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Postpartum Mental Health and its Relationship with Social-Structural Determinants of Health in Iran with the Approach of the World Health Organization Model: A Systematic Review

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Abstract

Background: Postpartum psychiatric disorders are a key concept in maternal-infant mental health, and determining the related factors is necessary. We aimed to determine the relationship between postpartum mental health and social-structural determinants of health in Iran.

Materials and Methods: In this systematic review, all Persian and English observational studies in Iran carried out through advanced search in online databases such as Medline, Scopus, Web of Science, EMBASE, SID and Magiran, as well as the Google Scholar between 2005 and 2020, using keywords of social determinants, structural factors, socio-economic status, risk factors, mental health, postpartum, Iran, and their English equivalents were obtained from MESH. Article quality was assessed using the standard Newcastle-Ottawa Scale (NOS).

Results: Out of 56 eligible articles (sample size: 36,515), 49 articles reported the prevalence of postpartum depression and one article reported the prevalence of postpartum psychosis. The lowest and highest prevalence of postpartum depression was between 4.8-68.5% using the Edinburgh tool in 2014-2017 and using the Beck tool between 3-78.27% in 2013-2014. Structurally significant effective factors on postpartum depression were identified including mother's age, mother's education, father's education, mother's job, father's job, family economic status (income adequacy), ethnicity and race, social class, culture, and religion, and in the field of postpartum psychosis, age, level of education, and mother's job. The most common structural determinant related to postpartum mental health was education and the least factor was related to social class.

Conclusion: Due to the effects of numerous related factors on common postpartum mental disorders, it is suggested that longitudinal studies be conducted to investigate the role of all the known factors, especially Intermediate factors, on postpartum mental health.

Key Words: Iran, Mental health, Postpartum, Social determinants, Structural Factors.

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1- INTRODUCTION

Maternal mental health problems are a major public health challenge worldwide (1). In fact, childbirth is a unique psychosocial process that strongly affects women in all physical, social, and emotional dimensions (2). According to the definition of the World Health Organization (WHO), postpartum mental health includes the promotion of mental well-being, the prevention of mental disorders in mothers during pregnancy and after childbirth (3). Most researchers define postpartum mental disorders in a variable period of 4 weeks to 3 months postpartum (4). Recently, the World Health Organization reported a worldwide prevalence of mental disorders in pregnant women as 10%, and 13% of women who have recently given birth, which are higher in developing countries (15.6% in pregnancy and 19.8% in postpartum, respectively) (3). These disorders are usually classified into three general categories: 1. Postpartum blues (13.7% to 76%) (5), and in Iran (29 to 59.55%) (6-9); 2. Postpartum depression (13.2%) (10), and in Iran with an overall prevalence of 25.3% (11); and 3. Postpartum psychosis (0.89-5 per 1000 women) (12).

Postpartum mental health disorders lead to a variety of reactive behaviors in response to the needs and care of the baby and maternal duties with the onset of various psychological symptoms in mothers. Therefore, mothers with postpartum mental disorders have special behavioral limitations in interaction with their infants, less positive caring behaviors, emotional conflict, responsiveness, and lower interaction quality with the child compared to healthy mothers (13-16). One of the most important factors affecting mental health postpartum are social determinants of health. According to studies by the World Health Organization, investing in social determinants of health is effective in improving the health well-being of society and eliminating the causes of inequality in health (17). Social inequalities in health throughout life from childhood to adulthood are related to individuals' mental health (18). Based on the model of social determinants of the World Health Organization, two groups of structural and intermediate determinants have been considered. The structural factors that make up a social class include education, employment status, income, and ethnicity, and intermediate factors include economic conditions, psychosocial factors, and behavioral and biological factors (19-21).

The results of various studies in Iran and the world show the relationship between some social-structural and intermediate determinants of health such as unfavorable economic and social conditions, cultural and psychological factors, lack of social support, spousal violence, unwanted pregnancy, fear of childbirth, history of sexual abuse in childhood, etc. which are associated with postpartum mental health (22-31). Considering the high prevalence of postpartum mental disorders in Iran and the world and conducting numerous studies on postpartum mental health, it is necessary to conduct a comprehensive and systematic review on the integration of this information. Determining the factors affecting postpartum mental health outcomes helps health policymakers develop strategies for planning and implementing appropriate interventions for promoting health and thus contribute to the promotion of maternal and infant health as well. The aim of this study was to assess the relationship between the social-structural determinants of health and postpartum mental health in Iran based on the WHO model.

2- MATERIALS AND METHODS

2-1. Eligibility criteria

The PECO is a framework for formulating good questions to explore the

association of environmental and other exposures with health outcomes (32).

Participants: Mothers and fathers in the postpartum period.

Exposure*:* Not Applicable.

Comparators: Social Structural Factors of Postpartum Mental Health.

Outcome: Postpartum mental health (postpartum depression, maternal grief, and postpartum psychosis).

2-2. Selection of studies

2-2-1. Inclusion criteria

The articles in the present study were reviewed by Iranian authors or conducted in Iran in Persian and English databases related to the last 15 years (from 2005 until the end of 2020). Due to the observance of the minimum time period and the principle of comprehensiveness in systematic review studies, which were only related to social-structural determinants; their design was observational (cross-sectional, case-control, and cohort); the full texts of the articles were available, and studies were limited to the three main areas of postpartum mental health in mothers and fathers (postpartum depression, maternal grief, and postpartum psychosis). The target population involved depressed and non-depressed women, women with any type of delivery (vaginal and cesarean section).

2-2-2. Exclusion criteria

Studies conducted only on intermediate social determinants; studies on mental health during pregnancy and unrelated to the three main areas of postpartum mental health (stress, anxiety, and postpartum stress); Studies whose design differed from the inclusion criteria of the present study (intervention, review, qualitative, case report, posters, and letter to the editor); studies in which the full text could not be retrieved were duplicate reports and irrelevant results in other articles. First, 1074 articles were obtained by searching through the so-called databases.

After deleting duplicates by END NOTEX9 software (Bld12062), 214 articles were excluded by title and abstract (screening) for reasons such as duplication, weak relevance, or unrelated to the purpose of the study. If based on the title and abstract of the articles, it was not possible to decide whether or not to include the article in the study, the full text of the article was referred for a more detailed evaluation. The list of sources of articles was also reviewed to ensure the retrieval of all documents and information; 789 articles were selected, and after reviewing the inclusion and exclusion criteria, 59 articles were eligible to enter the qualitative analysis stage (**Figure.1**).

2-3. Information sources

The present systematic study was intended to investigate the relationship between social-structural determinants of health and postpartum mental health in English and Persian databases such as Medline (via PubMed), Scopus, Web of Science, EMBASE, SID, and Magiran as well as Google Scholar search engine (2005-2020).

2-4. Keywords and search strategy

In order to maximize the principle of comprehensiveness of the search, related keywords were selected and identified based on Medical Subject Headings (Mesh), EMTREE, and text words and combined using AND/ OR operators to fully retrieve information. All stages of this study (method of collecting data, analysis, interpretation of data, and determining the research problem) were performed based on the reporting system of systematic studies and meta-analysis (PRISMA) (33). The keywords (English) used in this systematic review article included these keywords: Social determinants of health, Structural determinants of health, Socio-economic

Status, Education, Job, Income, Ethnicity and Race, Culture، Gender, Social Class, Mental Health, Postpartum, Risk Factors, Postpartum Depression, Postpartum Blues, Postpartum Psychosis (**Table.1**). Also, the Persian equivalents and Mesh terms of these keywords were used in the search for articles published during 2005-2020.

