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ORIGINAL RESEARCH

Prevalence and Predictors of Postpartum Depression Among Male Partners Who Came to Postnatal Follow-up Clinic with Their Partner in Selected Public Health Centers of Wolaita Zone, Ethiopia, 2019

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Mesfin Markos[1]
Aseb Arba[2]

[1]Wolaita Sodo University College of Medicine and Health Sciences, Department of Midwifery, Wolaita Sodo, Ethiopia; [2]Wolaita Sodo University College of Medicine and Health Sciences, School of Nursing, Wolaita Sodo, Ethiopia

Background: Paternal postpartum depression is a serious public health problem which has a significant effect on mortality and morbidity level. Its effect is not limited to the partner, but it also affects the family, the marital relationship and development of the child. Therefore, this study was planned to assess the prevalence and predictors of paternal postpartum depression among accompanying partners in selected public health centers of Wolaita Zone, Ethiopia.

Methodology: An institution-based cross-sectional study was conducted among 423 male partners. The study was conducted in 25 randomly selected health centers and samples proportionally allocated to each health center. Finally, the study participants were selected by systematic random sampling method. The collected data were entered into EpiData version 4.2 and exported to IBM SPSS for further analysis. The Edinburgh postnatal depression scale was considered at a cutoff point ≥10 to detect depression. Descriptive and binary logistic regression analyses were done. Adjusted odds ratio (AOR) and *p*-value results in multivariable logistic regression were used to declare strength and presence of association.

Results: Four hundred and ten partners participated in this study making a response rate of 97%. Seventy (17%) of the participants had paternal postpartum depression. Family income (AOR=3.0; 95%CI: 1.1–8.2), substance use (AOR=4.5; 95%CI: 1.5–13.3), family support (AOR=3.9; 95%CI: 1.3–11.3), marital relation (AOR=4.1; 95%CI: 1.5–11.0), unplanned pregnancy (AOR=3.5; 95%CI: 1.4–8.7) and infant sleeping problems (AOR=10.0; 95%CI: 4.1–24.0) were variables significantly associated with paternal postnatal depression.

Keywords: paternal postpartum depression, Edinburgh postnatal depression scale, parenthood

Introduction

Paternal postpartum depression (PPPD) also known as "paternal postnatal depression" is a seldom recognized mental illness in male partners that occurs with major depressive symptoms occurring within four weeks of childbirth and may extend to one year. These depressive symptoms they are experiencing are the symptoms of fatigue and changes in sleep or appetite, crying, and outward emotional symptoms.[1–4]

Correspondence: Aseb Arba
Wolaita Sodo University, College of Medicine and Health SciencesSchool of Nursing, PO BOX 200, Wolaita Sodo, Ethiopia
Email 40ase@gmail.com

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In addition, there are other common symptoms of PPPD. These include: irritability, unhealthy sexual relationships or infidelity, working more or less, low energy, exhaustion, lack of motivation or poor concentration, weight or appetite change, risk-taking behaviors including substance use, physical signs, anger and outbursts, escapist behavior, such as spending excessive time watching television, on the internet or at work, violent behavior and suicidal thoughts.[5–10]

The postpartum period is the transformation to paternity and it is a challenging and vulnerable period for most partners. Studies showed that partners suffer from depression after the birth of a child.[3,11] Historically, postpartum depression was assumed to be a mental illness of women only. But about one quarter of new male partners could also experience overwhelming depression after the birth of their child.[3,12,13] The transition to paternity may be complex and devastating, and may negatively influence the men's health. The change and practice to paternity is considered one of the most acute changes experienced throughout a man's life.[8] The experience is influenced by the partner itself, relationship, and infant factors.[14,15]

Postpartum depression is a clinically significant problem for male partners, families and community which is currently underdiagnosed, and undertreated. There is wide variation in estimate of the prevalence of PPPD ranging from 4–25% of partners within the postpartum period and its average prevalence was 10%.[3,12] Despite postpartum depression among women having been studied by different researchers in different countries, the prevalence of depression among the male partners of newborn is a not well recognized, underscreened and underdiagnosed.[14,16]

