



Scoping Review

FACTORS RELATED TO PATERNAL POSTNATAL DEPRESSION (PPND)

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A B S T R A C T

Introduction: Previously, perinatal depression was only associated with mothers, so paternal depression was not widely recognized and was not well studied.

Purpose: The purpose of this scoping review is to map the available evidence relating to factors related to the postnatal paternal depression (PPND).

Methods: The authors identify studies that explain the factors related to the PPND from two databases (PubMed and Science Direct). The search was limited to studies in English, and was published in the period 2010-2019. PRISMA Flowchart is used to identify relevant studies. In this review, the study design of the article is not limited. Provided the article deals with factors related to PPND.

Results: In this scoping review eight relevant articles were found for review. Then obtained several factors associated with the incidence of paternal depression in the postnatal period, then from the factors obtained mapping. Three themes were obtained, namely psychosocial factors (parenting distress, infant problems, social support, father's sleep quality, subjective birth experience, depression in partners, and relationships with partners), demographic factors (family income / economy, and experienced father), and the father's physical and mental health history (Previous history of mental illness, history of infertility treatment, and pressure or anxiety in the antenatal period).

Conclusion: Among the eight articles, the most frequent factors are family income/economy (4 articles), history of mental health before becoming a father (4 articles), problems in infants (3 articles), social support (3 articles) articles, relationship with partners (3 articles).

INTRODUCTION

Being a father to some men signifies a shift from individualism and leads to an increased sense of personal responsibility and self-reflection that initiates positive behavior changes (1). The fatherhood of the perinatal period should be a time of joy and happiness (2). The role of father has a protective effect on men's health (3), but there is some evidence that shows that the transition to fathering can have a negative impact on men's health (4) (5).

Drastic biological, psychological, and social changes during pregnancy and postpartum not only increase the risk of depression in the mother (6), but the transition can also cause stress to the father throughout the perinatal period, thereby causing depression and anxiety, with a pattern similar to that observed in the mother (7) (8) (9). The impact of paternal depression has been revealed by several large-scale longitudinal studies (10) (11) (12).

Paternal depression during the perinatal period has been shown to have a negative impact on the child's behavioral, emotional, cognitive and physical development (13) (14) (15). A study in the UK found that if a depressed father in the 8-week postpartum period, his child was twice as likely to develop behavioral and emotional problems at 3.5 years of age, and then the risk of mental illness at 7 years of age increased to 1,7 times (10) (16). In general, father's mental health in the perinatal period is often not considered. This causes the father is not highlighted, underdiagnosed and causes health problems during the perinatal period are not treated properly (17). Many factors have been identified that contribute to paternal postnatal depression (PPND), but the direction of causality is not so clear, the incidence of maternal depression is often associated as the most common predictor of the incidence of paternal depression (18) (19) (20). Then a history of previous psychiatric disorders was also associated with postnatal paternal depression (21). Fathers who experienced more challenges in childcare also reported higher PPND levels (2). There are many factors that allow for paternal

depression in the postnatal period, so researchers feel it is important to identify what factors are associated with the incidence of paternal postnatal depression and what is most common in the incidence of paternal postnatal depression.

METHOD

This study is a scoping review, which reviews systematically to interpret the evidence-based results available, used to map the concepts that underlie the research area, sources of evidence, and types of evidence available.

Determine and align research objectives and questions

This review is guided by the question "What factors are associated with the incidence of paternal postnatal depression and among those factors, what factors are most often associated with the incidence of paternal postnatal depression". This scoping review is to map the available evidence relating to factors related to the postnatal paternal depression (PPND)

Develop and align inclusion criteria with research objectives and questions

This study uses the PET Framework (Population, Exposure, Themes) in managing and solving the focus of review. In this review, the study design of the article is not limited.

