Paternal peripartum depression and its risk factors among men transitioning into fatherhood in Malaysia

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ABSTRACT

Introduction: Fatherhood can be challenging, and men's well-being during their partner's perinatal period is often overlooked. This study aims to assess the prevalence of paternal perinatal depression (PPND) and associated factors among men in a Malaysian district during their partner's perinatal period. **Methods:** This cross-sectional study used a self-administered questionnaire for men whose partners attended the maternal and child health clinic (MCHC) during the perinatal period. Eligible participants received either a hard copy or a link to an online Google Form. The questionnaire covered sociodemographic, economic, and clinical details, as well as the Multidimensional Scale of Perceived Social Support (MSPSS) and the Edinburgh Postnatal Depression Scale (EPDS). Informed consent was obtained, and men with EPDS scores of 10 or higher were considered at risk for post-partum neural depression (PPND). Data were analyzed using SPSS version 26. **Results:** 400 men responded, but only 381 completed data were analyzed. The mean age of participants was 32.72 (±5.648). The prevalence of PPND in this sample was 12.4%. The two significant factors for PPND were low or moderate social support and the presence of existing chronic disease. **Conclusion:** The study concluded that men lacking social support are at an increased risk of PPND. It also emphasized that men with pre-existing chronic conditions face a higher risk of PPND. Therefore, it is crucial to screen for PPND in men, particularly those with chronic illnesses and limited social support. Additionally, the well-being of fathers should be considered in the follow-up and care of their female partners during the perinatal period.
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1. INTRODUCTION

Fatherhood has a substantial impact on men's physical and mental well-being. The perinatal period [1] often focuses more on the mother's physical and mental well-being. As a result, the preparation for men to become fathers, for the first time or for subsequent children is often overlooked.

Paternal perinatal depression (PPND) is the presence of major depressive disorder (MDD) among men that developed during their partner's perinatal period [1]. PPND may occur during the pregnancy and up to one year after the birth of the child [2]. This period is a crucial time for the couple and the development of their newborn child. The presence of PPND can negatively affect the man, which can lead to further negative effects on his partner and child such as poor psychological support that is much needed by his female partner. Partner support is a protective factor against maternal perinatal depression (MPND) and on the contrary, poor support from the partner can lead to the mother becoming more prone to stress and psychopathology [3].

The presence of undiagnosed PPND has a negative impact on marital relationships and can lead to depression in the partner [4,5]. PPND can also lead to violence towards the partner, it is found that one-fourth of postnatal women reported violence from their partner with 69% being the first occurrence, meaning the violence happened for the first time during the relationship [6]. PPND can also lead to negative emotional and behavioral consequences in children including later psychopathology [7]. The child exposed to two parents with depression has a higher psychopathology risk in later life than exposure to only one [8]. Infants and children born to fathers who have depressive disorder during the perinatal period are likely to suffer from developmental delay, psychopathology, and behavioral problems [7]. These negative impacts of PPND are detrimental and the transition of men towards fatherhood needs to be addressed urgently. This study aims to determine the prevalence of PPND and factors that are associated with PPND among men whose partners are during the perinatal period in the Gombak district in Malaysia.

2. MATERIALS AND METHODS

2.1 Study Design

A cross-sectional study was conducted among men whose partners attended a maternal and child health clinic (MCHC) at two public health clinics in the Gombak district of Malaysia. Data collection took place from June 2021 to December 2021, using a self-administered questionnaire.

2.2 Sampling Population and Participant's Criteria

The sampling population was all men whose female partners attended the MCHC during the data collection period. The men whose female partners were during the perinatal period were invited to participate in the study. For this study, perinatal is defined as the antenatal and postnatal period up until the child is one year old. Convenience sampling was deployed due to the COVID-19 pandemic, and difficulty in collecting data. The inclusion criteria were men who were ≥18 years old and whose partners were during the perinatal period. The exclusion criteria were men who had a history of MDD or received treatment for the condition from a psychiatrist or Family Medicine Specialist (FMS).

2.3 Study Tools

This is a quantitative study using a questionnaire. The questionnaire was divided into sociodemographic, economic, and clinical details and two study tools. The study tools are the validated English and Malay version of the Multidimensional Scale of Perceived Social Support (MSPSS) and the validated English and Malay version of the Edinburgh Postnatal Depression Scale (EPDS)[9]. Those with an EPDS score of ≥ 10 are considered at risk of having PPND.

