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RESEARCH ARTICLE

Postnatal Depression Screening among Postpartum Women Attending Postnatal Care at Selected Community Health Centres Situated in the Nkangala District of South Africa

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Abstract:

Background:

The postnatal period represents a time of risk for the emergence of Postnatal Depression (PND), a common maternal mental health problem affecting the well-being of the mother, the newborn and the entire family. Previously, it was postulated that African women were not affected by PND, due to traditional rituals and other cultural factors. However, the assumption has been refuted because of the existence of empirical evidence of PND in Africa and beyond, particularly among women living in socio-economic disadvantaged regions. Despite the growing magnitude of PND reported in South Africa, the country continues to focus more on reducing maternal and infant mortality and promoting infant physical health with limited efforts made to address PND among postpartum women.

Objective:

To screen for PND and determine the associated risk factors among postpartum women in selected community health centres situated in the Nkangala District, South Africa.

Methods:

The study was cross-sectional in design and applied a quantitative approach. Random sampling was used to select the three community health centres in the Nkangala District. A sample of 228 women who had delivered a live infant within 12 weeks of the time of data collection was selected using purposive sampling from the three community health centres. Trained research assistants administered a questionnaire to obtain information on demography and obstetric history, while the Edinburgh Postnatal Depression Scale (EDPS) was used to screen for postnatal depression. An EDPS score of 13+ confirmed the probability of PND. Data was analysed using STATA 14.

Results:

The mean age of women was 28±7 years. The majority of women were single (61%), living in large households (77%), and living in households with a monthly income of less than $291.10 (63%). Most women had normal (*i.e.*, vaginal) delivery (83%) and reported unplanned pregnancies (65%). The probability of developing PND among women was 22%. The odds of developing PND were 3.17 times more likely in women with babies aged six weeks and above (AOR=3.17, CI; 1.39 - 7.23) and 4.50 times more likely in women living in households with an income of less than $115.55 (AOR=4.50, CI; 1.03 - 19.74). Partner/husband violence increased the odds of developing PND (AOR = 6.89, CI; 1.49 - 31.93), as well as a stressful life event (AOR= 3.73, CI: 1.52 - 9.17). Having partner/husband support (AOR=0.10, CI: 0.03 - 0.37) and receiving social support (AOR=0.28, CI: 0.09 - 0.93) reduced the risk of developing PND. A chi-square test showed significant associations between the EDPS scores and partner/husband support, partner/husband having another sexual partner, receiving social support, having a person who offers social support, partner/husband violence, and stressful life events.

Conclusion:

The probability of PND was high among postpartum women in the Nkangala District of the Mpumalanga Province, South Africa. The key determinants for the probability of PND were the age of a baby, household income, partner/husband violence, partner/husband support and receiving social support. Routine screening to identify women who are at risk of PND should be integrated into postnatal care settings for immediate intervention to protect the mother and her baby from different forms of morbidity.

Keywords: Edinburg postnatal depression scale, Screening postnatal depression, Postpartum women, Community health centres, Peri-urban setting, South Africa.

Article History	Received: June 29, 2020	Revised: September 22, 2020	Accepted: September 28, 2020

1. INTRODUCTION AND BACKGROUND

Postnatal Depressio (PND) is an internationally recognized public health concern, defined as a serious maternal mental health problem occurring within four to six weeks after childbirth [1 - 4]. Globally, PND affects 15% of postnatal women, and the high burden of disease associated with PND is well documented in Low-and-middle-income Countries (LMICs) [2, 5 - 7]. In Africa, it was previously postulated that women were protected from PND due to traditional rituals and other cultural factors [8]. However, it is becoming evident that all women are affected, particularly those living in socio-economically disadvantaged regions [9 - 11]. The overall combined prevalence of PND has been estimated to be 16.84% in Africa [12], while a range between 6% and 50% has been reported in Sub-Saharan Africa (SSA) [13 - 15] and 16.4% to 50.3% in South Africa [16, 17]. Several studies in South Africa have reported variations of PND prevalence among adolescents (26%) [7], women living with HIV (25% to 45.1%) [18, 19], in rural settings (47% to 50.3%) [17, 20], peri-urban settlements (30% to 34.7%) [10, 11], urban areas (16.4%) [16] and different provinces (34.7% to 49.3%) [9, 21].

