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## Psychosocial factors associated with coping among women recently diagnosed HIV-positive during pregnancy

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### Abstract

In order to identify the psychosocial factors related to the use of coping strategies by HIV-positive women diagnosed during pregnancy, four structured interviews were conducted over a period of two years with 224 HIV-positive women at antenatal clinics in Tshwane, South Africa. Two coping styles, active and avoidant coping, were assessed using an adapted version of the Brief COPE. Psychosocial variables associated with changes in coping over time were identified with mixed linear analysis. Increases in active coping were associated with decreasing levels of internalised stigma and depression, increasing self-esteem and positive social support, knowing someone who is living with HIV, being physically healthy and living above the poverty line. Increases in avoidant coping were associated with increasing internalised stigma and depression, lower levels of self-esteem, HIV-knowledge and lower levels of education. Recommendations are made for psychological support services to strengthen women's ability to cope to enhance their health and that of their infants.

### Keywords

coping styles; HIV/AIDS; women; pregnancy; South Africa

### INTRODUCTION

Through prevention of mother-to-child transmission programmes (PMTCT), HIV testing for pregnant women attending antenatal clinics has become a routine procedure in South Africa. [1] As a result, many women discover their HIV-positive status once they are pregnant. Receiving an HIV-positive diagnosis during pregnancy is particularly traumatic, as the diagnosis is further complicated by the mother's fear of infecting her infant, concerns over her own health and whether she will be able to provide for the baby. An HIV diagnosis is generally accompanied by high levels of psychological distress, including depression and

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anxiety. [2,3,4,5,6,7,8] Kwalombota [9] found that Zambian women diagnosed during pregnancy were more likely to experience psychological distress in the form of loss of interest in life, feelings of worthlessness, suicidal ideation and anxiety as well as considering terminating their pregnancy, when compared to pregnant women who had prior knowledge of their HIV-positive status.

Psychological distress has been found to have a negative effect on the health of HIV-positive women, including poor antiretroviral (ARV) adherence, [10] poor attendance at health care [11] and faster disease progression. [12] Additionally, psychological distress during and after pregnancy can have adverse outcomes for the mother and her infant, including behavioural problems [13] and impaired cognitive development of the child, [14] as well as disruption in the relationship between the mother and her child. [15]

For this reason, it is vital that HIV-positive pregnant and postpartum women develop adaptive ways of coping with their diagnosis in order to limit the level of psychological distress that they experience. To this aim, this research investigated the demographic and psychosocial factors associated with different coping strategies used by women recently diagnosed HIV positive during pregnancy.

## COPING WITH HIV

Coping can be defined as constantly changing cognitive and behavioural efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person. [16] Although various categories of coping exist, active and avoidant coping is a common categorization. [17]

Active coping refers to behavioural and cognitive attempts that are aimed at actively engaging with a stressful situation to change it. It includes strategies such as problem-solving, cognitive restructuring and seeking information. Previous research has found that active coping is associated with positive psychosocial and health outcomes in people living with HIV, including less HIV- and AIDS-related symptoms, [18] enhanced quality of life, [19] high positive affect, [20] high self-esteem, [21,22] less symptoms of psychological distress, [23,24] lower frequency of substance use [25] and adherence to antiretroviral treatment (ART). [26]

Avoidant coping refers to behavioural and cognitive attempts to avoid directly addressing a stressful situation, including disengagement, denial and distraction. [16] Avoidant coping has been associated with negative psychosocial and health outcomes, including increase in HIV- and AIDS-related symptoms, [18] decreased physical functioning, [27] poor quality of life, [28] low self-esteem, [21] more symptoms of psychological distress, [24] more frequent substance use [25] and non-adherence to ART. [26]

Despite extensive research on coping with HIV, there is very little research on how pregnant women, specifically those who are diagnosed HIV-positive during pregnancy, cope with their diagnoses. One study focusing on coping of pregnant women in the USA [29] found that active coping was the most frequently used coping strategy, and that disengagement, a form of avoidant coping, was significantly associated with higher psychological distress. It should

be noted that less than half of the women in this study discovered their status during the current pregnancy. Additionally, there are cultural differences between the participants of most publicised HIV coping studies conducted in Western countries, and the participants of the present study.<sup>[30]</sup> The majority of South African women diagnosed HIV-positive are black, from a low socio-economic background and are often in disempowering relationships.<sup>[8,31]</sup> Due to specific cultural interpretations of HIV, such as ‘social death’ or ‘bewitchment’,<sup>[32,33,34]</sup> communities are particularly stigmatising towards people living with HIV in South Africa.<sup>[35]</sup> Moreover, there is a lack of research on the associations between coping and psychosocial variables in South African women diagnosed during pregnancy.

