

THE COEXISTENCE OF PATERNAL STRESS, ANXIETY, AND DEPRESSION SYMPTOMS IN IRELAND DURING THE EARLY POSTNATAL PERIOD

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Abstract

Background: For most fathers, the early postnatal period is a time of great joy and happiness; however, some fathers experience difficulties in repositioning themselves in relation to their partner, child, and work, which can lead to increased stress, anxiety and depression. The aim of this study was to investigate the coexistence of paternal stress, anxiety, and depression symptoms in the early postnatal period (0–4 days).

Methods: A quantitative, cross-sectional, descriptive correlational design was used. Data were collected using a self-administered questionnaire comprising the Perceived Stress Scale, the State–Trait Anxiety Inventory, and the Edinburgh Postnatal Depression Scale. Demographic data collected included the father's age, number of children, level of education, relationship status, nationality, and their mental health history including that of their partner. Univariable and multivariable logistic regression were used to investigate factors associated with the coexistence of symptoms.

Results: A total of 336 fathers were included in the study. Forty-three fathers (12.8%) met the criteria for the coexistence of stress, anxiety, and depression symptoms. The coexistence of two or more symptoms of stress, anxiety, or depression was almost twice as common as having only one symptom. A self-reported history of anxiety ($P < 0.001$), a negative experience of labor and birth ($P < 0.001$), and being of a younger age ($P = 0.034$) were significantly associated with the coexistence of stress, anxiety, and depression symptoms.

Limitations: The data collected was cross-sectional; therefore, causal links cannot be determined.

Conclusion: The findings highlight the need to move away from the predominant focus on depression which has existed among researchers and clinicians, to encompass a broader understanding of adverse paternal mental health outcomes to include stress, anxiety, and the coexistence of symptoms.

Keywords: anxiety; coexistence; depression; father; postnatal period; stress

INTRODUCTION

During the early postnatal period, fathers go through a multitude of complex psychological,

relational, and physical changes.^{1–3} It is suggested that the early postnatal period is a challenging time for fathers due to the need to balance the numerous demands placed on them including personal and work

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commitments, emotional and relational needs of the family, and societal and economic pressures.⁴ For the majority of fathers, the changes experienced during this period are positive and lead to personal growth, wholeness, and cohesiveness in their lives, as well as increase the unity, strength and depth in their relationship with their partner.^{5,6} However, some fathers experience difficulties in repositioning themselves in relation to their partner, child, and work,^{7,8} which can lead to increased stress, anxiety, and depression.^{1,9,10}

Over the past three decades, research has reported that fathers experience adverse mental health in the early postnatal period,^{9,11} however, this research focused primarily on depression.¹ Cameron et al.⁹ undertook a meta-analysis of 74 studies that assessed paternal perinatal depression symptoms and reported a prevalence of 8.4%. Despite the predominant research focus on depression, it is suggested that anxiety is more common than depression among fathers during the perinatal period.¹ Philpott et al.¹¹ in their systematic review reported that the prevalence rate for anxiety symptoms ranged between 3.4 and 25.0% during the antenatal period and between 2.4 and 51% during the postnatal period.

Compared to anxiety and depression, stress has been the focus of less research, even though there is a potential increase in the number of stressors experienced during the perinatal period.¹² A recent systematic review reported a prevalence of stress among fathers during the perinatal period between 6% and 8.7%.¹⁰

While there is growing interest in paternal perinatal mental health among clinicians and researchers, up to this point, no study has investigated the coexistence of paternal stress, anxiety, and depression symptoms at any stage during the perinatal period. Most studies have explored stress, anxiety, or depression symptoms individually^{1,9,11} or reported the findings separately when all three have been measured.^{13,14} This lack of research is a notable omission considering that the coexistence of symptoms is considered the rule among clinicians.¹⁵ Furthermore, understanding whether

the coexistence of stress, anxiety, and depression occurs and establishing its prevalence are important, as fathers may present with complex and mixed symptoms, making them hard to identify and treat.¹⁵ Additionally, in order to tailor support interventions and treatments to the specific needs of fathers, it is important to understand the factors contributing to the coexistence of stress, anxiety, and depression. The aim of this study was to investigate the coexistence of paternal stress, anxiety, and depression symptoms, and to examine their associations with a range of demographic factors. The demographic factors chosen to be included in this study have been identified as important factors in explaining the variability in the prevalence of paternal perinatal stress, anxiety, and depression; however, this is the first time that they have been assessed for their influence on the coexistence of these symptoms.