The aetiology of PND is complex and includes the incorporation of many factors such as integration of bio-chemistry, hormonal functioning and genetic history, as well as psychosocial factors such as stressful life events [20]. Symptoms of PND include depressed mood, loss of interest or pleasure in activities, sleep disturbance, feelings of worthlessness or guilt, anxiety, and thoughts of suicide [3, 4]. Untreated PND has negative consequences for both the infant and the mother [22]. In mothers, untreated PND affects physical health, psychological health, relationships, and leads to risky behaviours. In infants, it affects anthropometry, physical health, sleep and motor, cognitive, language, emotional, social and behavioural development [22]. Untreated PND further affects mother-child interactions through bonding, breastfeeding, and the maternal role [22]. In addition, PND victims are twice as likely to experience future episodes of depression over a five year period [23].

The risk factors for PND reported in LMICs include socio-economic disadvantage, unintended pregnancy, being younger, being unmarried, lacking intimate partner empathy and support, experiencing intimate partner violence, having insufficient emotional and practical support and, in some settings, giving birth to a female baby, and having a history of mental health problems [24]. In Africa, the unique risk factors for PND include poor infant nutritional status, low infant birth weight, shorter duration of breastfeeding, diarrhoeal diseases, poor self-rated health, respiratory illness, home delivery, reduced quality of interaction between mothers and infants [25], and poor HIV care [26]. In South Africa, researchers have reported associated PND factors to be level of education, financial support by the baby's father, whether the baby was planned, baby's health status, partner/husband support, social support, partner/husband being violent, partner/husband alcohol use, and partner/husband having other sexual partners [9, 16, 17, 21].

The postnatal period represents a time of risk for the emergence of PND, affecting the well-being of the mother, the newborn and the entire family [27, 28]. However, newly birthed mothers are not identified when at risk of having a poor state of well-being, and often the opportunities to detect anxiety, stress and coping problems are missed [28]. In South Africa, maternal mental health care, particularly for PND, remains a neglected area [17, 21, 29] and the country continues to focus more on reducing maternal and infant mortality and promoting infant physical health [29]. This is despite the growing magnitude of PND reported in South Africa [18, 19, 21]. Thus, this study aimed to screen for PND and further determine the associated risk factors in selected health centres in the peri-urban Nkangala District of the Mpumalanga Province, South Africa. This study identified cases that required referral and further intended to add value to the minimal existing baseline information on PND in the Mpuma-langa Province, necessary to influence policy. In South Africa, failing to address PND is regarded as equivalent to a human rights violation [6].

2. MATERIALS AND METHODS

2.1. Study Design, Sample Size and Setting

The study used a cross-sectional design with a quantitative approach. This study is part of a larger study in the Department of Public Health at Sefako Makgatho Health Sciences University, titled "Prevalence of postnatal symptoms in primary health care clinics in South Africa", which was conducted in several provinces of the country. Arrangements to conduct the current study commenced in March 2019, and the study was concluded in December 2019. The study population consisted of women who had delivered a live infant within 12 weeks (three months) of the time of data collection and were attending postnatal care in the Community Health Centres (CHCs) in the Thembisile Hani local municipality, located in the Nkangala District of the Mpumalanga Province, South Africa. The local municipality having seven CHCs and three CHCs, situated in a peri-urban setting, were randomly selected. The database for deliveries in these three CHCs showed that 878 babies were born during the period of March 2019 and April 2020. Rao soft calculator [30] estimated a minimum representative sample of 209. Purposive sampling was used to select postpartum women and a final sample of 228 was obtained for PND screening.

