

# Study on the Association Between Maternal Cognitive Emotion Regulation Strategies and Their Coping Styles and Mental Health in High-risk Pregnancies

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**Abstract:** *Objective:* The correlation between cognitive emotion regulation strategies and the coping styles and mental health status of pregnant women with high-risk pregnancies was studied to provide a theoretical basis for clinical psychological intervention. *Methods:* 152 pregnant women with high-risk pregnancies who were hospitalized in the Department of Obstetrics and Gynecology of an A hospital and filed in the outpatient clinic from January 2022 to December 2023 were selected as the observation group, and 150 pregnant women with normal pregnancies who were hospitalized in the Department of Obstetrics and Gynecology and filed in the outpatient clinic during the same period were also selected as the control group. Cognitive emotion regulation questionnaire (CERQ-C), Chinese revised medical coping modes questionnaire (MCMQ), self-assessment of mental health symptoms (symptom-90), and self-assessment of mental health symptoms (MCMQ) were applied to the observation group. CERQ-C, MCMQ, SCL-90 and SCL-90 were used to assess the cognitive-emotional, coping mode and mental health status of the two groups, and to compare the differences in the scores of the scales and their dimensions. *Results:* The CERQ-C adaptive dimension scores of the observation group were lower than those of the control group, and the non-adaptive dimension scores were higher than those of the control group ( $P < 0.01$ ); the MCMQ avoidance and submission dimensions scores of the observation group were higher, and the confrontation dimension scores were lower ( $P < 0.05$ ); and the scores of all symptom dimensions on the SCL-90 of the observation group were significantly higher than those of the control group ( $P < 0.05$ ). Among the high-risk subgroups, the severe obstetric hemorrhage risk group had the most prominent cognitive-emotional regulation imbalance, negative coping and psychological problems. Pearson correlation analysis showed that adaptive cognitive-emotional regulation was positively correlated with face-to-face coping ( $r = 0.412$ ,  $P < 0.01$ ), and non-adaptive cognitive-emotional regulation was significantly positively correlated with yielding coping, anxiety and depression and other psychological symptoms ( $P < 0.01$ ). *Conclusion:* Mothers with high-risk pregnancies generally have cognitive emotion dysregulation, mostly adopt non-adaptive emotion regulation strategies, and tend to adopt negative coping styles of avoidance and submission, accompanied by obvious mental health problems, and the psychological stress problems of pregnant women with severe obstetric hemorrhage risk are the most significant. Clinical assessment of the cognitive emotion regulation ability of this group should be emphasized, and precise psychological interventions should

be carried out to improve their mental health and pregnancy outcomes.

**Keywords:** High-risk pregnancy; Cognitive-emotional regulation; Coping style; Mental health; Correlation study

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**Online publication:** May 31, 2026

## 1. Introduction

High-risk pregnancy is a state of pregnancy in which the mother is affected by certain pathologic and physiologic factors during pregnancy, which may cause adverse outcomes for the mother and the fetus or newborn <sup>[1]</sup>. With the adjustment of China's fertility policy, the increase in the proportion of older pregnant women and the popularization of assisted reproductive technology, the incidence of high-risk pregnancy has been on the rise year by year. Common clinical risk factors include hypertensive disorders in pregnancy, gestational diabetes, and the risk of severe obstetric hemorrhage, which not only threaten the lives of mothers and infants but also bring great psychological pressure to pregnant women. If psychological intervention is not carried out on time, it not only affects treatment compliance and quality of life but also may further aggravate the pregnancy comorbidities through neuroendocrine pathways, forming a vicious circle <sup>[2]</sup>. Cognitive emotion regulation refers to the process by which individuals consciously adopt cognitive ways to manage and regulate their emotions in the face of stressful events, and is categorized into adaptive and non-adaptive strategies <sup>[3]</sup>, with the former helping individuals to cope with stress positively and constructively, whereas the latter may exacerbate negative emotions and lead to adverse psychological consequences <sup>[4]</sup>. Currently, the role of cognitive emotion regulation in the mental health of the general population has been widely verified, but the research in the special group of high-risk pregnancy is still relatively limited, based on this, the present study conducted a small-sample clinical trial to compare and analyze the effects of different cognitive emotion regulation strategies on the coping styles and mental health of pregnant women with high-risk pregnancies, with a view to providing scientific evidence for the development of targeted psychological intervention programs for pregnant women with high-risk pregnancies. In order to provide a scientific basis for the development of targeted psychological intervention programs for pregnant women with high-risk pregnancies.