For the screening of PPND, several questionnaires have been documented to screen this construct including the EPDS, Beck's Depression Inventory (BDI) [10], and Patient Health Questionnaire (PHQ) [11]. There has not been a consensus on the most appropriate screening tool to assess PPND. However, In PPND studies, the most used screening tool is the EPDS [12]. The EPDS is a self-rated questionnaire. It contains ten brief questions regarding general depressive symptoms, and it uses a Likert-type format for answers. The respondents may choose the nearest to how they have been feeling for the preceding week. Every question has a scale from 0-3 indicating the severity of the symptoms. Probable scores on the EPDS vary from 0-30. In one study, at the cut-off point of ≥ 10, the sensitivity and specificity of the EPDS were 77.3% and 92.9% respectively [13]. The Cronbach alpha for the Malay EPDS was 0.78 [14]. Those participants who were at risk of having PPND were given information and advised to seek further medical care and referred to the family medicine specialist or a psychiatrist.

MSPSS questionnaire is a 12-item questionnaire to identify an individual's perceived level of social support from family, friends, and significant other. It has been translated into the Malay language and validated using confirmatory factor analysis (CFA) which supported the three-factor model of the original English version. The Cronbach alpha ranges from 0.9 to 0.932 [15]

2.4 Study Procedure

The data collection was conducted during the COVID-19 pandemic period, and therefore men accompanying their partners to the MCHC were not allowed to enter the premises. Hence, the researcher approached the women partners who attended the MCHC during the data collection days. The women were asked to contact their partners, and with the permission of the men, the researcher obtained their contact details. They were given either a hard copy of the questionnaire or an online link to a Google Form via WhatsApp, based on their preferred choice. Both the hard copy and online questionnaire contained the study information and consent form. The men who agreed and consented will proceed to answer the questions. The inclusion and exclusion criteria are asked in the hard copy and for the online questionnaire, only eligible participants can proceed to the next part. The completed online questionnaires were received by the researcher via the Google platform and those who opted for the hard copy returned the completed questionnaires to the clinic at their next visit. The completed questionnaire was then collected by the researcher.

2.5 Sample Size Calculation

Sample size calculation used the Raosoft online calculator, which is an online software used to calculate sample size using a single proportion formula. At a significant level of 0.05, power of 80%, and the highest PPND prevalence of 25.6% with a 95% confidence interval and 0.05 margin of error, the sample size required is 292. and taking into consideration 20% of non-responses, the minimum sample size needed was 350 samples. Due to the concern of not getting enough samples, especially during the COVID-19 pandemic, a convenient sampling method was applied in this study. As a result, this may influence the sample cohort and affect the generalisability of the study.

2.6 Data and Statistical Analysis

Data entry and statistical analysis were performed using the IBM SPSS version 26. Descriptive analysis was used to describe the frequency distribution, measures of central tendencies, and measures of distribution on the socio-demographic characteristics. For the normally distributed data, continuous variables were presented by mean and standard deviation, and categorical variables were presented by absolute numbers and percentages. Factors associated with paternal depressive disorder status were determined by using simple and multiple logistic regression. Factors with p-values <0.25 in simple logistics

were further included in the multiple logistic regression and p-values <0.05 were taken as significant p-values for the final model.

3. RESULTS

A total of 400 responses were collected, and 19 responses were excluded due to incomplete or missing data. The final sample of 381 participants was analyzed with a mean age of 32.72±5.648. Table 1 highlights the sociodemographic details of the participants. The participants are mainly from the Malay Muslim community. Many of them have certificates or diplomas in their education and almost all are married.

Table 1 Socio-demographic details of participants

Variables	Total Number (N)	Frequency, n (%)
Self-reported Ethnicity	381	
Malay		280 (73.5%)
Chinese		66 (17.3%)
Indian		23 (6%)
Others		12 (3.1%)
Religion	381	
Islam		289 (75.9%)
Buddhist		62 (16.3%)
Hindu		19 (5.0%)
Christianity		8 (2.1%)
Others		3 (0.8%)
Highest Level of Education Completed	374	
Secondary school		13 (3.5%)
Certificate		125 (33.4%)
Diploma		50 (13.4%)
Degree		90 (24.1%)
Masters		89 (23.8%)
Others		7 (1.9%)
Marital status	380	
Married		377 (99.2%)
Unmarried		3 (0.8%)

Source: Mohamad Ya'akob Yusuf et al (2026)

Table 2 shows the economic and clinical details of the participants. The majority are employed. Many of them are from the bottom 40% (B40) and middle 40% (M40) of monthly household income. The number of smokers and non-smokers is almost equal. Most of the participants neither have chronic disease nor a family history of depression. The World Health Organization defines chronic diseases as a disease that are not passed from person to person, they are long duration and slow progression. The most common chronic diseases are cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes.