2.2. Data Collection

Trained research assistants collected data using an adapted questionnaire consisting of demographic and obstetric characteristics, together with a version of the Edinburgh Postnatal Depression Scale (EPDS) [21]. Interviews were conducted in the three languages (*i.e.*, English, IsiZulu and Northern Sotho) preferred by the participants. Demographic data collected included age, marital status, education level, employment status, household family size and income, and child grant status. Age in years was classified into two groups, namely below 30 years and ≥ 30 years. Marital status was categorised according to single, cohabiting and ever married. The level of

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educational status was classified into low literacy (*i.e.*, primary school) and high literacy (*i.e.*, attained secondary school education and beyond). Employment status was clas-sified into unemployed and employed. Family size was categorised into 1-4 and ≥5 members. Monthly household income was categorised into five groups, namely, do not know, <$115.55, $115.93-$288.88, $290.12 - $464.10, and ≥ $464.16, while child grant was categorised as no and yes. Obstetric history included parity (1-2 or >2), planned preg-nancy (no or yes), delivery mode (vaginal or cesarean), birthplace (home, clinic or hospital), baby gender (boy or girl), preferred gender (none, boy or girl), baby age (<6 weeks or ≥6 weeks), baby health (good or not good), and breastfeeding (no or yes).

The EPDS is a 10-item self-report scale designed specifically as a screening instrument for the postnatal period and has been validated in South Africa [31]. The screening tool collects data to assess the mood of women during the first 12 months after their baby is born, as well as health problems, relationship with husband/partner, and history of intimate partner violence, social support and life stress. Social support is a voluntary act that one individual (the donor) gives to another individual (the recipient), which elicits a positive response in the recipient [32]. Social support can be given by a family member, friend, husband/partner, and/or others, and it may be given in different forms, like emotional (*e.g.*, empathy, caring, love), instrumental (*e.g.*, financial), and appraisal (*e.g.*, information promoting self-evaluation) [33]. Life stress was defined by having experienced severe stressful life events in the past six months, such as severe financial crisis, death and/or a serious illness of a close person, been a victim of a life-threatening crime, violence or accident, moved to a new place, changed or lost a job. These experiences were grouped into two categories, which are general problems and pregnancy/ relationship problems.

A score within the range of 0 - 9 may indicate the presence of some symptoms of distress that may be short-lived and are less likely to interfere with the day-to-day ability to function at home or at work. However, if these symptoms persist for more than a week or two, further inquiries are warranted. A score within the range of 10 - 12 indicates the presence of symptoms of distress that may be discomforting. A score of 13+ requires further assessment and appropriate management as the likelihood of depression is high. Referral to a psychiatrist/ psychologist may be necessary [34].

3. DATA ANALYSIS

During data analysis, none of the questionnaires had missing data above 10%, and the final sample of 228 women was considered in this paper. Data was stored in Microsoft Excel and analysed using STATA (Intercooled Stata® Version 14, College Station, TX). Descriptive statistics [*i.e.*, mean, Standard Deviation (SD), frequency (n) and percentage (%)] was computed. The outcome measures were an EDPS of 13+, indicating the probability of PND. A chi-square test (χ^2) was performed to compare the EDPS across different categories of exposure (risk) factors among mothers, and the results are presented as n (%), χ^2 and p-values. Fisher's exact was applied to variables with expected values lesser than five (5) in a cell. Univariate logistic regression analysis was performed and the purposeful selection process of each variable to be included in the multivariate model considered a cut-off p-value of less than 0.25. The results are presented as crude (*i.e.*, unadjusted) odds ratio (crude OR) with a 95% Confidence Interval (CI) and p-values. Multivariate logistic regression analysis, using a backward stepwise elimination procedure, was used to deter-mine the association of the probability of PND with independent variables. Results are presented as adjusted odds ratio (adjusted OR) with 95% CI and the significance level was considered $p < 0.05$.