The present study examined the use of active and avoidant coping strategies of HIV-positive women recently diagnosed during pregnancy, in a South African context. The aim was to investigate the use of active and avoidant coping over time and to identify psychosocial factors associated with coping styles. Based on previous research it was hypothesised that increased active coping within the first two years after being diagnosed during pregnancy, would be associated with positive health outcomes such as enhanced disclosure of HIV-positive status, higher self-esteem, more positive social support, lower depression and less internalised stigma. On the other hand, we expected that increased avoidant coping over time would be related to negative health outcomes such as non-disclosure of HIV-status, lower self-esteem, more negative social support, higher depression and higher internalised stigma over time.

## METHODOLOGY

### Sampling

The study was part of a longitudinal research project conducted in two townships in Tshwane, South Africa. HIV counsellors at four antenatal clinics in Tshwane recruited newly diagnosed HIV-positive pregnant women. Exclusion criteria included: being younger than 15 years old, testing HIV-positive prior to the current pregnancy, and intending to move out of the area during the study period of two years. Of the HIV-positive women diagnosed in this time period, 438 women were invited to participate in the study and 293 agreed to take part in the baseline interview (67%).

### Data collection procedure

Data were collected by means of structured interviews at four assessment points: the first interview was held approximately four weeks after diagnosis during pregnancy and the three subsequent interviews were all held postpartum at six-, 12- and 21-months after the baseline interview (three, nine and 18 months after the infant’s birth). These specific follow-up intervals were chosen, because they were the intervals scheduled for routine clinic visits for immunisation of the infants.

## Measurement instruments

**Demographic characteristics**—Demographic data included the participants' age, home language, marital status, education level, employment status, monthly household income and whether her partner supported her financially.

**Health-related questions**—Participants were asked whether they knew others who were HIV-positive, whether they were taking ART and whether they had disclosed their HIV-positive status to at least one other person.

**Coping**—An adapted version of the Brief COPE [36] was used to measure coping strategies used. The Brief COPE was adapted to include 15 coping strategies measured by 25 items focussed specifically on HIV. Participants were asked to indicate how often they used a particular coping strategy, 'most of the time', 'some of the time' and 'almost never'. In an exploratory factor analysis, two factors, namely active and avoidant coping, were identified.[37] Active coping consisted of eight coping strategies, namely acceptance, direct action, positive reframing, religion, emotional support, instrumental support, helping others and information seeking. Avoidant coping consisted of seven coping strategies, namely distraction, escape, denial, emotional venting, out-of-control, self-blame and substance use. A Cronbach reliability coefficient of the Brief COPE for this sample of HIV-positive pregnant women was found to be 0.63, with active coping 0.75 and avoidant coping a lower 0.54.

**HIV-knowledge**—The participants' knowledge regarding HIV and AIDS was measured by a general HIV and AIDS knowledge scale adapted from the World Health Organisation's Research Package. [38] The scale consists of 15 statements on knowledge about the transmission and presentation of HIV. The Cronbach alpha coefficient of the HIV-knowledge scale was 0.64, which is acceptable for a knowledge scale.

**Stigma**—Two parallel scales assessed internalised stigma and attributed stigma, each consisting of 12 items.[39] The internalised stigma scale assesses the extent to which the participant feels or anticipates being stigmatised because of her diagnosis, while the attributed stigma scale assesses the extent to which she views the community as holding stigmatising views towards people who are HIV-positive. Cronbach alpha coefficients of the internalised and attributed stigma scales were found to be respectively 0.70 and 0.77.

**Social support**—An adapted version of the Multidimensional Social Support Inventory (MSSI) [40] was used to assess the participant's perceived level of social support. In a factor analysis two distinct factors were identified, namely positive support and negative support. The Cronbach's alpha coefficient of the positive support was found to be 0.87, and 0.56 for the negative support scale.