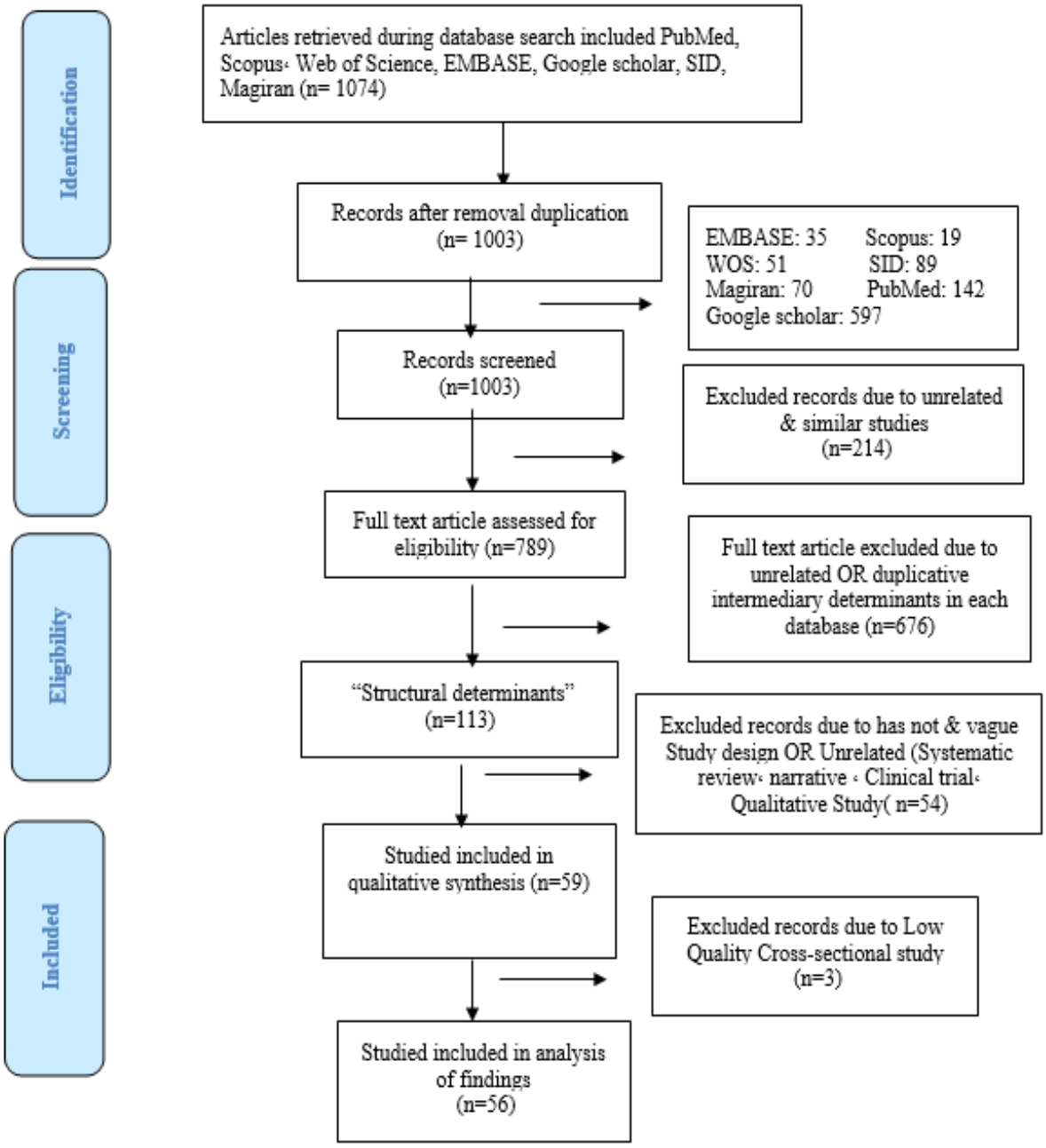

Fig1: PRISMA diagram.

Table-1: Database Search Strategy in Medline (via PubMed).

(Class [tiab] AND Social [tiab]) OR (Classes[tiab] AND Social[tiab]) OR "Social Classes" [tiab] OR "Socioeconomic Status" [tiab] OR (Status[tiab] AND Socioeconomic[tiab]) OR "Middle Class Population" [tiab] OR ("Class Population" [tiab] AND Middle[tiab]) OR ("Class Populations"[tiab] AND Middle[tiab]) OR "Middle Class Populations"[tiab] OR (Population*[tiab] AND "Middle Class"[tiab]) OR caste*[tiab] OR (Mobility*[tiab] AND Social[tiab]) OR "Social Mobility*"[tiab] OR "social stratification"[tiab] OR "Cultural Characteristics"[Mesh] OR "Characteristic, Cultural"[tiab] OR "Characteristics, Cultural"[tiab] OR "Cultural Characteristic"[tiab] OR "Continental Population Group" [tiab] OR (Group*[tiab] AND "Continental Population" [tiab]) OR ("Population Group*" [tiab] AND Continental[tiab]) OR "Racial Stock*" [tiab] OR (Stock*[tiab] AND Racial[tiab]) OR Race*[tiab] OR ("Ethnic Group" [tiab] OR Ethnicity[tiab] OR Nationality[tiab]) AND "Postpartum blues"[tiab] OR "baby blues"[tiab] OR "maternity blues"[tiab] OR "Postnatal Depression"[tiab] OR (Depression[tiab] AND Postnatal[tiab]) OR "Post-Partum Depression"[tiab] OR (Depression[tiab] AND Post-Partum[tiab]) OR "Post-Partum Depression"[tiab] OR "Postpartum Depression"[tiab] OR "Post-Natal Depression"[tiab] OR(Depression[tiab] AND Post-Natal[tiab]) OR "Post Natal Depression"[tiab] OR "Mental Disorder"[tiab] OR "Psychiatric Diseases"[tiab] OR "Psychiatric Disease"[tiab] OR "Psychiatric Illness"[tiab] OR "Psychiatric Illnesses"[tiab] OR "Psychiatric Disorders"[tiab] OR "Psychiatric Disorder"[tiab] OR (Diagnosis[tiab] AND Psychiatric[tiab]) OR "Psychiatric Diagnosis"[tiab] OR "Behavior Disorders"[tiab] OR ("Mental Disorders"[tiab] AND Severe[tiab]) OR (Disorder[tiab] AND Mood[tiab]) OR (Disorders[tiab] AND Mood[tiab]) OR "Mood Disorder"[tiab] OR "Affective Disorders"[tiab] OR "Affective Disorder"[tiab] OR (Disorder[tiab] AND Affective[tiab]) OR (Disorders[tiab] AND Affective[tiab]) OR "Depressive Disorders" [tiab] OR (Disorder[tiab] AND Depressive[tiab]) OR (Disorders[tiab] AND Depressive[tiab]) OR (Neurosis[tiab] AND Depressive[tiab]) OR "Depressive Neuroses" [tiab] OR "Depressive Neurosis" [tiab] OR (Neuroses[tiab] AND Depressive[tiab]) OR (Depression[tiab] AND Endogenous[tiab]) OR (Depressions[tiab] AND Endogenous[tiab]) OR "Endogenous Depression" [tiab] OR" Endogenous Depressions" [tiab] OR "Depressive Syndrome" [tiab] OR "Depressive Syndromes" [tiab] OR (Syndrome[tiab] AND Depressive[tiab]) OR (Syndromes[tiab] AND Depressive[tiab]) OR (Depression[tiab] AND Neurotic[tiab]) OR (Depressions[tiab] AND Neurotic[tiab]) OR "Neurotic Depression" [tiab] OR "Unipolar Depression" [tiab] OR (Depression[tiab] AND Unipolar[tiab]) OR (Depressions[tiab] AND Unipolar[tiab]) OR "Unipolar Depressions" [tiab] OR "Psychotic Disorder*"[tiab] OR (Disorder*[tiab] AND Psychotic[tiab]) OR Psychosis[tiab] OR Psychoses[tiab] OR "Schizoaffective Disorder*" [tiab] OR (Psychosis[tiab] AND Brief Reactive[tiab]) OR "Brief Reactive Psychoses" [tiab] OR "Brief Reactive Psychosis" [tiab] OR (Psychoses[tiab] AND "Brief Reactive" [tiab]) OR ("Reactive Psychoses" [tiab] AND Brief[tiab]) OR "puerperal psychosis"[tiab] OR "childbearing psychoses" [tiab] OR " childbed psychoses"[tiab] OR "childbirth psychoses" [tiab] OR "postpartum psychosis" [tiab] OR "postpartum psychosis" [tiab] OR (psychosis[tiab] AND postpartum [tiab]) OR (psychosis[tiab] AND puerperium[tiab]) OR "puerperium psychosis" [tiab] AND 2005:2020[dp] AND (iran[tiab] OR iran[ad] OR iran[Pl]).