4. RESULTS

4.1. Descriptive Characteristics of Women

The sociodemographic and obstetric characteristics of women are presented in Table **1**. The mean age of women was 28 ± 7 years. Fifty-nine percent (59%) of women in this study were aged less than 30 years and 41% were 30 years and above. Most women in this study were single (61%), while 20% of women were married and 19% were cohabiting. Forty-one percent (41%) of women had a low level of literacy, while 59% had a high level, and 80% were employed. Most women lived in households with five or more family members (77%), and a combined household income of less than $288.88 (63%). Only 36% of women were receiving a child support grant. Sixty-three percent (63%) of women in this study had more than two children, with boys (47%) being slightly lower than girls (53%). Most of the women (61%) had babies aged less than six weeks, while 39% had babies aged six weeks and above. Normal (*i.e.*, vaginal) delivery was reported by 83% of women, with most births (65%) occurring in hospitals. Unplanned pregnancies accounted for 65%, with only 10% of babies reported as not in good health, and 90% were breastfed (Table **1**).

Table 1. Descriptive characteristics of the study population.

Variables	Categories	Frequency (n)	Percentage (%)
Age (years)	Mean <30 ≥30	28 ± 7 134 93	59 41
Marital status	Single Cohabiting Married	139 43 46	61 19 20
Employment	No Yes	46 182	20 80

(Table 1) contd.....

Variables	Categories	Frequency (n)	Percentage (%)
Education level	Low High	93 125	41 59
Family size	1- 4 ≥5	52 176	23 77
Household income	Don't know <$115.55 $115.93 – $288.88 $290.12 – &464.10 ≥ $464.16	44 73 70 21 20	19 32 31 9 9
Receiving social grant	No Yes	147 81	64 36
Parity	1-2 >2	85 143	37 63
Pregnancy planned	No Yes	148 80	65 35
Birthplace	Home Clinic Hospital	6 74 148	3 32 65
Delivery mode	Vaginal Caesarean	190 38	83 17
Baby gender	Boy Girl	108 120	47 53
Baby age	1-6weeks >6weeks -12weeks	139 89	61 39
Baby health	Good Not good	206 22	90 10
Preferred gender	None Boy Girl	51 80 97	22 35 43
Breastfeeding	No Yes	22 206	10 90

$ stands for dollar.

4.2. Comparisons of EDPS Across Different Categories of Exposure (Risk) Factors

Twenty-two percent (22%) of women had EDPS ≥13, which indicated the likelihood of PND, while 11% indicated discomforting symptoms of stress (EDPS of 10-12). EDPS scores were associated with partner/husband support (χ^2=25.00, p ≤ 0.0001), partner/husband having another sexual partner in the past 12 months (χ^2=14.26, p=0.001), receiving social support (χ^2=11.06, p=0.003), and having a person who offered social support (χ^2=17.70, p=0.010). In addition, the EPDS scores were also associated with partner/husband violence (χ^2=10.25, p=0.046) and severe stressful events (χ^2=21.00, p ≤ 0.0001) (Table **2**).

4.3. Factors Associated with the Likelihood of Developing PND

In the univariate logistic regression analyses, marital status, household income, parity, baby age and gender, preferred baby gender and breastfeeding were associated with the probability of PND. Further univariate analyses showed that having a partner/husband, partner/husband support, and partner/husband who had other sexual partners in the past 12 months were associated with the likelihood of developing PND. In addition, the probability of PND was associated with receiving social support, having a person who offers support, partner/husband violence and a stressful life event (p < 0.25).

Table 2. Comparisons of EDPS across different categories of exposure (risk) factors.

