
Prenatal Coping Patterns Mediate The Effect of Uncertainty and Perceived Social Support on The Psychological Well-Being of High-Risk Pregnant Women

Fatma Mohammed Ibrahim Morsi*, Zienab Mohammed Ibrahim Morsi **

* Psychiatric/Mental Health Nursing- Faculty of Nursing - Ain Shams University

** Psychiatric/Mental Health Nursing -Faculty of Nursing - MTI

Abstract

Background: High risk pregnancy can introduce additional psychological stress on the pregnant women. Also, poor coping skills during pregnancy are associated with negative outcomes. The effects of perceived social support and uncertainty on the psychological well-being of high-risk pregnant women can be mediated by their prenatal coping patterns. **Aim:** This study aimed to assess the mediating effects of prenatal coping patterns of the perceived social support, and uncertainty on the psychological well-being of high-risk pregnant women. **Design:** A cross-sectional, correlational study design was utilized on 162 high-risk pregnant women according to certain inclusion criteria and who were attending outpatient clinic in Obstetrics and Gynecology Hospital affiliated to Ain Shams University Hospitals. **Tools of data collection:** The data was collected using an interview questionnaire that included five sections as the following: 1) patient's demographic characteristics and obstetric history 2) The Mishel Uncertainty in Illness Scale; 3) The Medical Outcomes Study (MOS) Social Support Survey; 4) The Prenatal Coping Inventory; 5) and The Psychological General Well-Being Index. **Results:** data and path analysis revealed that, planning/preparation for motherhood negatively mediated the effect of uncertainty on psychological wellbeing of high-risk pregnant women; planning/preparation for motherhood mediated the effect of perceived social support on psychological wellbeing of them; and perceived social support had direct effect on psychological wellbeing of the studied subject. Regarding the psychological well-being, perceived social support, uncertainty, and prenatal coping pattern of the studied high-risk pregnant women, less than half of them had moderate psychological distress, less than two third of them had high perceived social support, more than two third of them reported low level of uncertainty, the majority of them reported less use of avoidance, less than two third of them reported less use of spiritual coping, whereas more than three quarters of them reported frequent use of planning/preparation for motherhood. **Conclusion:** The study concluded that prenatal coping patterns (problem focused coping) mediated the effects of uncertainty and perceived social support on the psychological well-being of the studied high-risk pregnant women. **Recommendation:** Incorporating psychosocial assessment in routine prenatal screening for women experiencing medically complex pregnancies with continuous and routine screening for depression and anxiety.

Key words: Prenatal coping - Uncertainty - Perceived social support - Psychological well-being - High-risk pregnant women

Introduction

Although pregnancy has been reported by many women as a joyful and happy period in their lives, the requirements and changes associated with

this reproductive period, and the social context within which pregnancy occurs, can produce high levels of stress and anxiety for many pregnant mothers. Pregnancy requires many adjustments in biological, psychological, social, familial, financial, occupational and other realms

which may evoke emotional distress for women (**Handley, 2012; and Guardino and Dunkel Schetter, 2014**).

While pregnancy can be a source of stress, worry, and anxiety for women who are experiencing normal, low-risk pregnancy (**Gourounti, Lykeridou, Taskou, Kafetsios, & Sandall, 2012**), it is likely much more stressful and anxiety producing for women experiencing a pregnancy fraught with difficulties (**Gourounti, et al., 2012; and Fairbrother, Young, Zhang, Janssen, & Antony, 2017**).

A pregnancy can be classified as “high risk” on the basis of an increased possibility of fetal anomaly, compromises to maternal or fetal health, and/or significant risk for maternal or fetal death. The diagnosis of a high-risk pregnancy can introduce additional stress, anxiety, depressive symptoms and uncertainty on a pregnant woman. Women with high-risk pregnancies have high rates of bed rest which may have severe serious adverse physiological and psychological effects (**Gourounti, Karpathiotaki, & Vaslamatzis, 2015**).

Depression and anxiety have been found to be exacerbated by uncertainty during high-risk pregnancies in women suffering from a medical disorder (**King, Chambers, O’Donnell, Jayaweera, Williamson, & Glover, 2010**).

Mishel’s uncertainty theory describes uncertainty as a complex cognitive stressor that impacts an individual’s ability to make sense of events. The uncertainty in illness theory proposes that uncertainty exists, when the person is unable to accurately predict the outcomes as the events are ambiguous, complex, and unpredictable, therefore, it is considered a major cause of psychological stress to the patients (**Sajjadi, Rassouli,**

Abbaszadeh, Majd, & Zendehtel, 2014; and Clayton, Dean, and Mishel, 2018). The theory has been used more frequently in high-risk pregnant populations (**Hui Choi, Lee, Chan, Cheung, Lee, & Chan, 2012**). Uncertainty can be foundational to both anxiety and depression in pregnancy as the woman may be unable to accurately determine the meaning of the symptoms or changes in her life because the situation may not be adequately structured or categorized, as they are lacking sufficient cues (**Handley, 2012**).

Social support is a multi-faceted complex concept that include voluntary act from an individual that is given to another one, which elicits an immediate or delayed positive response in the recipient. The voluntary act can be given by a family member, friend, husband/partner, and/or others, and it may be given in different forms: informational, physical, emotional (e.g. empathy, caring, love), instrumental support (e.g. financial), and appraisal (e.g. information promoting self-evaluation). Evidence has shown that social support may decrease risk of depression during pregnancy, which leads to positive health and pregnancy outcomes (**Nurullah, 2012; Mirabzadeh, Dolatian, Forouzan, Sajjadi, Majd, & Mahmoodi, 2013; and Kim, Connolly, & Tamim, 2014**).

Coping is a dynamic process by which a person responds to stressful situations. **Lazarus and Folkman, 1984** in transactional theory of stress and coping described coping as any attempt, successful or unsuccessful, to manage conditions that are sensed as stressors. Coping has two widely recognized major functions: regulating stressful emotions (emotion-focused coping strategies such as passive and active avoidance, escaping, seeking social support, and positively reappraising the stressor) and managing the problem that is causing the distress (problem-focused coping strategies such

as planning how to change the stressor, seeking practical or informational support, and confronting the stressful situation) (Faramarzi, Pasha, Khafri, & Heidary, 2017).

This model provides a viable framework through which the relationship between the high-risk pregnancy and maternal psychological distress, and factors that influence this relationship, can be understood. This model suggests that coping with a high-risk pregnancy is a complex interaction of cognitive appraisals, coping strategies and coping resources. Particular patterns of thinking and responding, personal characteristics, plus access to resources such as social support, can reduce the impact of high-risk pregnancy on psychological well-being of the high-risk pregnant women (Gourounti, Anagnostopoulos, & Lykeridou, 2013).

