Maternal Mental Health and Mental Health Care Referral Outcomes Among Women Living with and without HIV in Botswana

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Background

- **Chronic health conditions, including HIV, can contribute to poor mental health.**
- The prevalence of symptoms of depression and anxiety among mothers living in high HIV-burden settings, such as Botswana, and the risk factors for poor mental health have not been well studied.
- **Research Question:** What is the prevalence of poor mental health by HIV status, and what are risk factors for anxiety and depression?

Methods

- Using data prospectively collected from the Botswana-based FLOURISH study, we quantified prevalence of poor mental health overall and by HIV status, assessed for risk factors associated with poor mental health, and evaluated outcomes of referrals provided to women who screened positive for depressive symptoms at FLOURISH study enrollment.
- FLOURISH study participants were screened at enrollment utilizing standardized instruments for depression (PHQ-9) and anxiety (GAD-7), with poor mental health defined as a PHQ-9 score ≥ 5, a GAD-7 score ≥ 5, or thoughts of self-harm.
- Prevalence of poor mental health was calculated overall and compared by maternal HIV status using a Fisher's exact test.
- Unadjusted and adjusted logistic regression models were fit to identify significant risk factors associated with poor mental health. If a factor had a p-value of ≤ 0.20 in unadjusted analysis, it was included in the adjusted analysis.
- Participants with a PHQ-9 or GAD-7 score ≥ 5 or thoughts of self-harm were referred to their local government health center for evaluation and support. Participants who screened positive for depression were contacted by the FLOURISH study team to determine the outcome of their referral.

Results

- Of 1147 FLOURISH mothers screened for depression and anxiety, 853 (74.4%) were living with HIV (**Table 1**). Mothers living with HIV were older, with lower educational attainment, and a higher prevalence of severe food insecurity compared with mothers who were HIV sero-negative FLOURISH participants.
- Mothers living with HIV (MLHIV) were significantly more likely to screen positive for poor mental health (i.e. depression) compared to mothers who were HIV sero-negative (12.5% versus 8.5%; p = 0.003) (**Table 2**).
- In unadjusted analyses, living with HIV, monthly income, and report of severe food insecurity were significantly associated with screening positive for poor mental health (**Table 3**). However, after adjusting for HIV status and income as covariates, only the report of severe food insecurity was significantly associated with screening positive for poor mental health.
- Among 115 women who were reached after referral to a government health center upon screening positive for depressive symptoms, only 44 (38.3%) reported receiving support from a counselor or social worker. Another 61 (53.0%) opted not to seek care at their local government health facility (**Figure 1**).

Results (cont.)

Table 1. Caregiver Characteristics by HIV Status

Characteristics	Women living with HIV (n=853)	Women living without HIV (n=294)	p-value
Median age	37.9 (32.5, 43.4)	31.2 (25.1, 36.0)	< 0.0001
Age			< 0.0001
18-25	37 (4.3%)	71 (24.2%)	
26-30	103 (12.2%)	72 (24.5%)	
31-35	165 (19.3%)	68 (23.1%)	
36-40	188 (22.0%)	43 (14.6%)	
> 40	360 (42.2%)	40 (13.6%)	
Education			< 0.0001
None/primary	111 (12.9%)	7 (2.4%)	
Secondary	660 (76.9%)	214 (72.5%)	
Tertiary	87 (10.2%)	74 (25.1%)	
Income (Pula/month)			< 0.0001
None	287 (34.7%)	110 (38.2%)	
1-50	58 (7.0%)	9 (3.1%)	
51-500	456 (55.1%)	139 (48.3%)	
> 500	26 (3.1%)	30 (10.4%)	
Food insecurity[1]			< 0.0001
None	207 (29.2%)	62 (47.8%)	
Moderate	279 (39.3%)	50 (34.5%)	
Severe	223 (31.5%)	33 (22.8%)	
Mental Health			0.003
Screened positive	107 (12.5%)	25 (8.5%)	
Screened negative	746 (87.5%)	269 (91.5%)	
Toilet Facility[2]			< 0.0001
No latrine facilities	4 (0.5%)	0 (N/A)	
Shared latrine	22 (2.7%)	10 (3.8%)	
Private latrine	500 (61.2%)	135 (50.8%)	
Indoor toilet	291 (35.6%)	121 (45.5%)	
Electricity Access			0.02
Yes	679 (82.9%)	232 (86.9%)	
No	140 (17.1%)	35 (13.1%)	

