ORIGINAL PAPER

HIV/AIDS and Postnatal Depression at the University Teaching Hospital, Lusaka, Zambia

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ABSTRACT

Objective: To study the contribution of HIV/AIDS to the problem of postnatal depression among women receiving postnatal care at University Teaching Hospital (UTH), Lusaka, Zambia.

Background: Postnatal depression (PND), a major depressive episode during the puerperium, affects between 10% and 22% of adult women before the infant's first birthday. HIV seropositivity has been associated with increased risk of mental disease, but its influence on postnatal depression has not been fully explored.

Methods: This was a cross-sectional study, involving 229 mothers receiving postnatal care at UTH. The presence of postnatal depression and mean scores on the Edinburgh Postnatal Depression Scale (EPDS) were assessed, along with the patients' HIV status and other demographic and clinical characteristics.

Results: 146 of 229 patients (64%) had depressive symptoms as measured by an EPDS score ≥ 8. Sixty-four women (28%) had severe PND, defined as an EPDS score ≥13. There were 46 HIV positive women (20.1%). HIV status was not associated with PND (adjusted OR 1.22, 95% CI 0.50-2.96) or severe PND (adjusted OR 1.77, 95% CI 0.68-4.61). Mixed mode of infant feeding and parity of 4-5 were independently associated with PND.

Conclusions: Depression is a real health problem among mothers attending postnatal care at UTH. HIV status was not independently associated with increased risk of postnatal depression.

INTRODUCTION

The burden of mental health contributed 13 percent of the global burden of disease in 2001, and it is estimated to rise to almost 15 percent by 2020, as reported in the 2002 World Health Report[1]. Women are 1.9 times more likely to suffer depression than men[2]. Postnatal or postpartum depression (PND) is the onset of depressive symptoms in women within 4 weeks of childbirth. Symptoms of PND can be the same as those found in major depression and can also include fluctuations in mood or pre-occupation or neglect of the baby. The prevalence of PND varies widely between and within regions, ranging from 5% to 60%.[3] In Zimbabwe and South Africa, prevalence of PND has been measured at 33% and 42% respectively.[4,5] Although postnatal depression is amenable to treatment, evidence shows that more than 50 percent of all cases go undetected in primary care settings.[6] Studies have suggested that mothers at risk of postnatal depression may be identified early in the postpartum period, so that secondary preventive interventions can be implemented.[7]

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Despite efforts made in the areas of HIV-related obstetrics care, through programmes such as exclusive breastfeeding and prevention of mother to child transmission of HIV (PMTCT), little attention has been given to the possible effects of HIV/AIDS on the mental health of mothers.

Studies of HIV positive mothers have shown an increased prevalence of PND, but these studies did not systematically compare HIV positive and negative mothers.[4,8] Hence, it is unclear if HIV confers an increased risk for PND. The main objective of this study was to evaluate the relationship between HIV/AIDS and postnatal depression among women receiving postnatal care at the University Teaching Hospital (UTH) in Lusaka. Secondary objectives included determining the prevalence of reported symptoms of postnatal depression and establishing the socio-demographic factors related to postnatal depression in Lusaka.

METHODS

Study design and Data Handling

This was a cross-sectional study of women receiving postnatal care at UTH in the first six months of 2008. Women 16 years of age or older were eligible to take part in the study if they were 2 weeks to 6 weeks postpartum, had undergone voluntary counseling test and had a documented HIV test result available. Postnatal mothers living outside of Lusaka district, those with previous history of depression or psychosis, and those who had a stillbirth this pregnancy were not eligible to take part in the study.

We used systematic sampling of every 6th postnatal woman presenting to the hospital with known HIV status. Written informed consent was obtained from the women before the administration of a standardized questionnaire and the Edinburgh Postnatal Depression Scale by a trained research assistant. The questionnaire included demographic data as well as information about the delivery and hospital stay. The Edinburgh Postnatal Depression Scale (EPDS) is an internationally validated questionnaire that is widely used to screen for postpartum depression. EPDS scores were grouped into three categories of depression. A score of 13 or more would constitute severe depression; a score of 10 to 12 moderate depression; and a score of 8 to 9 mild depression. Patients with scores of 7 and below were considered not to be depressed. The primary outcome was any depression (EPDS score ? 8). The secondary outcome was severe depression (EPDS core ¡13).

The calculation of the sample size used Statcalc in Epi info. The HIV prevalence was estimated at 25%, consistent with known UTH numbers. The expected frequency of postnatal depression was estimated at 15 percent in the HIV negative group and 40 percent among HIV positive mothers. We used a confidence level ($1 - \alpha$) of 95%, a power ($1-\beta$) of 90%, and corrected for a 20% non-response rate, giving a total sample of 211 subjects to be included in the study. Because the HIV prevalence was somewhat lower than expected, we increased the target sample size to 231 midway through data collection.