Problem-focused coping refers to action taken either within the environment (for example, preparing financially) or within oneself (for example, learning new skills) to alter the stressful situation. Several problem-focused coping strategies were perceived as either helpful or potentially helpful for coping during pregnancy as they better resolve the stressor, relieve stress and thereby, protect against adverse birth outcomes (Roberts, Muller, Sweeney, Bratkovic, & Gannoni, 2014).

Whereas emotion-focused coping strategies are utilized to alter the emotion attached to a situation rather than changing any aspect of the situation itself. This is achieved by either reappraising the problem to change the relational meaning of the situation as emphasizing the positive of the situation or altering the way in which the situation is attended to as avoidance. Avoidance coping is a form of emotion-focused coping and in this

strategy, the woman attempts to escape from the feelings of distress related to the stressor. Avoidance coping is frequently associated with negative emotional outcomes (Faramarzi, et al., 2017).

Women with a high-risk pregnancy who appraise the situation as within their control are experiencing increased psychological well-being, while their appraisal of threat and uncertainty make them at risk for increased psychological distress. Positive reappraisal is an effective emotion-focused coping strategy for high-risk pregnant women whilst avoidance coping is associated with increased psychological distress. Social support is effective for high-risk pregnant women, especially support from medical professionals due to high-risk condition (Horsch, Brooks, & Fletcher, 2013).

Significance of the study:

The prevalence of high-risk pregnancies is still high in the developing countries (Zaidan, Al-Gburi, & Alhilli, 2018). World Health Organization has reported that, in Africa almost 15% of all the pregnant women can develop potentially life-threatening complications and about 830 women die daily as a result of complications during antenatal period and childbirth (World Health Organization, 2017).

Pregnant women perceive the diagnosis of high-risk pregnancy as stressful, as it is associated with increased levels of uncertainty regarding the pregnancy. Additionally, poor coping skills and lack of social support during pregnancy pose negative emotional and birth outcomes. Altogether, the effects of social support on psychological distress can be mediated by prenatal coping skills for these women.

Aim of the study:

The aim of this study was to assess the prenatal coping patterns mediating effects of the perceived social support, and uncertainty on the psychological well-being of high-risk pregnant women

Research question

1. Do prenatal coping patterns mediate the effects of uncertainty and perceived social support on the psychological well-being of high-risk pregnant women?
2. What are the types of correlation among women`s uncertainty, perceived social support, emotion focused coping, problem focused coping and their psychological well-being?

Operational definition:

In present study prenatal coping patterns are preparation for motherhood, avoidance coping, and spirituality.

Subject and Methods**Research design:**

A cross-sectional, correlational design was used to examine the relationships among uncertainty, perceived social support, prenatal coping strategies, and psychological well-being among the studied high-risk pregnant women.

Study setting

This study was conducted at outpatient clinic in Obstetrics and Gynecology Hospital - It is affiliated to Ain Shams University Hospitals.

Subjects:

A purposive sample of 162 high-risk pregnant women according to certain inclusion criteria, who were available at the time of the study, and determined by using appropriate statistical equation.

$$S = X^2 NP (1-P) \div d^2 (N-1) + X^2 P (1-P).$$

s= required sample size

x=the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841)

N=the population size.

P=the population proportion (assumed to be .50 since this would provide the maximum sample size)

d=the degree of accuracy expressed as a proportion (.05) (Krejcie, & Morgan, 1970).

Inclusion criteria:

- Age: 20 to 45 years.
- Educational level: All educational levels and different socioeconomic classes.
- Agree to participate in the study

Exclusion criteria:

- Previous history of neurological or mental disorder.
- Physically handicapped.
- Previous high-risk pregnancy.

Tools of data collection

Data were collected by using the following tools:

I)Patient's demographic characteristics and obstetric history:

this includes age, educational level, occupational status, adequacy of monthly income, gravidity, gestational age, and obstetric and medical diagnosis.

II) The Mishel Uncertainty in Illness Scale (MUIS; Mishel, 1997): the scale contains 33 items assessing four dimensions (ambiguity, complexity, inconsistency, and unpredictability) on a five-point Likert scale (1= strongly disagree, 5= strongly agree). Total scores range from 33 to 165, with higher scores indicating more uncertainty. Based on the approval of the instrument's author that was obtained by **Giurgescu, and colleagues 2006**, the wording of the items was changed from "illness" to "condition" to indicate relevance to high-risk pregnancy (**M. Mishel, personal communication, February 20, 2003: in Giurgescu, Penckofer, Maurer, & Bryant, 2006**). The instrument has been found to be internally consistent (Cronbach's = .87), and construct validity was supported through factor analysis (**Mishel, 1997**). In the current study, the Cronbach's "coefficient of the MUIS was .89.

Dimensions	Certai n	Uncertai n
Ambiguity	13- 44.2	44.3-65
Inconsistency	8-27.2	27.3-40
Complexity	7-23.8	23.9-35
Unpredictability	5-17	17.1-25
MUIS total	33- 108.8	108.9- 165

III) The Medical Outcomes Study (MOS) Social Support Survey: It was developed by **Sherbourne & Steward**, it is used to measure the perceived availability of support. The MOS contains 1 item related to information on network (i.e., the number of friends and relatives that are available to the individual) and 19 items related to four functional domains:

emotional/informational, tangible, affectionate, and positive social interaction. Individuals indicate how often each of the 19 items is available, using a five-point Likert scale from 1 = none of the time to 5 = all of the time. The 19 items are summed to obtain a total score ranging from 19 to 95, with higher scores indicating a greater availability of support. The instrument has good internal consistency (Cronbach's " = .96), test-retest reliability ($r = .78$) (**Sherbourne & Stewart, 1991**). In this study, the Cronbach's "coefficient for MOS was .91.

MOS	High	Low
Perceived Social Support	13- 44.2	44.3- 65

IV) The Prenatal Coping Inventory revised (NuPCI): it was developed by **Yali & Lobel, (1999)**, and it is used to measure prenatal coping strategies for pregnant women. It is a specific self-report instrument and contains 42 items that focuses on the coping style of pregnant women during the prenatal period. The subscales include Planning-Preparation, Spiritual-Positive Coping, and Avoidance. In this study 10 items were eliminated as alcohol use, drug use, and other items that were not matched with our culture. Respondents report how often they used different kinds of coping in the past month on a scale from 0 (never) to 4 (very often). The higher the mean subscale score, the more frequently that coping style was used. In previous study internal consistency (Cronbach's ") ranged from .80 to .85 for the subscales of preparation, prayer, and positive interpretation and was .76 for the subscale of avoidance (**Lobel, Yali, Zhu, DeVincent, & Meyer, 2002**). The Cronbach's "coefficients for the current research were high for the subscales of avoidance (.81), preparation (.89), and prayer (.83).

