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Depression, retention in care and uptake of PMTCT service in Kinshasa, The Democratic Republic of Congo: a prospective cohort

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Abstract

There is a clear need for effective strategies to address the factors that affect retention, or Lost-to-follow-up (LTFU) and adherence to HIV care and treatment. Depression in particular may play an important role in the high rates of LTFU along the prevention of mother-to-child HIV transmission (PMTCT) cascade in sub-Saharan Africa. This study assessed the association between prenatal depression and 1) LTFU or 2) Uptake of PMTCT services. As part of a randomized control trial to evaluate the effect of conditional cash transfers on retention in and uptake of PMTCT services, newly-diagnosed HIV-infected women, 32 weeks pregnant, registering for antenatal care (ANC), in 85 clinics in Kinshasa, Democratic Republic of Congo (DRC), were recruited and followed-up until LTFU, death, transfer out, or six-weeks postpartum. Participants were interviewed at enrollment using a questionnaire which included the Patient Health Questionnaire (PHQ-9). Depression was defined as a PHQ-9 score of ≥ 15 . Among 433 women enrolled, 51 (11.8%) had a PHQ-9 score ≥ 15 including 15 (3.5%) with a score ≥ 20 . At six weeks postpartum, 67 (15.5%) were LTFU and 331 (76.4%) were in care and had accepted all available PMTCT services. Of participants with depression at enrollment, 17.7% (9/51) were LTFU at six weeks postpartum compared to 15.2% (58/382) among those without, but the association was not statistically significant. On the other hand, 78.4% (40/51) of participants with prenatal depression were in care at six weeks postpartum and had attended all their scheduled visits and accepted available services compared to 76.2% (291/382) among those without depression. In this cohort of newly-diagnosed HIV-infected pregnant women, prenatal depression assessed with a PHQ-9 score ≥ 15 was not a strong predictor of LTFU among newly-diagnosed HIV-infected women in Kinshasa, DRC.

Keywords

Depression; PHQ-9; PMTCT; retention; Lost-to-follow-up; Kinshasa

CONTRIBUTORS

KY and MY designed the analysis. KY, KF, and MY analyzed the data. KY and MY wrote the first draft of the report. All authors contributed to the final report.

CONFLICTS OF INTEREST

The authors declare no conflict of interest

Introduction

In many African settings, poor adherence and high rates of lost-to-follow-up (LTFU) hamper the effectiveness of programs for the prevention of mother-to-child HIV transmission (PMTCT) and HIV care among pregnant and breastfeeding women. Mental health has been hypothesized as one of the main contributors to high rates of LTFU and poor adherence to antiretroviral drugs (Stringer et al., 2014). Depression, emotional stress, stigma, physical distance from pharmacies, and economic hardship have been identified as barriers to adherence in the perinatal period (Nachega et al., 2012; Ngarina et al., 2013). To the best of our knowledge, there has been no study examining the effects of depression on retention in care among HIV-infected pregnant or breastfeeding women enrolled in PMTCT programs. Yet, perinatal depression occurring either during pregnancy or within the first six months postpartum, is one of the most common pregnancy-related complications, with prevalence of 10%–15% in high income countries (Gavin et al., 2005; Gaynes et al., 2005) and 11%–18% in Africa (Sawyer et al. 2010). The aim of this study was to assess the effect of prenatal depression on 1) LTFU and 2) uptake of PMTCT services among newly diagnosed HIV-infected pregnant women in Kinshasa, Democratic Republic of Congo (DRC).

Methods

This study is a prospective analysis of data from a cohort of newly-diagnosed HIV-infected women, 32 weeks pregnant, registering for antenatal care (ANC), who were enrolled between April 2013 and August 2014 in Kinshasa to participate in a randomized controlled trial to evaluate the effect of providing small and increasing cash incentive on retention in care and uptake of PMTCT services (Trial registration: NCT01838005). All participants were followed-up until LTFU, death, transferred out, or six-week postpartum, whichever occurred first. Participants were considered to be LTFU if they did not attend their six-week postpartum visit and could not be reached either by phone or home visit. Further details of the original study have been reported elsewhere (Yotebieng et al., 2016a). As part of routine PMTCT services, psychological support was provided to all participants in their respective clinic through a psycho-educational group which was led by HIV-infected volunteer mothers who have been through the PMTCT program and had been trained on basic counseling techniques.

Prenatal depression was assessed using the Patient Health Questionnaire (PHQ-9): a brief (nine questions), multipurpose instrument for screening, diagnosing, monitoring, and measuring the severity of depression (Kroenke et al., 2001). The PHQ-9 was administered in Lingala or French via face-to-face interviews at enrollment by a trained study nurse who was not part of the care providing team. The PHQ was first translated from English to French, then from French to Lingala, back-translated from Lingala to French and field tested to ensure the fidelity of the translation (Flaherty et al., 1988). The score was used to classify participants in two groups (moderate or severe depression with scores over 15, or scores lower than 15).

