth in first 24 hours of delivery is one of the limitations of this study. Another limitation for this study was using psychological interviewing as the gold standard for assessing the sensitivity and specificity of the coping stress scale. Lack of follow up for evaluating PTSD is another limitation of our study. The study could be improved by providing good supervision for gathering the data and implementing of interviews by a qualified midwife trained in counseling for 2 years.

Conclusion

The results in this study demonstrated that mothers with a low stress coping score had a high sensitivity and specificity for predicting a traumatic childbirth. A stress coping score of less than or equal to 30 was considered to be predictive of psychological traumatic childbirth. Therefore, it is recommended that all mothers evaluate the level and degree of their coping during pregnancy, and if the mother has poor psychological coping strategies (less than 30), training and psychology classes can be provided to help improve stress coping and problem-solving skills to prevent traumatic childbirth and the consequent postpartum PTSD.

Conflicts of Interest

The authors report no actual or potential conflicts of interest.

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