Subscales	Les s use	Frequen t use
Preparation/planning (15 items)	0-45	45.1-75
Avoidance (11 items)	0-33	33.1-55
Spiritual/positive coping (6 items)	0-18	18.1-30
Prenatal Coping total (32 items)	0-96	>96 -160

V) The Psychological General Well-Being Index (PGWB): It is a validated Health Related Quality of Life (HRQoL) measure, widely used to provide a general evaluation of self-perceived psychological health and well-being and was developed by **Dupuy (1984)**. The instrument contains 22 items on a six-point Likert scale from 0 = most distress to 5 = most well-being. The PGWB is composed of six subscales: positive well-being (4 items), general health (3 items), vitality (4 items), depressed mood (3 items), anxiety (5 items), and self-control (3 items). The overall reliability for the instrument was .94, and evidence of concurrent validity had acceptable correlations, ranging from .52 to .80 (**Dupuy, 1984**). The Cronbach's "coefficient of the PGWB for the present research was .93.

In each subscale low scores are those less than or equals 60% of the summed scores, whereas high scores are those more than 60% of the summed scores. The total score ranges from 0 to 110, with some items being reverse-coded. Scores higher than 73 represent greater sense of well-being, scores between 61 and 72 represent moderate distress, and scores below 61 represent severe distress.

Operational Design

The operational design for this study includes preparatory phase, pilot

study, field work, limitations of the study, and ethical considerations.

Preparatory phase:

It included reviewing past, current, local and international related literature and theoretical knowledge of various aspects of prenatal coping patterns, uncertainty of the illness, perceived social support and psychological well-being of high-risk pregnant women using books, articles, internet, periodicals and magazines.

The researchers prepared and designed tools of data collection. Then the tools were translated into Arabic language and back translated into English language by language experts, and any discrepancies elicited between the back translation and the original tools were taken as an indication of translation error.

Tool validity and reliability:

It was ascertained by a group of experts from Psychiatric/Mental Health Nursing, Maternity Nursing and Community Health Nursing, their opinions were elicited as regards to the tool format layout, consistency, knowledge accuracy, relevance, and competencies as well the scoring system. Internal consistency (Cronbach alpha) and Pearson correlation coefficient (r) were tested for each tool.

Pilot study:

The pilot study was carried out from the beginning of January to the beginning of February 2018. It was conducted on a ratio of 10 % of the study sample size "16 cases of high-risk pregnant women" who were later excluded from the study subjects and substituted with other 16 cases who fulfilled the previously mentioned criteria, to evaluate

the clarity, applicability and feasibility of the research tools and to estimate the time needed for data collection. The tool was finalized based on the results of the pilot.

Field work:

The study consumed four months during the period from beginning of March to the end of June 2018 for data collections.

Before starting the data collection, the nature and the purpose of the study were explained to:

1. Director of outpatient clinic to get an official permission.
2. The head nurse and nursing staff in outpatient clinic separately to get their cooperation.

Data were collected through 2 days/week (Tuesday, and Wednesday) during morning shift (10.00 a.m.: 2.00 p.m.) for 15-20 minutes for each case. Confidentiality of any obtained information was assured, and the subjects were informed about their right to participate or not in the study. The participants were also assured about anonymity, and that data will only be used for the purpose of the study.

The researchers met with each patient individually and introduced themselves; explained the purpose and nature of the study; and ensured the confidentiality of data. Patients were asked if they were interested and agreed to participate in the study. After that, the questionnaire forms were distributed to each patient individually and they were asked to complete it by selecting only one response that reflects the actual situation. The researchers asked the patients about any difficulties that faced them during

answering the questionnaires and offered help.

Administrative Design

An official letter was issued from the Faculty of Nursing-Ain Shams University to the director of Obstetric and Gynecological Hospital, explaining the aim of the study and requesting their permission for data collection. Oral consent was obtained from every participant who shared the study.

Ethical considerations

Participation was voluntary and anonymity was assured. Approval of hospital director and in charge nurses was taken first also suitable time for data collection was determined with each patient and oral consent was taken from each participant. The participants were informed their right to withdraw from the study at any time. Subjects were assured about confidentiality of the information gathered and its use only for their benefits and for the purpose of the study.

Statistical Design

In the present study, a frequency analysis, using SPSS 20. The collected data were organized, categorized, tabulated and analyzed. Data were presented in tables and figure using actual numbers and percentage of tables. The statistical significance and association were assessed using Mean and standard deviation, T- test and Pearson correlation coefficient. The observed differences, associations were considered as follows: $P > 0.05$ not significant (NS); $P < 0.05$ significant (S); and $P < 0.001$ high significant (HS).

Structural equation modeling via LISREL 8 (Joreskog & Sorbom, 1996)

was used for analyzing the hypothesized mediating effects of prenatal coping patterns by examining the statistical significance of the direct and indirect effects using path analysis.

Results

Table (1) reveals that less than half (46.3%) of the studied women were at age group between 26-30 years old and the mean age of them was 27.3 ± 4.3 years old. Regarding educational level less than half (46.9%) of the studied women had finished university education. Regarding adequacy of monthly income less than two fifths (38.3%) of them their monthly income was enough to some extent. More than two thirds (67.3%) of the studied sample were employed, regarding gravidity less than three quarters (73.5%) of them were multigravida. As regards gestational age, less than half (46.9%) of the studied women were between 34-36 weeks gestation.

Table (2) shows that less than three quarters of the studied women them (72.2%) had anemia, and less than two third (65.4%) of them had antepartum hemorrhage.

Figure (1): describes that the highest percentage (80%) of the studied women reported higher scores in positive well-being subscale, less than three quarters (71.7%) of them reported high scores in self-control subscale, more than two thirds (67.8%) reported high scores in vitality, and less than two third (63.3%) of them reported high scores in general health, while less than two thirds (63.3%) of them reported low scores in depressed mood subscales which indicates more depression symptoms, and more than half (54.3%) of them reported low scores in anxiety subscales which indicates more anxiety symptoms.

Table (3): shows that the studied high-risk pregnant women were certain about their condition with mean scores 96.7 ± 30.3 , they had high perceived social support with mean score 74.9 ± 17.3 , and they experienced moderate psychological distress with mean score 65.7 ± 13.4 . Regarding coping pattern, the studied high-risk pregnant women reported high use of problem focused coping of planning/preparation for motherhood with mean score 41.1 ± 16.3 , they reported less use of emotional focused coping of avoidance with mean score 16.4 ± 11.7 , and they reported less use of emotional focused of spiritual coping with mean score 11.0 ± 5.9 .