## 2. Data and methods

### 2.1. General information

152 cases of pregnant women with high-risk pregnancies who were hospitalized in the obstetrics department of the maternity hospital of a hospital or outpatient clinic from January 2022 to December 2023 were selected as the observation group, and were divided into four subgroups according to the type of high-risk: 43 cases of gestational hypertension, 47 cases of gestational diabetes mellitus, 33 cases of severe obstetric hemorrhage risk group, and 29 cases of intrauterine distress group. In the same period, 150 cases of normal pregnancy pregnant women were selected as the control group.

Inclusion criteria: (1) singleton pregnancy, clearly diagnosed as high-risk pregnancy, in line with the diagnostic criteria for high-risk pregnancy in *Obstetrics and Gynecology* (9th edition); (2) age 22-39 years old; (3) gestational weeks  $\geq 12$  weeks; (4) love of the purpose of this study, methodology, and voluntary

participation in the study, and to obtain the consent of the knowledge of the youth. Exclusion criteria: (1) those who have a history of mental illness or are receiving psychotropic medication; (2) those who are accompanied by malignant tumors, severe liver and renal insufficiency diseases; (3) those who have cognitive dysfunction and are unable to cooperate in completing the questionnaire research.

## 2.2. Methods

### 2.2.1. Survey instruments

- (1) General information questionnaire: the hospital's own questionnaire was used to collect maternal demographic data and obstetric clinical baseline information.
- (2) Cognitive emotion regulation: the CERQ-C contains 9 independent subscales, totaling 36 assessment entries, which can be divided into two major dimensions of adaptive and non-adaptive emotion regulation strategies as a whole<sup>[5]</sup>. The adaptive strategy dimension consists of five subscales, including acceptance, positive attention shift, behavioral reprogramming, positive cognitive restructuring, and rational analysis, corresponding to 20 items; and the non-adaptive strategy dimension consists of four subscales, including self-blame, repetitive thinking, catastrophic thinking, and blaming others, corresponding to 16 items. The scale was scored on a scale of 1 to 5, with 1 representing never use and 5 representing always use, and the scoring interval for each subscale was 5 to 20, with higher scores indicating more frequent use of this type of emotion regulation. The overall Cronbach's alpha coefficient of the scale was tested to be 0.83, and the Kappa coefficient was 0.61, with good reliability and validity, which can meet the needs of this study's assessment.
- (3) Coping styles: MCMQ has a total of 20 assessment entries, which are divided into three core dimensions: face coping, avoidance coping, and yielding and accepting coping, and each dimension contains 8, 7, and 5 assessment topics, respectively, and the overall scale adopts a four-level scoring model from 1 to 4 points, and the higher the score of a single dimension, the more the research subject tends to adopt the disease coping styles corresponding to that dimension<sup>[6]</sup>. After testing, the Cronbach's alpha coefficient of the scale was 0.81, and the Kappa coefficient was 0.52; the reliability index was good, and the assessment results were real and reliable.
- (4) Mental health status: SCL-90 has a total of 90 assessment topics, covering 9 core factors of somatic discomfort, obsessive-compulsive behaviors, interpersonal sensitivity, depression, anxiety state, hostility, terror, paranoid thinking, and psychotic symptoms, as well as 1 additional factor, which can comprehensively reflect the characteristics of the individual's psychological abnormalities<sup>[7]</sup>. All entries were scored on a scale of 1 to 5, with 1 being no relevant symptoms and 5 being extremely severe symptoms. The total score of the scale corresponds to the following criteria for the classification of the degree of symptoms: 1–1.5 points suggests no psychological symptoms; 1.5–2.5 points suggests the presence of mild episodic symptoms; 2.5–3.5 points suggests the presence of mild and moderate psychological symptoms; 3.5–4.5 points suggests the presence of moderate and severe psychological symptoms; and 4.5–5.0 points suggests the presence of severe psychological symptoms. The empirical data show that the Cronbach's alpha coefficient of the scale is 0.96 and the Kappa coefficient is 0.68, with excellent reliability and validity, which is suitable for this research on maternal mental health status.