METHODS

Research design

A quantitative, cross-sectional, descriptive correlational design was used.

Sampling and participants

Participants were recruited from the postnatal wards of a large, urban, public maternity hospital in the southern region of Ireland. Fathers, regardless of parity, who were aged 18 years or above, able to read and write English, and visiting their partner and newborn infant at the maternity hospital were invited to take part in the study. Fathers of infants diagnosed with a birth defect and admitted to the neo-natal unit or those who had a stillborn were excluded. Non-probability convenience sampling was used to recruit fathers who met the inclusion criteria. Following a power analysis, a sample size of 300 participants was deemed sufficient to detect a medium effect ($f^2 = 0.15$) in a multiple regression with up to 30 independent variables, with a power of 80%, a level of significance of 0.05, and a two-tailed test.

The researcher (LP) collected data over a period of 3 months. LFP liaised with the clinical nurse

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manager (CNM) and the midwives on the wards to identify fathers who met the inclusion criteria. The CNM or midwives informed eligible fathers about the study and gave them an information leaflet. If they were interested in taking part in the study, fathers informed the midwives, and following this met the researcher. An overview of the study was provided by LP, and fathers were given an opportunity to ask questions once their interest in taking part in the study was confirmed. Fathers who were willing to participate were given a copy of the questionnaire to complete. They were made aware, both in the information sheet and verbally, that completing the questionnaire indicated their consent. The participants dropped the completed questionnaire into a sealed box at the midwives' station. LP collected the completed questionnaires on a daily basis.

Ethical considerations

Ethical approval was obtained from the Clinical Research Ethics Committee (CREC) prior to the commencement of the study. Fathers were made aware that completing the questionnaire was indicative of their consent.

Data collection methods

A pilot study ($n = 20$) was undertaken at the maternity hospital to ascertain the time taken to complete the questionnaire, and to ensure the clarity of the questions and the effectiveness of the instructions. Participants included in the pilot study were representative of those in the study in terms of nationality, age, relationship status, and education level. Following feedback from the pilot study, minor modifications were made to the demographic questions and the layout of the questionnaire. Data from the study were included in the final analysis.

A self-administered questionnaire was distributed to the participants. Demographic data gleaned included the father's age, number of children, level of education, relationship status, nationality, and their mental health history including that of their partner; however, the participants were not asked whether they had a clinical diagnosis or whether

they were taking medications. The questionnaire also consisted of three screening instruments to assess stress, anxiety, and depression symptoms.

Stress symptoms were measured using the Perceived Stress Scale (PSS).¹⁶ The scale consists of 10 items rated on a five-point Likert scale ranging from "Never" to "Very often." Scores can range from 0 to 40, with higher scores indicating higher perceived stress.¹⁶ The following cutoff scores are recommended for varying levels of perceived stress: 0–13 = low perceived stress; 14–26 = moderate perceived stress, and 27–40 = high perceived stress.¹⁷ In this study, the scale demonstrated high reliability with a Cronbach's alpha value of 0.85.

Anxiety symptoms were measured using the State–Trait Anxiety Inventory (STAI).¹⁸ The STAI consists of two distinctive scales that aim to assess state anxiety (a temporary state influenced by the current situation where the respondent answers how they feel at that moment) and trait anxiety (a general propensity to be anxious, where the respondent notes how they feels "generally"). Each scale consists of 20 items rated on a four-point Likert scale. Scores on each scale can range from 20 to 80, with higher scores representing greater anxiety symptoms. A cutoff ≥ 40 is recommended for screening clinically significant anxiety symptoms.^{19,20} In this study, both the STAI-T and STAI-S demonstrated excellent reliability, with each scale having a Cronbach's alpha value of 0.93.

As there is no measurement tool specifically designed to screen paternal perinatal depression, clinicians and researchers have used measurement tools that have been developed for screening depression in the general population outside the perinatal period, and among women in the perinatal period. Some of the tools used include the Edinburgh Postnatal Depression Scale (EPDS), Beck Depression Inventory (BDI), Gotland Male Depression Scale (GMDS), and the Depression Anxiety Stress Scales (DASS). The EPDS was chosen for this study as several validation studies with fathers have been conducted using this scale.²¹ The EPDS scale consists of 10 items rated on a

four-point Likert scale. Scores can range from 0 to 30, with higher scores indicating greater depressive symptoms. For the purpose of this study, a cutoff score ≥ 9 for major and minor depression and ≥ 12 for major depression was used due to its reported sensitivity and specificity in previous studies.²² In this study, the scale demonstrated high reliability with a Cronbach's alpha value of 0.86. In order for the coexistence of stress, anxiety, and depression symptoms, the following are required: PSS score ≥ 14 , STAI-T and STAI-S ≥ 40 , and EPDS ≥ 12 .