Figure (2): reveals that less than one quarter of them (22.7%) had severe psychological distress, while less than half (45%) had moderate psychological distress

Figure (3): illustrates that less than two third (63.3%) of the studied high-risk pregnant women had high perceived social support

Figure (4): illustrates that more than three quarters (75.2% & 78.3%) of the studied high-risk pregnant women reported low level of ambiguity and unpredictability of the condition respectively, while three fifths of them (60%) reported high level of inconsistency and more than half of them (53.3%) reported high level of complexity of their condition.

Figure (5): shows that more than two third (69.4%) of the studied high-risk pregnant women reported low level of uncertainty.

Figure (6): reveals that the majority of the studied high-risk pregnant women (81.6%) reported less use of avoidance (emotional focused coping),

less than two third of them (63.3%) reported less use of spiritual coping, whereas more than three quarters of them (76.7%) reported frequent use of planning/preparation for motherhood (problem focused coping).

Table (4): shows that, there is an indirect correlation between women`s uncertainty and perceived social support. Indirect correlation between women`s uncertainty and planning/preparation for motherhood. Indirect correlation between women`s uncertainty and psychological well-being. Indirect correlation between women`s perceived social Support and avoidance. Indirect correlation between women`s planning/preparation for motherhood and avoidance. Indirect correlation between women`s psychological well-being and avoidance. Direct correlation between women`s uncertainty and avoidance. There is a direct correlation between perceived social

support and planning/preparation for motherhood. Direct correlation between perceived social support and psychological well-being

Table (5): shows that, Indirect correlation between women`s uncertainty subscales and psychological well-being.

Figure (7): Planning/preparation for motherhood negatively mediate the effect of uncertainty on psychological wellbeing of high-risk pregnant women. Planning/preparation for motherhood mediate the effect of perceived social support on psychological wellbeing of high-risk pregnant women. Perceived social support has direct effect on psychological wellbeing of high-risk pregnant women.

Table 1: Distribution of the studied high-risk pregnant women according to their demographic characteristics and current pregnancy data (n=162).

Statement	No	%
Age		
20-<25	42	25.9
25- <30	75	46.3
30-38	45	27.8
Mean \pm SD		27.3 \pm 4.3
Educational Status		
Illiterate	17	10.5
Primary education	21	13
secondary education	48	29.6
university education	76	46.9
Occupational Status		
Works	109	67.3
Doesn't work	53	32.7
Adequacy of monthly income "according to participant's point of view"		
Enough =adequate	43	26.5
Enough to some extent	62	38.3
Not enough=inadequate	57	35.2
Gravida		
Multigravida	119	73.5
Primigravida	43	26.5
Gestational age		
24-29 weeks	24	14.8
30-33 weeks	62	38.3
34-36 weeks	76	46.9

Table 2: Distribution of the studied high-risk pregnant women according to their current obstetric and chronic medical diagnosis (n=162)

Statement	No	%
Hyperemesis gravidarum	10	6.2
Antepartum hemorrhage	<u>106</u>	<u>65.4</u>
Placenta previa	24	14.8
Premature rupture of membrane	17	10.5
Placenta accreta	3	1.9
Preterm labour	44	27.1
Abruption placenta	18	11.1
Gestational diabetes	53	32.7
Gestational hypertension	49	30.2
Liver diseases	16	9.9
Coagulopathy	7	4.3
Anemia	117	72.2
Malpresentation	34	20.9
Intrauterine growth retardation	46	28.4
Heart diseases	32	19.8
Oligohydramnios	45	27.8
Diabetes mellitus	24	14.8
Incompetent cervix	31	19.1

Numbers are not mutually exclusive

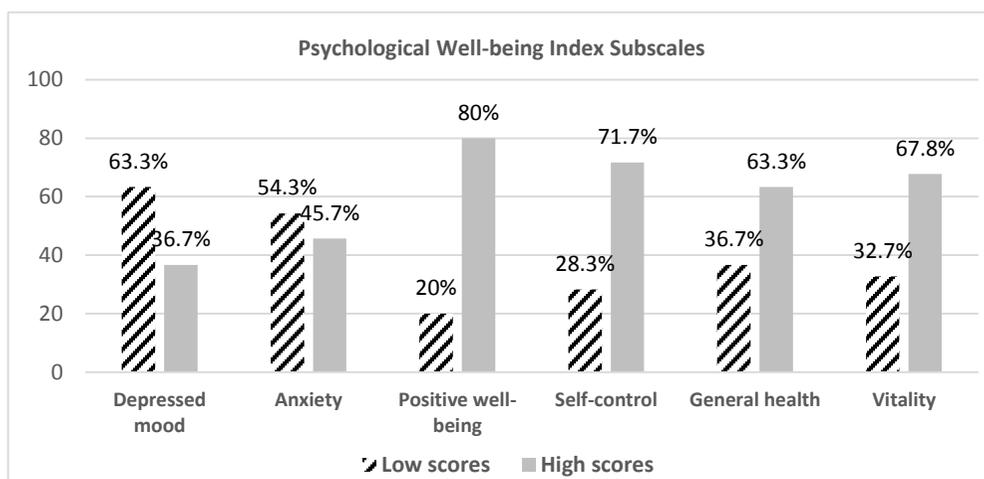


Figure (1): Distribution of the studied high-risk pregnant women according to their scores of psychological well-being index subscales (n=162).

Table 3: Descriptive data for uncertainty, social support, prenatal coping strategies, and psychological well-being of the studied high-risk pregnant women (n = 162).

Variables	Mean ± SD	Range
Uncertainty	96.7±30.3	36-161
Perceived social support	74.9±17.3	42-89
▪ Planning- Preparation for motherhood	41.1±16.3	11-59
▪ Avoidance	16.4±11.7	2-43
▪ Spiritual Coping	11.0±5.9	4-24
Psychological well being	65.7±13.4	45-90

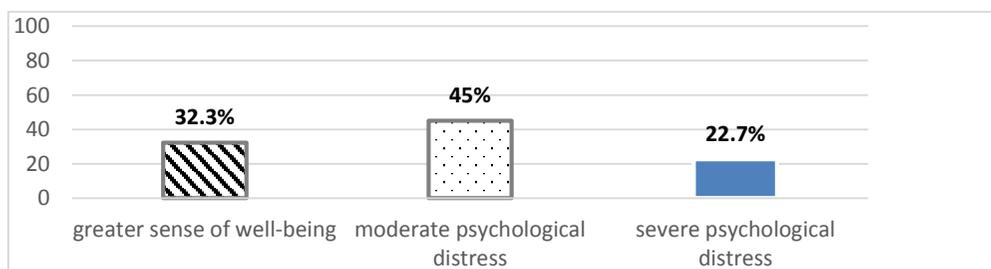


Figure (2): Distribution of the studied high-risk pregnant women according to their levels of psychological well-being (n=162).