2-5. Quality control

In order to achieve the maximum quality competence of eligible articles in line with the study objective, two colleague researchers performed quality evaluation separately in order to avoid the risk of bias. The Newcastle-Ottawa scale was used for each type of observational study (cross-sectional, cohort, and case-control). The only tool that currently has homogeneity for these three types of studies is the NOS tool (34, 35). The method of answering the tool questions is stellar, and scoring is done based on scoring or classification. In this checklist, three sub-categories of sample selection (star scores 0-4), comparability (star scores 0-2), and outcome (star scores 0-3) are examined (36, 37). Based on this scale, articles are rated from zero (weakest) to nine (strongest). Each star represents a score (38). In this review study, articles that scored above average were considered as high quality studies, and articles that scored below average were considered as low quality studies. Therefore, three cross-sectional descriptive articles were excluded from the study due to their low quality (scores 3 and 4) (**Tables 2, 3**).

2-6. Data extraction

After evaluating the quality of the articles, 56 studies were finally analyzed. It should be noted that some articles examined the social-structural and intermediate determinants of health simultaneously; in this study, these factors have been expressed separately. Information required for each study according to the type of studies (cross-sectional, case-control, and cohort) is displayed in the form of separate tables according to (authors name, year, and type of research, purpose of research, place of study, sampling method, and characteristics of samples) (**Tables 2, 3**).

2-7. Synthesis of results

The present study was intended to determine the relationship between postpartum mental health and social-structural determinants of health with the

approach of the WHO model. Using Quantitative meta-analysis for data analysis will be one of the goals of researchers in the near future in the study of social (intermediate) determinants of postpartum mental health.

2-8. Ethical consideration

The Research Council of SBMU under the ethics code IR.SBMU.RETECH.REC approved this study. 1399.177.

Table-2: Characteristics of descriptive-cross-sectional studies related to postpartum mental health between 2005 and 2020.

Authors, Year, Reference	Type of research	Purpose of the research	Study place	Sampling method	Characteristics of samples	NOS quality score (34, 35)
Abbaszadeh et al., 2011, (22)	Cross-Sectional survey	To estimate the prevalence of physical and emotional violence and PPD in a pregnant Iranian population.	Kerman	-	450 women gave birth (8 weeks postpartum)	Satisfactory
Ahmadi et al., 2015, (39)	Descriptive Cross-Sectional study	To investigate the prevalence of PPND and its relationship with some individual characteristics.	Tehran	Consecutive technique	328 men during 8 weeks postpartum of their wives	Satisfactory
Alikamali et al., 2020, (40)	Cross-Sectional study	To explore the association between demographic characteristics and pregnancies with PPD and anxiety.	Zarand	Cluster sampling	400 Iranian mothers for four weeks to six months postpartum	Satisfactory
Bazaz et al., 2018, (41)	Cross-Sectional study	Determining the relationship between intimacy with the spouse and general self-efficacy with PPD in the first delivery.	Yazd	Multistage cluster sampling	200 women gave birth (2 weeks postpartum)	Good
Boomadi et al., 2016, (42)	Descriptive and Periodical study	Analysis of the prevalence and effective factors on post-natal depression.	Garmsar	Census	110 women gave birth (2 months postpartum)	Satisfactory
Ezzeddin et al., 2018, (43)	Cross-Sectional study	To determine the prevalence of PPD and its association with demographic, socioeconomic, obstetric, and household food security status.	West of Tehran	Stratified sampling	325 women gave birth (3-8 months postpartum)	Satisfactory
Yazdanpanah et al., 2015, (44)	Cross-Sectional study	To determine the predisposing risk factors of PPD among fertile women.	Larestan	Clusters sampling	233 women gave birth (2 months postpartum)	Satisfactory
Fathi et al., 2017, (45)	Cross-sectional and conducted	To determine the relationships of self-efficacy and PPD symptoms with functional status in randomly sampled Iranian mothers.	Bonab	Random sampling	437 women gave birth (within 10-10 weeks postpartum)	Good
Ghani Gheshlagh et al., 2015, (46)	Descriptive-analytical	Comparison of PPD in young parents.	Saqez	Convenience (available) sampling	150 young parents having their first child (two groups of 75)	Satisfactory
Kheirabadi et al., 2009, (47)	Cross-sectional study	To study the risk factors of PPD in women living in rural areas of Isfahan province in Iran.	Isfahan	-	6627 women, two to 12 months postpartum	Good
Mahmoodi et al., 2017, (48)	Cross-sectional study	To investigate the mother-father differences in Postnatal Psychological Distress (PPD) and its determinants among the parents with 8-week old children.	Saqqez	Simple random sampling	306 postnatal parents with a 8-week old infant	Satisfactory
Hosseini et al., 2008, (49)	Cross-sectional-analytical	Determining the prevalence of PPD and the factors associated with it.	Kermanshah	Random	330 women gave birth (within the first 10 days postpartum)	Satisfactory
Kamalifard et al., 2018, (50)	Cross-sectional	To determine paternal PPD and its relationship with some factors, especially maternal	Tehran	Random cluster sampling	All eligible (205) couples (six to 12 weeks postpartum) (six to 12	Satisfactory

Authors, Year, Reference	Type of research	Purpose of the research	Study place	Sampling method	Characteristics of samples	NOS quality score (34, 35)
		PPD.			weeks postpartum)	
Khorramirad et al., 2010, (51)	Cross-sectional	Assessing the prevalence of PPD and determining related factors.	Qom	Consecutive sampling	300 women gave birth (6-12 weeks postpartum)	Satisfactory
Mahdavy et al., 2020, (52)	Descriptive	Obtaining native risk factors for PPD.	Natanz	-	673 women gave birth (2 weeks to 2 months postpartum)	Satisfactory
Manshoori et al., 2017, (53)	Descriptive study	To determine the frequency of PPD and its possible risk factors in mothers.	Rafsanjan	Convenience sampling	on 250 women who had given birth in the previous 2-6 months	Satisfactory
Amidi Mazaheri et al., 2014, (54)	Cross sectional	To investigate the prevalence of PPD and its related factors in mothers.	Isfahan	Cluster sampling	133 women who at the last 8-4 weeks of labor	Satisfactory
Matinnia et al., 2020, (55)	Cross sectional	The frequency of postpartum depression and evaluation of the relationship between PPD, socio-demographic factors, and quality of marital satisfaction in postpartum women with a history of infertility.	Hamadan	Multi-stage	All (240) primiparous women with a history of infertility	Satisfactory
Matinnia et al., 2018, (56)	Cross sectional	To recognize the prevalence of PPD and association with risk factors in low socioeconomic populations.	Hamadan	Simple random & stratified sampling	451 low income pregnant women 18-35 years during pregnancy (28-week) and through 6 months postpartum	Satisfactory
Mirsalimi et al., 2019, (57)	Cross-sectional	Evaluation of mental health literacy regarding PPD in pregnant women.	Tehran	Available	338pregnant women in the third trimester of pregnancy	Satisfactory
Moradi et al., 2020, (58)	Descriptive-analytical and cross-sectional	To determine the predisposing factors of PPD.	Kermanshah	Cluster random sampling	242 women (two months postpartum)	Satisfactory
Najafi et al., 2006, (59)	Cross-sectional	Evaluating prevalence of PPD.	Rasht	Convenience non-probability sampling (available)	335 women gave birth (2-3 weeks postpartum)	Satisfactory
Rajaipour et al., 2019, (60)	Descriptive-correlational	To investigate the relationship of PPD with spiritual well-being and some demographic variables.	Qom	Multistage sampling (convenience sampling)	196 eligible women	Satisfactory
Rezaei et al., 2016, (61)	Cross-sectional, descriptive study	To examine the mothers' quality of life in postpartum period.	Ilam	Cluster sampling	Sample of 380 eligible women (less than 6months passing since the delivery)	Satisfactory
Rouhi et al., 2012, (62)	Cross-sectional study	To evaluate prevalence and some ethnic risk factors of PPD among women in West Azerbaijan, Mahabad, Iran.	Mahabad	-	Twelve hundred mothers (600 Kurdish women, 600 Azeri (at 8 weeks postpartum)	Satisfactory
Shobeiri et al., 2007, (63)	Cross-sectional, descriptive study	Determining the frequency of PPD.	Hamadan	Available-convenience	400 women gave birth (2-8 weeks postpartum)	Satisfactory
Shahi et al., 2018, (64)	Cross-sectional, descriptive study	To determine PPD and its associated factors.	Bandar Abbas	Simple sampling	A total of 343 mothers (in the 2nd and 4th months after childbirth)	Satisfactory
Sooki et al., 2012, (65)	Cross-sectional study	Prevalence of PPD and its related factors	Kashan	-	460 women during the second and third months after childbirth	Satisfactory
Taherifard et al., 2013, (66)	Descriptive cross-sectional study	To determine the prevalence of PPD and its associated risk factors.	Ilam	Midwife. Face to face interviews	197 women (the 6th and the 8thweek postpartum)	Satisfactory
Tashakori et al., 2009, (67)	Descriptive cross-sectional	To examine some potential risk factors of PPD in Iran.	Ahvaz	-	Two hundred-ten women (at two months	Satisfactory