Data analysis

A data-coding framework was developed prior to data collection. All returned questionnaires were reviewed for completeness. Missing scores for individual items on the scales were replaced with the mean score of the non-missing items within the scale if at least 80% of the items had been answered. Statistical analysis was performed using IBM SPSS Statistics (version 25.0, IBM Corp, Armonk, NY, USA). Continuous variables were described using mean and standard deviation (SD) when normally distributed and median and interquartile range (IQR) when non-normally distributed. Categorical variables were described using frequencies and percentages. Ninety-five percent confidence intervals (95% CIs) for prevalence were calculated using binomial distribution (Clopper–Pearson exact method). Univariable and multivariable logistic regression was used to investigate factors associated with PSS, SATI, and EPDS. In the multivariable analysis, forward stepwise regression was used to identify the best predictors. Unadjusted and adjusted odds ratios (ORs) and their corresponding 95% confidence intervals (95% CIs) are presented. All tests were two-sided, and $P < 0.05$ was considered statistically significant.

FINDINGS

Paternal demographic characteristics and self-reported mental health history

A total of 553 questionnaires were administered of which 361 were returned. Of these,

responses from 336 questionnaires with adequate data for the variables of interest were included in the statistical analysis, yielding a response rate of 61%. The majority of the study participants were of Irish origin ($n = 282$, 83.9%), educated to third level ($n = 241$, 71.7%), married ($n = 238$, 70.8%), and in full-time employment ($n = 278$, 82.7%). The age of the participants ranged from 19 years to 65 years, with a mean (SD) of 35.6 (5.8) years. Just over half ($n = 170$, 50.6%) of the participants were first-time fathers. Forty-five fathers (13.4%) self-reported as having a history of adverse mental health, including anxiety ($n = 31$, 9.2%), stress ($n = 22$, 6.5%), depression ($n = 22$, 6.5%), obsessive compulsive disorder ($n = 1$), bipolar disorder ($n = 1$), and issues not specified ($n = 1$). Fifty-two fathers (15.5%) had a partner with a history of adverse mental health, and there were 14 couples (4.2%) with both the father and his partner having a history of adverse mental health (Table 1).

Stress, state or trait anxiety, and depression symptoms scores

The mean (SD) score for stress was 12.36 (6.01). The majority of the participants ($n = 198$, 58.9%) had low stress levels, while 40% ($n = 134$, 39.9%) had moderate stress levels (Score: 14–26), and 1% ($n = 4$, 1.2%) had high stress levels. STAI-S scores ranged from 20 to 70, with a median (IQR) of 29 (24–38). STAI-T scores were slightly higher, with a median (IQR) of 32 (26–40) and scores ranging from 20 to 66. EPDS scores ranged from 0 to 21, with a median (IQR) of 5 (2–8).

Coexistence of stress, anxiety, and depression symptoms

The coexistence of two or more symptoms of stress, anxiety, or depression was almost twice as common ($n = 102$; 30.4%) as having only one symptom ($n = 58$; 17%). For the 32 fathers with two symptoms, the coexistence of stress and trait anxiety was the most common ($n = 10$; 3%), followed by stress and depression with minor symptoms ($n = 7$; 2.1%). See Table 2.

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TABLE 1. Demographic Characteristics and Self-Reported Mental Health History, n = 336*

	n	%
Age (years): mean (SD)	35.6	5.8
Nationality		
Irish	282	84
Non-Irish	54	16
Highest level of education		
Primary level	1	0.3
Secondary level	94	29
Third level	241	71.1
Current relationship status		
Married	238	70.8
Cohabiting	76	23
In a relationship but not cohabiting	19	6
Single	3	0.9
Current employment status		
Full-time employment	278	83
Self-employed	36	11
Unemployed	11	3
Part-time employment	6	2
Student	3	0.9
Homemaker	1	0.3
Retired	1	0.3
Type of accommodation		
House	305	91
Apartment	25	7
Others	6	2
Self-reported lifetime history of mental health problems		
Yes	45	13.4
No	291	86.5
Self-reported lifetime mental health problems experienced		
Anxiety	31	9.2
Stress	22	6.5
Depression	22	6.5
Others	3	0.9

(continues)

TABLE 1. Continued

	n	%
Self-reported lifetime partner history of mental health problems		
Yes	52	15.5
No	284	84.5
Self-reported lifetime mental health problems experienced by partner		
Depression	34	10.1
Anxiety	26	7.7
Stress	14	4.2
Others	5	1.5

SD: standard deviation. *Unless otherwise stated.