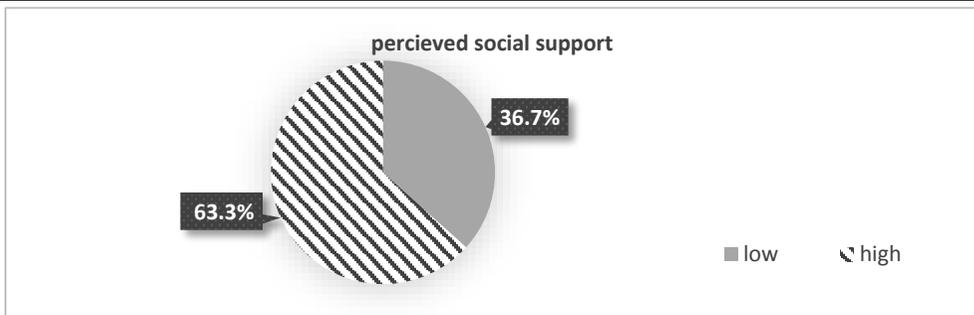


Figure (3): Distribution of the studied high-risk pregnant women according to their levels of percieved social support (n=162).

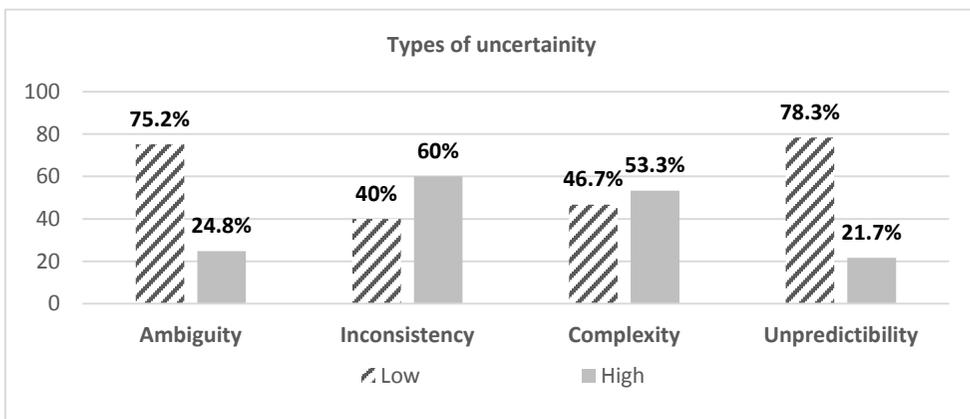


Figure (4): Distribution of the studied high-risk pregnant women according to their levels of uncertainty types: ambiguity, inconsistency, complexity, and unpredictability (n=162).

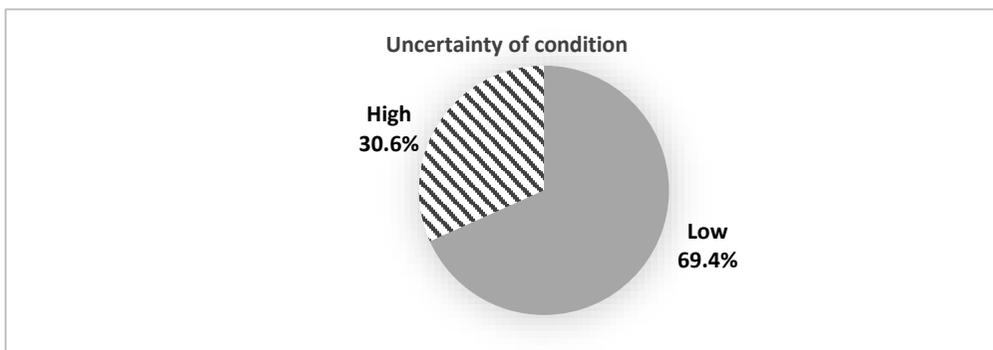


Figure (5): Distribution of the studied high-risk pregnant women according to their total levels of uncertainty (n=60).

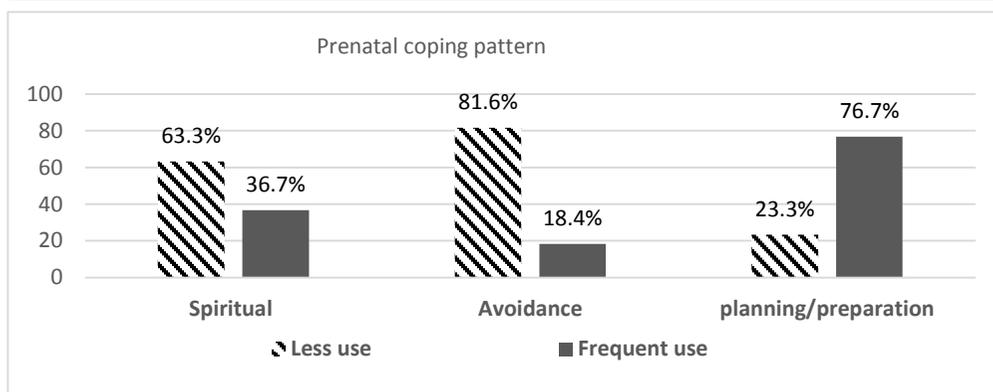


Figure (6): Distribution of the studied high-risk pregnant women according to their levels of prenatal coping patterns: spiritual, avoidance, and planning/preparation for motherhood (n=162).

Table (4): Correlation matrix among prenatal coping patterns, uncertainty of condition, perceived social support and psychological well-being of the studied high-risk pregnant women (n=162).

Variable	Uncertainty	Social Support	Preparation for motherhood	Avoidance	Spiritual coping
Uncertainty					
Perceived social support	-.382**				
▪ Planning-Preparation for motherhood (Problem focused)	-.499**	.549**			
▪ Avoidance (Emotional focused)	.277*	-.295*	-.520**		
▪ Spiritual coping (Emotional focused)	.155	.219	.155	.242	
Psychological well-being	-.494**	.629**	.595**	-.386**	.155

(*) statistically significant at $p < 0.05$

(**) highly statistically significant at $p < 0.001$.

Table (5): Correlation between types of uncertainty of condition and psychological well-being of the studied high-risk pregnant women (n=162).

Variable	Ambiguity	Unpredictability	Complexity	Inconsistency	
Psychological well-being	r	-0.471**	-0.359**	-0.359**	-0.304*
	P value	0.000	0.005	0.005	0.018

(*) statistically significant at $p < 0.05$.