**Self-esteem**—The Rosenberg Self-Esteem (RSE) scale [41] was used to measure self-esteem. The 10-item scale consists of statements about the individual's values and feelings towards the self. Small changes in the wording of some items were made to improve cultural appropriateness. A Cronbach's alpha coefficient of 0.75 was recorded.

**Depression**—The Centre for Epidemiologic Studies Depression scale (CES-D)<sup>[42]</sup> was used to measure the presence and extent of depressive symptoms among participants. Participants were required to indicate how often in the past week they had experienced the emotions and/or behaviour described in each statement. Somatic symptoms of depression, similar to those of HIV-infection and pregnancy<sup>[43]</sup> were excluded from the scale used in the analysis. A fifteen item scale was thus used. The CES-D was found to have satisfactory reliability coefficient of 0.88.

**Decision-making power**—To assess women's empowerment in relationships,<sup>[8]</sup> a seven-item scale was used to measure the extent to which participants had power to make important decisions in the household (related to financial matters, health care, use of contraceptives etc.). The decision-making power score was calculated by giving a score of '1' for women who made decisions alone or jointly with other household members and '0' if she did not have input in decisions made. The internal consistency of the scale was found to be 0.62 which is satisfactory.

**Experience of violence**—Information on women's prior experience of violence in the household (emotional, physical and sexual abuse or financial withholding) was obtained using questions from a survey of women's experiences of violence.<sup>[44]</sup>

## Data analysis

A descriptive analysis of the data was used to report participant demographic characteristics and health related variables. Mixed linear analysis (MLA) was used to determine the psychosocial variables (which can change over time) associated with changes in the use of active and avoidant coping over the two-year study period. MLA was chosen, because it is a repeated measures analysis used to analyse longitudinal data sets which keep within-subject dependence of repeated variables into account. It allows for unequal number of repetitions. Consequently, MLA does not require all participants to have attended all interviews. It only requires that each participant attend at least the baseline interview and at least one follow-up interview.<sup>[45]</sup>

In order to identify variables that were associated with changes in active and avoidant coping over time (the dependent variables), variables that had the theoretical potential to be associated with coping were selected as independent variables. These variables were also treated as varying over time. Each variable was entered into a separate repeated measures MLA model. Independent variables entered into the model that had a *p* value of less than 0.25 were then entered into the full model.<sup>[45]</sup> Two separate MLA models were created, one for active coping and one for avoidant coping.

Time of each interview was entered into each model. This continuous variable was calculated by subtracting the date of the follow-up interviews from the date of the baseline interview. In this way, the fact that some women may not have attended their interviews at the same gestational age and at slightly different follow-up times was taken into consideration. In order to create the most parsimonious models for active and avoidant coping, a backward stepwise procedure was performed by removing non-significant independent variables (variables with *p* values greater than 0.05) from the models one at a

time. Once all non-significant variables were removed, the final models for active and avoidant coping were created.

### **Ethical approval**

The study obtained ethical approval from the Faculty of Health Sciences Research Ethics Committee of the University of Pretoria, as well as from the Human Investigation Committee of Yale University School of Medicine.

## **RESULTS**

### **Interview Attendance**

Baseline interviews were conducted with 293 HIV-positive pregnant women. A total of 69 women who participated in the baseline interview failed to participate in any further follow-up interviews and were subsequently excluded from the data analysis. Despite slight demographic differences between the women who attended further interviews and the women who only attended the baseline interview, there were no significant differences found between the women in the two groups' use of coping strategies. A total of 198 women who participated in the baseline interview took part in the six-month follow-up interview, 175 in the 12-months follow-up and 166 in the 21-month follow-up interview. The total sample thus consisted of 224 women (who attended the baseline interview and at least one follow-up interview).

### **Socio-demographic and health related variables**

Table 1 presents the socio-demographic characteristics and health related variables of the women at baseline. The mean age of the women was 26.5 years. Most women had secondary school education (76%) and 29% of women lived below the poverty line of less than R200 (approximately \$25) per month. Only 23% women were employed but 71% reported that their partners provided for them financially. Almost one quarter of the women (24.6%) reported experiences of emotional abuse. In initial analyses, the experience of multiple different types of violence appeared to be related to more to psycho-social variables than the experience of any single category of violence. There were almost 22% women who experienced two or more different types of violence. At baseline, 62% had disclosed their HIV-status to at least one other person, 40% knew someone living with HIV and 10% were using ART.