Factors associated with the coexistence of stress, anxiety, and depression symptoms

Based on the univariable analysis presented in Table 3, factors that were significantly associated with the coexistence of stress, anxiety, and depression symptoms were: a negative experience of labor and birth (P < 0.001); single or not cohabiting (P = 0.043); history of mental problems (P < 0.001), stress (P < 0.001), anxiety (P < 0.001), and depression (P = 0.009).

Only variables that were significant following the univariable analysis were entered into the multivariable model. Following the multivariable analysis, the factors that are significantly associated with the coexistence of stress, anxiety, and depression symptoms were negative experiences of labor and birth (P < 0.001), a history of anxiety (P < 0.001), and younger age (P = 0.034). See Table 4.

DISCUSSION

To the best of our knowledge, this is the first study to investigate the coexistence of paternal stress, anxiety, and depression symptoms in the early postnatal period. The study is timely and warranted,

TABLE 2. Prevalence of the Coexistence of Stress, Anxiety, and Depression, n = 336

	n	Prevalence	(95% CI)
No symptoms	176	52.3	(49.1–55.8)
One symptom only	58	17.3	(13.4–21.7)
Stress	46	13.7	(10.2–17.8)
State anxiety	6	1.8	(0.7–3.8)
Trait anxiety	2	0.6	(0.1–2.1)
Depression: Minor symptoms	2	0.6	(0.1–2.1)
Depression: Major symptoms	2	0.6	(0.1–2.1)
Two symptoms	32	9.5	(6.6–13.2)
Stress, trait anxiety	10	3.0	(1.4–5.4)
Stress, depression: Minor symptoms	7	2.1	(0.8–4.2)
Stress, state anxiety	4	1.2	(0.3–3.0)
Stress, depression: Major symptoms	4	1.2	(0.3–3.0)
Trait anxiety, depression: Minor symptoms	4	1.2	(0.3–3.0)
State anxiety, trait anxiety	3	0.9	(0.2–2.6)
Three symptoms	27	8.0	(5.4–11.5)
Stress, depression: Major symptoms, trait anxiety	10	3.0	(1.4–5.4)
Stress, state anxiety, trait anxiety	9	2.7	(1.2–5.0)
Depression: Minor symptoms, state anxiety, trait anxiety	3	0.9	(0.2–2.6)
Stress, depression: Minor symptoms, trait anxiety	3	0.9	(0.2–2.6)
Stress, depression: Minor symptoms, state anxiety	2	0.6	(0.1–2.1)
All four symptoms	43	12.8	(9.4–16.8)
Stress, Depression: Major symptoms, state anxiety, and trait anxiety	29	8.6	(5.9–12.2)
Stress, Depression: Minor symptoms, state anxiety, and trait anxiety	14	4.2	(2.3–6.9)

CI: class interval.

given the fact that it is crucial for researchers and clinicians to keep working toward a more comprehensive understanding of paternal perinatal mental health with the aim of reducing the incidence and subsequent effects through the implementation of effective interventions and supports. In this study, the coexistence of two or more symptoms of stress, anxiety, or depression was almost twice as common as having only one symptom. Symptoms of stress were more common than symptoms of anxiety and depression, and when a father had two symptoms, stress was the symptom most likely to coexist with another symptom. The findings highlight the need to move away from the predominant

focus on depression that existed among researchers and clinicians,¹ to encompass a broader understanding of adverse paternal mental health outcomes to include stress and anxiety. These findings suggest that focusing on depression does not accurately represent the substantive risk to paternal mental health wellbeing and the resultant negative impact on a father's ability to parent effectively, support his partner, and function in general.²³

Having a self-reported history of anxiety was statistically significant for the coexistence of symptoms. One of the challenges for fathers who experience anxiety is that it impairs their decision-making and behavioral flexibility.²⁴ Anxiety is accompanied