Data were entered using Epi-Info version 6.0 (CDC, Atlanta, GA, USA) and analyzed with SPSS version 10 (IBM, Chicago, IL, USA). Distributions of data describing the study participants and their HIV status were examined and tabulated. Frequency tables were generated to obtain percentages and measures of central tendency for continuous variables. Odds ratios were used to assess for potential associations between clinical exposure variables and the specified outcomes. Multivariable logistic regression analysis was conducted to determine adjusted odds ratios. The multivariable models included all 9 exposure variables and categorized continuous variables based on pre-specified cut points.

The study was approved by the Biomedical Research Ethics Committee of the University of Zambia. Permission was sought from the Managing Director of the University Teaching Hospital after endorsement by the Head of Department of Obstetrics and Gynecology.

RESULTS

231 postnatal women consented to complete the questionnaire and the Edinburgh Postnatal Depression Scale instrument, but 2 of those were excluded due to age less than 16. Demographic and medical characteristics of all 229 women are presented in Table 1.

Table 1. Demographic and clinical characteristics of mothers and unadjusted odds of depression and severe depression.

Risk Factors	Total	Any Depression		Severe Depression	
		Positive (%)	OR (95% CI)	Positive (%)	OR (95% CI)
All women	229	146 (64)	--	64 (28)	--
Age					
16-19	23	14(61)	1	2(8.7)	1
20-24	64	38(59)	0.94 (0.35-2.49)	17(27)	3.80 (0.80-17.9)
25-29	63	43(68)	1.38 (0.51-3.72)	17(27)	3.88 (0.82-18.3)
30-34	50	31(62)	1.05 (0.38-2.89)	18(36)	5.91 (1.24-28.1)†
35+	29	20(69)	1.43 (0.45-4.51)	10(35)	5.52 (1.07-28.5)†
Residential density					
High	146	99 (68)	1	49 (34)	1
Medium	58	34 (59)	0.67 (0.36-1.26)	3 (12)	0.52 (0.25-1.06)
Low	25	13 (52)	0.51 (0.22-1.21)	12 (21)	0.27 (0.08-0.95)†
Education					
None/Primary	76	46 (61)	1	16 (21)	1
Secondary	88	61 (69)	1.47 (0.77-2.81)	31 (35)	2.04 (1.01-4.12)†
Tertiary	65	39 (60)	0.99 (0.50-1.92)	17 (26)	1.32 (0.61-2.90)
HIV					
Negative	183	114 (62)	1	47 (26)	1
Positive	46	32 (70)	1.38 (0.69-2.77)	17 (37)	1.70 (0.86-3.36)
Parity					
1	91	53 (58)	1	15 (17)	1
2-3	88	56 (64)	1.25 (0.69-2.29)	29 (33)	2.49 (1.22-5.07)†
4-5	32	26 (81)	3.11 (1.17-8.28)†	16 (50)	5.07 (2.09-12.3)†
6+	18	11 (61)	1.13 (0.40-3.17)	4 (22)	1.45 (0.42-5.01)
Gestational age					
37+	139	83 (60)	1	35 (25)	1
34-36	49	32 (65)	1.27 (0.64-2.50)	14 (29)	1.19 (0.57-2.46)
29-33	18	13 (72)	1.75 (0.59-5.19)	6 (33)	1.48 (0.52-4.25)
24-28	23	18 (78)	2.43 (0.85-6.92)	9 (39)	1.91 (0.76-4.80)
Days in hospital after delivery					
0-3	113	66 (58)	1	29 (26)	1
4-7	85	57 (67)	1.45 (0.81-2.61)	21 (25)	0.95 (0.50-1.82)
8-14	21	15 (71)	1.78 (0.64-4.93)	11 (52)	3.2 (1.23-8.28)†
15+	10	8 (80)	2.85 (0.58-14.0)	3 (30)	1.24 (0.30-5.12)
Type of infant feeding					
Breastfeeding	197	118 (60)	1	48 (24)	1
Mixed	21	19 (90)	6.36 (1.64-41.2)†	11(52)	3.42 (1.37-8.53)†
Formula	9	7 (64)	2.34 0.48-11.6)	3 (33)	1.55 (0.37-6.44)

"Any depression" is defined as EPDS ≥8.
"Severe depression" is defined as EPDS ≥13.
OR=Odds Ratio, CI=Confidence interval
†Statistically significant

There were 46 HIV positive women (20.1%) and 183 HIV-negative (79.9%). There were no statistical differences in baseline characteristics between HIV-positive and -negative mothers, except for mode of feeding. Due to prevention of mother to child transmission counseling, HIV-positive women were less likely to breast feed than the HIV-negative mothers (67% vs. 92%, p<0.001).

Prevalence of Depression and Severe Depression

146 of 229 patients (64%) had depressive symptoms as measured by an EPDS score ≥8. Sixty-four women (28%) had severe PND, defined as an EPDS score ≥13. Potential risk factors for any depression and severe depression are shown in Table 1. In univariable analysis, parity of 4-5 and mixed mode of feeding were associated with depression. Age 30-34 and ≥35, maximum level of education of secondary school, parity of 2-3 or 4-5, post-delivery hospital stay of 8-14 days, and mixed mode of feeding were all associated with severe PND.

