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## Empowering Women Living with HIV/AIDS in Vietnam: A Hybrid Online-Offline Intervention to Combat Stigma

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### Abstract

Women living with HIV/AIDS (WLHA) encounter numerous challenges, such as stigma and gender disparities, that hinder their access to care, especially in patriarchal societies like Vietnam. We developed a hybrid intervention with online and offline (in-person) components to empower WLHA in Vietnam. The intervention was pilot tested with 91 WLHA in Hanoi. During baseline and 4-month, study investigators delivered two in-person sessions, one Zoom session, and 15 weeks of Zalo (social media platform) discussions to enhance positive coping strategies, treatment utilization and adherence, and engagement of support from family and peers. The participants continued their Zalo discussions from 4-month to 6-month without investigators' involvement. Intervention outcomes, including active coping and perceived barriers to care, were evaluated at baseline, 4-, and 6-month surveys. Mixed-effects regression models showed that the participants' active coping significantly increased from baseline ( $50.5 \pm 9.4$ ) to 4-month ( $53.8 \pm 6.2$ ;  $p=0.0001$ ), although there was a slight decrease at 6-month ( $52.8 \pm 7.2$ ), the change from 4-month to 6-month was not significantly significant ( $p=0.3256$ ). There was a significant reduction in participants' perceived barriers to care, from  $19.8 \pm 5.2$  at baseline to  $17.4 \pm 5.2$  at 4-month ( $p<0.0001$ ), which remained stable at  $17.8 \pm 4.3$  at 6-month ( $p<0.0001$  compared to baseline). This intervention presents a promising model to empower WLHA in Vietnam and potentially in similar global contexts. Future interventions could benefit from leveraging natural peer leaders and adopting a more person-centered approach to meet WLHA's varying needs.

### Keywords

HIV; Women; Stigma; Behavioral Intervention; Social Media; Vietnam

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## INTRODUCTION

Globally, there are 20.2 million girls and women living with HIV/AIDS (WLHA), constituting more than half of the 37.7 million individuals affected by the virus [1]. Compared to their male counterparts, WLHA face a unique set of challenges stemming from gender disparities in education and employment opportunities and financial capital [2]. The intersectional nature of stigma towards HIV and gender disparities makes WLHA impacted by stigma more adversely than men [3–5]. Literature has documented WLHA's vulnerabilities to domestic violence, familial rejection, and societal exclusion [6,7]. Furthermore, WLHA are prone to internalizing stigma, leading to increased rates of anxiety and depression [8,9]. These psychological burdens can significantly interfere with treatment adherence and accelerate disease progression [6,10,11].

In Vietnam, there are 73 thousand women aged 15 or over living with HIV/AIDS [12]. Beyond social disparities, Vietnamese WLHA's vulnerability is compounded by the deeply rooted patriarchal culture in Vietnam [13]. Similar to several East Asian countries, Vietnamese society values filial piety, accentuating the belief that men are generally the heads of households and women are typically expected to be caregivers providing support and care for their elders, husbands, and children [14,15]. Female sexuality is traditionally confined to marriage and motherhood, with premarital or extramarital sexual activities often labeled as deviations from female virtue and sometimes even considered as 'social evils' [16]. Given the pervasive HIV-related stigma intersecting with female inferiority, WLHA in Vietnam often have to resort to passive coping strategies, such as concealing their HIV status and distancing themselves from social networks, resulting in social isolation, a lack of support, and a compromised ability to access or adhere to HIV treatment and other essential health services [17,18].

