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Paternal Postnatal Depression in Ireland: Prevalence and Associated Factors'

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Abstract

Background: it is well established that fatherhood has a long term positive and protective effect on men's health. However, there is also evidence that the transition to fatherhood can be complex and demanding and can lead to distress, anxiety and increased risk of depression.

Objective: this study aimed to investigate the prevalence of paternal postnatal depression, and to examine associations with a range of demographic and clinical factors.

Methods: a cross-sectional study design was used to collect primary data from 100 fathers, whose partner gave birth to an infant in the previous 12 months. Data were collected using the Edinburgh Postnatal Depression Scale.

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Results: the prevalence of paternal postnatal depression was 12% using the Edinburgh Postnatal Depression Scale cut off score of 12 or above, when the cut off score was reduced to 9 or above the prevalence was 28%. The factors found to increase the risk of paternal postnatal depression included having an infant with sleep problems, a previous history of depression, a lack of social support, poor economic circumstances, not having paternity leave and not being married.

Conclusion: the results add to the growing body of evidence that paternal postnatal mental health is a significant public health issue, and indicates a need for assessment and support for fathers during this life stage.

Key Words: Fatherhood, Paternal, Depression, Postnatal, Men's Health, Mental Health.

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Introduction

Over the past three decades the issue of men's health has moved from the margins to the centre of health discourse (Richardson, 2013). During this time there has been a growing awareness and concern about the burden of ill-health experienced by men (Department of Health and Children, 2008). To address the issue, academics and clinicians seek to identify windows of opportunity to improve men's health, and it is suggested that fatherhood may be one such avenue worthy of exploration (Garfield et al., 2010). Men's health has the potential to be influenced by the transition to fatherhood. Becoming a father for many men signals a shift away from individualism and leads to an increasing sense of personal responsibility and self-reflection that initiates positive behaviour changes (Garfield et al., 2010). Research has shown that fatherhood has a protective effect on men's health (Markey et al., 2005). However, there is also evidence that the transition to fatherhood can be

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complex and demanding and can have a negative impact on men's health, causing distress, anxiety and increased risk of depression (Kim and Swain, 2007; Lara et al., 2010; Sheng et al.,2010; Veskrna, 2010).

Postnatal Depression (PND) is a non-psychotic depressive disorder that occurs after the birth of a child (Massoudi, 2013). It has typically been associated with women. Previously, it was perceived as a product of hormonal changes and consequently, most of the research focused on mothers (Kim and Swain, 2007; Wee et al., 2011). However, it is now established that PND is also the product of psychosocial causes (Philpott, 2016a). It can therefore be presumed that such factors could also impact on the mental health of involved fathers in the postnatal period (Wilson, 2008). Paternal Postnatal Depression (PPND) is not widely acknowledged and not well researched. In general, the mental health of fathers in the perinatal period is often not considered. This has resulted in men being underscreened, underdiagnosed and undertreated for PPND and other perinatal mental health problems (Musser and Foli, 2013).

While the study of PPND is still in its infancy, an understanding of the problem has advanced considerably over the last ten years (Wee et al., 2011; Philpott, 2016a). The estimates of the prevalence of PPND within the first year vary widely ranging from 1% to 27% (Wilson, 2008). Paulson and Bazemore (2010) undertook a meta-analysis of 43 studies that assessed PPND and reported a prevalence of 10.4%. Cameron et al. (2016) in their meta-analysis of 74 studies reported a prevalence of 8.4%. These rates of depression are above those seen in the general male adult population which are estimated at 4.7% (National Institute of Mental Health, 2015). The most commonly used scale to screen for PPND is the Edinburgh Postnatal Depression Scale (EPDS) (Philpott, 2016b).