Different scholars estimate the prevalence of PPPD extending from 1.2–25% in a community based study. It was higher among male partners whose partner had paternal postnatal depression, that ranges from one quarter to half of partners who were affected with depression.[3,11] In Ethiopia, a study on the prevalence of PPPD was not conducted, but the prevalence of maternal postpartum depression ranged from 23.3–34%.[17–19]

PPPD carries increased suicide risk or loss of self-esteem and is associated with different variables as shown in conceptual framework Figure 1 in Supplementary data. In addition, it causes negative impact on the family, poor parenting behaviors, the marriage relationship, reduced parent–infant interaction, has implications for healthy child growth and development.[20–25] Several factors have been identified that may precipitate

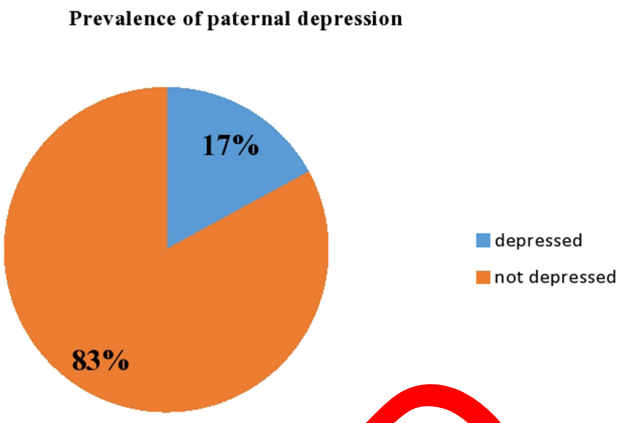

Figure 1 Prevalence of paternal postpartum depression among partners who came to postnatal follow-up clinic with their partner at Wolaita Zone public health centers, Ethiopia, (n= 410).

PPPD including paternal factors; employment status, relationship factors; poor marital relationships; and infant-related problems.[26–28] Although its prevalence is not adequately studied, recent investigations showed that the problem has advanced considerably over the past three decades. The estimates of the prevalence of PPPD within the last year vary widely ranging from 4–27%.[2,29,30]

The prevalence of maternal postpartum depression among Ethiopian postpartum women is high compared to global reported figure ranges from 4.5–20%.[17–19,31] However, paternal depression among partners of newborn is a new concept in Ethiopia. Despite the problem having been studied by different researchers in other countries, to our knowledge, there is no study conducted in Ethiopia on the problem under study, therefore we planned to assess the prevalence of paternal postpartum depression and its associated factors among partners who come to the postnatal follow-up clinic at Wolaita Zone health centers.

Significance of the Study

This study will be important for different stakeholders in addressing the issues related to paternal morbidity and mortality during the postpartum period. The result will point out prevention measures that are important for decreasing the occurrence of depression among partners of the newborns. The result will also provide information for strategic planning of comprehensive postnatal care and follow-up, support and care of partners with newborns. It is also expected that, the findings will be important for further psychiatric evaluation and hence, advanced mental health care and support will be integrated

with the routine postnatal care and follow-up management guidelines. The study results may also show solutions for the paternal postpartum-related depression at the community level. And it also will be a baseline source for additional further research regarding PPPD.

Objectives

- To determine the prevalence of PPPD among partners who came to the postnatal follow-up clinic with their partner in selected Wolaita Zone health facilities, Ethiopia, 2019.
- To identify the factors associated with PPPD among partners who came to the postnatal follow-up clinic with their partner in selected Wolaita Zone health facilities, Ethiopia, 2019.

Methods and Materials

Study Area and Study Period

The study was conducted in public health centers of Wolaita Zone, which is one of administrative zones in SNNPR of Ethiopia. The zone has a total population size of 15 million as estimated in 2018 and it is divided into 17 woredas (districts). There are seven hospitals and 73 health centers under Wolaita Zone health department. This study was conducted in selected public health centers of Wolaita Zone, which had postnatal follow-up units from April 1 to May 2, 2019.

Study Design

Institutional based cross-sectional study design was employed.

Population

All male partners who came to postnatal clinics with their partners in selected public health centers of Wolaita Zone during the study period were considered the study population.