Table 2 Economic and clinical details of participants

Variables	Total Number (N)	Frequency, n (%)
Monthly Household Income (RM)	378	
≤RM 4849.00 (B40)		245 (64.8%)
RM 4850.00 – 10 959. 00 (M40)		115 (30.4%)
≥RM 10 960 (T20)		18 (4.8%)
Employment Status	381	
Employed		370 (97.1%)
Unemployed		11 (2.9%)
Smoking status	379	
Smoker		165 (43.5%)
Non-smoker		167 (44.1%)
Ex-smoker		47 (12.4%
Presence of Existing Chronic disease	378	
Yes		43 (11.3%)
No		335 (88.6%)
Family history of depression	379	
Yes		25 (6.6%)
No		354 (93.4%)

RM = Malaysian Ringgit
Income bracket as defined by the Ministry of Finance, Malaysia 2019 are B40 ≤RM 4849.00, M40 RM 4850.00 – 10 959. 00 and T20 ≥RM 10 960

Source: Mohamad Ya'akob Yusuf et al (2026)

Table 3 represents the logistic regressions and from the multiple logistic regression, two variables that are found to be significantly associated with PPND are the presence of existing chronic diseases with OR of 2.384 [95% CI (1.043, 5.450), p-value:0.039], and low to moderately perceived social support with OR of 2.176 [95% CI (1.095, 4.324), p-value:0.026].

Table 3 Summary of predictors associated with PPPD (n=381)

	SLogR		MLogR	
Variable	Crude OR (95% CI)	P-value	Adjusted OR (95% CI)	P-value
Age	0.921 (0.812, 1.043)	0.195		
Race			-	-
Malay	3.178	0.402		
Non-Malay	(0.213, 47.462)			
Religion			-	-
Islam	3.106	0.437		
Others	(0.178, 54.180)			

Variable	SLogR OR (95% CI)	p-value	MLogR OR (95% CI)	p-value
Female partner in antepartum or postpartum stage	0.754 (0.000, -)	1.000	-	-
Family history of Depression	2.377 (0.226, 24.99)	0.471	-	-
Suffers from chronic disease	4.126 (1.074, 15.851)	0.039	2.384 (1.043, 5.450)	0.039
History of depression	0.320 (0.043, 2.376)	0.265	-	-
History of anxiety disorder	0.394 (0.054, 2.857)	0.357	-	-
Marriage duration	0.998 (0.786, 1.267)	0.988	-	-
Number of children	1.479 (0.016,141.074)	0.866	-	-
Number of miscarriage / IUD	1.683 (0.017,164.953)	0.824	-	-
Number of pregnancies	0.620 (0.105, 3.678)	0.599	-	-
Spouse diagnosed as peripartum depression	5.048 (0.199,128.090)	0.326	-	-
Baby gender	0.498 (0.179, 1.387)	0.182	-	-
Baby medical illness	0.000 (0.000, -)	0.998	-	-
Paternity leave	0.824 (0.151, 4.503)	0.823	-	-
Low-moderate perceived social support	2.958 (0.989, 8.849)	0.052	2.176 (1.095, 4.324)	0.026

SLogR = Simple Logistic Regression

MLogR = Multiple Logistic Regression (R2= 0.043; the model reasonably fits well because Hosmer and Lemeshow test showed p value of 0.698; model assumptions are met; there was no interaction between independent variables and multicollinearity problem)

CI: Confidence interval

Source: Mohamad Ya'akob Yusuf et al (2026)

4.   DISCUSSION

The prevalence of PPND during the perinatal period in this study is 12.4%. Other Malaysian studies on the prevalence of PPND during the antenatal period, found 8.4%[16] and 12.1%[17]. A meta-analysis looking at international EPDS studies found that the PPND was 8.75% (95% CI = 6.68-11.07%) within a year of birth but with a variety of cut-off points[18]. A study using EPDS with a cut-off value of ≥10 found a PPND prevalence of 12% [19]. Therefore, we can conclude that the prevalence of PPND in this study is comparable to other studies on PPND using EPDS with the same cut-off value.

This study found two risk factors for PPND namely; low to moderate social support, and the presence of existing chronic disease. Using the ecological framework of the World Health Organisation, PPND risk factors can be summarised according to individual factors, micro-level factors, and macro-level factors. Individual factors can be biological such as a family history of depression[20,21] or chronic medical illness that predisposes to depression[22]. Psychological include premorbid personalities such as low self-esteem, poor problem-solving [23], and, substance or alcohol abuse[24,25]. Social factors include interaction with micro-level factors such as the partner, the newborn, family, and social support. At the micro level, PPND has been found to be correlated to maternal peripartum depression (MPPD)[25,26]. Quality of marriage and support system (from the partner and others) is vital for the father's mental health[4,5]. At the macro level, economic inequality, unemployment[27], poor public awareness, and stigma on mental health may lead to delayed help-seeking behavior and can increase the risk of PPND[28]. This study looked at the individual level and some micro-level factors. Unfortunately, the study was not able to look at the macro level factors which would have added richness to the data and its interpretation.