### 2.2.2. Survey method

Uniformly trained medical and psychological personnel carried out the survey, unifying the instruction of the discourse and standardizing the survey process. The form of anonymous questionnaire completion is used, and all questionnaires are completed and answered within 1 week to ensure that the emotional state of pregnant women is stable. The questionnaires were verified on the spot, reviewed twice, and invalid questionnaires with omissions, logical contradictions, and homogenized answers were excluded, so that the quality of the data was strictly controlled.

### 2.3. Observation indicators

Observe the maternal CERQ-C adaptive and non-adaptive dimension scores of the two groups; MCMQ face, avoid, yield dimension scores; SCL-90 scores of each psychological symptom dimension, and analyze the correlation between the three.

### 2.4. Statistical methods

SPSS 25.0 statistical software was applied to carry out statistical processing. The normal score measurement information is expressed as the mean  $\pm$  standard deviation (SD), and the comparison between the two groups was made using the independent samples t-test. Count data were expressed as the number of cases (%), and comparisons between groups were made using the  $\chi^2$  test. The correlation between cognitive emotion regulation and coping styles and mental health was analyzed using Pearson software. The difference was considered statistically significant at  $P < 0.05$ .

## 3. Results

### 3.1. Comparison of CERQ-C scale scores between the two groups

The total score of CERQ-C adaptive dimension in the observation group was ( $62.86 \pm 10.95$ ), which was significantly lower than that of ( $68.56 \pm 10.24$ ) in the positive control group ( $t = 4.671, P = 0.003$ ). The total score of the non-adaptive dimension in the observation group was ( $63.35 \pm 10.37$ ), which was significantly higher than ( $60.91 \pm 9.59$ ) in the control group ( $t = 2.122, P = 0.035$ ). Among the subgroups of high-risk pregnancies, the lowest adaptive dimension scores and non-adaptive dimension scores were in the group at risk of severe obstetric hemorrhage, as shown in **Table 1**.

**Table 1.** Comparison of maternal CERQ-C scale scores between the two groups (mean  $\pm$  SD, points)

Group	Adaptive dimension	Non-adaptive dimension
Control group (n = 150)	$68.56 \pm 10.24$	$60.91 \pm 9.59$
Observation group (n = 152)	$62.86 \pm 10.95$	$63.35 \pm 10.37$
Gestational hypertension group (n = 43)	$15.81 \pm 2.65$	$16.12 \pm 2.48$
Gestational diabetes group (n = 47)	$16.43 \pm 2.78$	$15.56 \pm 2.63$
Severe obstetric hemorrhage risk group (n = 33)	$14.57 \pm 2.69$	$16.79 \pm 2.71$
Fetal intrauterine distress group (n = 29)	$16.05 \pm 2.83$	$14.88 \pm 2.55$

### 3.2. Comparison of MCMQ scale scores between the two groups

The scores of avoidance and yielding (acceptance) dimensions in the observation group were higher than

those of the control group, and the scores of the facing dimension were lower than those of the control group; the differences were statistically significant ( $t = 2.290, 3.760, 2.427, P = 0.023, 0.000, 0.016$ ). In the subgroup of high-risk pregnancies, the highest scores on the avoidance and yielding (acceptance) dimensions and the lowest scores on the facing dimension pointed to the risk of severe obstetric hemorrhage, as shown in **Table 2**.