Table 1. PET Framework

Population	Exposure	Themes
<i>Fathers in their partner's postnatal period who have symptoms of depression</i>	<i>Fathers who have done EPDS tests</i>	<i>Factors related to depressive symptoms</i>

Identifying Relevant Studies

The strategy used in identifying relevant articles is, researchers only focus on peer review of articles using databases. The databases are PubMed, and ScienceDirect. Keyword: "(risk AND factors) AND paternal) OR father) AND depression) OR depressive) AND perinatal) AND postnatal.

Study Selection

For the selection of studies determined using inclusion and exclusion criteria.

Table 2. Inclusion and Exclusion Criteria

Kriteria Inklusi	Kriteria Eksklusi
- The past ten years (2010-2020)	- Review article
- In English language	- Report article
- Original research	
- Humans	

PRISMA Flowchart is used to identify relevant studies. PRISMA is considered appropriate because it can improve the quality of publication reporting.

Quality assessment of articles

Critical Appraisal Skills Program (CASP) is used for a critical appraisal to assess the quality of the article. The selected studies are studies with grades A and B. In this study found 3 articles with grade B, 5 articles with grade A

RESULT and DISCUSSION

Mapping/Scoping

Themes	Sub Themes
Psychosocial Factors	<ol style="list-style-type: none"> 1. Parenting distress^{2,4} 2. Infant Problems^{4, 5,6} 3. Social Support^{2,5,6} 4. Father's sleep quality² 5. Subjective birth experience⁷ 6. Depression in partners⁷ 7. Relationship with partners^{2,4,8}
Sociodemographic Factors	<ol style="list-style-type: none"> 1. <i>Family Income</i>^{1,2,5, 8} 2. <i>Experienced father</i>³
Father's physical and mental health history	<ol style="list-style-type: none"> 1. History of mental health problems before becoming a father^{1,5,6,8} 2. History of infertility treatment¹ 3. Pressure or anxiety in the partner's antenatal period^{2,3,8}

From the articles that have been reviewed, there is evidence from 8 studies that state that there are factors related to the occurrence of paternal depression during and after the partner's pregnancy, such as psychosocial factors, sociodemography and previous physical and mental health history of the father.

Psychosocial Factors

Parenting Distress

From this review, two articles were obtained which showed that parental pressure was related to the incidence of father's depression. It was found that a high level of parental distress was significantly associated with increased postpartum paternal depression (22) (23). Other studies suggest that parenting is a construction that is related to the role of parents which is influenced by expectations and perceptions of the characteristics of the child, parental characteristics, and the quality of interaction between parents and babies. This is a relationship between bio-psycho-social factors (anxiety, discomfort, psychological and emotional tension, negative/maladaptive coping with stressful events, emotional inability, etc.) that distort the adaptive reaction

to stressors and affect subjects with psychological and social related high vulnerability (24) (25).

Infant Problems

There are three studies that show that problems in babies have a relationship with the incidence of paternal depression. Problems in infants related to paternal depression such as sleep problems, infant health problems and difficult babies (23) (26) (27). Two factors of the baby which is a protection against the mental health of their parents, is the condition of the baby's term and does not have sleep problems. Other studies have found that fathers of premature babies, difficult babies, and babies with sleep problems have higher PPND levels (28) (29).

Social Support

Three studies showed low social support had an impact on symptoms of paternal depression. Related social support is family support, partner support, friends, health workers or special people (22) (27) (26). This finding is consistent with other studies, that with a decrease in scores for the perception of social support from family, friends, or someone special, a father's depression score increases. So it is thought that social support acts as a buffer against stress (30) (31).

Fathers's Sleep Quality

There is one study that found poor sleep quality would have an impact on postpartum depression symptoms in fathers (22). Given that fathers and mothers may experience sleep disturbances early in their parental roles, sleep may be associated with the father's PPD, and may even contribute to the transmission of PPD to a partner (32).