Two primary outcomes were considered: 1) Lost-to-follow-up (LTFU) and 2) uptake of PMTCT services through six weeks postpartum. Participants were considered to uptake

PMTCT services if they met all the following conditions: attended all their scheduled clinic visits (within five days of the scheduled date) from randomization through six weeks postpartum, including giving birth in a study clinic, and accepted all proposed clinical services including provision of blood samples for CD4 count and dried blood spot sample for DNA PCR testing at six weeks.

Logistic regression models were used to estimate crude and adjusted Odd ratio (OR) and 95% confidence intervals (CI) measuring the strength of association between high PHQ-9 score and LTFU or uptake of PMTCT services. All analyses were adjusted for participant's age in years, marital status, years of education, gestational age at enrollment, primigravida, disclosure of HIV status, means of arrival at clinic (by foot or other), and a socioeconomic status (SES) index determined using principal components analysis and grouped by quintile. Details of the factor analysis are reported elsewhere (Yotebieng et al., 2016b).

All analyses were completed using SAS 9.3 (SAS Institute, Cary, NC). All tests were two-sided and used a 0.05 significance level. The study was approved by the Institutional Review Board of the Ohio State University and the Ethical Committee of the Kinshasa School of Public Health. All participants provided signed informed consent.

Results

Overall, all 433 HIV-infected pregnant women enrolled and interviewed for the original trial were included in this analysis. At enrollment, 51 (11.8%) participants had a PHQ-9 score ≥ 15 indicating moderate to severe depression. Of participants with high baseline PHQ-9 scores, 17.7% (9/51) were LTFU at six weeks postpartum compared to 15.2% (58/382) among those who scored lower than 15, but the association was not statistically significant: OR 1.20 (95%CI 0.65–2.32) (Table 1). The association between high PHQ-9 scores and LTFU did not change substantially after adjusting baseline covariates: adjusted OR 1.26, 95%CI 0.57–2.77 (Table 2).

Similar results, in the opposite direction were observed for uptake of PMTCT services. Of participants with high PHQ-9 scores at baseline, 78.4% (40/51) were in care at six weeks postpartum, had attended all their scheduled visits, and accepted available services compared to 76.2% (291/382) among those with PHQ-9 scores < 15 : OR 1.14 (95%CI 0.56–2.31). The observed OR also did not change after adjustment for baseline covariates, 1.09 95%CI 0.53–2.25 (Table 2).

Discussion

At enrollment, 11.8% of our cohort reported symptoms of moderate to severe depression as indicated by a PHQ-9 score ≥ 15 . While there was a slight tendency towards increased odds of LTFU among women with high PHQ-9 scores, the results were not statistically significant. Though the PHQ-9 was not used as a diagnostic tool, women in this study systematically had access to psycho-social support groups as part of the routine PMTCT package as described above and antidepressants were widely available and accessible in HIV care clinics where participants were referred. Although we did not collect information on utilization of these services, their availability and utilization by participants in this study

might have played a role in the observed lack of association between depression and LTFU or uptake of PMTCT services (Pence et al., 2014).

To the best of our knowledge, this is the first study to evaluate the association between prenatal depression and LTFU across the PMTCT cascade. In a cohort of 610 HIV-infected adults in rural Rwanda (Krumme et al., 2014), the authors reported that depression, assessed with the Hopkins Symptom Checklist-15, was associated with a higher hazard of attrition (hazard ratio 2.40, 95% CI 1.27–4.52) at three months after initiation of antiretroviral therapy. But attrition was defined broadly to include death, treatment default, or LTFU.

Although the use of PHQ-9 has been shown to have good sensitivity and specificity for identifying pregnant women who met criteria for current depression (Sidebottom et al., 2012), its use has not been validated in the DRC. Despite efforts to pretest the PHQ-9, it is possible the questions, even in their most faithful translation, did not result in criterion equivalence (Flaherty et al., 1988). Furthermore, the administration of the questionnaire by an interviewer might have resulted in respondent bias, or in some misreporting of symptoms that biased the result towards the null. Although we argue that this would have likely been non differential in regard with the two outcomes considered in this study. Another limitation of the study is the relatively small sample size. Only 15 participants had a PHQ-9 score ≥ 20 and thus, we could not examine whether reporting more severe symptoms strongly correlates with LTFU or uptake of services.

Despite those limitations, the study had significant strengths: it is a prospective study with depression measured well before the occurrence of outcomes. All participants were followed-up over the same duration, limiting the potential of selection bias that might be present in retrospective studies of patients who have already been in care. In conclusion, our study indicates that prenatal depression assessed with a PHQ-9 score ≥ 15 is not a strong predictor of LTFU among newly-diagnosed HIV-infected women in Kinshasa, The Democratic Republic of Congo.

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Table 1

Association between baseline characteristics, LTFU, and uptake of PMTCT services and prenatal depression among 433 newly-diagnosed HIV-infected pregnant women enrolled between April 2013 and August 2014 and followed up through six weeks postpartum in Kinshasa, The Democratic Republic of Congo.