Authors, Year, Reference	Type of research	Purpose of the research	Study place	Sampling method	Characteristics of samples	NOS quality score (34, 35)
	study				postpartum)	
Zahmatkesh et al., 2020, (68)	Descriptive cross-sectional study	To determine the relationship between mental health literacy and self-efficacy and PPD.	Mashhad	Cluster sampling	250 mothers in the third trimester of pregnancy to 8 weeks postpartum	Satisfactory
Aghapoor et al., 2009, (69)	Descriptive-analytical	Comparison of PPD in employed women and housewives and its relationship with social support and marital adjustment.	Tabriz	Random-cluster	300 women (in the period 6-12 weeks postpartum)	Satisfactory
Bahari et al., 2017, (70)	Descriptive-cross-sectional	Determining the relationship between stressful life events and PPD.	Aliabad Katul	Available	200 mothers (during the second week to six months postpartum)	Satisfactory
Khooshemehry et al., 2011, (71)	Descriptive-analytical / cross-sectional	Evaluating prevalence and predisposing factors for PPD	Tehran / North region	Cluster / two-stage	250 women gave birth (six weeks to one year postpartum)	Satisfactory
Kheirabadi et al., 2015, (72)	Descriptive-cross-sectional	Evaluating prevalence of PPD and its relationship with some social and demographic risk factors in women.	Najafabad Isfahan	Self-report and census	640 mothers (2 months to one year postpartum)	Satisfactory
Rahmani et al., 2012, (73)	Cross-sectional	Determining some predisposing factors for PPD.	Tabriz	Random cluster	560 mothers (2 months postpartum)	Satisfactory
Roubintan et al., 2012, (74)	Descriptive-correlation	The role of delivery type, infant nutrition and some variables related to pregnancy and childbirth on PPD.	Tabriz	Cluster	159 mothers (4-8weeks postpartum)	Satisfactory
Salmalian et al., 2008, (75)	Cross-sectional	Identifying the symptoms of depression and its effective factors during pregnancy and preventing possible family and individual complications of PPD.	Babol	Convenience -cluster	263 pregnant women (in the last trimester of pregnancy and 4-8 weeks postpartum)	Satisfactory
Shafie et al., 2017, (76)	Descriptive-correlation	Evaluating the relationship between social support and the rate of PPD in mothers of preterm infants	Yazd	Available	100 mothers with premature infants discharged from the NICU	Satisfactory
Salehi et al., 2009, (77)	Descriptive	Evaluation of demographic characteristics affecting PPD.	Hormozgan	-	246 mothers having vaginal birth (40 days postpartum)	Satisfactory
Sehati et al., 2008, (78)	Descriptive-analytical	Investigating the relationship between different factors predisposing to PPD.	Tabriz	Random-convenience	600 mothers gave birth (at least two months postpartum)	Satisfactory
Safa et al., 2006, (79)	Descriptive-cross-sectional	Study of cultural, economic, social characteristics and related causes in patients with postpartum psychosis.	Khorramabad	Purpose-based Census	All women who gave birth (3-12 weeks postpartum) having one of the mood symptoms referring to a specialized psychiatric and private clinic in the city	Satisfactory
Saei Gharenaz et al., 2017, (80)	Descriptive-cross-sectional	Determining the contributing factors to PPD.	Urmia	Cluster	175 women gave birth (time of referral unknown)	Satisfactory
Ghaljeh et al., 2013, (81)	Cross-sectional	Determining the rate of PPD and some related factors.	Najafabad Isfahan	Available	92 mothers (in 4-8 weeks postpartum)	Satisfactory
Kamkar et al., 2019, (82)	Descriptive-analytic study	To investigate and compare the frequency of PPD in women with normal and cesarean delivery.	Gorgan	Non-probability	300 pregnant women (within 7 to 10 days before delivery, and follow-up 2 weeks postpartum)	Good
Kiani et al., 2010, (83)	Descriptive-analytical	Determining the relationship between marital satisfaction in pregnancy and PPD.	Astara	Two-stage: stratified random	120 women gave birth (within six months postpartum)	Satisfactory
Lashkaripour et al., 2012, (84)	Descriptive-analytical	Evaluating prevalence of PPD and its related factors.	Zahedan	Available	300 women gave birth (evaluation in 4 stages: immediately, 4 weeks later, 6 weeks after the second evaluation and 8 weeks after the third evaluation)	Satisfactory

PPD: Post- partum depression, NOS: Newcastle-Ottawa scale.

Table-3: Characteristics of cohort and case-control studies related to postpartum mental health between 2005 and 2020.

Authors, Year, Reference	Type of research	Research purpose	Study place	Sampling method	Sample characteristics	NOS Quality score (34, 35)
Abbasi et al., 2013, (23)	Prospective cohort	Examine whether pregnancy intention was associated with PPD among first-time mothers.	Pennsylvania	-	2972 women during the third trimester& at 1-month postpartum	Good
Abdollahi et al., 2014, (25)	Prospective cohort	Antenatal risk factors for PPD in women at risk of developing this disorder.	Mazandaran	Convenience sampling method	A total of 2083women 16-45 years during 32-42 weeks of gestation & at 8 weeks postpartum	Good
Abdollahi et al., 2014, (85)	Longitudinal cohort	To identify the incidence and the related factors contributing to PPD in women in Iran for the first time.	Mazandaran	-	A total of 2279 eligible pregnant women from 32–42 weeks of pregnancy to 12 weeks post-partum	Good
Abdollahi et al., 2016, (86)	Longitudinal cohort	To determine the incidence of early PPD and possible relevant risk factors among women.	Mazandaran	-	2279 eligible women during weeks 32–42 of pregnancy at 2 weeks post- partum	Good
Abdollahi et al., 2016, (24)	Longitudinal cohort	To identify the relationship between sociocultural practices and PPD in a cohort of Iranian women for the first time.	Mazandaran	-	2279 pregnant women in the third trimester of pregnancy (32-42 weeks) and who were followed-up to 12 weeks after delivery.	Good
Ghaffarzadeh Khoei et al., 2017, (87)	Longitudinal cohort	To investigate the relationship between health literacy and PPD among nulliparous pregnant women.	Karaj	Available	348 nulliparous women in third trimester& followed-up at 8th week after delivery	Fair
Zarghami et al., 2019, (88)	Prospective cohort	To examine and compare the prevalence and risk factors for PPD in urban and rural areas.	Mazandaran	-	2279 pregnant women 16-45 years from 32-42 weeks' pregnancy	Good
Nikpour et al., 2012, (89)	Prospective	Investigating the relationship between type of delivery and the prevalence of PPD.	Amol	Non-probability sampling	420 pregnant women aged 16-35 years in the third trimester (300 samples for follow-up 2-8 weeks postpartum)	Good
Sharifi et al., 2008, (90)	Analytical-control case	Investigating the relationship between PPD and type of delivery.	Kashan Purpose-based	460 Women in two groups (230) In the second and third months postpartum	No statistically significant relationship between type of delivery and PPD (OR= 1.28). Statistically significant relationship between spouse job and PPD p≤0 / 047	Good