Subjective Birth Experience

There is one study that found that negative perceptions or subjective experiences of childbirth had a significant relationship with postnatal depression (33). This is the first study to examine this phenomenon in men, and highlights that the relationship between birth experience and depression can also occur in fathers after giving birth. In addition, these findings highlight the importance of subjective birth experiences. For prevention efforts, it may be important to talk with prospective new parents, because their subjective experiences may be more important than objective criteria (34).

Depression in Partner

Author found two articles that explain that having a partner who has symptoms of antenatal depression and increased stress of parents is associated with symptoms of paternal depression at 2 months postpartum (22) (33). Other studies have also suggested that high postnatal depression rates in mothers increase the risk of postnatal depression in fathers. In this study it was found that the depression depression in the father is similar to that in the mother,

but the symptoms of depression in the father vary somewhat in time (35).

Relationship with Partner

In this review found three studies that show that the quality of the relationship with a partner is one of the strong predictors of PPND. such as adjusting for a bad relationship with a partner, poor marital quality, and not having a relationship with a partner in recent months (22) (23) (36). Similar to other studies, fathers in the depressed group were less satisfied with the relationship and showed less affection, and a higher level of criticism towards and from partners (37).

Sociodemographic Factors

Family income/Economy

There are four studies that show that family income or economic factors have a significant relationship with the incidence of postnatal paternal depression. Such as economic anxiety, fathers who are surviving financially, and fathers who are unemployed (38) (22) (26) (27). Poor financial condition, fathers who survive financially, and fathers who are unemployed are the most common problems. Another study shows that one way to bring a father into a bad financial situation is unemployment, a father who is unemployed 6.5 times the risk of developing postpartum father depression (39).

Experienced Father

A study found that a higher risk of anxiety was observed in experienced fathers compared to men who first became fathers throughout the perinatal period, both during pregnancy and postnatal (40). Other study explain, the situation faced by fathers may be more complicated because parity is an important contributor to the level of difficulty and trajectory, experienced fathers have a much higher risk of depression and anxiety during the perinatal period compared to men who first became fathers (10) (41). The presence of a baby for a good second time may be more difficult because an experienced father faces a series of demands and challenges, including increased financial responsibility and childcare demands (42).

Father's physical and mental health history

History of mental health problems before becoming a father

There are four studies that found that psychological factors such as anxiety disorders or depression before becoming a father, are strong predictors correlated with paternal depression (26) (27) (36) (38). This finding is consistent with some literature which has suggested the strongest prenatal risk factors for the occurrence of depressive symptoms in fathers and mothers will increase if they have current or previous psychopathological problems

(depression and anxiety), stress, insomnia, and a bad family atmosphere (20) (43) (44).

History of infertility treatment

In this review, only one study examined further the correlation between the history of infertility treatment with paternal postnatal depression. It was stated that fathers with a history of infertility treatment had a risk of 2,4 times experiencing PPND (38). In another study, it was found that infertility treatments triggered anxiety and depression among women and their partners (45) (46) and their effects differed between them, along with advances in infertility treatments, possibly a problem Postnatal mental health can improve in fathers (47).

Pressure or anxiety in the partner's antenatal period

There are three studies examining the correlation between prenatal anxiety and postnatal depression, it was found that prenatal anxiety or depression was significantly associated with an increased risk of postnatal depression both for mothers and fathers