Study Subjects

The study subjects were male partners who present at time of data collection in selected public health centers of Wolaita Zone and included in the study.

Inclusion and Exclusion Criteria

All male partner who come to postnatal follow-up clinic during the third visit with his partner and had an infant ≥4 weeks. Male partners who were not able to respond to questions were excluded.

Sample Size Determination and Sampling Procedure

The sample size was determined by using a single population formula. A 95%CI, 5% margin of error, and proportion of 50% were assumed because of the absence of the proportion of paternal postpartum depression in Ethiopia. The initial sample size was 384. After adding the nonresponse rate 10%, the final sample size was 423 shown in supplementary data.

The total number of public health centers in Wolaita Zone was 73. From these, three of them had no postnatal care follow-up figures to report in the previous month before the study. From the rest, 25 health centers were selected by lottery method. The sample size was allocated proportionally to each health center based on the previous months client follow-up records in the postnatal care unit shown in supplementary data. Then, study subjects from selected health centers were chosen by systematic random sampling method. The first partner was selected by lottery method and others selected were every second from the preceding participant.

Data Collection Tools

A structured questionnaire was adapted from previously published literature.[4,13,32] The questionnaire had four parts; sociodemographic, personal, relationship, infant and environmental factors with depression, which was uploaded as supplementary data. It was prepared in English and translated into Amharic language by experts, then retranslated back into English by a different expert to ensure its consistency. The reliability of the questionnaire was checked and its Cronbach's alpha reliability coefficient result was 0.81. It measures the feeling of partners during the previous seven days of the postnatal period. The Edinburgh postnatal depression scale (EPDS) was used to assess the depressive symptoms.[33]

Data Collection Procedure

A face-to-face interview was conducted using a structured and pretested questionnaire. The designed questionnaire contains close-ended and some open-ended questions. Exit interview was conducted in a private place after they received the service they required and after getting consent of participation.

A total of 25 midwives were selected for data collection and four experts with an MSc in maternity and reproductive health were used for supervision.

Variables

Dependent Variable

- Paternal postpartum depression

Independent Variables

- **Sociodemographic and personal factors:** age, religion, educational status, employment status, number of newborns, family income, substance use, history of depression, experience of being father to baby.
- **Relationship factors:** family set up, relationship with parents, support from friend, marital status, marital relation, family support, number of wife, and relative mental illness.
- **Infant and environmental factors:** Residence of wife after delivery, housing status, planned/unplanned pregnancy, antenatal follow-up status, mode of delivery, presence/absence of male partner at delivery of a baby, GA of the pregnancy, congenital birth problems, place of delivery, infant sleeping problem, and history of loss of child.

Operational Definitions

- Depression: when the cumulative score of Edinburgh postnatal depression scale (EPDS) was 10 or above. The scale has 10 items and each item of the scale was scored from 0 to 3, yielding a total range of 0–30. The score of questions number 1, 2, and 4 were the first choice and scored as 0, the second choice scored as 1, the third choice scored as 2 and the last choice scored as 3 and the score of question number 3, 5, 6, 7, 8, 9 and 10 were scored the first as 3, second as 2, third as 1 and the last 0.
- Substance use: when the male partners used any one or more of the substances (alcohol, chat, and or cigarette).

Data Quality Assurance

Data were collected by trained health-care providers who have previous experience of data collection and participation in research. Training was given to data collectors. Training addressed the detailed explanation of every question with clear understanding. Then the research tool was pretested in Bilate Charicho and Anka Duguna health centers among 22 male partners, and necessary arrangements and corrections were made to standardize the questionnaire. The quality of the data collection process was supervised by the principal investigator.

Data Analysis

Data were coded and entered to EpiData version 4.2.0 and exported to IBM SPSS version 20 software package for analysis. Descriptive statistics were done to get frequencies, percentages and cross-tabulations. Then, binary logistic regression statistical model was employed for bivariate and multivariable analysis. The outcome variable is based on EPDS score; a cutoff point ≥10 was categorized as presence of depression. Finally, the presence of association of covariates with depression was declared when *p*-values <0.05 and AORs at 95% CI in multivariable analysis.