Given these challenges, addressing the needs and empowering WLHA in Vietnam is of paramount importance. However, interventions specifically addressing the negative impact of stigma and social vulnerabilities and engaging WLHA in healthcare have been underdeveloped in Vietnam [19]. There were in-person interventions designed for WLHA and demonstrated positive outcomes in mental health and service utilization, mostly in African Countries [20,21]. These traditional in-person intervention approaches come with limitations in their reach and scalability, while the rapid development and widespread adoption of internet technologies offer a promising avenue to conduct intervention through online platforms [22,23]. Being one of the countries with the highest Internet and smartphone penetration [24], online HIV intervention programs have demonstrated high acceptance among HIV key populations in Vietnam [25]. Considering the richness of communication cues in in-person interventions and easy access to online strategies [26], we developed an online-offline hybrid intervention to empower WLHA in Vietnam to cope with stigma and social vulnerabilities and actively seek treatment and care. The hybrid intervention was pilot-tested in Hanoi to evaluate its feasibility, acceptability, and preliminary outcomes. With feasibility and acceptability data to be presented in a separate manuscript, the current paper focuses on presenting the outcomes of the hybrid intervention on WLHA participants' active coping and barriers to care.

## METHODS

### Study Design and Population

This study was an intervention using a one-group, pre-post design with baseline, 4-month, and 6-month assessments. Study participants included adult WLHA in Hanoi, Vietnam. To recruit participants, study flyers were mounted and distributed in HIV outpatient clinics, HIV testing sites, and women-serving community-based organizations (CBO) in Hanoi. Staff of these agencies and WLHA in the study also passed the study information to potentially eligible participants by flyers and word of mouth. Eligibility criteria included: 1) aged 18 or above, 2) being female at birth and currently, 3) being HIV-seropositive, and 4) currently living in Hanoi and having no plan to move out of the area in the next six months. Prior to enrolment, eligible participants were informed of the study procedure, the confidentiality and voluntary nature of the study, and the risks and benefits of participation. Written informed consent was obtained from all WLHA participants. Between September 2022 and March 2023, a total of 91 WLH were recruited and participated in the study.

### The Hybrid Intervention

This intervention development process started with a series of in-depth interviews and focus groups with WLHA representatives, healthcare providers, and stakeholders of CBOs serving women and/or people living with HIV/AIDS. This formative work revealed key health challenges faced by local WLHA, including mental stressors related to societal stigma, limited access to health information and resources, heavy family and child-bearing responsibilities conflicting with their self-caring passive coping styles, and avoidance of disclosing HIV status in service seeking [18,27]. Based on these identified challenges, research teams conducted a literature review and compiled a list of evidence-based behavioral intervention components aimed at reducing internalized stigma, promoting self-esteem, enhancing positive coping strategies, and fostering increased engagement with healthcare among people living with HIV/AIDS [6,28–31].

We devised the intervention to be delivered through three different formats: in-person sessions, Zoom meetings, and Zalo (Vietnam's most popular social networking mobile app). Six researchers, each with experience in HIV-related behavioral interventions in Vietnam, rated the relevance of the identified intervention components in relationship to the intended outcomes and the feasibility of the components being conducted in the three formats. Based on their ratings, the intervention components were categorized into different themes to be delivered in various formats. The researchers also suggested adaptation by incorporating cultural and local elements to enhance the acceptability of the interventions. An example of the adaptation was to have WLHA paint their negative thoughts on a "Buddha board" and watch the ink magically disappear, symbolizing a farewell to negativities and a clean slate of mind. All intervention formats were designed to be interactive, featuring games, pair-share, and role-playing during in-person sessions, along with emojis, whiteboards, annotations, and screen sharing in the Zoom and Zalo platforms, to thoroughly engage participants.

The 91 WLHA were grouped into 8 groups with 8–14 WLHA in each group. An initial in-person session, titled "EMPOWER SELF" was organized right after the baseline assessment.