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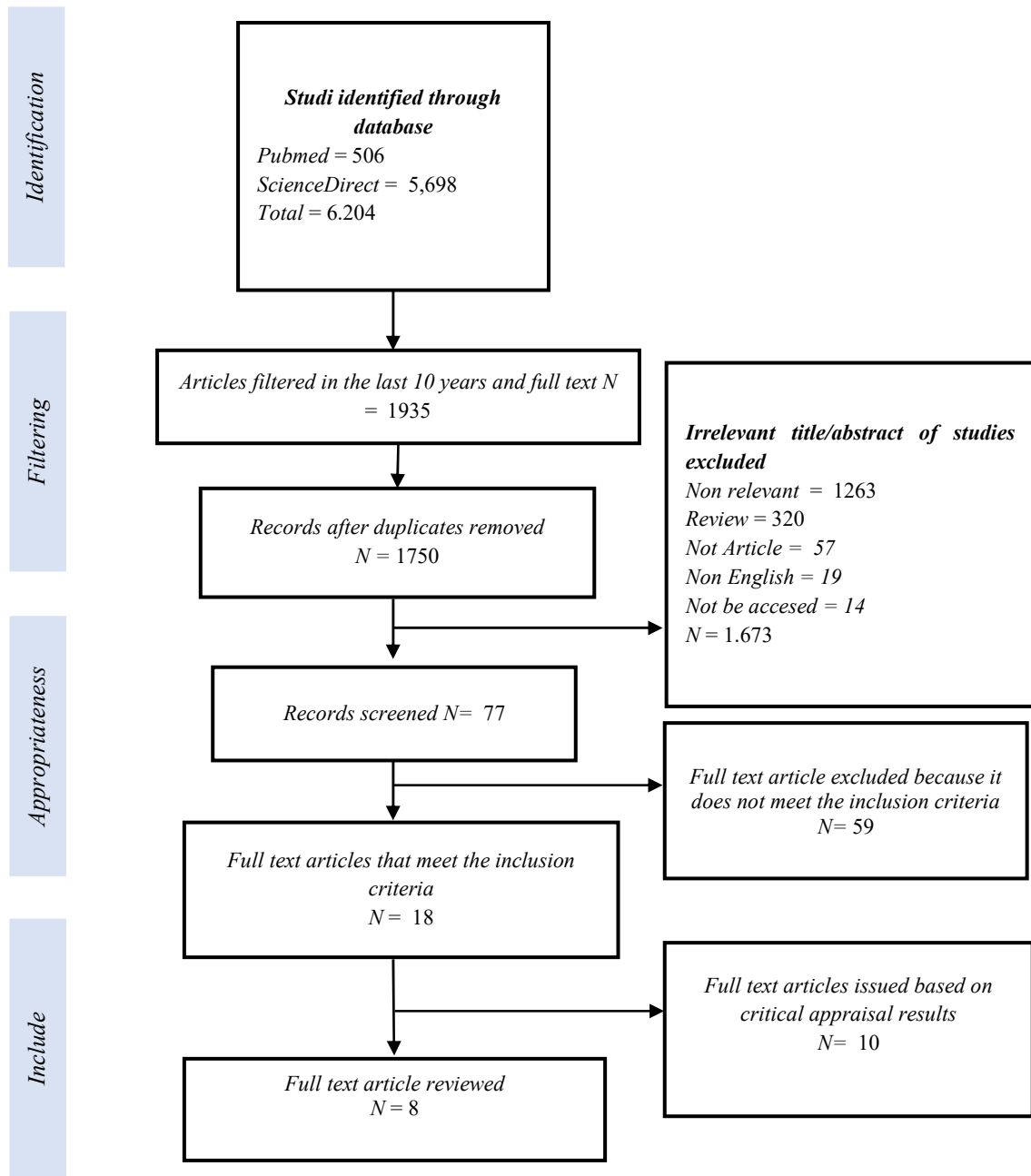
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CONCLUSION

From a total of eight articles that have been reviewed, evidence is obtained regarding the factors related to PPND. The most frequent factors are family income / economy (4 articles), history of mental health before becoming a father (4 articles), problems with infants (3 articles), social support (3 articles) articles, relationship with partners (3 articles). It is very important that health workers can pay attention to the mental health of fathers and mothers, through early screening and prevention strategies that can be applied, especially for those who are at risk of depression during the transition to parenthood.