**Table 2.** Comparison of maternal MCMQ scale scores between the two groups (mean  $\pm$  SD, points)

Group	Facing dimension	Avoidance dimension	Submission (acceptance) dimension
Control group (n = 150)	63.48 + 8.89	60.12 + 9.65	61.56 + 7.65
Observation group (n = 152)	60.93 + 9.36	62.74 + 10.22	64.81 + 7.37
Gestational hypertension group (n = 43)	15.11 $\pm$ 2.55	15.67 $\pm$ 2.75	16.25 + 1.89
Gestational diabetes group (n = 47)	16.25 $\pm$ 2.17	14.62 $\pm$ 2.53	15.36 + 1.83
Severe obstetric hemorrhage risk group (n = 33)	14.19 $\pm$ 2.43	16.83 $\pm$ 2.49	17.33 + 1.78
Fetal intrauterine distress group (n = 29)	15.38 $\pm$ 2.21	15.62 $\pm$ 2.45	15.87 + 1.87

### 3.3. Comparison of SCL-90 scale scores between the two groups

The scores of the nine symptom dimensions of the SCL-90 scale in the observation group were significantly higher than those in the control group, and the differences were all statistically significant ( $P < 0.05$ ). Among the high-risk subgroups, the group at risk of severe obstetric hemorrhage had the highest scores on all psychological symptom dimensions and the most severely impaired mental health ( $P < 0.05$ ). See **Table 3**.

**Table 3.** Comparison of maternal SCL-90 scale scores between the two groups (mean  $\pm$  SD, points)

Item	Control group (n = 150)	Observation group (n = 152)	High-risk pregnancy subgroup			
			Gestational diabetes group	Gestational hypertension-related group	Severe obstetric hemorrhage risk group	Fetal intrauterine distress group
Somatization dimension	22.58 $\pm$ 3.11	33.65 $\pm$ 4.47*	29.75 $\pm$ 4.21	34.27 $\pm$ 4.56	38.41 $\pm$ 4.73	32.18 $\pm$ 4.39
Dimension of obsessive-compulsive symptoms	17.85 $\pm$ 3.73	29.19 $\pm$ 4.66*	26.38 $\pm$ 4.32	29.86 $\pm$ 4.81	32.59 $\pm$ 4.94	27.93 $\pm$ 4.57
Dimension of interpersonal sensitivity	16.36 $\pm$ 3.18	28.29 $\pm$ 4.03*	25.93 $\pm$ 3.87	28.75 $\pm$ 4.02	31.62 $\pm$ 4.26	26.86 $\pm$ 3.95
Depression dimension	24.18 $\pm$ 3.13	36.69 $\pm$ 3.56*	32.42 $\pm$ 3.35	37.19 $\pm$ 3.62	41.26 $\pm$ 3.78	35.87 $\pm$ 3.48
Anxiety dimension	17.91 $\pm$ 3.13	27.83 $\pm$ 4.22*	24.66 $\pm$ 4.01	28.33 $\pm$ 4.28	31.75 $\pm$ 4.43	26.58 $\pm$ 4.15
Hostile dimension	11.21 $\pm$ 2.32	17.81 $\pm$ 2.64*	15.79 $\pm$ 2.53	18.37 $\pm$ 2.68	20.12 $\pm$ 2.74	16.94 $\pm$ 2.61
Horror dimension	12.82 $\pm$ 2.24	18.41 $\pm$ 3.16*	15.67 $\pm$ 3.05	18.94 $\pm$ 3.17	21.58 $\pm$ 3.29	17.45 $\pm$ 3.11
Paranoia dimension	10.93 $\pm$ 2.13	17.84 $\pm$ 3.79*	15.32 $\pm$ 3.61	18.49 $\pm$ 3.85	20.74 $\pm$ 3.97	16.83 $\pm$ 3.72
Psychoticism dimension	18.65 $\pm$ 3.42	26.86 $\pm$ 3.35*	22.97 $\pm$ 3.12	27.33 $\pm$ 3.45	31.49 $\pm$ 3.58	25.65 $\pm$ 3.26

Note: \* $P < 0.05$ .