After adjusting for all 9 exposure variables, parity of 4-5 and mixed mode of feeding remained associated with the presence of PND. In multivariable analysis for severe PND, only secondary education and parity of 2-3 and 4-5 were associated with increased prevalence of severe PND. Low residential density was associated with lower prevalence of severe PND in both univariable and multivariable analyses. Table 2 shows only the statistically significant adjusted odds ratios from the multivariable logistic regression model, plus the non-significant HIV adjusted odds ratios.

HIV and PND

HIV was not associated with PND in univariate (OR 1.38, 95%CI 0.69-2.77) or multivariate (OR 1.22, 95%CI 0.50-2.96) analysis. There was a trend towards increased prevalence of severe depression in HIV positive patients (adjusted OR 1.77, 95%CI 0.68-4.61), but this was not a statistically significant association.

Table 2. Risk factors for depression and severe depression, adjusted odds ratios

Risk Factors	Any Depression OR (95% CI)	Severe Depression OR (95% CI)
Residential density		
High		1
Low		0.36 (0.15-0.85)
Education		
None/Primary		1
Secondary		3.85 (1.58-9.33)
Tertiary		
Parity		
1	1	1
2-3		2.58 (1.004-6.66)
4-5	3.68 (1.03-13.1)	7.95 (2.05-30.8)
Type of infant feeding		
Breastfeeding	1	
Mixed	5.81 (1.23-27.3)	
HIV		
Negative	1	1
Positive	1.22 (0.50-2.96)	1.77 (0.68-4.61)

DISCUSSION

We conducted a study of postnatal depression among women delivering at University Teaching Hospital (UTH) in Lusaka. We found a very high prevalence of PND and severe PND in our population. Based on EPDS scores, 64% of mothers had depression, and 28% had severe PND. HIV was not associated with postnatal depression, although there was a non-significant increase in severe PND among HIV positive women. In multivariable analysis, mixed feeding and parity of 4-5 were associated with the presence of PND. Parity of 2-5 and secondary school education were associated with severe PND, and living in a low density neighborhood was associated with a decreased prevalence of severe PND.

The high prevalence of PND in our study was comparable to other countries in our region. A study from Western Cape, South Africa found a 42% prevalence of PND using an EPDS cut-off of ≥12 in women who were 10-12 months postpartum.[5]

Chibanda et al. validated the EPDS against psychiatric evaluation in an urban Zimbabwean cohort of mothers 6 weeks post-delivery.[4] Psychiatrists confirmed PND in 33% percent of all mothers and 55% of those with HIV. However, the investigators did not evaluate for an association between HIV and PND. Our study found that in Lusaka, PND prevalence was high in both HIV positive and negative mothers, and HIV was not independently associated with PND.

Studies in Denmark and Turkey previously found an association between higher parities and PND.[9,10] Our study confirmed these findings, with a peak in PND and severe PND prevalence at parity 4-5. Type of baby feeding was strongly associated with PND in our study, a finding not described in previous studies.[11] While there was little difference between breastfeeding and formula feeding mothers, we discovered that mothers using mixed feeding had significantly higher prevalence of PND. This could be due to the fact that mothers who do not produce enough milk to exclusively breast feed might be predisposed to depression. Conversely, depression may cause hormonal changes that reduce the production of breast milk.

We found that mothers living in low-density areas were less likely to have severe depression. In Lusaka, residential density is inversely proportional to income, so this may suggest an increase in severe PND among the poor. We did not measure other societal, cultural, socio-economic, family, medical, and institutional factors (like staff attitudes and facility infrastructure) that may have contributed to the state of postnatal depression in our patients.

Our study had several other limitations. By recruiting our patients from an urban tertiary hospital population the study may not be valid for mothers who deliver in primary care or rural settings. Also, women with stillbirths and early neonatal deaths were not included in this study. They would presumably have had higher risk for PND than women with healthy babies. The literature demonstrates a wide variation in what is considered a clinically significant EPDS score. Due to financial limitations, our study did not include formal psychiatric evaluation to confirm PND.

In conclusion, postnatal depression is a common problem in postnatal mothers at UTH. Higher parity and the use of mixed feeding are associated with increased prevalence of depression, but HIV infection does not appear to be a risk factor for PND. It is imperative for health practitioners in Zambia to consider and screen for postnatal depression, so as to counsel and refer for further care as necessary. One practical means would be to screen all new mothers with the EPDS tool at first postnatal visit. Those with EPDS scores greater than 12 could then be referred for psychiatric assessment. Expanded mental health worker training, including the new Masters of Medicine in psychiatry, is needed to provide sufficient numbers of mental health providers. The Ministry of Health must promote increased awareness of postnatal depression to the public and develop a policy which will help to address the problem in Zambia.

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