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TABLE 3. Univariable analyses to investigate relationships between respondent characteristics and Co-existence of conditions, n=336

Dependent variable: Co-existence of all conditions 1= Yes 0= No	Co-existence of conditions				Odds ratio	(95% CI)	p-value
	No (n=293)		Yes (n=43)				
	%	(n)	%	(n)			
Third level education							
No	84.2	(80)	15.8	(15)	1		0.304
Yes	88.4	(213)	11.6	(28)	0.70	(0.36 to 1.38)	
Relationship status							
In relationship but not cohabiting/Single	72.7	(16)	27.3	(6)	1		0.043
Married/Cohabiting	88.2	(277)	11.8	(37)	0.36	(0.13 to 0.97)	
Employment status							
Full-time employment	88.5	(246)	11.5	(32)	1		0.206
Self-employed	77.8	(28)	22.2	(8)	2.20	(0.92 to 5.23)	
Other	86.4	(19)	13.6	(3)	1.21	(0.34 to 4.33)	
Living in a house							
No	87.5	(28)	12.5	(4)	1		0.958
Yes	87.2	(265)	12.8	(39)	1.03	(0.34 to 3.10)	
Home owner							
No	83.2	(99)	16.8	(20)	1		0.106
Yes	89.4	(194)	10.6	(23)	0.59	(0.31 to 1.12)	
Smoker							
No	88.6	(248)	11.4	(32)	1		0.097
Yes	80.4	(45)	19.6	(11)	1.89	(0.89 to 4.03)	
Drinks alcohol weekly							
No	86.5	(77)	13.5	(12)	1		0.821
Yes	87.4	(216)	12.6	(31)	0.92	(0.45 to 1.88)	
First time father							
No	86.7	(144)	13.3	(22)	1		0.805
Yes	87.6	(149)	12.4	(21)	0.92	(0.49 to 1.75)	
Experience of labour and birth positive							
No	62.5	(20)	37.5	(12)	1		<0.001
Yes	89.8	(273)	10.2	(31)	0.19	(0.08 to 0.42)	
Planned pregnancy							
No	83.6	(51)	16.4	(10)	1		0.355
Yes	88.0	(242)	12.0	(33)	0.70	(0.32 to 1.50)	
Intend taking paternity leave							
No	86.0	(43)	14.0	(7)	1		0.783
Yes	87.4	(250)	12.6	(36)	0.88	(0.37 to 2.12)	

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TABLE 3. Continued

Dependent variable: Co-existence of all conditions 1= Yes 0= No	Co-existence of conditions				Odds ratio	(95% CI)	p-value
	No (n=293)		Yes (n=43)				
	%	(n)	%	(n)			
Father has history of mental health problems							<0.001
No	90.4	(263)	9.6	(28)	1		
Yes	66.7	(30)	33.3	(15)	4.70	(2.26 to 9.77)	
Father has history of Stress							<0.001
No	89.2	(280)	10.8	(34)	1		
Yes	59.1	(13)	40.9	(9)	5.70	(2.27 to 14.33)	
Father has history of Anxiety							<0.001
No	90.2	(275)	9.8	(30)	1		
Yes	58.1	(18)	41.9	(13)	6.62	(2.95 to 14.83)	
Father has history of Depression							0.009
No	88.5	(278)	11.5	(36)	1		
Yes	68.2	(15)	31.8	(7)	3.60	(1.38 to 9.43)	
Partner has history of mental health problems							0.544
No	87.7	(249)	12.3	(35)	1		
Yes	84.6	(44)	15.4	(8)	1.29	(0.56 to 2.97)	
Partner has history of Stress							0.331
No	87.6	(282)	12.4	(40)	1		
Yes	78.6	(11)	21.4	(3)	1.92	(0.51 to 7.19)	
Partner has history of Anxiety							0.682
No	87.4	(271)	12.6	(39)	1		
Yes	84.6	(22)	15.4	(4)	1.26	(0.41 to 3.86)	
Partner has history of Depression							0.375
No	87.7	(265)	12.3	(37)	1		
Yes	82.4	(28)	17.6	(6)	1.53	(0.60 to 3.95)	
Age					0.95	(0.90 to 1.01)	0.118

TABLE 4. Multivariable analysis to investigate relationships between respondent characteristics and Co-existence of conditions, n=336