Variables	All n (%)	0-9 n (%)	10-12 n (%)	≥13 n (%)	χ^2	P-value
Do you have a partner/husband currently? No Yes	14 (6) 214 (94)	6 (4) 146 (96)	3 (11) 23 (88)	5 (10) 45 (90)	3.875	0.099[a]
Partner/husband support No Yes	23 (11) 194 (89)	6 (4) 141 (96)	3 (13) 20 (87)	14 (30) 33 (70)	25.00	≤0.0001[a]*
Partner/husband has other sexual partners No Yes	165 (75) 55 (25)	120 (80) 29 (29)	19 (83) 4 (17)	26 (54) 22 (46)	14.26	0.001[a]*

(Table 2) contd.....

Variables	All n (%)	0-9 n (%)	10-12 n (%)	≥13 n (%)	χ^2	P-value
Receiving social support No Yes	24 (11) 204 (89)	9 (6) 143 (94)	4 (15) 22 (85)	11 (22) 39 (78)	11.06	0.003[a]*
Who supports you? None Partner Family Friend/colleagues	22 (10) 4 (2) 172 (76) 27 (12)	9 (6) 2 (1) 123 (81) 18 (12)	4 (15) 2 (8) 17 (65) 3 (12)	9 (19) 32 (68) 6 (13)	17.70	0.010[a]*
Partner/husband violent Never Once More than once	199 (90) 9 (4) 13 (6)	139 (93) 6 (4) 5 (3)	22 (96) 1 (4)	38 (79) 3 (6) 7 (16)	10.25	0.046[a]*
Partner/husband drinks alcohol Never Sometimes Everyday Every weekend	83 (38) 103 (47) 1 (0.5) 31 (14)	53 (36) 79 (53) 1 (1) 15 (10)	9 (39) 8 (35) 6 (26)	21 (45) 16 (34) 10 (21)	10.55	0.059[a]
Stressful life events No Yes	106 (46) 122 (54)	86 (57) 66 (43)	10 (38) 16 (62)	10 (20) 40 (80)	21.00	≤0.0001*
Reason for a stressful event General problems Pregnancy/ relationship problems	82 (71) 34 (29)	45 (70) 19 (30)	13 (81) 3 (19)	24 (67) 12 (33)	0.147	0.604[a]

EDPS stands for Edinburg Postnatal Depression Scale, n stands for frequency, % stands for percentage. χ2 stands for Chi square test, a indicates that fisher's exact was considered when the number of cases were lower than 5 in a cell, and * indicates significant difference.

Table 3. Association of the probability of PND with variables among mothers.

Probability of PND	Crude OR (95%CI)	P-value	Adjusted OR (95%CI)	P-value
Baby age				
<6 weeks			1[Reference]	
≥6 weeks	2.19 (1.14-4.19)	0.018*	3.17 (1.39-7.23)	0.008*
Household income				
Don't know			1[Reference]	
<$115.55	7.67 (2.13-27.6)	0.002*	4.50 (1.03-19.74)	0.046*
$115.93 - $288.88	3.64 (0.98-13.56)	0.054*	3.52 (0.77-16.07)	0.104
$290.12 – &464.10	7.09 (1.52-33.04)	0.013*	3.85 (0.65-22.93)	0.139
>$464.16	4.0 (0.79-20.28)	0.094	2.32 (0.32-16.93)	0.407
Partner/husband support				
No			1[Reference]	
Yes	0.10 (0.04 – 0.28)	≤0.0001*	0.10 (0.03-0.37)	0.001*
Receiving social support				
No			1[Reference]	
Yes	0.22 (0.09-0.58)	0.002*	0.28 (0.09-0.93)	0.038*
Partner/husband violence				
Never			1[Reference]	
Once	1.82 (0.44-7.65)	0.408	0.70 (0.09-5.55)	0.735
More than once	5.12 (1.54-17.04)	0.008*	6.89 (1.49-31.93)	0.014*
Stressful life events				
No			1[Reference]	
Yes	5.21 (2.43-11.18)	≤0.0001*	3.73 (1.52-9.17)	0.004*