NOS: Newcastle-Ottawa scale.

3- RESULTS

In the present study, among the articles published from Jan 2005 to Dec 2020, 56 articles were accepted for final review after carrying out the main steps of a systematic review study. Among these articles, 47 cross-sectional descriptive studies, 8 cohort studies (cohort-prospective), and one case-control study were performed. The total number of samples in the present study is 36,515 people. Out of 56 studies, 49 studies examined the prevalence of postpartum depression (22-25, 39, 42-44, 46, 47, 49-53, 55, 56, 58-60, 62-75, 77-82, 84,85, 87-93), and one study reported the prevalence of postpartum psychosis (79).

In this review article, no study met the inclusion criteria, i.e. evaluating the prevalence of maternal grief. Although initially a study entitled "frequency and factors affecting maternal grief"(8) was included in the study, due to the uncertainty of the type of research, the study was excluded from this review article. According to numerous reports of a significant number of fathers of postpartum depression symptoms, and the imposition of high costs of health care postpartum (94-96), and its relationship with postpartum depression in the mother and family health (97, 98), and the incidence of behavioral and emotional problems in their infants and children (99-103), the prevalence of postpartum depression in fathers was reported 11.3-59.8% (39, 50,92, 104). In one study, the prevalence of this disorder in all parents was reported 16.9% (48).

The highest and lowest prevalence of postpartum depression in mothers was reported in Najafabad city of Isfahan and the capital of this province 78.27 and 3%, respectively. The criterion for measuring postpartum depression in both studies was the Beck standard test (81,93). One study reported the prevalence of postpartum depression in urban and rural areas of Mazandaran Province 20.1 and 17.8, respectively (88). In addition, the prevalence of postpartum depression was reported in terms of emotional differences in different ethnicities, including Kurdish and Azeri ethnicities, 14.77 and 12.99, respectively (62). The prevalence of postpartum psychosis following the first delivery was 37% and 33.3% in the second delivery, of which 9.1% reported a history of major depression (79).

According to **Table.4**, the tools used in most studies (37 studies) were the Edinburgh standard questionnaire for postpartum depression (22-25, 39-43, 45-47, 50-53, 55, 56, 58, 60, 62, 64, 66, 67, 70, 72-74, 76-78, 83, 85, 87-89, 91), and Beck standard test (15 studies) (44, 49, 59, 63, 65, 68, 69, 71, 75, 80-82, 84, 90, 93). Four studies had used other instruments such as General Health Questionnaire (GHQ-28) (92), researcher-made questionnaire (105), Health-Related Quality of Life Questionnaire (HRQOL) (61), and clinical interview by a psychiatrist (postpartum psychosis diagnosis (79).

In terms of the duration of follow-up of postpartum mental health disorders, the only study related to postpartum psychosis examined mothers with severe postpartum depression and psychotic symptoms 3 and 12 weeks postpartum (79). The highest follow-up time for postpartum depression in two studies was up to one year postpartum (55, 72), and the shortest follow-up time was immediately (first day postpartum before discharge), and the first 10 days postpartum (49, 84). In one study, follow-up was reported after the mother referred for eye examination of her infant who had just been discharged from the Neonatal Intensive Care Unit (76).

Table-4: Information on the duration of postpartum follow-up, mental health scale and the prevalence of postpartum mental disorders in studies conducted in 2005-2020.

Authors, Year	Follow-up duration postpartum	Mental health scale	Prevalence of postpartum mental disorders (%)
Abbas Zadeh et al., (2011)	8 weeks postpartum	EPDS	45.8
Abbasi et al., (2013)	4 weeks postpartum	Edinburgh	22.8
Abdollahi et al., (2016)	12 weeks postpartum	Edinburgh	19
Ahmadi et al., (2015)	8 weeks postpartum	Edinburgh	59.8 (in fathers)
Ali Kamali et al., (2020)	4-6 weeks postpartum	Edinburgh	-
Bazaz et al., (2018)	2 weeks postpartum	Edinburgh	-
Boomadi et al., (2016)	2 months postpartum	Edinburgh	36
Ezzeddin et al., (2018)	3-8 months postpartum	Edinburgh	35.4
Yazdan Panah et al., (2015)	2 months postpartum	BDI	28
Abdollahi&Zarghami et al., (2014)	12 weeks postpartum	Edinburgh	0-2 weeks: 6.7; 2-8 weeks: 4.3, 8-12 weeks: 4.5
Abdollahi&Zarghami et al., (2016)	2 weeks postpartum	Edinburgh	6.9
Abdollahi&Rohani et al., (2014)	8 weeks postpartum	Edinburgh	19.4
Fathi et al., (2017)	8-10 weeks postpartum	Edinburgh	-
Ghanei Gheshlagh et al., (2015)	-	Edinburgh	36 in fathers, 49.3 in mothers
Kheirabadi et al., (2009)	2-12 weeks postpartum	Edinburgh	57.2
Mahmoodi et al., (2017)	8 weeks postpartum	GHQ	16.9 (parents), 21 in fathers; 12.9 depression in mothers
Hosseini et al., (2008)	10 days postpartum	BDI	24.8
Kamali Fard et al., (2018)	6-12 weeks postpartum	Edinburgh	33.2 in mothers; 11.7 in fathers
Khorramirad et al., (2010)	6-12 weeks postpartum	Edinburgh	23.7
Mahdavy et al., (2020)	2 weeks to 2 months postpartum	Edinburgh	7.1
Manshoori et al., (2017)	2-6 months postpartum	Edinburgh	68.5
Amidi Mazaheri et al., (2014)	4-8 weeks postpartum	BDI	54.90 mild, 42.10 moderate, 3 severe
Matinnia et al., (2020)	1 year	Edinburgh	63.3
Matinnia et al., (2018)	6 months postpartum	Edinburgh	39
Zarghami et al., (2019)	12 weeks postpartum	Edinburgh	20.1 in urban mothers 17.8 in rural mothers
Mirsalimi et al., (2019)	-	Researcher-made questionnaire	Mean score of mental health literacy in postpartum depression: 3.78
Moradi et al., (2020)	2 months postpartum	Edinburgh	11.3 medium; 44.8 severe
Najafi et al., (2006)	2-3 weeks postpartum	Beck	20
Rajaipour et al., (2019)	1 months postpartum	Edinburgh	10.2
Rezaei et al., (2016)	6 months postpartum	HRQOL	-
Rouhi et al., (2012)	8 weeks postpartum	Edinburgh	36.3 (14.77 in Kurdish women; 12.99 in Azeri women)
Shahi et al., (2018)	2-4 months postpartum	Edinburgh	19.8 in the second month 15.7 in the fourth month
Shobeiri et al., (2007)	2-8 weeks after delivery	Beck	32
Sooki et al., (2012)	2-3 months after delivery	Beck	28.9
Taherifard et al., (2013)	6-8 weeks after delivery	Edinburgh	34.8
Tashakori et al. (2009)	2 months after delivery	Edinburgh	21.4
Zahmatkesh et al., (2020)	8 weeks after delivery	BDI	68 people out of a total of 250 (27.2)