### **Change in coping strategies over time**

HIV-positive women reported more active coping strategies, than avoidant coping strategies (Table 2). The use of both active and avoidant coping strategies increased over time, although the use of avoidant coping decreased at first. The results of pairwise comparisons (after performing a Bonferroni adjustment for the multiple comparisons) showed that the estimated mean of active coping was significantly lower at baseline than at each of the follow-up interviews ( $p < 0.05$ ). Pairwise comparison on the estimated mean scores for avoidant coping showed that avoidant coping decreased slightly (non-significantly) between baseline and 6 months follow-up and then increased significantly ( $p < 0.05$ ) from 6- to 21-months follow-up (Table 3).

### Variables related to active and avoidant coping

Independent variables entered into the MLA models included demographic and psychosocial variables. All the variables had the potential to change over time and were treated as such in the setting up of the analysis. Variables with a  $p$  value of less than 0.25 (Table 4) were then entered into the full model.

A backward stepwise procedure was followed to identify the final MLA model for active and avoidant coping respectively (Table 5). The variables that were associated with increased active coping over time includes decreased internalised stigma and depression, increased self-esteem and positive support as well as knowing someone who is HIV-positive, living above the poverty line, not taking ART (being healthy) and the time interval from baseline. Variables associated with increased avoidant coping over time includes increased internalised stigma and depression, decreased self-esteem as well as low HIV-knowledge, lower educational level (less than tertiary) and the time interval since baseline.

## DISCUSSION

Women diagnosed with HIV during pregnancy increasingly use active and avoidant coping (after 6 months follow-up) as time progressed. They thus increasingly use a greater variety of coping strategies to deal with difficult situations.<sup>[46]</sup> The results indicate that the increasing use of active or avoidant coping is associated with differing levels of psychosocial outcomes. Changes over time in both active and avoidant coping are associated with internalised stigma, depression and self-esteem, albeit in opposite directions. Additionally, increase in active coping over time is associated with knowing someone with HIV, receiving positive social support, living above the poverty line and being healthier (no need for ART). In contrast, increase in avoidant coping over time is associated with lower educational levels and less HIV-knowledge. The difference between the two coping styles is thus complex and context dependent. These findings suggest an interesting contrast between active and avoidant coping that has not been observed in previous research.

In interpreting the results it should be noted that an increase or decrease in psychosocial variables are related to the increase in coping, however it does not indicate to what extent the variables *cause* the coping responses. As suggested by Lazarus,<sup>[46]</sup> the possibility exists that the dynamic between coping and psychosocial and demographic variables is circular. For example, having low self-esteem may cause a person to use avoidant coping strategies. Yet at the same time, the use of avoidant coping strategies such as self-blame, may contribute to the further decrease in a person's self-esteem, setting off the further use of avoidant coping strategies.

In accordance with previous research,<sup>[21,22,23,25]</sup> the results of the study revealed that newly diagnosed women who are coping more actively over time are more likely to report low depression and high self-esteem, whereas high depression and low self-esteem are more likely to be associated with avoidant coping. There is thus a relationship between coping style and psychological health.



Decreasing internalised stigma was related to increased active coping, whereas increased internalised stigma was related to avoidant coping. Although very little research has focussed on the connection between coping and internalised stigma, it has been suggested that internalised stigma is associated with psychological distress, less social support and not knowing others living with HIV. [39,47,48] Consequently, it can be suggested that newly diagnosed HIV-positive women who struggle less between personal identity and HIV-positive status, [49] are more likely to use predominantly active coping strategies, compared to women who use predominantly more avoidant coping strategies.

Women who reported receiving high levels of positive social support were more likely to use active coping strategies. It must be noted that seeking support is one of the active coping strategies - the relationship is thus expected. This association is confirmed by numerous studies that revealed the important role social support plays in improving the psychological well-being of people living with HIV. [20,50,51]

Knowing someone who is living with HIV was associated with more active coping, possibly because they share similar difficulties and can support each other, which allows them to accept their HIV-positive status. [52] Knowing others living with HIV can therefore facilitate better adjustment.