PND stand for postnatal depression, OR stands for odds ratio, p-values for trends for household income = 0.232 and for partner/husband violence = 0.006, and * indicates significant association ($p<0.05$),

All of the above-mentioned variables were used to build a multivariate model and a backward stepwise elimination procedure was used. Table **3** reports the factors associated with the probability of developing PND, and crude OR and adjusted OR, 95% CI and p-values are presented. From the multivariate logistic analyses, developing PND was significantly associated

with the age of the baby, household income, partner/husband support, social support, partner/husband violence and a stressful life event. The odds of developing PND were three times more likely in women with babies aged six weeks and above (AOR=3.17 CI; 1.39 - 7.23) and 4.50 times more likely in women living in households with an income of less than $115.55 (AOR=4.50, CI; 1.03 - 19.74). Partner/husband violence increased the odds of developing PND (AOR = 6.89, CI; 1.49 - 31.93), as well as stressful life events (AOR= 3.73, CI: 1.52 - 9.17). Having a partner/husband support (AOR=0.1, CI: 0.03 - 0.4) and receiving social support (AOR=0.3, CI: 0.1 - 0.9) reduced the probability of PND.

5. DISCUSSION

This study screened for PND and determined the associated risk factors among postpartum women in selected community health centres situated in the Nkangala District of the Mpumalanga Province, South Africa. Consistent with other studies in South Africa and sub-Saharan Africa (SSA), the findings highlight that the likelihood of developing PND among postpartum women was high. The findings further showed that the likelihood of developing PND was associated with several factors such as baby age, household income, partner/husband support, partner/husband having another sexual partner, social support, having a person who offers social support, partner/husband violence, and stressful life events [9, 16, 17, 21, 24].

The likelihood of PND (22%) among the postpartum women recorded in this study was higher than the estimates reported in some urban settings [16], yet lower than other urban settings [21] and peri-urban settlements [10, 11] in South Africa. However, similar estimates of developing PND have been reported in SSA, such as in Ethiopia and Zimbabwe [35, 36] and other LMICs, such as India and China [37 - 39]. The prevalence of PND has been reported to be higher in other studies in Africa, mainly Nigeria [15, 40, 41] and lower in Ghana, Malawi, Tanzania and Zambia [42 - 45], as compared to the findings of the current study. In high income and western countries, previous research on PND has recorded a prevalence of between 10% and 20% [46, 47]. Literature documents that the differences in the prevalence among studies might be because of the effect of social, cultural, lifestyle and racial factors on depression [48]. Furthermore, the effect of sample size, study design and diverse regions on the variation in the prevalence of PND has been implicated [12, 49].

In the current study, the likelihood of PND was significantly associated with baby age, low household income, and lack of partner/husband support, lack of social support, partner/husband violence and stressful life events. The odds of developing PND were 3.17 times more likely in women with babies aged six weeks and above. Researchers have reported that developing PND is directly proportional to the time after delivery. Furthermore, the likelihood of PND in the first two to 12 weeks after delivery increases due to hormonal fluctuation and the new environment of maternity [50, 51].

Women living in households with an income of less than $115.55 were more likely to develop PND in this study. Socio-economic factors are also of great importance in establishing the risk of developing PND. Having a low income can put immense pressure on an individual and increase stress levels during pregnancy [52]. However, evidence on the relationship between socio-economic status and mental health is conflicting in developing countries, especially with regards to employment and income [53]. Living in a lower economic environment has been reported to increase the risk of PND [12]. Previous studies have similarly demonstrated associations between common mental disorders and low income [54, 55]. Literature documents that women with a low socio-economic status could become underprivileged due to scarcity of financial resources and insufficient health insurance, which leads to stress in LMICs [56, 57].