Variable	Odds ratio	(95% CI)	p-value
Experience of labour and birth positive			<0.001
No	1		
Yes	0.20	(0.08 to 0.48)	
Father has history of Anxiety			<0.001
No	1		
Yes	6.41	(2.68 to 15.31)	
Age	0.93	(0.87 to 0.99)	0.034

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by the difficulty in shifting between strategies in the presence of changes that a task demands.²⁵ As the early postnatal period is marked by uncertainty and unexpected changes, fathers who experience anxiety may find it difficult to be flexible and to adjust to the changes as necessary.²⁶ This can potentially have negative consequences, affecting their ability to bond and care for their infant and support their partner. Furthermore, under stressful conditions, such as those often experienced in the early postnatal period, fathers experiencing anxiety show less confidence,²⁷ further affecting their ability to fulfil their fathering and supportive role and increasing the risk for other adverse mental health issues such as stress and depression.

Identifying and understanding the role that different demographics have in protecting against or increasing the risk of the coexistence of stress, anxiety, and depression are important as they will help identify at-risk fathers. Being a young father was statistically significant for the coexistence of symptoms in this study. While previous studies have identified younger fathers as having a greater risk for stress, anxiety, and depression symptoms,^{28–33} the findings are inconsistent.^{9,34} Despite the inconsistent findings, it is suggested that younger fathers are at greater risk of adverse mental health as they face specific challenges such as entering fatherhood at a time that is outside the typical timeframe for their generational peers, stigma, adverse stereotyping, relationship breakdown, financial uncertainty, lower levels of education, and unstable housing.^{35,36} For younger fathers experiencing unstable housing, it can be difficult to sustain and maintain consistent contact with their infant, which can be a catalyst for adverse mental health.^{36,37} This adverse mental health can be further compounded as younger fathers face fewer organizational support during a time when they are taking on new responsibilities.³⁸

A negative experience of labor and birth was statistically significant for the coexistence of stress, anxiety, and depression symptoms. While there is a dearth of research examining the impact of negative labor and birth experience on the mental health

of fathers, a few studies that have been undertaken have shown that there is an increased risk for adverse mental health outcomes. For example, Gürber et al.³⁹ found that a negative birth experience was related to poor psychological postnatal adjustment, while Darwin et al.² in their qualitative study reported the adverse impacts of previous negative birth experiences on subsequent fathers, with one father stating that “at the back of my mind I was thinking, oh, we’re going to go through this labor again, which was hell last time. As we approached due date, I was getting less sleep due to worrying about it” (p. 8). While there are deleterious effects from negative labor and birth experiences, on the other hand a positive experience can enhance a man’s transition into fatherhood, promote father–child and spouse bonding, enhance parenting satisfaction, and augment family functioning and health.^{40,41} Given the potential impact that labor and birth experiences can have on paternal and family function and health, there is an argument for increasing efforts to identify and support fathers who have had a negative labor and/or birth experience.

RECOMMENDATIONS FOR CLINICAL PRACTICE, INCREASING AWARENESS AND PROVIDING SUPPORT

The early postnatal period is considered as one of the most challenging times for fathers;⁴² however, during this time, the mental health of fathers is frequently overlooked.⁷ Fathers are an equal part of the parental unit; therefore, their mental health should be considered.²³ In general, fathers do not have access to tailored information resources, and their needs are not formally acknowledged by healthcare professionals (HCPs) such as midwives, doctors, and public health nurses.⁴³ Because of their many contacts with fathers during the early postnatal period, HCPs are ideally placed to identify and support fathers who are at risk of adverse mental health, increase awareness, combat stigma, and engage them in discussions about their mental health. HCPs are well positioned to incorporate paternal perinatal

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mental health information and education into existing antenatal classes and reinforce the information in the hospital after birth, during Well Baby check-ups and immunizations. The findings from this study highlight that this may be extremely important for younger fathers, and those who have a negative experience of labor and birth as they may be at more risk for adverse mental health during the early postnatal period.