Ethical Consideration

The study was approved by the Research and Ethical approval Committee of School of Nursing, Lideta College of Health Sciences and Business where the authors worked as part-time instructors. An official letter from the School of Nursing was written to Wolaita Zone Health Department and to Health centers. The study was conducted in accordance with the Declaration of Helsinki. Informed voluntary consent was taken before starting the interview. Privacy and confidentiality was maintained during the interview. The subjects were informed that any information they provided was confidential shown in supplementary data. Any personal identification of the study participants was not recorded during data collection.

Results

Socioeconomic and Paternal Personal Factors

It was planned to interview 423 partners in this study. Out of them, 410 successfully participated in the study making the response rate of 97%. The mean age of the participants was 32.02±5.36 years and two thirds of respondents were in between 25 and 34 years, the age of baby at the time of interview of fathers was 44.49±3.04 days after delivery. Out of 410, 153 (37.3%) were fathers of the first child, while 257 (62.7%) were experienced partners. The majority of 385 (93.9%) partners had one newborn, and the rest had twin and triple newborns, and 210 (51.2%) of partners were orthodox by religion. One hundred and eighty (43.9%) of partners completed higher education, 370 (90.2%) of partners were government employees. Among the employed, 331 (89.5%)

were permanent employees and 39 (9.5%) of them were temporary employees. Among these, 312 (76%) received paternal leave. The average family income of the respondents were 5064±2669.41 Ethiopian birr, ranging from 1000–26,000 and 257 (62.7%) of the respondents were not comfortable with their family income, 42 (10.2%) of the participant were using at least one of the substances shown in Table 1.

Table 1 Socioeconomic and Paternal Factors of Participant Who Came to Postnatal Follow-Up Clinic with Their Partner in Wolaita Zone Public Health Centers, Ethiopia (n=410)

Variable	Category	Frequency	Percent
Paternal age in years	20–24 25–29 30–34 35–39 40–44 45–49	14 150 130 61 42 13	3.4 36.6 31.7 14.9 10.2 3.2
Number of children in household	1 ≥2	153 257	37.3 62.7
Religion	Orthodox Muslim Protestant Other	210 114 71 15	51.2 27.8 17.3 3.7
Educational status	No formal education Read and write Completed primary education Completed secondary education Completed higher education	13 17 60 140 180	3.2 4.1 14.6 34.1 44.0
Number of newborns	One newborn Twin newborns	385 25	93.9 6.1
Employment status	Employed Unemployed	370 40	90.2 9.8
Family income in Ethiopian birr	≤1650 1651–3200 3201–5250 5251–7800 7801–10,900 >10,900	11 77 186 96 24 16	2.6 18.8 45.4 23.4 5.9 3.9
Comfortable to your family income	Yes No	153 257	37.3 62.7
Substance use[a]	Yes No	42 368	10.2 89.8
History of depression	Yes No	17 393	4.1 95.9

Note: [a]Alcohol, chat, cigarette.

Relationship-related Characteristics of the Participants

All of the respondents were married and almost all of them 408 (99.5%) were living together with their partner. Almost all of the respondents 407 (99.3%) had one wife. Nearly all of partners reported that they lived with nuclear family. Three hundred and fifty-five (86.6%) of the respondents had a good marital relationship. About three quarters of the respondents had a good relationship (70.2%), with their parents had support from friends (72.9%) and had family support (73.4%) as shown in Table 2.

Infant and Environment Related Characteristics of the Participants

Concerning their housing, 270 (65.9) of the respondents were living in rental houses, and only 25 (6.1%) respondents wives went to her mother or family house for delivery. More than two thirds of pregnancies were planned 316

Table 2 Relationship Related Characteristics of Partners Who Came to Postnatal Follow-up Clinic with Their Partner in Wolaita Zone Public Health Centers, Ethiopia (n=410)

Variables	Category	Frequency	Percent
Family setup	Nuclear family Joint family	409 1	99.8 0.2
Good relationship with parents	Yes No	288 122	70.2 29.8
Support of friends	Yes No	299 111	72.9 27.1
Marital status	Married living together Married living separately	408 2	99.5 0.5
Good marital relationship	Yes No	355 55	86.6 13.4
Support of family	Yes No	301 109	73.4 26.6
Relatives diagnosed with mental illness	Yes No	8 402	2.0 98.0
Number of wives (in number)	One More than one	407 3	99.3 0.7