### 3.4. Correlation analysis of cognitive emotion regulation with coping styles and mental health status in high-risk pregnancy

The results of Pearson correlation analysis showed that the adaptive dimension of the CERQ-C scale was positively correlated with the confronting dimension of the MCMQ scale ( $r = 0.412, P = 0.003$ ); and the non-adaptive dimension was positively correlated with the yielding dimension ( $r = 0.387, P = 0.006$ ). Non-adaptive cognitive emotion regulation was significantly and positively correlated with SCL-90 somatization, depression, anxiety, and total score ( $P < 0.01$ ), with the strongest correlation with depression and anxiety; the adaptive dimension had no significant correlation with the mental health indicators ( $P > 0.05$ ), and the specific results are shown in **Table 4**.

**Table 4.** Correlation analysis of CERQ-C with MCMQ and SCL-90 (r value)

Variable	Adaptive dimension	Non-adaptive dimension
MCMQ-facing	0.412**	-0.124
MCMQ-Avoidance	-0.112	0.163
MCMQ-Yield	-0.201	0.387**
SCL-90-somatization	-0.098	0.415**
SCL-90-Depression	-0.142	0.502**
SCL-90-Anxiety	-0.135	0.478**
SCL-90-total score	-0.156	0.443**

Note: \*\* $P < 0.01$ .

## 4. Discussion

With the change of China's family planning policy, the proportion of high-age pregnant women continues to rise, resulting in a yearly increase in the number of high-risk pregnancies, which has become a key problem that threatens the health of mothers and infants and increases the burden on public health<sup>[8]</sup>. This study found that pregnant women with high-risk pregnancies have significant cognitive-emotional regulation imbalances, and they are less likely to use positive cognitive regulation strategies and rely excessively on non-adaptive strategies, such as catastrophizing and self-blame, compared with women with normal pregnancies. A high-risk pregnancy is a persistent, uncontrollable stressor. Mothers facing long-term psychological pressure of fetal safety and unknown pregnancy outcome are prone to fall into a negative cognitive cycle, which depletes their psychological resources and ultimately leads to dysfunctional emotion regulation.

There are significant gradient differences in the psychological status of different high-risk types of pregnant women, among which the cognitive imbalance, negative coping, and psychological symptoms of pregnant women at risk of severe obstetric hemorrhage are the most serious. The reason for this is that obstetric hemorrhage has an acute onset and a high risk of death, which can bring strong fear of survival to pregnant women and trigger extreme negative cognition; whereas in high-risk pregnancies that are more controllable, such as gestational diabetes mellitus, pregnant women can control their condition through standardized interventions, and their psychological stress is relatively moderate. Their cognitive regulation is better<sup>[9]</sup>.

The present study found that the negative coping styles of avoidance and submission were commonly used by pregnant women with high-risk pregnancies. Avoidance is characterized by deliberate neglect

of the condition, avoidance of obstetric examination and communication of the condition, which may temporarily relieve anxiety but delays clinical intervention and aggravates the risk of pregnancy; submission is characterized by learned helplessness and passive acceptance of poor outcomes, leading to decreased treatment adherence. Negative coping is a direct result of an imbalance in cognitive-emotional regulation and is an important mediator in triggering various types of psychological problems. SCL-90 results confirm that high-risk pregnant women have a significantly high prevalence of anxiety, depression, and somatization symptoms, and that long-term psychological stress not only affects mental health but also triggers endocrine disruption, aggravates pregnancy comorbidities, and creates a vicious circle<sup>[10]</sup>. The results of correlation analysis showed that adaptive cognitive emotion regulation can promote individuals to adopt positive coping styles, while non-adaptive regulation can prompt individuals to succumb to stress, which in turn induces anxiety, depression and other psychological problems. Adaptive regulation was not directly correlated with psychological health in this study because of the high stress intensity of high-risk pregnancy, and the psychoprotective effects of positive cognitive strategies were masked by the high-intensity stressors, which only indirectly alleviated psychological stress by improving coping styles.