Authors, Year	Follow-up duration postpartum	Mental health scale	Prevalence of postpartum mental disorders (%)
Aghapoor et al., (2009)	6-12 weeks after delivery	BDI	28
Bahari et al., (2017)	2-6 months after delivery	Edinburgh	32.7
Khooshemehry et al., (2011)	The first 6 weeks after delivery	BDI	30
Kheirabadi et al., (2015)	2 months to one year after delivery	Edinburgh	37.2
Rahmani et al., (2012)	2 months after delivery	Edinburgh	45.4 mothers with unfavorable economic situation, 8.2 mothers with favorable economic status
Roubintan et al., (2012)	4-8 weeks after delivery	Edinburgh	50.8
Salmalian et al., (2008)	4-8 weeks after delivery	BDI	39.9 moderate; 24.7 mild - severe
Sharifi et al., (2008)	2-3 months after delivery	BDI	Different prevalence according to the type of variable (female occupation: 23 housewives spouse occupation: 11 in labor, female education: 16 High school
Shafaie et al., (2017)	At the time of referral for examination of the infant's eye during discharge from the NICU	Edinburgh	Mean score of postpartum depression: (16.64±6.66)
Salehi et al., (2009)	40 days after delivery	Edinburgh	12.6
Sehati et al., (2008)	2 months postpartum	Edinburgh	34.7
Safa et al., (2006)	3-12 weeks postpartum	Clinical interview by a psychiatrist (diagnosis of postpartum psychosis profile)	9.1 History of major depression
Ghaffarzadeh Khoei et al., (2017)	8 weeks postpartum	Edinburgh	21.6
Saei Gharenaz et al., (2017)	-	BDI	18.2 mild; 16.6 moderate; 12.6 severe
Ghaljeh et al., (2013)	4-8 weeks postpartum	BDI	78.27
Kamkar et al., (2019)	14 days postpartum	BDI	13
Kiani et al., (2010)	6 weeks postpartum	Edinburgh	-
Lashkaripour et al., (2012)	Four times (immediately, 4 weeks after the first evaluation, 6 weeks after the second evaluation, 8 weeks after the third evaluation)	BDI	33.7
Nikpour et al., (2012)	2-8 weeks postpartum	Edinburgh	10.3 in the second week; 13 in the eighth week

EPDS: Edinburgh Postnatal Depression Scale, BDI: Beck Depression Inventory, GHQ: General Health Questionnaire, HRQOL: Health Related Quality of Life Questionnaire, NICU: Neonatal intensive care unit.

According to **Table.5**, in the review of 56 studies, some structural factors related to postpartum mental health were identified, including age of parents (father, mother) in 31 studies (23, 39, 41-44, 49, 50, 52, 55, 56, 60, 62, 63, 65, 66, 70, 72-75, 77-82, 84, 85, 87, 106), age difference of couples in three studies (44, 71, 87), parents education in 46 studies (22, 23, 25, 39-44, 46, 47, 49, 50, 52-56, 58, 60, 62-68, 70-73,

75-81, 83, 84, 87, 89-92, 106), mental health literacy in two studies (68, 87), parents occupation in 43 studies (39-41, 43, 44, 46, 47, 49, 50, 52-56, 58-64, 66-72, 75-79, 81-85, 87-90,106), family economic status (income adequacy) in 28 studies (23, 39, 40, 43, 45, 50, 51, 53, 56, 62, 64, 66-68, 70, 72, 73, 75, 76, 78, 80, 83, 85, 87, 89, 92, 93,106), parents' ethnicity and race in five studies (23, 50, 55, 62, 70), social class in one study (45), and culture and religion in two studies (24, 85). Among the mentioned factors, the most common structural determinant related to postpartum mental health was considered education and the least factor was assumed social class.

Among 46 studies that measured the relationship between education and postpartum mental health, 23 studies (22, 43, 47, 49, 54-56, 60, 63-68, 70, 73, 77-79, 81, 84, 92,106), demonstrated a significant relationship between mother's education and postpartum mental health, and six studies (25, 43, 71, 75, 76, 91) showed a significant relationship between father's education and postpartum mental health.

In the study of Rouhi et al., the relationship between the two structural variables of education and occupation in two Kurdish and Azeri ethnicities in both parents (mother/father) was measured separately with postpartum mental health, revealing a significant relationship (P= 0.000) of primary education variable and occupation (housewife) of Kurdish mothers and postpartum mental health and a significant relationship (P= 0.02) regarding the variable of occupation (housewife) of Azeri mothers (62).

Only one study showed a significant relationship (OR: 0.97, 95% CI= 0.95-0.99, P= 0.033) between maternal health literacy and postpartum depression (87). Among 43 studies related to job variables, 21 studies (46, 47,49, 54-56, 59-64, 66, 68, 69, 72, 78, 79, 85, 88,106) showed a significant relationship between mother's job and postpartum mental health and nine studies (39, 43, 44, 46, 63, 75, 76, 88, 90) reported a significant relationship between father's job and postpartum mental health. Out of 31 studies related to the variable of parents' age (mother/father), 16 studies (23, 41, 49, 55, 56, 62, 63, 65, 70, 73-75, 78, 79, 84, 85) reported significant relationship between mother's age and postpartum mental health, and none reported a significant relationship between father's age and postpartum mental health (43, 50, 56, 65, 66).

In measuring the relationship between the structural variable of family economic status (income adequacy), most studies (20 studies) (23, 39, 40, 43, 45, 50, 51, 54, 62, 64, 66, 68, 70, 73, 75, 76, 78, 80, 85, 92) showed a significant relationship between this variable and postpartum mental health. In terms of ethnicity variable, among five related studies, three studies (23, 62, 70) reported a significant relationship between maternal ethnicity and postpartum mental health, while in one study no significant relationship (P= 0.541) was reported between paternal ethnicity and postpartum mental health (50). The structural variable of social class was measured in only one study, which showed a negative significant relationship between this variable and postpartum mental health (45).

Two studies (24, 91) assessed the relationship between cultural activities and religious rituals with postpartum mental health; a significant relationship (OR: 0.94, 95% CI= 0.89-0.99, P= 0.004) was just reported between religious rituals and postpartum mental health (91). Three structural variables (age, education, and maternal occupation) showed a significant relationship (P=0.000) regarding postpartum psychosis in the only study found in this systematic review (79).

Table-5: Social-structural determinants of postpartum mental health related to studies in 2005-2020.