(77.1%). More than two-thirds, 340 (82.9%) and 342 (93.4%) of partners were present at the time of antenatal checkup and delivery of infant, respectively. Among all respondents, 336 (82%) reported that the delivery of their child were vaginal delivery. Most of the babies 301 (73.4%) were delivered at term and more than two-third s, 334 (81.5%) of infants were delivered at governmental health institution. Seven (1.7%) respondents had congenital problems. Eighty-two (20%) infants had sleeping problems shown in Table 3.

Prevalence of Paternal Postpartum Depression

From all participants, 70 (17%) of respondents scored above cutoff point for PPPD (≥10), and 340 (83%) participants were scored below the cutoff point for paternal postpartum depression. Hence the prevalence of PPPD was 17% with (13.36, 20.64) at 95%CI as shown in Figure 1.

Table 3 Infant and Environmental Related Characteristics of Partners Who Came to Postnatal Follow-up Clinic with Their Partner in Wolaita Zone Public Health Centers, Ethiopia (n= 410)

Variables	Category	Frequency	Percent
Wife went to her mother's house for delivery	Yes No	25 385	6.1 93.9
Housing	Own house Rental	140 270	34.1 65.9
Was the pregnancy planned	Yes No	316 94	77. 22
Attend antenatal checkup	Yes No	0 70	82.9 7.1
Mode of delivery	Vaginal delivery Cesare section	33 74	82.0 18.0
Accompany partner at delivery of your child	Y No	342 6	83.4 16.6
GA of the pregnancy	eterm Post term	59 301 50	14.4 73.4 12.2
Congenital birth problems[a]	Yes No	7 403	1.7 98.3
Place of health care	Governmental Private	334 76	81.5 18.5
Infant sleeping problem	Yes No	82 328	20 80
Loss of child before this pregnancy	Yes No	28 382	6.8 93.2

Note: [a]Cleft lip/palate, Down's syndrome, spinal bifida, physical deformities.

Factors Associated with Paternal Postpartum Depression

Bivariable analysis was done for each independent variables with the dependent variable using binary logistic regression. The variables with $p<0.25$ in bivariable analysis were exported to multivariable analysis. These variables were employment status, comfortable to family income, substance use, history of depression, relationship with parents, friend support, family support, marital relationship, planned pregnancy, attend antenatal checkup with partner, accompany partner at the time of delivery of child, infant sleeping problems, and child loss before the birth of the child. From these variables, six variables were significantly associated with PPPD.

The partners who were not comfortable on the family income were three times more likely to develop depression than those who were comfortable with family income (AOR=3.0; 95%CI: 1.1–8.0). Those partners who currently use substances were five times more likely to develop depression than those not using substances (AOR=5.0; 95%CI: 1.7–14.5). In addition, partners who had no family support were nearly four times more likely to be depressed than those who had family support (AOR=3.8; 95%CI: 1.3–11.1).

Those partners who did not have a good marital relationship with their partner were 4.4 times more likely to be depressed than those with good marital relationship (AOR=4.4; 95%CI: 1.6–11.7). Those partners who had unplanned pregnancy (delivery) were 3.5 times more likely to be depressed than those partners with planned pregnancy (AOR=3.5; 95%CI: 1.4–8.8). Those partners whose infant had sleeping problems were nearly 11 times more likely to develop PPPD compared to their counterparts (AOR=10.9; 95%CI: 4.6–25.8) as displayed in Table 4.