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Chart 1. PRISMA Flowchart



Charting Data

Table 3. Characteristics of Studies in Review

No	Title/Author/Years/Grade	Country	Aim	Study design	Participants / samples	Results
1	Nishimura <i>et al.</i> , (2015)/Q1/ Grade B/ <i>Paternal postnatal depression in Japan: an investigation of correlated factors including relationship with a partner</i>	Japan	Examine the prevalence and related factors associated with postpartum depression at four months postpartum	<i>Cross-Sectional Design</i>	A total of 2032 self-report questionnaires were distributed to couples (one mother and one father) with 4-month-old babies between January and April 2013. Data from 807 couples (39.7%) were analyzed. EPDS (Edinburgh Postnatal Depression Scale) is used to measure depression Fathers with EPDS scores of 8 points or higher, and mothers with scores of 9 points or higher, were classified as depressed.	<ul style="list-style-type: none"> - Responses were obtained from 907 fathers (44.6%), and researchers analyzed data from 807 couples (39.7%) where fathers and mothers completed all actions. Among 807 fathers, 110 (13.6%) had an EPDS score of 8 or more. - Depression in couples has a significant influence on the incidence of paternal postnatal depression (adjusted odds ratio (AOR) 1.91; 95% confidence interval (CI) 1.05-3.47) - A history of infertility treatment also significantly correlates with paternal postnatal depression ((AOR 2.37; 95% CI 1.32–4.24) Psychological factors such as, experience of visiting medical institutions due to mental health problems (AOR 4.56; 95% CI 2.06-10.08) and economic anxiety (AOR 2.15; 95% CI 1.34-3.45) significantly correlated with PPND.
2	Dacosta <i>et al.</i> , (2019)/Q1/ Grade A/ <i>A prospective study of postnatal depressive symptoms and associated risk factors in first-time fathers</i>	Canada	Determine the prevalence of depression in fathers for the first time at 2 and 6 months postpartum and identify associated risk factors.	<i>Prospective Cohort Study</i>	Couples in the second and third trimesters of pregnancy are recruited. Prospective cohort study conducted on 622 men who completed the sociodemographic and psychosocial questionnaire. - EPDS is used to measure depression in fathers. - Pittsburgh Sleep Quality Index (PSQI) measure sleep quality - <i>Dyadic Adjustment Scale (DAS)</i> measure the degree of adjustment of men in their partner relationships. - Modified <i>MOS Social Support Survey</i> measure social support <i>Parenting Stress Scale (PSS)</i> measure father's subjective feelings about tension, difficulties and dissatisfaction as parents.	<p>The prevalence of pediatric depression symptoms at 2 months postpartum was 13.76% (67/487) (CI: 10.70,16,82) and 13.60% (51/375) (CI: 10,13,17.07) at 6 month. Among men who reported depressive symptoms at 2 months postpartum, 40.30% (n = 27/67) also experienced depressive symptoms during antenatal assessment, and among those who had depressive symptoms at 6 months postpartum, 24% (n = 12 / 51) experience depressive symptoms on antenatal examination and 2 months postpartum.</p> <p>The risk of postpartum father's depression symptoms 2 months increased for men who simultaneously had poorer sleep quality (OR, 1.25; CI: 1,10,1,42), worse partner relationship adjustment (OR, 0.97; CI: 0.94,0.99), and higher parenting stress (OR, 1.07; CI: 1.02.1.11). Unemployment (OR, 3.75; CI: 1.00,13.72), poorer sleep quality (OR, 1.37; CI: 1.16.1.65), lower social support (OR, 0.92; CI: 0.84.1.00), adjustment of partner relationships worse (OR, 0.95, CI: 0.92,0.98) and higher financial pressures (OR, 1.21, CI: 1,04,1.42), all simultaneously assessed significantly associated with symptoms of pediatric depression at 6 months postpartum.</p> <ul style="list-style-type: none"> - Depression in partners simultaneously is slightly related to depressive symptoms in fathers at 2 months, but not at 6 months.
3	Chen <i>et al.</i> , (2018)/ Q1/Grade A		Investigate changes in depression,	<i>Prospective Longitudinal</i>	A total of 531 pregnant women and their partners were	Mother's mental distress is highest at 1 month postpartum. During the postpartum period, depression scores increase, and social