Previous research has highlighted that fathers find it difficult to openly discuss their emotions because of social and cultural expectations concerning fatherhood and also because they do not want to take the focus of care off their partner.² Interventions to support fathers need to take into consideration the fathers' personal values and cultural beliefs, and how these might influence help-seeking. Father-inclusive programs are recommended⁶ as they provide an opportunity to gain mentorship, social support, and a safe space for building relationships with other fathers that can lead to an increase in willingness and capacity for trust, when disclosing personal experiences.^{44,45}

FUTURE RESEARCH

The findings from this study indicate that the adverse mental health experienced by fathers in the early postnatal period is complicated and not just limited to depression symptoms. Future research needs to move away from a depression-centered focus to encompass a broader concept of paternal perinatal mental health to include stress, anxiety, and the coexistence of symptoms as it more accurately captures the range of challenges experienced by fathers during the transition to first-time or subsequent fatherhood. Longitudinal studies, using large samples, are needed to build a more comprehensive picture of paternal perinatal mental health. These studies will allow for a greater understanding of the general trend of fluctuation and changes in symptomatology across the perinatal period. This research is important as it can form the basis for identifying at-risk fathers and the development of

interventions delivered at the most effective times during the perinatal period.

Studies involving fathers from diverse backgrounds are needed, as most of the studies to date have included homogeneous populations of white, married, employed, highly educated, heterosexual fathers living in high-income countries. Research with minority group fathers (gay, separated/divorced, unemployed, ethnic minorities, younger fathers) is needed as previous research has identified that these groups are at increased risk of mental health problems.^{46,47} Undertaking research with minority groups and comparing their mental health outcomes and risk factors with fathers from majority groups will help establish if they are at greater risk of adverse outcomes, and more susceptible to specific stressors at this stage of life. Studies assessing paternal perinatal mental health, in general, have not included younger fathers. Our study highlights the need to undertake further research with younger fathers to gain a greater understanding of the factors that impact their mental health. This is necessary to develop interventions and programs that address their unique needs.⁴⁵ Consideration also needs to be given to the development of a male-sensitive screening tool for identifying fathers at risk of adverse mental health in the perinatal period.

LIMITATIONS

Limitations of this study include the fact that data were collected with a self-reported questionnaire, use of a cross-sectional design, and that the sample may not be a representative of the wider community. The use of self-administered questionnaires may increase the risk of bias in this study.⁴⁸ Due to practical considerations for administering the instruments in a clinical setting, diagnostic measures were not used; therefore, results were not objectively validated with a clinic interview. The cross-sectional design used in this study only identified associations and no causal inferences as this can only be investigated using longitudinal follow-up studies.⁴⁹ Most of the fathers in the study

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were white, married, educated, and of Irish origin. These sample characteristics make it difficult to generalize the current study findings to men from more diverse backgrounds and minority groups. The manifestation of the coexistence of symptoms may be different in a sample from more diverse and sociological backgrounds as the challenges they face might be different. The extent to which nonresponse bias affected the findings of the study is unclear; however, if the results were biased, it would very likely be in an underestimation of the prevalence as distressed fathers would be less likely to respond to the questionnaire.⁵⁰ Finally, there is also a possibility that more distressed fathers in the study would be more likely to rate their mental health history, or labor and birth experience negatively, therefore, causing a reverse causality. Despite these limitations, this study fills an important gap in research by examining and investigating the coexistence of stress, anxiety, and depression symptoms in the early postnatal period. Furthermore, the results of the study emphasize the importance of investigating multiple adverse mental health outcomes concurrently in order to better understand the reality of paternal mental health. If these results are replicated consistently in future research, it may allow HCPs to identify at-risk fathers and allow for early intervention to target stress, anxiety, and depression symptoms.

CONCLUSION

Understanding paternal perinatal mental health is important as adverse outcomes affect family functioning and has short- and long-term implications on the health of the father, his partner, and infant. To the best of our knowledge, this is the first study to assess the coexistence of paternal stress, anxiety, and depression symptoms in the early postnatal period. This study builds on the previous body of literature related to paternal perinatal mental health and adds a unique contribution by identifying the importance of moving away from a depression-centered focus which currently exists, to encompass a

broader understanding of adverse paternal mental health to include stress, anxiety, and the coexistence of symptoms. The coexistence of adverse mental health has received no attention to date, which is an omission as highlighted by the findings from this study where the coexistence of two or more symptoms was almost twice as common as having only one symptom. If clinicians and researchers want to understand the epidemiological evidence more accurately and capture the range of challenges experienced by fathers during the transition to first-time or subsequent fatherhood, they will need to move toward a broader understanding of adverse mental health to include stress, anxiety, and the coexistence of symptoms.

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CONFLICT OF INTEREST

The author states that there is no conflict of interest to disclose.

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