Authors, Year	Age of parents (father, mother)		Age difference of couples	Parent education / Mental health literacy		Parents occupation (father, mother)		Family economic status (income adequacy)	Parents' ethnicity and Race		Social class	Culture and Religion
	F	M		F	M	F	M		F	M		
Abbas Zadeh et al., (2011)				-	●							
Abbasi et al., (2013)	-	●		-	o			●	-	●		
Abdollahi& Etemadinezhad et al., (2016)												o
Ahmadi et al., (2015)	-	o		-	o	●	o	●				
Ali Kamali et al., (2020)				-	o	o	o	●				
Bazaz et al., (2018)	-	●		-	o	-	o					
Boomadi et al., (2016)	-	o		-	o							
Ezzeddin et al., (2018)	o	o		●	●	●	o	●				
Yazdan Panah et al., (2015)	-	o	o	-	o	●	o					
Abdollahi and Zarghami et al., (2014)	-	●				-	●	●				
Abdollahi and Zarghami et al., (2016)				●	-							●
Abdollahi and Rohani et al., (2014)				●	-							
Fathi et al., (2017)								●			●	
Ghanei Gheshlagh et al., (2015)				-	o	●	●					
Kheirabadi et al., (2009)				-	●	●	-					
Mahmoodi et al., (2017)				-	●			●				
Hosseini et al., (2008)	-	●		-	●	-	●					
KamaliFard et al., (2018)	o	o		o	o	o	o	●	o	o		
Khorramirad et al., (2010)								●				
Mahdavy et al. (2020)	-	o		-	o	-	o					
Manshoori et al., (2017)				-	o	-	o	o				
Amidi Mazaheri et al., (2014)				-	●	-	●	●				
Matinnia et al., (2020)	-	●		-	●	-	●		-	o		
Matinnia et al., (2018)	o	●		-	●	-	●	o				
Zarghami et al., (2019)						●	●					
Mirsalimi et al., (2019)	-	o		-	●	-	●	o				
Moradi et al., (2020)				-	o	-	o					
Najafi et al., (2006)						-	●					
Rajaipour et al., (2019)	-	o		-	●	-	●					
Rezaei et al., (2016)						-	●					
Rouhi et al., (2012)	-	●		*		-	●	●	-	●		
Shahi et al., (2018)				o	●	-	●	●				
Shobeiri et al., (2007)	-	●		-	●	●	●					
Sooki et al., (2012)	o	●		o	●							
Taherifard et al., (2013)	o	-		-	●	o	●	●				
Tashakori et al., (2009)				-	●	-	o	●				
Zahmatkesh et al., (2020)				-	●	-	●	o				
				o								
Aghapoor et al., (2009)						-	●					
Bahari et al., (2017)	-	●		-	●	-	o	●	-	●		
Khooshemehry et al., (2011)			o	●	o	-	o					
Kheirabadi et al., (2015)	-	o		-	o	-	●	o				
Rahmani et al., (2012)	-	●		-	●			●				
Roubintan et al., (2012)	-	●										

Authors, Year	Age of parents (father, mother)		Age difference of couples	Parent education / Mental health literacy		Parents occupation (father, mother)		Family economic status (income adequacy)	Parents' ethnicity and Race		Social class	Culture and Religion
	F	M		F	M	F	M		F	M		
Salmalian et al., (2008)	-	●		●	-	●	o	●				
Sharifi et al., (2008)				-	o	●	o					
Shafaie et al., (2017)				●	o	●	o	●				
Salehi et al., (2009)	-	o		-	●	o	-					
Sehati et al., (2008)	-	●		-	●	-	●	●				
Safa et al., (2006)	-	●		-	●	-	●					
Ghaffarzadeh Khoei et al., (2017)	-	o	o	o ●	o	-	o	o				
Saei Gharenaz et al., (2017)	-	o		o	o			●				
Ghaljeh et al., (2013)	-	o		-	●	-	o					
Kamkar et al., (2019)	-	o				-	o					
Kiani et al., (2010)				o	o	-	o	o				
Lashkaripour et al., (2012)	-	●		-	●	-	o					
Nikpour et al. (2012)				-	o	-	o	o				

● indicates significant related variables, and o indicates non-significant variables, and - indicates the lack of measurement of the desired variable with postpartum mental health. ***** indicates a significant and non-significant relationship of education in the two Kurdish and Azeri ethnicity groups and postpartum depression.

4- DISCUSSION

The aim of this study was to review the studies on the relationship between social-structural determinants of health and postpartum mental health in Iran. Based on the results of diagnostic tools used to diagnose postpartum depression, 37 studies used the Edinburgh's measuring instrument and 15 studies used the Beck standard test. The highest prevalence of postpartum depression (68.5%) using the Edinburgh instrument was related to the study of Manshoori et al. (2017) with a follow-up duration of 2-6 months postpartum (53), and the lowest rate (4.3%) was related to Abdullahi et al. (2014) 2-8 weeks postpartum (85). Also, using Beck tool, the highest (78.27%), and lowest (3%) prevalence of depression was reported within 4-8 weeks' postpartum follow-up, respectively (81, 93). According to the results of a systematic review and meta-analysis study in 2018, the global prevalence of postpartum depression was reported to be 17% (107). In another study in 2017, the global prevalence of postpartum psychosis was reported in five studies (0.89 to 2.6 per 1000 women), and in one study (5 in 1000) (108). In a systematic review study in 2012 in Iran, the overall prevalence of postpartum depression was estimated 28.7%, which was 26.9% and 30.5%, respectively, in studies using the Edinburgh and Beck questionnaires (109). The reason for this can be the difference in the type of instrument in terms of the characteristics of the two instruments, the number of questionnaire questions, maximum scoring criteria, sensitivity, specificity, etc. in different societies (110,111). In the present review study, the highest prevalence of postpartum depression in fathers belongs to the study of Ahmadi et al. (2015), 59.8%. In this study, the data of 328 fathers during 8 weeks after the birth of the baby were examined using only the Edinburgh measuring instrument (39). In a study in Sweden (2017), on 447 fathers 0-18 months after the birth of a baby, using three measuring instruments (Edinburgh, Beck, and the Gotland Men Depression Scale [GMDS]), the prevalence of this disorder was 23% using Edinburgh tool (cut-off ≥11), and in another study using the same tool but different cut-off point (cut-off ≥8), it was reported 11.2-12% at intervals of one to six months postpartum

(112,113). In another study in Sweden in 2013, the prevalence of postpartum depression in 812 fathers 3 months postpartum using the Edinburgh instrument (cut-off ≥11) was reported to be 10.3% (114). It seems that variation in the number of participants in the study, place of study, disagreement in assessing the follow-up time of fathers postpartum, lack of a single tool for measuring, different age range in fathers, uncertainty of the severity of depression (mild-severe) according to DSM-5 of American Psychiatric Association, 2013, is one of the reasons for the discrepancy in the results among postpartum fathers.

However, one of the most important reasons for these differences can be the weakness in diagnosing postpartum depression in fathers and the lack of reporting this disorder. Another reason for the difference in the reported rates is the age range of the fathers participating in the studies. In the present review study, the highest prevalence of postpartum depression was observed in fathers in the age range of 30-39 years who had recently had children (39). In two studies in Sweden, fathers in the age range of 34-28 years suffered from higher rates of postpartum depression (112,114).

These findings may indicate a higher prevalence of postpartum depression in younger fathers. Some researches in this field confirm this (114,115). In the present study, three studies reported the prevalence of postpartum depression in parents, simultaneously (46, 50, 92). In the study of Ganeyi Gheshlagh et al. (2015), the prevalence of this postpartum disorder using the Edinburgh scale in fathers compared to mothers was 36% and 49.3%, respectively (46). In the study of Mahmoodi et al. (2017), this rate was reported 21% vs. 12.9% using the GHQ-28 (92), indicating the relatively high prevalence of postpartum depression and the need for screening fathers in the postpartum period as mothers. According to studies, 24-50% of fathers whose spouses experience some degree of depression within a year postpartum develop postpartum depression (116). In a review of studies, Kamali Fard et al. (2018) reported a higher prevalence of postpartum depression in mothers than fathers (using the Edinburgh scale higher (33.2% vs. 11.7%). In this study, more than half of the women experienced their first delivery (50). This is consistent with the results of a study by Figueiredo et al. (2011). In their study, they also showed the prevalence of postpartum depression using the Edinburgh instrument in 20% of mothers and 11.5% of fathers 3 months postpartum (117).