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Many factors have been identified as contributing to PPND however, the direction of causality is not always clear. Maternal Postnatal Depression has been reported as the most common predictor for PPND (Gao et al., 2009; Wee et al., 2011; de Magistris et al., 2013; Zhang et al., 2016). Matthey et al. (2000) reported that fathers whose partners had PND have a 2.5 times higher risk of depression at 6 weeks postpartum. A previous history of a psychiatric disorder has also been linked to PPND (Nishimura and Ohashi, 2010). Compared to other mental health disorders such as stress and anxiety, depression poses a greater risk for developing PPND (Wee et al., 2011). This may be due to predisposing genetic factors and/or enduring environmental factors, with the perinatal period acting as a stressful life event which triggers a recurrence (Philpott, 2016a). Fathers who experience more challenges with childcare than initially expected also report higher levels of PPND. Some examples include having an infant with sleep problems, colic or failure to thrive (Philpott, 2016c). An unplanned pregnancy is considered a risk factor for PPND due to the lack of choice and preparation inherent in such pregnancies (Gao et al., 2009; Nishimura and Ohashi, 2010; Koh et al., 2014; Philpott, 2016b). Less educated fathers experience greater difficulty in gaining information about and access to services in the perinatal period. This subsequently results in these men being less informed and less prepared for the changes that an infant brings and can greatly increase the risk of PPND (Boyce et al., 2007; Ramchandani et al., 2008; Gawlik et al., 2013).

The consequences of PPND for fathers include an inability to meet responsibilities at home and work, lack of interest, fatigue, stress, anxiety and increased suicide risk (Veskrna, 2010; Quevedo et al., 2011; Kamalifard et al., 2014). Apart from the many negative effects on a father's well-being there are numerous potential negative effects on the health and well-being of the mother and child. Approximately half of all fathers with PPND have partners

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with maternal postnatal depression (Goodman, 2004). Depressed fathers display less positive behaviours such as sensitivity, warmth and responsiveness and increased negative behaviours such as hostility and disengagement (Wilson and Durbin, 2010). PPND also affects infant and child well-being. Studies have reported a higher risk for lack of bonding, increased incidence of spanking, and later child psychopathology such as emotional issues, conduct disorder, and hyperactivity in children whose fathers have PPND (Ramchandani et al., 2008; Ramchandani et al., 2013).

Several factors highlight the need for research on PND among fathers living in Ireland. Irish studies assessing maternal postnatal depression have reported high occurrences with an average prevalence of 19.7% (Cronin, 2012). The incidence of PPND may be similarly elevated among fathers due to the fact that maternal postnatal depression is the most common predictor for PPND. However, to our knowledge no Irish research has investigated PPND. Economic stressors, unemployment and poor accommodation are associated with depressive symptoms among men in general and in the postnatal period (Wheeler et al., 2011; Park et al., 2013). These facts are relevant to the Irish context as Ireland has experienced an economic crisis over the past 8 years which has led to decreased family incomes, increased unemployment and a housing crisis (Kinsella and Leddin, 2010).

Methods

Research Design and Data Collection

A cross-sectional study design was employed to investigate PPND, and to examine associations with a range of demographic and clinical factors. The study was conducted at a primary care centre located in the Southern region of Ireland. The primary care centre catchment area consisted of urban, suburban and rural areas with varying levels of socio economic deprivation. The area is served by one large maternity hospital and fathers were

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recruited in the community following the discharge of their partners. From the public health nurses records at the local primary care centre 130 fathers who were greater than 18 years of age and whose infants were born in the previous year were chosen using simple random sampling. Each father was assigned a number and a random number generator was used to select the sample. Participants were sent a postal letter highlighting the purpose of the study and informing them that the questionnaire would be sent out to them the following week. A week later the questionnaire was sent out with a personalised letter again explaining the purpose of the study. Three weeks later all fathers in the study received a follow up letter reminding them to return the questionnaire.

Study Instrument

A questionnaire was specifically developed for the study consisting of 63 questions, including the Edinburgh Postnatal Depression Scale. The Edinburgh Postnatal Depression Scale is a 10-item self-report scale, scored on a four point scale (0-3) which was originally designed for use with women in the primary care setting (Cox and Holden, 2003). The Edinburgh Postnatal Depression Scale is the most common of the self-report scales used to screen for depression across the perinatal period. The traditional cut of score for the Edinburgh Postnatal Depression Scale when assessing women is 13 or greater however, a lower cut-off score is recommended for fathers as men express emotions differently from women, mainly that they are less expressive with their negative emotions (Cochran and Rabinowitz, 2003). Five validation studies of the use of the Edinburgh Postnatal Depression Scale for fathers have been published (Matthey et al., 2003; Edmondson et al., 2010; Lai et al., 2010; Tran et al., 2010; Massoudi et al., 2013). The most recent validation study