Discussion

The current study planned to determine the prevalence and predictors of paternal postnatal depression among partners who came to postnatal follow-up clinics with their partner in public health centers of Wolaita Zone, Ethiopia. In this study, 70 (17%) (95%CI: 13.36–20.64) partners had depression; this showed that a significant proportion of partners were suffering from PPPD. This figure goes in line with studies conducted in Saudi Arabia,[32] Japan,[34] and

Table 4 Bivariate and Multivariate Logistic Regression Analysis of Paternal Postpartum Depression Among Partners Who Came to Postnatal Follow-up Clinic with Their Partner in Wolaita Zone Public Health Centers, Ethiopia, (n=410)

Variables	Category	Depressed		COR (95%CI)	AOR (95%CI)
		Yes (%)	No (%)		
Employment status	Employed Unemployed	56 (15.1) 14 (35)	314(84.9) 26(65)	1 3.01 (1.48, 6.13)	1 1.89(0.6,5.6)
Comfortable to family income	Yes No	15 (9.8) 55 (21.4)	138 (90.2) 202(78.6)	1 2.50(1.36, 4.61)	1 3.0(1.1, 8.0)*
Substance use	Yes No	24(57.1) 46(12.5)	18(42.9) 322(87.5)	9.33(4.70, 18.51) 1	5.0(1.7, 14.5)* 1
History of depression	Yes No	7(41.1) 63 (16)	10 (58.9) 330(84)	3.66(1.7 9.99) 1	3.0(0.5, 16.3) 1
Good relationship with parents	Yes No	42(14.6) 28 (22.9)	246(85.4) 94(77.1)	1 1.74 (1.02, 2.9	1 0.7(0.2, 1.8)
Friend support	Yes No	27(8.8) 43(41.3)	279(91.2) 61(.7)	1 28(4.18 .69)	1 2.7(0.9,8.0)
Family support	Yes No	25(8.3) 45(41.3)	276(.7) 64(58.7)	1 7.76 (4.43, 13.58)	1 3.8(1.3, 11.1)*
Good marital relationship	Yes No	41(.6) 29(2.7)	314(88.4) 26(7.3)	1 8.54(4.58, 15.90)	1 4.4(1.6, 11.7)*
Planned pregnancy	Yes No	31( ) 39(41.5)	28 0.2) (58.5)	1 6.51(3.75, 11.33)	1 3.5(1.4, 8.8)*
Attend antenatal checkup with your partner	Yes No	4( ) 8 (40)	298(87.6) 42(60)	1 4.73(2.65, 8.42)	1 1.5(0.5, 4.1)
Attend delivery of child	Yes No	53(15.5) 17 (25)	289(84.5) 51(75)	1 1.8 (0.9, 3.3)	1 1.6(0.6, 4.5)
Infant sleep problems	s N	45(54.9) 25(7.7)	37(45.1) 303(92.3)	14.7(8.1, 26.7) 1	10.9(4.6, 25.8)* 1
Lost child before the birth of this child	Yes No	15(53.6) 55(14.4)	13(46.4) 327(85.6)	6.86(3.0–15.2) 1	3.9(0.99–11.47) 1

Note: 1, reference group; *<0.05.

Northwest [35] wh the prevalence of PPPD was 16.6%, 6.7%, nd 13.6% respectively. This might be due to v iati in st population, study time variation of the study etween previous study and this study.

However, t proportion was lower when compared with a similar study conducted in Ireland where the level of paternal postnatal depression was 28%.[4] This might be due to the population difference, sample size and study period difference. And the current proportion of paternal depression was somewhat higher when compared to other studies in Japan in 2017 which was 8.8,[36] in Australia, 9.7,[37] in Brazil, 11.9,[13] and in US, 10.3.[12]

This discrepancy in prevalence of PPPD might be due to the difference in study method, population, assessment tool, and study period. For example, the study conducted in Japan was studied by longitudinal method, and in Australia the Kessler-6 scale was used,[37] in Brazil BDI was used,[13] and in the US they used the Center for Epidemiologic Studies Depression Scale (CESD).[12] The current result was also higher when compared with another study conducted in Japan in 2018, in which 11.2% of partners were depressed.[38] This difference might be due to cutoff point difference, sample size difference, socio-demographic difference.

In the current study, paternal postnatal depression was significantly associated with partners who were not comfortable to their family income)AOR=3.0; 95%CI: 1.1–8.0). This finding was consistent with the study done in Ireland,[4] and in the University of Lublin.[39] It might be because of the fact that parenthood increases the need of fulfilling the essential materials for the family including the newborn's basic needs. Facing difficulty due to economic conditions might further affect the mood of partners during the postpartum period.