	<i>High Risk of Depression, Anxiety, and Poor Quality of Life among Experienced Fathers, But Not Mothers: A Prospective Longitudinal Study</i>		anxiety, and quality of life-related to the health of both parents from early pregnancy to 1 year postnatal. The parity effect is specifically examined.	<i>inal Study</i>	recruited during the initial prenatal visit, with five follow-ups from mid-pregnancy to 1-year post-birth. Data reported. EPDS is used to measure depression. State-Trait Anxiety Inventory (STAI) to measure anxiety. HRQoL scores focus assesses physical health and social relationships.	relationship domain scores decrease in men. Although mental distress is higher in mothers than in fathers, parity clearly affects men. Experienced fathers are independently associated with a 70% higher risk of perinatal depression (odds ratio [OR] = 1.7, 95% confidence interval [CI] = 1.2-2.3) and anxiety (OR = 1.7, 95% CI = 1.2-2.6). A higher risk of anxiety was observed in experienced fathers compared to first fathers throughout the perinatal period both during pregnancy (OR = 1.9, 95% CI = 1.1-2.2) and postpartum (OR = 1.8, 95% CI = 1.1-2.8). In an analysis of the relationship between prenatal anxiety and postnatal depression, it was found that prenatal anxiety was significantly and independently associated with an increased risk of postnatal depression in both the mother (OR = 3.2, 95% CI = 2.1-4.4) and father (OR = 5.6, 95% CI = 3.8-8.4).
4	Demontigny <i>et al.</i> , (2019)/ Q1/Grade A/ <i>Psychosocial factors associated with paternal postnatal depression</i>	Canada	Identify psychosocial factors associated with postnatal depression in fathers.	<i>Descriptive Correlational Study</i>	A total of 205 fathers who have babies (mean age: 11 months) are exclusively or predominantly breastfed for at least 6 months, comparing psychosocial factors in fathers with (n: 17.8.2%) and without a positive score for depression on the EPDS scale (n: 188) EPDS is used to measure depression Dyadic Adjustment scale to measure <i>marital relationship</i> Parent Expectations Survey to measure <i>paternal parenting efficacy</i> the Parenting Stress Index mengukur <i>parenting stress</i>	1. Sociodemographic factors In this study sociodemographic factors which included father's age, baby's age, area of origin, income, length of household, education, primiparous father, and history of miscarriage in couples, did not have a significant influence with paternal postnatal depression. 2. Faktor Psikososial Several psychosocial factors have a significant relationship with the incidence of paternal postnatal depression. Like the loss of the baby in a previous pregnancy, parenting distress, infant temperament (difficult child), dysfunctional interaction with the baby, decreased marital adjustment, and perceived low efficacy of parenting.
5	Philpott & Corcoran (2018)/ Q1/ Grade B/ <i>Paternal Postnatal Depression in Ireland: Prevalence and Associated Factors</i>	Ireland	Investigate the prevalence of postpartum depression of the father, and examine the relationship with various demographic and clinical factors	<i>Cross-Sectional Study Design</i>	The sample in this study was 100 fathers, whose partners gave birth to a baby in the previous 12 months. EPDS is used to measure depression	The prevalence of paternal postnatal depression is 12% using the EPDS scale with a cut-off score of 12 or more when the cut-off score is reduced to 9 or more the prevalence is 28%. Factors found in this study to increase the risk of postnatal depression in fathers are having babies with sleep problems, a history of previous depression, lack of social support, poor economic conditions, not having left as a father, and not getting married.
6	Helle <i>et al.</i> , (2015)/ Q1/ Grade B <i>Very low birth-weight (VLBW) as a risk factor for postpartum depression four to six weeks postbirth in mothers and</i>	Germany	Determine the prevalence & risk of PPD 4-6 weeks postpartum in parents of VLBW infants compared to parents of term infants, and Identify relevant predictors for this condition.	<i>Cross-Sectional Results From A Controlled Multicentre Cohort Study</i>	230 mothers and 173 fathers participated. EPDS is used to measure depression	The risk of postnatal depression is 4 to 18 times higher in mothers and 3 to 9 times higher in fathers of the index group. The most relevant risk factors for PPD are the birth of a VLBW baby, followed by the female sex, lifelong psychiatric disorders, and low social support.