A higher level of social support, particularly at the micro level, is recognized as a protective factor against PPND. This conclusion is backed by a systematic review. The study indicates that low to moderate social support significantly increases the risk of developing PPND, with an odds ratio suggesting that individuals in this category are twice as likely to experience PPND compared to those with strong social support. The Multidimensional Scale of Perceived Social Support (MSPSS) is effective due to its three domains, which help identify the specific sources of support perceived by the individual. One study revealed that strong support from a partner or family members plays a more crucial role in reducing the risk of PPND than support from friends or healthcare professionals. This underscores the importance of support from partners and family during the perinatal period.

The presence of existing chronic diseases is an individual risk factor for postpartum depression among men. This study is the first to explicitly identify such an association. Generally, having chronic diseases can increase a person's likelihood of developing depression. The prevalence of depression among patients with heart disease, stroke, cancer, and diabetes is thought to be significantly higher than that of the general population. In this particular PPND study, it is suggested that men with pre-existing chronic diseases are especially vulnerable to developing PPND. It is important to explore this further to determine the possible reasons behind this phenomenon.

PPND is closely related to MPND, but in this study, only two of the female partners of the participants were diagnosed with MPND. This may be linked to the male partners' awareness and knowledge of MPND. Several questions arise from this finding. Firstly, were the female partners screened for MPND during their antenatal or postnatal follow-ups? If screening was not conducted, this could mean that the possibility of MPND went undetected. A clinical audit could be performed to ensure that screening for MPND is conducted regularly. Secondly, were the men aware that their partners might have MPND? Low awareness could explain the limited diagnoses. Regarding awareness of perinatal depression, only 56% of respondents reported being aware of it. This level of awareness needs to be addressed to enhance knowledge and understanding of both PPND and MPND within the community.

This study shows the need to screen for PPND among men and the assessment of the father's well-being needs to be included during the perinatal follow-up. The role and importance of fathers in providing support and care for their partner and newborn child need to be considered by healthcare professionals and the current health system.

4.1   Study Limitations

The limitations of the study include the use of convenience sampling that can lead of potential selection bias. Additionally, the restrictions imposed during the COVID-19 pandemic meant that the research had to be conducted at two public health clinics in the Gombak district, where the researcher both works and lives. As a result, the findings of this study cannot be generalized to other regions of Malaysia.

Additionally, the EPDS questionnaire has its own limitations as it is primarily a screening tool. Nonetheless, its application in primary care settings among men to identify PPND is deemed adequate. With a cut-off score of ≥ 10, the EPDS demonstrates a good sensitivity of 77.3% and a specificity of 92.9% [13]. Furthermore, the EPDS was specifically developed for individuals during the perinatal period and is easy to implement in primary care clinics.

5.   CONCLUSION

There is a high prevalence of paternal perinatal depression (PPND) among men, highlighting the need for regular screening of fathers whose partners are in the perinatal period. Assessments for fathers could be conducted alongside their female partners during antenatal or postnatal follow-ups. It's important to involve men during these follow-up visits, and those identified as being at risk for PPND should be referred for further evaluation and counseling.

Factors such as low to moderate social support and existing chronic diseases increase the risk of developing PPND. These men need close monitoring and additional support. This situation underscores the responsibility of healthcare professionals and the healthcare system to ensure that fathers are assessed and engaged during the postnatal period.

6.   ACKNOWLEDGEMENTS/FUNDING

7.   CONFLICT OF INTEREST

Authors declare none.

8.   AUTHORS' CONTRIBUTION

Mohamad Ya'akob Yusof was the postgraduate student of this study. Farnaza Ariffin was the main supervisor with Zaliha Ismail and Salmi Razali as co-supervisors for this study. The student formulated and conceptualized the study, collected data, analysed and interpreted the data and wrote the manuscript. Ariffin F, Isa MR and Mat Nasir N supervised in the conception of the study, reviewed the analysis and interpretation of the data and contributed to the critical revisions of the results and manuscript. Ariffin F reviewed and finalized the manuscript. All authors read and approved the final manuscript. All authors agreed to be accountable for the accuracy and integrity of any part of this manuscript.

9.   ETHICS STATEMENT

Ethical approval of this study was obtained from two ethical bodies namely the Research Management Centre (RMC), University Technology MARA (UiTM) (approval code: MR/259), and National Medical

Research Register (NMRR-20-2397-56114 (IIR)). Consent obtained for the online questionnaire was via those who clicked the 'agree' button to the consent were allowed to proceed to the questionnaire.

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