## 5. Conclusion

In conclusion, cognitive-emotional dysregulation is the core causative factor of negative coping and psychological abnormalities in high-risk pregnancies, and the higher the risk of disease, the more serious the cognitive dysregulation and psychological problems. In clinical work, we need to abandon the traditional model of “focusing on the physical, but not on the psychological”, and incorporate cognitive-emotional regulation assessment and psychological screening into the routine management of high-risk pregnancy. We should carry out stratified interventions for different risk levels of pregnant women, focusing on high-risk groups such as severe obstetric hemorrhage risk, correcting non-adaptive emotion regulation patterns through cognitive interventions, and guiding positive coping styles, to improve the state of maternal mental health and optimize the outcome of pregnancy for mothers and infants.

## Disclosure statement

The authors declare no conflict of interest.

## References

- [1] Zhao HY, Wang Y, 2022, Effects of Sleep and Emotional Status During Pregnancy on Maternal Early Cognitive Function. *Chongqing Medicine*, 51(12): 2157–2160.
- [2] Chen Y, Pan X, Zhou C, et al., 2023, Analysis of Anxiety and Depression in Pregnant Women in Late Pregnancy and the Need for Psychological Intervention. *China Maternal and Child Health Care*, 38(1): 1–6.
- [3] Ding W, Xu X, Zhang Y, et al., 2023, Prevalence Characteristics of High-Risk Pregnancy Factors and Their Impact on Pregnancy Outcomes in Huai’an City. *China Maternal and Child Health*, 38(12): 2218–2223.
- [4] Wang X, 2023, Analysis of Maternal Risk Factors for High-Risk Pregnancy and Its Treatment. *Chinese Science and Technology Journal Database (Full Text Edition) Medicine and Health*, (9): 63–66.
- [5] Qu M, Yang L, Wang J, et al., 2022, The Roles of Cognitive Emotion Regulation Strategies and Punishment

- Sensitivity Between Parental Psychological Control and Adolescent Non-Suicidal Self-Injurious Behavior. *Chinese Journal of Clinical Psychology*, 30(5): 1192–1197.
- [6] Yang M, Wu Z, 2026, The Effect of Nursing Care Under the Quantitative Assessment Strategy Model on Pregnancy Outcomes and Psychological Status of Women with Hypertension-Related High-Risk Pregnancies. *Marriage and Health*, 32(10): 16–18.
- [7] Wang Y, Yan Q, 2026, The Mediating Effect of Cognitive Emotion Regulation on the Relationship Between Maternal Anxiety and Coping Styles in High-Risk Pregnancies. *Chinese Journal of Modern Nursing*, 32(7): 949–953.
- [8] Li Z, Sun N, Wang S, 2026, Analysis of Factors Affecting Maternal Birth Trauma in High-Risk Pregnancies. *Preventive Medicine*, 38(2): 140–144.
- [9] He L, Cai M, Xin D, 2026, Analysis of the Current Situation and Influencing Factors of Postpartum Delivery Trauma in Women With High-Risk Pregnancies. *Chinese Journal of Family Planning*, 34(1): 10–15.
- [10] Liu Y, Chen C, Wan W, 2025, Analysis of the Current Situation and Influencing Factors of Psychological Help-Seeking Stigma Among Pregnant Women With High-Risk Pregnancies. *Shanghai Nursing Care*, 25(11): 61–65.

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