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recommended a cut off score of 12 or above for a positive screening for major depression and 9 or above for a positive screening for minor depression (Massoudi, 2013). For this study a cut-off score of 12 or above and 9 or above was used to assess PPND. The Edinburgh Postnatal Depression Scale was the only scale used in the study. Questions related to socio-demographics, paternal physical and mental health history, infant health and sleep problems, partner's physical and mental health and social support were self - reported by fathers. A pilot study was undertaken to ensure the clarity of the questions, effectiveness of the instructions and to ascertain the time that it would take to complete. The sample in the pilot study was representative of the majority of the fathers in the study in terms of nationality, age, relationship status and education level. Following the feedback from the pilot study, changes were made in line with the recommendations given.

Data Management and Analysis

All returned questionnaires were individually reviewed by the authors to assess for errors, accuracy and completeness. Questionnaires that were incomplete or had errors were excluded. The data was analysed using Microsoft Excel and Statistical Package for the Social Sciences (SPSS) 21. The Edinburgh Postnatal Depression Scale cut-off scores of 12 or above and 9 or above were applied to provide the prevalence of PPND. A 95% CI was obtained using the normal approximation of the binomial distribution. Chi-square tests were used to identify factors, all of which were categorical, showing some evidence of association with paternal postnatal depressive symptom. This was done by applying a 10% level of statistical significance, i.e. a p-value < 0.1 identified a factor that may be associated with PPND. Such factors were then considered in a stepwise multivariable logistic regression analysis for which the standard 5% level of statistical significance was used, i.e. p value <0.05 indicating statistical significance. Associations were reported as adjusted odds ratios with 95% CIs.

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Ethical Considerations

Ethical approval was obtained from the Clinical Research Ethics Committee (CREC) prior to commencing the study. Potential participants were given written information about the purpose of the study. Anonymity and confidentiality were assured and participants were informed that they had a choice whether or not to take part in the study. Voluntary completion and return of questionnaires implied that participants consented to take part.

Results

Sample characteristics

One hundred fathers returned completed usable questionnaires, which resulted in a response rate of 77%. There were 20 nationalities represented in the study, 71% were Irish. Ninety percent were European, with 10% coming from South America, Asia and Africa. The length of time non-Irish fathers were living in Ireland ranged from 1 to 15 years. The youngest participant in the study was 24 years of age, the oldest was 50 years old, with the majority (68%) aged between 30 and 40 years of age. Over three quarters of the sample (79%) had a third level qualification, 84% were in full or part-time employment, 66% were married, 31% were co-habiting, 3% were single, with 57% living in rented accommodation (46% private, 11% local authority). Demographic and socio-economic characteristics are summarised in Table 1.

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Prevalence

Using the Edinburgh Postnatal Depression Scale cut-off score of 12 or above there was a PPND prevalence of 12% (95% CI 5.6 – 18.4%), compared to 28% (95% CI 19.2 – 36.8%) for a cut-off score of 9 or above. Edinburgh Postnatal Depression Scale scores ranged from 0 to 28 out of a possible 30. PPND was most prevalent in the first 6 months postpartum (EPDS ≥ 12 = 16.4%; EPDS ≥ 9 = 32.7%) compared to the second 6 months (EPDS ≥ 12 = 6.7%; EPDS ≥

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9 22.2%). None of the fathers in the study were assessed for PPND by healthcare professionals and just over a quarter (26%) of fathers were aware of PPND.

Predictors of PPND

Multiple paternal, relationship, infant and environmental factors were identified as having an association with PPND (see Table 2).The factors that were identified as being independently and statistically significantly associated with PPND included; having a baby who was either pre-term or overdue, having an infant with sleep problems, living in rented accommodation, poor economic circumstances, not being married and not relying on a partner for support. The multivariate logistic regression analysis for the Edinburgh Postnatal Depression Scale of 12 or above and 9 or above identified the following factors as being independently and statistically significantly associated with a positive score; unmarried, living in rented accommodation, poor economic circumstances, not relying on a partner for support, having a baby who was either pre-term or overdue and an infant with sleep problems (see tables 3 and 4).