fathers: Cross-sectional results from a controlled multicentre cohort study

7	Gurber <i>et al.</i> , (2017)/ Grade A Antenatal depressive symptoms and subjective birth experience in association with postpartum depressive symptoms and acute stress reaction in mothers and fathers: A longitudinal path analysis	Switzerland	Investigate the relationship between partners by analyzing whether the subjective birth experience is a potential mediator between prenatal depression symptoms and postpartum depression symptoms	Longitudinal cohort study	A total of 189 couples were recruited, they completed the Edinburgh Postnatal Depression (EPDS) Scale in the last trimester of pregnancy. In the first week of postpartum, they answered the Salmon's Item List (subjective birth experience), and 4 weeks postpartum EPDS and Impact of Event Scale - revised (IES-r). Data are evaluated in a longitudinal path analysis.	Compared with fathers, in mothers there were more depressive symptoms (pregnancy $p < 0.001$; postpartum $p < 0.001$), ASR (acute stress reactions) was higher ($p < 0.001$), and lower 'positive birth experience' ($p < 0.001$). The relationship between depressive symptoms in mother and father was not significant during pregnancy ($r = 0.107$, $p > 0.10$), but maternal depressive symptoms in the third trimester of pregnancy were a significant predictor of depressive symptoms and acute stress reactions in the fourth week after giving birth to mother ($\beta_{EPDS} = 0.40$, $p < 0.001$; $\beta_{IES-r} = 0.35$, $p < 0.001$), and father ($\beta_{EPDS} = 0.41$, $p < 0.001$, $\beta_{IES-r} = 0.23$, $p < 0.01$). Then 'negative subjective childbirth experience' explains the significant proportion of variance in the mother ($\beta_{EPDS} = 0.21$ $p < 0.01$, $\beta_{IES-r} = 0.18$, $p < 0.05$) and father ($\beta_{EPDS} = 0.31$, $p < 0.001$, $\beta_{IES-r} = 0.37$, $p < 0.001$) on the occurrence of PDS and ASR after controlling for age, labor, parity, epidural anesthesia, baby sex and birth weight. The symptoms of antenatal depression are related significantly to subjective childbearing experiences only in the father.
8	Underwood <i>et al.</i> , (2017)/ Grade A Paternal Depression Symptoms During Pregnancy and After Childbirth Among Participants in the Growing Up in New Zealand Study	New Zealand	Identify characteristics associated with depressive symptoms among men whose partners become pregnant and then give birth.	Longitudinal Cohort Study	A demographically diverse sample of 3,523 New Zealand men who completed interviews during their partner's pregnancy and 9 months after the birth of their child. EPDS is used to measure depression	Symptoms of antenatal depression occurred in 82 fathers (2.3%) and were related to perceived stress (odds ratio [OR], 1.38; 95% CI, 1.30-1.47) and poor health in fathers during pregnancy her partner (OR, 2.06; 95% CI, 1.18-3.61). Increased symptoms of postnatal paternal depression affect 153 (4.3%) fathers and are associated with perceived stress in pregnancy (OR, 1.12; 95% CI, 1.08-1.17), no longer in a relationship with the mother 9 months after giving birth (OR, 6.36; 95% CI, 2.28-17.78), had poor health at 9 months (OR, 3.29; 95% CI, 2.10-5.16), became unemployed at 9 months (OR, 1.86; 95% CI, 1.11-3.10), and a history of depression before becoming a father (OR, 2.84; 95% CI, 1.69-4.78).