Living above the poverty line was associated with active coping, whereas having an education level lower than tertiary level was related to avoidant coping. These findings correspond with previous research that has revealed that people living with HIV, who have more resources in the form of income and education, are more able to give positive meaning to their HIV-positive status, use problem-focussed coping strategies and report a higher quality of life. [53,54] In contrast, people with less resources have been found to be more prone to psychological distress and the use of avoidant coping. [32,55] This highlights the value of socio-economic and educational resources in the well-being of newly diagnosed women living with HIV.

Although no research was found which specifically connected coping and HIV-knowledge, previous research suggested that, as HIV-positive women become more informed about HIV, they develop a more positive attitude towards their future, [7] lower levels of internalised stigma [56] and improved health behaviours such as ART adherence. [26] These findings suggest that HIV-positive women with low levels of HIV-knowledge may have certain negative misconceptions about their illness associated with more avoidant coping. The improvement of newly diagnosed HIV-positive women's HIV-knowledge could therefore play a critical role in helping them cope with their status and improve their physical and psychological well-being. Thus efforts to increase their knowledge could play a critical role in helping them cope with their status and improve their physical and psychological well-being.

During the time of the study, people living with HIV had to have a very low CD4 count (200 or less), before being enrolled on the Government's ART programme. [57] It is likely that women who were receiving ART at the time were considerably more ill compared to women who were not on ART and advanced HIV disease progression is associated with



psychological distress.<sup>[18]</sup> The relationship between not receiving ART and active coping is thus explained in that women who did not receive ART at the time were healthier and not needing ART. This confirms that the severity of illness plays a role in coping with HIV.

It is interesting to note that contrary to the expectation, there was no association between coping style and disclosure of HIV-status in this data. This means that there may be many other factors that influence whether women disclose their HIV status or not.<sup>[37]</sup> Attributed stigma was related to avoidant coping in the initial analysis but was not part of the final model. The stigma attributed to the community was thus not associated significantly with women's coping strategies.

## CONCLUSION

In summary, the findings suggest that changes in active and avoidant coping over the first two years subsequent to the HIV-positive diagnosis are related to a number of psychosocial variables. These results confirm the findings of various previous studies despite the different cultural context in which the present study was conducted. The study contributes to greater understanding of the way HIV-positive women, who were diagnosed during pregnancy, and exposed to unique challenges, cope with their diagnosis.

The findings should be of value to mental health professionals in addressing the psychological well-being of newly diagnosed HIV-positive women. The findings suggest that coping strategies can change in relation to other variables and can therefore be influenced.<sup>[16]</sup> Interventions should focus on providing support, increasing women's self esteem and decreasing depression and feelings of being stigmatized. Increasing knowledge and understanding about HIV could decrease more avoidant strategies. Financial and educational empowerment of women can also contribute to improved coping.

Despite numerous methodological strengths of the study, a few shortcomings need to be taken into account. Care should be taken not to assume any direct causality between the psychosocial variables and coping, since the connections cannot be interpreted as causal. At best, one can conclude that these variables share a unique connection with coping, which warrants further investigation. It should be further noted that the avoidant coping and negative social support scales had particularly low reliability coefficients. The possibility therefore exists that there may have been a high degree of random error present, which could negatively affect the reliability and validity of these measures.

To conclude, it is clear that women living with HIV, and particularly women diagnosed during pregnancy, face numerous difficulties and are at an increased risk of experiencing psychological distress symptoms. The findings illustrate that coping with HIV does not occur in a social vacuum, but is embedded in a variety of societal problems and that numerous psychosocial variables can be associated with the use of active and avoidant coping. Ultimately, the findings of the present study underscore the importance of good psychological health for newly diagnosed mothers who are living with HIV.

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**Table 1**

Socio-demographics and health-related characteristics at baseline

Age [mean(sd)]	26.5 (5.1) years
Gestational age [mean (sd)]	27.6 (7.0) weeks
Marital status N (%)	
• Married	43 (19.1)
• Single with partner	152 (67.9)
• No partner	29 (12.9)
Education level N (%)	
• None/primary	21 (9.3)
• Secondary	171 (76.3)
• Some tertiary	32 (14.3)
Household income monthly per-capita [median]	R320
Below poverty line <R200 N (%)	64 (28.6)
Regular income employment N (%)	
• Participant	52 (23.2)
• Partner	151 (67.4)
Partner providing financial support	160 (71.4)
Prior experience of violence N(%)	
• Emotional	55 (24.6)
• Financial withholding/control	36 (16.1)
• Physical	26 (11.6)
• Sexual	12 (5.4)
• >2 types of violence	49 (21.9)
CD4 [mean (sd)]	433 (232.5)
• <200 N(%)	27 (12.2)
Using ART	19 (10.6)
Disclosure N (%)	138(61.6)
• Partner	102(45.5)
• Others	72(32.1)
Know someone with HIV N (%)	89 (39.7)
• Relative	44 (19.6)
• Non-relative	65 (29.0)

Note. N = Number; sd = standard deviation.