In the current study, stressful life events increased the odds of developing PND. Previous studies have reported that the more stressful life events that occur in the perinatal period, the more likely mothers are to develop PND [58, 59]. Literature documents that during the postpartum period, there is a fall in cortisol and corticotrophin-releasing hormones in the days and weeks after birth and the decrease may be linked to the onset of PND [60]. Studies have also shown that the relationship between changes in the hypothalamic-pituitary-adrenal axis and PND is due to lower cortisol levels that are evident in women with PND up to one year postpartum [61 - 63].

Experiencing partner/husband violence doubled the odds of developing PND. It has previously been reported that exposure to different forms of partner violence/abuse increases the odds of developing PND among postpartum women in several countries, including LMICs [56, 64]. Domestic violence before and/or during pregnancy has been reported as a risk factor for PND in South Africa [65], Nigeria [66], and Ethiopia [35], as well as in developed countries such as Canada [67] and Chile [68]. The possible mechanism behind partner violence promoting the development of PND has been explained through the link between traumatic and psychological distress. The enduring stress, low self-esteem, isolation, hopelessness and physical pain that usually accompany partner violence can lead to mental health problems, PND in particular [56, 69 - 71].

Psychological factors are also of great importance in the risk of developing PND. An individual's social context can be protective (*i.e.*, social support), as is observed in this study, with partner/husband support and social support being associated with a decreased likelihood of developing PND. Having support from spouses and other family members was protective against the likelihood of developing PND in the current study, which means that lack of support could pre-dispose women to PND. Several studies in South Africa [18, 29] and other LMICs including other African countries [12, 14, 72, 73] have confirmed that women who lack support from their partners and close family members at delivery or during care of the newborn had higher odds of developing PND because they were less satisfied and more stressed [74].

6. LIMITATIONS

This study was undertaken at a single point in time and thus provides a snapshot screening, which can only estimate emotional status and the likelihood of developing PND. Although sampling in this study required a deliberate choice of

women in the postpartum period, we acknowledge the use of non-probability sampling (*i.e.*, purposive), which has a tendency of introducing bias and impedes the ability to draw inferences about a population [75]. In addition, the effectiveness and approach of snapshot screening for PND in detecting maternal mental health problems have been raised as a concern. The study is applicable only to peri-urban settings and cannot be extrapolated to populations with different settings and characteristics. Nonetheless, this study used a validated EDPS tool to estimate the probability of PND among postpartum women who attended the three randomly selected community health centres in the Thembisile Hani local municipality in the Nkangala District of the Mpumalanga Province, South Africa, at one point in time.

CONCLUSION

The probability of PND was high among the postpartum women attending community health centres in the Nkangala District. The key determinants for the probability of PND among women were the age of a baby, household monthly income, partner/husband violence, partner/husband support and receiving social support. This study supports the need to improve maternal and child health and to integrate routine screening into the postnatal care setting to identify women who are at risk of developing PND and for immediate interventions to save the mother and her baby from different forms of morbidity. However, concerns such as medicalisation of childbirth and motherhood and stigma being attached to screening for PND exist and should be considered in future studies.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

All procedures involving human subjects were approved by the Sefako Makgatho Health Sciences University Research and Ethics Committee, South Africa [SMUREC/H/101/2016: IR]. Permission to conduct the study was obtained from the Department of Health, Mpumalanga Province in South Africa.

HUMAN AND ANIMAL RIGHTS

Not applicable.

CONSENT FOR PUBLICATION

Written informed consent was obtained from each participant prior to the study.

AVAILABILITY OF DATA AND MATERIALS

The dataset analysed during the current study is avai-lable from the corresponding author [P.M] and can be made available upon a reasonable request.

FUNDING

The South African Medical Research (SAMRC), through the Research Capacity Development programme, supported the research reported in this publication.

CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

ACKNOWLEDGEMENTS

The authors would like to thank the Department of Health, Mpumalanga Province (South Africa) for permission to conduct the study in community health centres. We also appreciate the participants from these selected community health centres. We acknowledge the research assistants for collecting data.

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