Father's factors

Fathers who self-reported that they were struggling to survive financially had a statistically significant risk of PPND compared to fathers who reported that they were financially comfortable (4.69%) (p value = .003). For the Edinburgh Postnatal Depression Scale of 9 or above the prevalence of PPND was 44% for fathers who self-reported that they were struggling to survive financially compared to 18.7% for fathers who reported that they were financially comfortable (p value = .006). Unemployed fathers had a greater prevalence of PPND however it was not a statistically significant factor EPDS of 12 or above (p value = .365) Edinburgh Postnatal Depression Scale of 9 or above (p value = .752). Employed fathers who did not receive paternal leave had a prevalence of PPND of 19.4% compared to 4.2%

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for fathers who receive leave (p value = .025). A lower level of education was associated PPND, those with a third level education had a prevalence of 8.9% compared to 23.8% (p value = .061) for those with a secondary or primary level of education. Having a previous history of depression was also a statistically significant risk factor (p value = .048).

Relationship factors

Married fathers had a PPND prevalence of 6.1% compared to 22.6% for those co-habiting, and 33.3% for single fathers (p value = .034). An unplanned pregnancy was not identified as a risk in this study (EPDS ≥ 12; p value = .420, EPDS ≥ 9; p value = .234). Relying on a partner or family for social support was a statistically significant protective factor (partner for support p value = 0.38; family for support p value = .038) however, relying on friends or healthcare professional was not a protective factor (friends for support p value = .347; healthcare professionals for support p value = .188). Fathers whose partners received care in the private healthcare system were at less risk of PPND than fathers whose partners were cared for in the public healthcare system (p value = .021). There were 28 fathers whose partners went through the private healthcare system and none had an Edinburgh Postnatal Depression Scale of 12 or above.

Infant and environmental factors

Infant sleep problems were a statistically significant risk factor for PPND using the Edinburgh Postnatal Depression Scale of 9 or above (p value = .002). Infant related factors that were not statistically significant were having a full term infant and having an infant that did not have sleep problems. Fathers whose infant was not preterm or overdue were less likely to experience PPND (EPDS ≥ 12 p value = .001). Other infant factors that did not have statistical significance included type of delivery (p value = .900) and whether an infant was breastfed or not (p value = 1). Living in rented accommodation (p value = .050) and certain types of

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housing such as an apartment (p = value .047) were found to be statistically significant risk factors for PPND.

Discussion

The prevalence rate of PPND of 12% using the Edinburgh Postnatal Depression Scale cut off score of 12 or more in this study is similar to the meta-analysis of 43 studies which derived an estimated prevalence of 10.4% (Paulson and Bazemore, 2010). The fact that there was a higher percentage of PPND in the first 6 months postpartum compared to the second 6 months may suggest that fathers are starting to adjust to their role of fatherhood. While some studies have reported that younger paternal age (Stramrood et al., 2013; Bergstrom, 2013) and being a first-time father (Wilkinson, 1999; Bielawska-Batorowicz and Kossakowska-Petrycka, 2006) increase the risk of PPND, in this study these were not risk factors. Fathers who self-reported that they were struggling to survive financially, had a greater risk of PPND compared to those who were financially comfortable. These findings echo previous research which found that living in poor economic circumstances increased the risk of PPND (Bielawska-Batorowicz and Kossakowska-Petrycka, 2006; Dave et al., 2010; Wee et al., 2011).

One avenue that leads fathers into poor financial circumstances is unemployment. Unemployment has been linked to depression among the general population and also among fathers (Rosenthal et al., 2013). In this study, while unemployed fathers had a greater prevalence of PPND it was not statistically significant. On the other hand fathers in employment often struggle to find a balance between work and family life in the perinatal period (Philpott, 2016a). To help fathers adapt to new fatherhood several countries have introduced paternal leave. In this study fathers who did not receive leave had a greater

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prevalence of PPND compared to fathers who did receive leave. The risk may be reduced in fathers who receive paternity leave as they have increased involvement with their infants and family which has shown to increase paternal self-efficacy and social support (Tanaka and Waldfogel, 2007). Both paternal self-efficacy and social support are protective factors against PND (Leahy-Warren et al., 2012; Huerta et al., 2013). Similar to previous studies we found that a previous history of depression (Matthey et al., 2003; Ramchandani et al., 2008; Nishimura and Ohashi, 2010; Wee et al., 2011) and lower levels of education (Ramchandani et al., 2008; Gawlik et al., 2013) were risk factors for PPND.