	Prenatal Depression[¶]		
	Yes	No	OR (95% CI)
Age in years: Median (IQR)	30 (26, 34)	29 (25, 34)	1.01 (0.96, 1.06)
Gestational age in weeks: Median (IQR)	24 (22, 28)	26 (22, 29)	0.96 (0.90, 1.02)
Time in minutes to the clinic: Median (IQR)	25 (15, 40)	20 (10, 30)	1.00 (1.00, 1.01)
Maternal education in years: Median (IQR)	10 (8, 12)	10 (8, 12)	0.98 (0.89, 1.07)
Marital status[*]			
Married/cohabiting	42 (11.73)	316 (88.27)	1
Divorced/separated/widow/never married	9 (12.16)	65 (87.84)	1.04 (0.48, 2.25)
Primiparus			
Yes	8 (14.29)	48 (85.71)	1.30 (0.57, 2.92)
No	43 (11.41)	334 (88.59)	1
Early ANC visit			
< 20 weeks	10 (12.20)	72 (87.80)	0.88 (0.45, 1.74)
≥ 20 weeks	41 (11.68)	310 (88.32)	1
HIV disclosure to anyone			
Yes	11 (10.89)	90 (89.11)	0.89 (0.44, 1.81)
No	40 (12.05)	292 (87.95)	1
Wealth quintile (SES)			
Fourth and fifth	15 (8.67)	158 (91.33)	1
Third	14 (16.28)	72 (83.72)	2.05 (0.94, 4.47)
First and Second	22 (12.64)	152 (87.36)	1.53 (0.76, 3.05)
Mean of transport to clinic			
Walk	31 (12.65)	214 (87.35)	1.22 (0.67, 2.21)
Other	20 (10.64)	168 (89.36)	1
LTFU			
Yes	9 (13.43)	58 (86.57)	1.20 (0.55, 2.59)
No	42 (11.48)	324 (88.52)	1
Uptake of PMTCT service			
Yes	40 (12.08)	291 (87.92)	1.14 (0.56, 2.31)
No	11 (10.78)	91 (89.22)	1

* Missing 1 observation.

[¶] Defined as Patient Health Questionnaire score ≥ 15. Participants who were not in care at six weeks postpartum and whose whereabouts were unknown were classified as LTFU. Participants were considered to uptake PMTCT services if they met all the following conditions: attended all their scheduled clinic visits (within five days of the scheduled date) from randomization through six weeks postpartum, including giving birth in a study clinic, and accepted all proposed services including provision of blood samples for CD4 count and dried blood spot sample. Abbreviation: IQR=Interquartile range; LTFU = Loss to follow up; ANC=Antenatal care; SES=Socio-economic status; OR = Odd ratio; 95%CI = 95% confidence interval.

Table 2

Association between prenatal depression and LTFU or uptake of PMTCT services adjusted for baseline characteristics among 433 newly-diagnosed HIV-infected pregnant women enrolled between April 2013 and August 2014 and followed up through six weeks postpartum in Kinshasa, The Democratic Republic of Congo.

	Loss-to-follow-up	Uptake of PMTCT services
	Adjusted OR* (95% CI)	Adjusted OR* (95% CI)
Age in years	0.99 (0.94, 1.04)	0.99 (0.95, 1.03)
Gestational age in weeks	1.06 (0.97, 1.16)	0.98 (0.90, 1.05)
Time to the clinic (30 minutes increment)	1.05 (0.86, 1.27)	0.99 (0.82, 1.20)
maternal education in years	1.01 (0.91, 1.11)	1.02 (0.94, 1.11)
Marital status*		
Married/cohabiting	1	1
Divorced/separated/widow/never married	1.33 (0.66, 2.69)	0.73 (0.40, 1.34)
Primiparus		
Yes	0.78 (0.32, 1.88)	1.28 (0.60, 2.77)
No	1	1
Early ANC visit		
< 20 weeks	1	1
20 weeks	1.37 (0.46, 4.08)	0.96 (0.39, 2.41)
HIV disclosure to anyone		
Yes	1.26 (0.68, 2.33)	0.88 (0.52, 1.50)
No	1	1
Wealth quintile (SES)		
Fourth and fifth	1	1
Third	1.15 (0.54, 2.47)	1.02 (0.54, 1.96)
First and Second	1.23 (0.60, 2.53)	1.05 (0.57, 1.93)
Mean of transport to clinic		
Walk	0.64 (0.36, 1.14)	1.48 (0.91, 2.42)
Other	1	1
Prenatal depression[†]		
Yes	1.26 (0.57, 2.77)	1.09 (0.53, 2.25)
No	1	1

* Odds ratio adjusted for all other covariates in table.

[†]Defined as Patient Health Questionnaire score ≥ 15 . Participants who were not in care at six weeks postpartum and whose whereabouts were unknown were classified as Loss to follow up. Participants were considered to uptake PMTCT services if they met all the following conditions: attended all their scheduled clinic visits (within five days of the scheduled date) from randomization through six weeks postpartum, including giving birth in a study clinic, and accepted all proposed services including provision of blood samples for CD4 count and dried blood spot sample. Abbreviations: PMTCT = Prevention of Mother to Child Transmission of HIV; ANC = Antenatal care.