(**) highly statistically significant at $p < 0.001$.

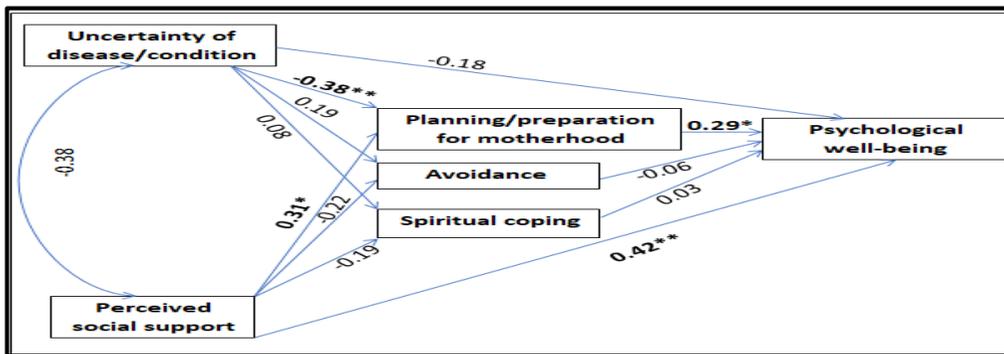


Figure (7): path analysis of the mediating effect of the residualized endogenous variables of prenatal coping strategies (spiritual, avoidance, and planning/preparation for motherhood) and exogenous variables of uncertainty and perceived social support on the psychological well-being of the studied high-risk pregnant women (n=162).

Discussion

The subjects of the current study were at age group from 26-30 years old and the mean age of them was 27.3 ± 4.3 years old, less than half of them finished university education, less than two fifths of them their monthly income was enough to some extent, and more than two thirds of them were employed. Regarding gravidity less than three quarters of them were multigravida, and less than half of them were 34-36 weeks gestation. As regard their high-risk condition, less than two third of the studied women had antepartum hemorrhage, and more than half of them had anemia.

Data of path analysis reveals that coping pattern of planning/preparation for motherhood negatively mediate the effect of uncertainty and directly mediate the effect of perceived social support on psychological wellbeing of high-risk pregnant women. Perceived social support has direct effects on psychological wellbeing of high-risk pregnant women and coping pattern of planning/preparation for motherhood.

This is in accordance with **Guardino & Dunkel Schetter, (2014)**

who studied “Coping during pregnancy: A systematic review and Recommendations” and stated that the literature provides some evidence that avoidant coping behaviors or styles and poor coping skills in general are associated with postpartum depression, preterm birth and infant development.

This is also in accordance with **Peñacoba-Puente, Carmona-Monge, Marín-Morales, & Naber, (2013)**, who studied “Coping strategies of Spanish pregnant women and their impact on anxiety and depression”, who mentioned that overt emotional expression and religious coping increased symptoms of depression and anxiety, whereas social support reduced these symptoms.

As well, this result is supported with **Giurgescu, et al., (2006); and Cihan, Dirilen-Gumus, & Erkenekli, (2017)**, who clarified that high levels of social support to women with high-risk pregnancy have a direct effect on preparation to motherhood.

Individuals can cope with stressful situations and that coping can act as a moderator in reducing emotional distress. Coping efforts may influence birth outcomes by reducing or preventing

negative emotional, behavioral, cognitive, and physiological responses to stressors **Oni, Harville, Xiong, & Buekens, (2015); & Puente, Morales, & Monge, (2015).**

The current data analysis shows that the studied high-risk pregnant women reported high scores in positive psychological well-being, self-control, general health, and vitality. This may be due to the impact of their uncertainty status and social support they perceived, as they report low level of ambiguity and unpredictability of the condition, and high level of perceived social support. These clarify the result that less than half of them had moderate psychological distress and about one third had a greater sense of well-being.

This result comes in line with **Ngai & Chan, (2012)** in their study entitled “Learned Resourcefulness, Social Support, and Perinatal Depression in Chinese Mothers”, in which they stated that social support had a direct impact on depressive symptoms and mediated the effect of stress on depressive symptoms during pregnancy as learned resourcefulness and social support serve to protect against the development of depressive symptoms and mediate the relationship between stress and depressive symptoms in the perinatal period.

This also in accordance with **Giurgescu, et al., (2006); Peñacoba-Puente, et al., (2013); and Cihan, et al., (2017)** who stated that social support affects positively the general health and psychological well-being of women with lower perceived control” high-risk pregnancies”. As depression decreases in response to the increase in social support during pregnancy (family, friends and spouse)

The results showed that less than two thirds of the studied high-risk pregnant women reported low scores in in depressed mood subscales which indicates more depression symptoms, and more than half of them reported low scores in anxiety subscales which indicates more anxiety symptoms. This may be contributed to their high levels of complexity and inconsistency of their condition as three fifths of them reported high level of inconsistency and more than half of them reported high level of complexity of their condition. Since they reported that they have not been told exactly what conditions they have, they have been given different opinions about their conditions, they were worried about being in pain or having unpleasant symptoms, they had many unanswered questions, and many times the explanations they received about their conditions seemed confusing.

This result comes in line with **Gourounti, et al., (2015 b)**, who studied psychosocial stress in high-risk pregnancy and mentioned that Prevalence of antenatal depression in high-risk pregnant women range from 18% to 58% and the prevalence of antenatal anxiety is almost 13%.

More specifically, in the study by **Gourounti, Karapanou, Karpathiotaki, and Vaslamatzis, (2015 a)** that was conducted in Greece, the high-risk pregnant women experienced high mean scores of state and trait anxiety, and more than half of women had depressive symptomatology, it was noteworthy that almost 10% of the participants scored positively on the suicide screening question.

However, in the studies by **Byatt, Hicks-Courant, Davidson, Levesque, Mick, and Allison, (2014)**, and by **Thiagayson, Krishnaswamy, Lim, Sung, Haley, Fung, Allen, & Chen, (2013)**, they reported that the prevalence of antenatal

depression was low (27%, and 18% respectively) and the rate of antenatal anxiety was almost the same (13%). In studies by **Denis, Michaux, and Callohan, (2012)**, and by **Brandon, Trivedi, Hynan, Miltenberge, Labat, Rifkin, and Stringer (2008)**, the prevalence of antenatal depression was higher than the current study findings (58% and 44.2% respectively).

Regarding coping pattern of the studied high-risk pregnant women, data analysis reveals that the majority of the studied high-risk pregnant women reported less use of emotional focused coping of avoidance and spiritual coping, whereas more than three quarters of the studied women reported frequent use of problem focused coping of planning/preparation for motherhood. This finding is supported by the studied high-risk pregnant women's levels of positive psychological well-being, self-control, general health, and vitality, moreover high perception of social support, and low level of uncertainty of the condition.