Unlike previous research, maternal postnatal depression and an unplanned pregnancy (Gao et al., 2009; Nishimura and Ohashi, 2010; Koh et al., 2014) were not significant risk factors for PPND in this study. Similar to previous research we found that traditional marital relationships reduced the risk (Wee et al., 2011). Certain relationships in this study were important in protecting against PPND. Relying on a partner or family for social support was a statistically significant protective factor while relying on friends or healthcare professional was not. We found was that fathers whose partners received care in the private healthcare system were at less risk of PPND when compared to fathers whose partners were cared for in the public healthcare system. Of the 28 fathers whose partners were cared for in the private healthcare system, none of the men had a positive Edinburgh postnatal depression scale score. These findings may be linked to another statistically significant protective factor outlined above, namely being financially comfortable (Bielawska-Batorowicz and Kossakowska-Petrycka, 2006; Wee et al., 2011; Kvalevaag et al., 2013), as fathers who are financially comfortable are more likely to have private health insurance.

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Two infant related factors that were statistically significant protective factors were having a full- term infant and having an infant that did not have sleep problems. Cheng et al. (2016) reported that fathers of preterm infants have more PPND than fathers of term-born infants. In this study fathers were asked about common infant problems such as colic, failure to thrive and sleep problems and the only factor that was statistically significant was having an infant who had sleep problems. The association between infant sleep problems and depression has been shown in several studies (Wake et al., 2006; Martin et al., 2007; Bayer et al. 2007). Research has shown that when infant sleep patterns improve, the symptoms of depression reduce (Hiscock and Wake, 2002; Hiscock et al., 2007).

Environmental factors identified as risk factors included living in rented accommodation and certain types of housing such as an apartment. These findings are similar to Anderson et al. (2005) who also reported higher levels of PPND in fathers living in rented accommodation and apartments. The rental market is associated with poor housing conditions and a lack of stability of tenure (Barnes et al., 2013). The birth of an infant may highlight these problems and exacerbate concerns about the infant's health in poor housing and increase stress and anxiety related to the insecure nature of renting (Barnes et al., 2013). Those living in rented accommodation are five times more likely to live in unfit housing than those in owner occupied housing (Barnes et al., 2006). Families living in apartments often have to cope with the paucity of nearby recreational spaces, resulting in spending more time indoors (Barnes et al., 2013). Such restrictions heighten interfamilial conflict, minimize play opportunities, and remove a primary avenue for parents to get to know their neighbours (Evans, 2003). The birth of an infant is a time when such restrictions can be highlighted.

Limitations

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The findings in this study should be considered in conjunction with the following limitations. The Edinburgh postnatal depression scale is a self-report measurement and while every effort was made to reassure fathers of their anonymity in order to ensure accurate answers, the results were not objectively validated with a clinic interview. The fact that fathers self-reported on their own physical and mental health and that of their partner may increase the risk of bias in the study. While the response rate was good, the sample size limited the ability to conduct more complex evaluations. Although several analytic strategies were used to increase power, larger samples are necessary to advance a comprehensive understanding of PPND. The study design was a point prevalent cross-sectional study. In order to truly understand the risk factors and course of PPND, longitudinal research is needed. The sample consisted of mainly white, Irish, married middle class fathers. This may limit the generalisation of the findings to more diverse populations in different geographical regions. Replication with a more socioeconomically heterogeneous population is warranted. The extent to which non response 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 of PPND as depressed fathers would be less likely to respond to the questionnaire (Wodall et al., 2011).

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Conclusion

Based on the study's findings there are a number of probable and possible risk factors for PPND which can be broken down into father, relationship, infant and environmental factors. While many of the variables identified as risk factors in this study were previously reported in the literature, our research found risk factors that were not reported previously. These included not having paternity leave and not receiving care in the private healthcare system. On the other hand previous research has reported several risk factors that were not found

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to be risk factors in this study. These include having a partner with a history of PND, being a younger father, being a first time father, being unemployed and having an unplanned pregnancy. The results of the study add to the growing body of evidence that suggests that paternal perinatal mental health is a significant issue, and indicates a need for assessment and support for fathers during this life stage. There is a need to focus on the mental health of fathers as well as mothers during the perinatal period, as fathers currently are underscreened, underdiagnosed and undertreated for mental health problems.