In the current study, PPPD was significantly higher among partners who were using substances than that of nonusers (AOR=5.0; 95%CI: 1.7–14.5). This result was in line with the studies conducted in Brazil and Japan.[13,40] This might be due to taking substances during this period that might change the mood of partners or it might cause them economic crisis due to increased demand of family as well as expense of substance.

Furthermore, partners who had no family support were nearly four times more likely to be affected by paternal postpartum depression than that of partners who had family support (AOR=3.8; 95%CI: 1.3–11.1). This result goes in line with the study conducted in Ireland.[4] This might be due to the fact that feelings of loneliness m change the mood of the partners. However, family suppor was not associated with depression in the study conducted in Saudi Arabia.[32] This might be due to diffe ice in tudy setting, study period, and population.

In addition, partners who did not ve a d marital relationship with their partner wer ore likely t develop PPPD (AOR=4.4; 95%CI: 1.6– 1.7). t, this factor was not associated with the stud conducted i audi Arabia.[32] This change might be du to popu ation, sample size, methodology difference. In e cur nt study, partners who had unplanned pregnancy we significa y associated with PPPD (AOR= 5; 95 CI: 1. 8.). This result is in line with the st y condu ed in 2010 in Japan.[41] This might be the similarity i the assessment tool. This result differs from the study conduc d in Ireland, in which there was no significant association between planning of pregnancy and PPPD.[4] This might be due to the population difference.

Furthermore, the association found in the current study was having an infant with sleeping problems. Partners who had an infant with sleeping problems were more likely to be depressed than that of partners who had an infant without sleeping problems (AOR=10.9; 95%CI: 4.6–25.8). This result was consistent with the study conducted in Ireland.[4] This finding might show that the partners were worried about the healthiness of the child and this further might cause them to develop depression.

Recommendations

Depending on the findings, the following recommendations were forwarded to the Wolaita Zone Health Department, health professionals, different NGOs and researchers working on health and other sectors.

- In collaboration with the Ministry of Health, it is recommended to develop guide ne f postnatal follow-up that include mental nd reproduc ive health screening for both partners (f her and mo her).
- We recommend Wol ta Zone H lth d artment to offer basic faciliti needed or child e with affordable cost duri po nat follow p.
- We recom end hea pro ssionals to provide health uca n on the e cts of substance use by using different ss media and making it inaccessi e easily by low c t.
- We recom end provision of pre-marriage, precon eption and erinatal counseling service in collabora ti with her sectors.
- NGOs and governmental organizations working on s al and reproductive health (SRH) should provide further attention on utilization of family planning methods to minimize unplanned pregnancy.
- Provide better training for health-care providers on how to counsel regarding paternal postpartum depression prevention and related issues.
- We recommend health professionals to provide mental health screening for partners, especially during preconception care, antenatal care, perinatal and postnatal period.
- The researchers are recommended to conduct further research by using different design (mixed study) and setting to identify further risk factors to paternal postpartum depression.

Strength and Limitation of Study

This study focused on paternal postpartum depression which was not conducted before in the study area. However, there could be introduction of social desirability bias. To minimize this bias, data collectors explained about purpose of study and confidentiality of their response. By its cross-sectional nature, it is difficult to establish causal relationship between the covariates and the outcome

variable. In addition, authors faced difficulty for comparison due to limitation of literature on related topics.

Conclusion

PPPDn was high among partners who came to postnatal clinics of the Health Centers of Wolaita Zone. Economic problems, substance use, relationship factors, family support, marital relationship, unplanned pregnancy and infant sleeping problems were a significant predictors of PPPD in the study area.

Abbreviations

AOR, adjusted odds ratio; CI, confidence interval; EPDS, Edinburg postnatal depression scale; GA, gestational age; PPND, paternal postnatal depression; PPPD, paternal postpartum depression; SNNPR, Southern, Nation Nationalities and People's Region; SPSS, statistical package for social sciences.

Data Sharing Statement

All interested persons or institutions could get final logistic regression SPSS file by sending email to mesfinmarkos92@gmail.com.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Disclosure

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