This is in accordance with **Yali, & Lobel (2002)**; and **Stapleton, Schetter, Westling, Rini, Glynn, Hobel, & Sandman, (2012)** who emphasized that optimism and positive appraisal during pregnancy decrease emotional distress.

Also, this finding is in accordance with **Giurgescu, et al., (2006)** who stated that, women with high-risk pregnancy use religious belief more as a coping strategy also the studied women reported less use of emotional focused coping of avoidance

This result is in line with **Peñacoba-Puente, et al., (2013)**, who mentioned that problem-focused coping was used significantly more often than emotional coping, as the studied pregnant Spanish women used predominantly problem solving, positive reappraisal, and

social support coping, whereas religious coping was used significantly less by them, and moderate scores for avoidance strategy was obtained.

This results is contradicted by **Hamilton and Lobel (2008)** who emphasized that spiritual coping is the most frequently used coping strategy during pregnancy.

Data analysis of the current study revealed that uncertainty was correlated negatively with perceived social support, planning/preparation for motherhood, and psychological well-being, whereas uncertainty was correlated positively with avoidant coping. As women with lower level of uncertainty reported high level of social support, psychological well-being, less use of avoidant behaviors (emotion focused coping), and frequent use of planning/preparation for motherhood (problem focused coping). In addition, psychological well-being of the studied women was correlated negatively with uncertainty level and avoidance (emotion focused coping), whereas it was correlated positively with perceived social support and planning/preparation for motherhood (problem focused coping). Those participants with high levels of psychological well-being reported less use of avoidance, more use of planning/preparation for motherhood, and high level of perceived social support.

This come in accordance with **Hui Choi, et al., (2012)**, who studied "The relationships of social support, uncertainty, self-efficacy, and commitment to prenatal psychosocial adaptation" and indicated that greater psychosocial adaptation was associated with higher social support, higher self-efficacy, higher commitment to pregnancy, and lower uncertainty.

This is in line with **Sarani, Azhari, Mazlom, & Aghamohammadian Sherbaf, (2015)**, who studied “The relationship between psychological hardiness and coping strategies during pregnancy” and reported that there was 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. As 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 **Giurgescu, et al., (2006); Hamilton & Lobel, (2008); Faisal-Cury, Savoia, & Menezes, (2012); and Guardino & Dunkel Schetter, (2014)** agreed that avoidant coping styles or behaviors have been associated with many adverse mental health outcomes in pregnancy including lower general psychological well-being, increased distress, higher depressed mood, more anxiety, higher perceived stress, and less positive attitudes towards their conditions.

Conclusion

The present study results concluded that, prenatal coping patterns (problem focused coping) mediated the effects of uncertainty and perceived social support on the psychological well-being of the studied high-risk pregnant women.

Recommendation

Based on the present study findings the following recommendations are formulated:

1. Incorporating psychosocial assessment in routine prenatal screening for women experiencing medically complex pregnancies with continuous and routine screening for depression and anxiety.
2. Development of psychosocial reliable screening tool to provide comprehensive psychosocial assessment including evaluating the coping strategies during routine prenatal screening of childbearing women in clinics and other medical and research settings.
3. Establishment of psychosocial counseling clinic for risk pregnant women.
4. Future qualitative studies should be performed.

Financial support

No funding was received

Conflicts of Interest Disclosure

The authors declare that there is no conflict of interest.

Reference

Brandon, A. R., Trivedi, M. H., Hynan, L. S., Miltenberger, P. D., Labat, D. B., Rifkin, J. B., & Stringer, C. A. (2008). Prenatal depression in women hospitalized for obstetric risk. *The Journal of clinical psychiatry*, 69(4), 635.

Byatt, N., Hicks-Courant, K., Davidson, A., Levesque, R., Mick, E., Allison,

- J., & Simas, T. A. M. (2014).** Depression and anxiety among high-risk obstetric inpatients. *General Hospital Psychiatry, 36(6), 644-649.*
- Cihan, H., Dirilen-Gumus, O., & Erkenekli, K. (2017).** Comparison of women with risk-free and high-risk pregnancy and family resilience. *Journal of Psychology and Behavioral Science, 5(1), 25-30.*
- Clayton, M., Dean, M., & Mishel, M. (2018).** Theories of uncertainty in illness. *Middle range theory for nursing, 4, 49-82.*
- Denis, A., Michaux, P., & Callahan, S. (2012).** Factors implicated in moderating the risk for depression and anxiety in high risk pregnancy. *Journal of Reproductive and Infant Psychology, 30(2), 124-134.*
- Dupuy, H. J. (1984).** The psychological general well-being (PGWB) index. In Wenger, I. N., Mattson, M. E., Furberg, C., & Elinson, J. Assessment of quality of life in clinical trials of cardiovascular therapies. New York: Le Jacq, pp. 170-183.
- Fairbrother, N., Young, A. H., Zhang, A., Janssen, P., & Antony, M. M. (2017).** The prevalence and incidence of perinatal anxiety disorders among women experiencing a medically complicated pregnancy. *Archives of women's mental health, 20(2), 311-319.*
- Faisal-Cury, A., Savoia, M. G., & Menezes, P. R. (2012).** Coping style and depressive symptomatology during pregnancy in a private setting sample. *The Spanish Journal of Psychology, 15(1), 295-305.*
- Faramarzi, M., Pasha, H., Khafri, S., & Heidary, S. (2017).** The factor structure and psychometric properties of the persian version of the revised prenatal coping inventory (Nu-PCI). *Journal of clinical and diagnostic research: JCDR, 11(3), QC17.*
- Giurgescu, C., Penckofer, S., Maurer, M. C., & Bryant, F. B. (2006).** Impact of uncertainty, social support, and prenatal coping on the psychological well-being of high-risk pregnant women. *Nursing research, 55(5), 356-365.*
- Gourounti, C., Karapanou, V., Karpathiotaki, N., & Vaslamatzis, G. (2015 a).** Anxiety and depression of high risk pregnant women hospitalized in two public hospital settings in Greece. *International Archives of Medicine, 8(25): 1-6.*
- Gourounti, C., Karpathiotaki, N., & Vaslamatzis, G. (2015 b).** Psychosocial stress in high risk pregnancy. *International Archives of Medicine, 8.*
- Gourounti, K., Anagnostopoulos, F., & Lykeridou, K. (2013).** Coping strategies as psychological risk factor for antenatal anxiety, worries, and depression among Greek women. *Archives of women's mental health, 16(5), 353-361.*
- Gourounti, K., Lykeridou, K., Taskou, C., Kafetsios, K., & Sandall, J. (2012).** A survey of worries of pregnant women: reliability and validity of the Greek version of the Cambridge Worry Scale. *Midwifery, 28(6), 746-753.*
- Guardino, C. M., & Dunkel Schetter, C. (2014).** Coping during pregnancy: a systematic review and