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Ethical Statement

1 There is no Conflict of Interest,

(2) Ethical Approval was sought and granted by Clinical Research Ethics Committee (CREC) Cork

(3) there were no Funding Sources,

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Characteristics	Number	%
Nationality		
Irish	71	71%
Non-Irish	29	29%
Paternal Age		
Under 30 years	12	12%
30 - 34 years	36	36%
35- 40 years	32	32%
Over 40 years	20	20%
Relationship Status		
Married	66	66%
Co-habiting	31	31%
Single	3	3%
Paternal Education Level		
Primary level	2	2%
Secondary level	19	19%
Third level / Diploma / Degree / MSc / PhD	79	79%
Employment Status		
Employed	84	84%
Unemployed	16	16%
Area of residency		
Urban	47	47%
Suburban	53	53%

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Table 1: Demographic and Social characteristics of fathers

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Characteristic	Category	EPDS score ≥ 12 n / N (%)	p-value	EPDS score ≥ 9 n / N (%)	p-value
Third-level education	No	5 / 21 (23.8%)	.061	-	-
	Yes	7 / 79 (8.9%)			
Accommodation owner	No	10 / 57 (17.5%)	.050	23 / 57 (40.3%)	.006
	Yes	2 / 43 (4.7%)		5 / 43 (11.6%)	
Financially comfortable	No	9 / 36 (25%)	.003	16 / 36 (44%)	.006
	Yes	3 / 64 (4.6%)		12 / 64 (18.7%)	
Married	No	8 / 34 (23.5%)	.034	-	-
	Yes	4 / 66 (6.1%)			
Private Healthcare	No	12 / 72 (16.7%)	.021	-	-
	Yes	0/28 (0%)			
Full-term pregnancy	No	9 / 45 (20%)	.001	-	-
	Yes	3/ 55 (5.5%)			
History of Depression	No	10/ 95 (10.5)	.048	-	-
	Yes	2 / 5 (40%)			
Rely on partner for support	No	6 / 20 (30%)	.006	-	-
	Yes	6 / 80 (7.5%)			
Rely on family for support	No	9/ 47 (19.1%)	.038	-	-
	Yes	3 / 53 (5.7%)			
Infant sleep problems	No	-	-	18 / 83 (21.6%)	.002
	Yes			10 / 17 (58.8%)	

Table 2. Associations between paternal and infant characteristics and paternal postnatal depression

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Variable	Category	Adjusted odds ratio	95% confidence interval	P Value
1)Financially comfortable	Yes (reference group) No	1.0 8.1	(1.48 – 44.30)	.016
2) Full-term infant	Yes (reference group) No	1.0 6.04	(1.09 – 33.44)	.039
3) Married	Yes (reference group) No	1.0 4.84	(1.03 – 22.78)	.046
4) Rely on partner for support	Yes (reference group) No	1.0 .110	(1.03- .561)	.008

Table 3: Stepwise Regression of the variables that had a p value < .1 for the EPDS ≥ 12 using the Chi-Square test

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Variable	Category	Adjusted odds ratio	95% confidence interval	p Value
Owner occupied accommodation	Yes (reference group)	1.0	(.978 – 11.68)	.054
	No	3.38		
Finically comfortable	Yes (reference group)	1.0	(1.01 – 10.16)	.047
	No	3.21		
Infant sleep problems	Yes	3.97	(.941 – 16.74)	.060
	No (reference group)	1.0		
Full-term pregnancy	Yes (reference group)	1.0	(1.63 – 15.93)	.005
	No	5.11		
Rely on partner for support	Yes (reference group)	1.0	(.069 - .855)	.027
	No	.243		

Table 4: Stepwise Regression of the variables that had a p value < .1 for the EPDS ≥ 9 using the Chi-Square test

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Highlights

With a prevalence of 12%, PPND is a significant public health issue

A lack of social support and not having paternity leave increased the risk of PPND

The results indicate a need for PPND assessment and supports for fathers

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