**Table 2**

Changes in active and avoidant coping over time

Interview Time	Active coping (range 0–39)		Avoidant coping (range 0–24)	
	Mean	Std. Error	Mean	Std. Error
Baseline	32.492	0.372	14.188	0.181
6-months	33.164	0.388	13.874	0.186
12-months	33.803	0.338	14.056	0.191
21-months	33.565	0.336	14.575	0.172

*Note:* Estimated mean scores based on the MLA model

Table 3

Pairwise comparisons of estimated mean coping scores over time

(I) interview	ACTIVE COPING			AVOIDANT COPING		
	(J) interview time	Mean Difference (I-J)	Std. Error	(J) interview time	Mean Difference (I-J)	Std. Error
Baseline	6-months	-1.305*	.299	6-months	.314	.204
	12-months	-2.064*	.309	12-months	.132	.221
	21-months	-1.930*	.317	21-months	-.387	.198
6-months	baseline	1.305*	.299	baseline	-.314	.204
	12-months	-.760	.320	12-months	-.183	.205
	21-months	-.626	.328	21-months	-.701*	.197
12-months	baseline	2.064*	.309	baseline	-.132	.221
	6-months	.760	.320	6-months	.183	.205
	21-months	.134	.333	21-months	-.519	.221
21-months	baseline	1.930*	.317	baseline	.387	.198
	6-months	.626	.328	6-months	.701*	.197
	12-months	-.134	.333	12-months	.519	.221

Note. Based on estimated marginal means.

\*  $p < 0.05$



**Table 4**

Independent variables related to active and avoidant coping to be entered into MLA models

Active Coping		Avoidant Coping	
Independent variable	<i>p</i> value *	Independent variable	<i>p</i> value *
Violence >2 <sup>a</sup>	0.064	Violence >2 <sup>a</sup>	0.009
Depression	<0.0001	Depression	<0.001
HIV-knowledge	0.001	HIV-knowledge	<0.0001
Self-esteem	<0.0001	Self-esteem	<0.0001
Time to interview	<0.0001	Time to interview	0.001
Internalised stigma	<0.0001	Internalised stigma	<0.001
Disclosure of status	<0.001	Disclosure of status	0.028
Positive support	<0.001	Negative support	0.024
Marital status	0.056	Partner support	0.130
Know someone with HIV	0.001	Attributed stigma	0.054
Below poverty line	0.005	Level of education	0.014
Decision-making power	0.067		

Note.

\* < 0.25, two-tailed.

<sup>a</sup> Experiencing two or more types of violence.

Table 5

MLA models for active and avoidant coping respectively

Parameter	Active Coping			Avoidant Coping			
	Estimate	Std. Error	p value*	Parameter	Estimate	Std. Error	p value*
Intercept	29.67	1.36	<0.0001	Intercept	18.44	0.92	<0.0001
Time to interview	0.05	0.014	<0.0001	Time to interview	0.02	0.01	0.027
Internalised Stigma	-0.15	0.05	0.006	Internalised Stigma	0.15	0.03	<0.0001
Depression	-0.05	0.01	0.001	Depression	0.02	0.01	0.006
Self-Esteem	0.07	0.03	0.047	Self-Esteem	-0.12	0.02	<0.0001
Positive Support	0.18	0.021	<0.0001				
Living below the poverty line	-0.61	0.29	0.040	Level of Education - below tertiary	0.54	0.26	0.039
Knowing someone with HIV	0.87	0.34	0.014	HIV-Knowledge	-0.14	0.05	0.006
Receiving ART	-1.47	0.55	0.008				

Note.

<sup>a</sup>Reference category, Std. Error = Standard Error.

\*  $p < 0.05$ , two-tailed.