Perhaps, the most important reason for the differences in the results of various studies in this field can be attributed to a set of risk factors that threaten the mental health of mothers postpartum. Although postpartum biological changes are somewhat the same for all women, the socioeconomic status (SES) is unique to each new mother and her family (118). Many contradictory studies have reported the relationship between socioeconomic status (structural determinants), and mental health, especially postpartum depression (119,120). According to the results of the articles under study, some structural factors related to postpartum mental health (depression and psychosis), in order of frequency, include education, occupation, age, family economic status (income adequacy), ethnicity and race, age differences of the couple, culture, religion, and social class. Education level is one of the most practical indicators in determining the socio-economic status (121,122). Reviewing the significant relationship between parents' education status and postpartum depression, in most studies related to this variable, the mothers participating in the research had a diploma or lower degrees (22, 43, 47, 55, 60, 63,

64, 66-68, 70, 78, 81, 84, 93), and the majority of fathers had a diploma and lower degrees (71, 76, 91). In most studies in this field, low level of education is often considered as an independent factor in the prevalence and increased risk of postpartum depression (122). Mahmoodi et al. (2017), and Sooki et al. (2012) showed the effect of education variable as a strong predictor of risk in postpartum depression in mothers, 12 and 18%, respectively (65,92). It seems that increasing the level of education of parents promotes their awareness and knowledge with respect to meeting their physical and mental needs and facilitates their access to more information resources and thus reduces the risk of depressive symptoms in them. The issue of maternal employment and its protective role against postpartum depression has always been confirmed in many studies (123,124).

Reviewing the studies, the majority of mothers with postpartum depression were housewives, showing a significant difference compared to working mothers (46, 47, 56, 59-61, 63, 64, 66, 68, 69, 72, 78, 85, 93, 106). Rouhi et al. (2012) reported that the majority of mothers were housewives, and the mean score of postpartum depression in women who were not working showed a significant difference compared to working mothers (62). According to studies, workers experience lower degrees of postpartum depression symptoms (125, 126).

The available evidence indicates the presence of symptoms of anxiety, depression in fathers during the transition to the parental stage, endangering their mental health and subsequently developing negative effects on the family (115). In the present review study, the highest rate of postpartum depression in the group of fathers was related to new fathers with lower level of education, unfavorable economic situation, unemployed, and men with housewives (39). This can be due to differences in the average age of fathers, unfavorable or average relationships between couples, lack of support from others in child care, and mothers' concerns in performing maternal duties. In measuring the relationship between fathers' jobs and postpartum depression, the majority of fathers participating in the study were self-employed or unemployed (43, 44, 46, 76). Based on the findings, the age group of under 35-36 years was correlated with postpartum depression in mothers. Lashkaripour et al. (2012) showed that depression in the age group under 18 was significantly different from other age groups, which could be due to the mother's unwillingness to accept maternal responsibilities and childcare, followed by feelings of helplessness and inadequacy in mothers and developing depression (84).

A study by Muraca et al. (2014) in Canada on mothers who had recently given birth revealed a significant association between 40-44 years old mothers compared to 35-30 years old mothers and postpartum depression (127), which is not in line with the results of the present study. Perhaps, the reason for this in a number of studies is a proven association between some complications of pregnancy and its consequences in older mothers at the time of delivery (128-130). In the present study, the majority of mothers were moderate or weak in terms of family economic status (income adequacy). In the study of Taherifard et al. (2013), Khorami Rad et al. (2010), and Abbasi et al. (2013), women with low and moderate economic status were more than twice as likely to be at risk for postpartum depression (OR: 2.45- OR: 2.18) (23, 51, 66). The results of this study are consistent with some other studies regarding the significant positive relationship between economic status and family income with postpartum depression (118, 131). Understanding mothers' economic status and family livelihoods

and their relationship with postpartum depression are important in determining how they care for themselves and their infants and managing the costs of pregnancy and childbirth, especially in low-income families. In fact, mothers' family environment plays an important role in postpartum depression (132). In the only study found, Safa et al. (2007) found a significant correlation between maternal socioeconomic characteristics (age, occupation, and level of education) and postpartum psychosis. In this study, the majority of research units (54 mothers) in the age group of 20-30 years were housewives having a diploma and a history of mental illness (33.3%) (79).

Studies in this field have shown a significant relationship between socio-economic factors and postpartum psychosis. In these studies, mother age of less than 25 years (133), and more than 35 years (134,135), low income (136), low level of maternal education, and risk of readmission in hospital (137) were significantly associated with postpartum psychosis. In this review study, a significant relationship was observed between some ethnicities and races with postpartum depression (23, 62, 70). Bahari et al. (2017) reported that the mean score of postpartum depression among Turkmen ethnicity was higher than other ethnicities studied in this study (70).

A review study in 2019 showed that women of African or Spanish ethnicity possibly show more symptoms of postpartum depression for reasons such as lack of social support, lack of access to facilities, a history of depression, etc., but due to being afraid of cultural stigma (mental illness), they are less likely to seek treatment (138). Differences in cultural expectations and perceptions of motherhood, perceived need for care, access to healthcare insurance, and the mother's relationship with the service provider are among the reasons for the complex relationship between ethnicity and race and postpartum depression (139). It should be noted that due to the small number of Iranian studies on the role of ethnicity and race in the developing postpartum psychiatric disorders, it is difficult to achieve acceptable results through analyzing the findings of these limited studies. In measuring the relationship between culture and religion and postpartum depression, Abdollahi and Etemadnejad (2016) reported that cultural activities (three areas: maternal, nutritional, and neonatal) are not associated with a reduced chance of postpartum depression, and in fact, it does not act as a defense mechanism against the risk of this disorder (24).

However, Abdullahi and Zarghami (2016) demonstrated that performing religious and cultural rituals is associated with a decrease in the frequency of postpartum depression (91). Religious and cultural activities, via encouraging mothers to participate in various ceremonies, harmonize physical and psychological social dimensions, and by increasing the mother's self-confidence, perceived social support, lack of loneliness, and thus adaptation of the mother to the environment ultimately improves management of stressful situations and reduces postpartum depression. In other words, religious-cultural traditions and customs have a protective role in postpartum mental health (140, 141). In the present study, only one study showed a significant negative relationship between social class and activities and postpartum depression (45). In this study, mothers' social activities and participation were at their lowest performance level postpartum, which is consistent with some studies conducted abroad (142, 143).

4-1. Strengths and limitations of the study

Strengths of the study*:* Simultaneous study of structural determinants affecting

postpartum mental health in both parents (mother and father) in some studies found published between 2005 and 2020, manifesting the significance of paying more attention to the mental health status of men as well as their wives by healthcare providers. In addition, reviewing and summarizing various studies conducted in the field of the most common postpartum mental health disorders (maternal grief, depression, and postpartum psychosis) in Iran and comparing it with some foreign studies to better understand and inform researchers and stakeholders in the field of structural determinants affecting postpartum mental health are the strengths of this systematic review.

Limitations of the study*:* Limitations of this study involves the review of studies only in Iran, the exclusion of some studies due to the lack of clarity in the type of study in the text and also the low quality of some articles with respect to the purpose of the current study, a small number of studies performed on some structural determinants affecting postpartum mental health, and the small number of studies related to postpartum mental health in fathers.

5- CONCLUSION

Generally, the prevalence of postpartum mental health disorders, especially postpartum depression, has been reported differently in Iran and other countries based on differences in the results of diagnostic tools, gender, ethnicity and culture, etc. Due to the adverse and negative consequences and complications of postpartum mental health disorders in parents and its irreversible effects on all aspects of family life quality, the need to pay attention to the risk factors underlying these disorders is of great importance. The results of this study merely showed the association of some structurally significant determinants affecting postpartum mental health, especially with a greater emphasis on postpartum depression. In general, structural factors affecting postpartum depression include maternal age, mother's education, father's education, mother's job, father's job, family economic status (income adequacy), ethnicity and race, social class, culture, and religion, and regarding postpartum psychosis include the mother's age, level of education, and occupation. Therefore, by identifying the underlying risk factors in the prenatal period in pregnant mothers and their spouses, their mental health in the postpartum period can be ensured. It is recommended that longitudinal studies be conducted in different regions of Iran using similar measurement criteria to examine all the factors together. Moreover, it is necessary to conduct more studies to identify other factors related to postpartum mental health including the relationship between postpartum mental health and Intermediate factors.

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7- CONFLICT OF INTEREST: None.

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