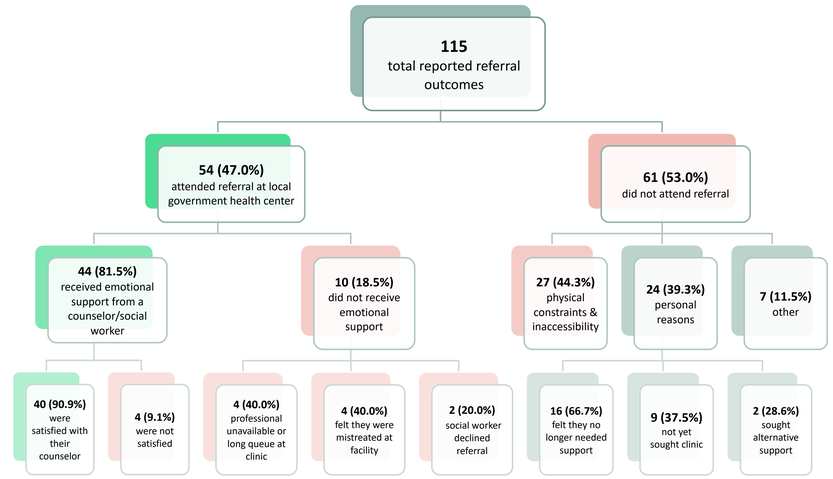
Table 2. Mental Health Screening Results by HIV Status

Mental Health Outcomes	Total (n = 132)	Women living with HIV (n = 107)	Women living without HIV (n = 25)	p-value
Depression				0.04
Mild	42 (35.6%)	34 (34.3%)	8 (42.1%)	
Moderate	8 (6.8%)	8 (8.1%)	0 (N/A)	
Severe	68 (57.6%)	57 (57.6%)	11 (57.9%)	
Anxiety				0.2
Mild	51 (87.9%)	34 (85.0%)	17 (94.4%)	
Moderate	5 (8.6%)	4 (10.0%)	1 (5.6%)	
Severe	2 (3.5%)	2 (5.0%)	0 (N/A)	

Table 3. Logistic Regression Model of Factors Associated with Mental Health

Covariates of Interest (Living with vs. without anxiety and depression)	Unadjusted Models		Adjusted Model	
	Odds ratio (95% CI)	p-value	Odds ratio (95% CI)	p-value
Age				
18-25	Ref	-		
26-30	1.3 (0.6, 3.0)	0.5		
31-35	1.3 (0.6, 2.7)	0.5		
36-40	1.5 (0.7, 3.1)	0.3		
> 40	1.2 (0.6, 2.5)	0.6		
Education				
None/primary	1.4 (0.7, 2.9)	0.3		
Secondary	1.1 (0.6, 1.8)	0.8		
Tertiary	Ref	-		
Income (Pula/month)				
None	2.6 (0.8, 8.6)	0.1	2.1 (0.6, 7.2)	0.2
1-50	3.4 (0.9, 12.9)	0.1	1.9 (0.5, 7.2)	0.3
51-500	2.2 (0.7, 7.4)	0.2	1.7 (0.5, 5.7)	0.4
> 500	Ref	-	-	
Food insecurity				
None	Ref	-	-	-
Moderate	1.4 (0.8, 2.3)	0.2	1.3 (0.8, 2.3)	0.3
Severe	2.6 (1.6, 4.5)	0.0002	2.6 (1.5, 4.5)	0.004
HIV Status				
Living with HIV	1.5 (1.0, 2.4)	0.06	1.1 (0.6, 1.9)	0.9
Living without HIV	Ref	-	-	-
Toilet Facility				
No latrine facilities	7.6 (1.0, 55.0)	0.05		
Shared latrine	0.8 (0.2, 2.7)	0.7		
Private latrine	1.0 (0.7, 1.5)	1.0		
Indoor toilet	Ref	-		
Electricity Access				
Yes	Ref	-		
No	0.8 (0.5, 1.4)	0.5		

Figure 1. Reported Referral Outcomes for Mothers Screening Positive for Depression (PHQ-9)



Conclusions

- In the FLOURISH cohort, mothers living with HIV had a higher prevalence of screening positive for symptoms of depression or anxiety compared to mothers who were HIV sero-negative.
- Low uptake of referral for mental health support was observed in our cohort and likely reflects stigma associated with a mental health disorder diagnosis.
- Findings from the FLOURISH study highlight the need for a national campaign to:
  - Destigmatize mental health illness and care,
  - Scale up of mental health support services, including ensuring that psychiatrists, psychologists, and social workers are accessible in urban, peri-urban, and rural communities in Botswana to provide requisite care to persons experiencing symptoms of depression, anxiety, or other mental health issues, and
  - Enhance social protection programming, including food assistance programs to minimize factors that may potentiate mental health symptoms, with social support screening routinely enacted for women living with HIV, particularly parenting women.
- The Botswana Network for Mental Health (BONMEH) will provide support for FLOURISH when participants referred for signs of poor mental health are not provided with care at a local government health center.

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