- recommendations. *Health psychology review*, 8(1), 70-94. DOI: 10.1080/17437199.2012.752659.
- Hamilton, J. G., & Lobel, M. (2008).** 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*, 29(2), 97-104.
- Handley, M. C. (2012).** Emotional responses to pregnancy based on geographical classification of residence. *Online Journal of Rural Nursing and Health Care*, 6(2), 7-17.
- Horsch, A., Brooks, C., & Fletcher, H. (2013).** Maternal coping, appraisals and adjustment following diagnosis of fetal anomaly. *Prenatal diagnosis*, 33(12), 1137-1145.
- Hui Choi, W. H., Lee, G. L., Chan, C. H., Cheung, R. Y., Lee, I. L., & Chan, C. L. (2012).** The relationships of social support, uncertainty, self-efficacy, and commitment to prenatal psychosocial adaptation. *Journal of Advanced Nursing*, 68(12), 2633-2645. doi: 10.1111/j.1365-2648.2012.05962.
- Jöreskog, K. G., & Sörbom, D. (1996).** LISREL 8: User's reference guide. *Scientific Software International*.
- Kim, T. H., Connolly, J. A., & Tamim, H. (2014).** The effect of social support around pregnancy on postpartum depression among Canadian teen mothers and adult mothers in the maternity experiences survey. *BMC pregnancy and childbirth*, 14(1), 162.
- King, N. M., Chambers, J., O'Donnell, K., Jayaweera, S. R., Williamson, C., & Glover, V. A. (2010).** Anxiety, depression and saliva cortisol in women with a medical disorder during pregnancy. *Archives of women's mental health*, 13(4), 339-345.
- Krejcie, R. V., & Morgan, D. W. (1970).** Determining sample size for research activities. *Educational and psychological measurement*, 30(3), 607-610.
- Lazarus, R. S., & Folkman, S. (1984).** Stress, appraisal, and coping. *Springer publishing company*.
- Lobel, M., Yali, A. M., Zhu, W., DeVincent, C. & Meyer, B. (2002).** Beneficial Associations Between Optimistic Disposition and Emotional Distress in High-Risk Pregnancy. *Psychology & Health*, 17(1), 77-95. doi:10.1080/08870440290001548.
- Mirabzadeh, A., Dolatian, M., Forouzan, A. S., Sajjadi, H., Majd, H. A., & Mahmoodi, Z. (2013).** Path analysis associations between perceived social support, stressful life events and other psychosocial risk factors during pregnancy and preterm delivery. *Iranian Red Crescent Medical Journal*, 15(6), 507.
- Mishel, M. H. (1997).** Uncertainty in acute illness. *Annual review of nursing research*, 15(1), 57-80.
- Ngai, F. W., & Chan, S. W. C. (2012).** Learned resourcefulness, social support, and perinatal depression in Chinese mothers. *Nursing Research*, 61(2), 78-85. doi: 10.1097/NNR.0b013e318240dd3f
- Nurullah, A. S. (2012).** Received and provided social support: A review of current evidence and future directions. *American Journal of Health Studies*, 27(3), 173-188.

- Oni, O., Harville, E., Xiong, X., & Buekens, P. (2015).** Relationships among stress coping styles and pregnancy complications among women exposed to Hurricane Katrina. *Journal of Obstetric, Gynecologic & Neonatal Nursing, 44*(2), 256-267.
- Peñacoba-Puente, C., Carmona-Monge, F. J., Marín-Morales, D., & Naber, K. (2013).** Coping strategies of Spanish pregnant women and their impact on anxiety and depression. *Research in nursing & health, 36*(1), 54-64.
- Puente, C. P., Morales, D. M., & Monge, F. J. C. (2015).** Religious coping and locus of control in normal pregnancy: moderating effects between pregnancy worries and mental health. *Journal of religion and health, 54*(5), 1598-1611.
- Roberts, R. M., Muller, T., Sweeney, A., Bratkovic, D., & Gannoni, A. (2014).** Promoting psychological well-being in women with phenylketonuria: pregnancy-related stresses, coping strategies and supports. *Molecular genetics and metabolism reports, 1*, 148-157.
- Sajjadi, M., Rassouli, M., Abbaszadeh, A., Majd, H. A., & Zendehtdel, K. (2014).** Psychometric properties of the Persian version of the Mishel's Uncertainty in Illness Scale in Patients with Cancer. *European Journal of Oncology Nursing, 18*(1), 52-57.
- Sarani, A., Azhari, S., Mazlom, S. R., & Aghamohammadian Sherbaf, H. (2015).** The relationship between psychological hardiness and coping strategies during pregnancy. *Journal of Midwifery and Reproductive Health, 3*(3), 408-417.
- Sherbourne, C. D., & Stewart, A. L. (1991).** The MOS Social Support Survey. *Science and Medicine, 32*, 705-714.
- Stapleton, L.R., Schetter, C.D., Westling, E., Rini, C., Glynn, L. M., Hobel, C. J., & Sandman, C.A. (2012).** Perceived partner support in pregnancy predicts lower maternal and infant distress. *Journal of Family Psychology, 26*(3), 453-63. doi: 10.1037/a0028332.
- Thiagayson, P., Krishnaswamy, G., Lim, M.L., Sung, S.C., Haley, C.L., Fung, D.S.S., Allen, J.C. & Chen, H. (2013).** Depression and anxiety in Singaporean high-risk pregnancies – prevalence and screening. *General Hospital Psychiatry, 35* (2), 112-116.
- World Health Organization. (2017).** *Managing complications in pregnancy and childbirth: a guide for midwives and doctors.* World Health Organization.
- Yali, A. M., & Lobel, M. (1999).** Coping and distress in pregnancy: an investigation of medically high risk women. *Journal of Psychosomatic Obstetrics & Gynecology, 20*(1), 39-52.
- Yali, A. M., & Lobel, M. (2002).** Stress-resistance resources and coping in pregnancy. *Anxiety, Stress and Coping, 15*(3), 289-309.
- Zaidan, A. A., Al-Gburi, R. K., & Alhilli, H. M. (2018).** The prevalence of high risk pregnancy among pregnant women attending primary health care center in Baghdad Al-Karkh health directorate. *IRAQI journal of community medicine, 31*(4), 143-147.