During this session, participants engaged in activities and guided discussions to help them recognize their identities (such as being a mother or business owner) and strengths (e.g., kindness, intelligence, and resilience). For example, participants were engaged in exercises titled “Circle of Control,” which helped them analyze mental burdens and learn to focus on areas within their control. This exercise was designed to enhance confidence, self-esteem, and a sense of purpose in problem-solving. Approximately two months after the initial session, a Zoom session named “LIVE WELL” was conducted. This session focused on encouraging health service utilization and overall well-being. Participants were equipped with communication strategies for medical appointments and practical tools for adhering to their treatment regimens. A second in-person session, “ENGAGE SUPPORT”, was delivered before the 4-month assessment. In this session, participants were guided to make informed decisions regarding the timing and manner of disclosing their HIV status to family members, aiming to garner family support. Furthermore, they learned strategies to mitigate and address family conflicts and to foster peer support through pair-sharing, discussions, and role-playing exercises. Each in-person and Zoom session lasted approximately 90 minutes. Between the in-person and Zoom sessions, we developed and delivered 15 brief Zalo curriculums, which served as weekly check-ins to assess participants’ physical and mental well-being and to reinforce the material covered in the in-person and Zoom sessions. Some Zalo discussions focused on specific themes, including “identifying a role model,” “developing a self-improvement plan,” and “sharing resources.” The weekly Zalo discussions were typically initiated on Friday nights, a time when WLHA generally had more free time. While the focused conversation usually lasted about 20–30 minutes, participants were encouraged to spontaneously share their thoughts in the group at any time throughout the week. The interventions conducted through in-person meetings, Zoom, and Zalo from the baseline up to the 4-month assessments were facilitated by the study investigators and conducted in Vietnamese. Following the 4-month assessment, the Zalo platform remained open for information exchange and peer support among the WLHA participants, operating without the study investigators’ involvement. The intervention activities and timeline are illustrated in Figure 1. The intervention was registered on [ClinicalTrials.gov](https://clinicaltrials.gov/ct2/show/study/NCT05357118) (ID: NCT05357118).

### Data Collection

At baseline, 4-, and 6-month of the pilot period, the WLHA completes short surveys to measure their outcomes. The survey was pre-programmed using Kobo Toolbox and completed by participants using a study tablet. Each survey took approximately 40 minutes to complete. Surveys were conducted in a private setting to ensure confidentiality, and interviewers were available to assist any WLHA who faced reading difficulties or encountered technical issues. For their participation in each survey, WLHA were compensated with 200,000 VND (approximately USD 8.5). Among 91 WLHA who completed the baseline survey, 86 (95%) and 85 (93%) were successfully followed up at 4- and 6-month. The study procedures received ethical approval from the Institutional Review Boards of the University of California, Los Angeles, and Hanoi Medical University.

## Measures

Active coping was measured using the scale developed by Namir and colleagues [32]. Active cognitive coping (8 items) and active behavioral coping (7 items) subscales were adopted in this study. Participants responded to the prompt, “Which of these things have you used to help you deal with your illness?” Examples of items included “Thought a lot more about what is really important in your life” for cognitive coping and “Turned to work or other activities to keep your mind off things” for behavioral coping. Responses were scored from 1 (never) to 5 (always). With negatively worded items reversely coded, higher total scores indicated WLHA’s better use of positive active coping strategies (Cronbach’s alpha = 0.84).

WLHA’s perceived barriers to accessing healthcare services were assessed using the Barriers to Access to Care Evaluation scale (BACE) originally developed to assess obstacles to obtaining mental health services [33], and later adapted for investigating healthcare-seeking behaviors among individuals living with HIV in Vietnam [34,35]. Participants were inquired about various potential barriers they might encounter when seeking healthcare, including not knowing where to obtain professional care, doubts about the effectiveness of treatment, fear of unintentional disclosure of their disease status, past experiences of discrimination within healthcare settings, financial limitations, and logistical obstacles. Responses were measured on a scale from 1 (not at all) to 4 (a lot), with a higher aggregate score indicating a greater level of barriers to accessing healthcare services (Cronbach’s alpha = 0.78).

The WLHA’s demographic characteristics and social determinants of health (age, education attainment, employment, income, marital status) and HIV profile (years of HIV infection and transmission route) were assessed at the baseline survey.

## Data Analysis

Statistical analyses were conducted using SAS (version 9.4). We first conducted descriptive statistics for all measures. Graphs were generated to visualize WLHA’s outcomes at baseline, 4-month after study investigator-initiated group sessions, and 6-month after the self-administered group sessions. We implemented mixed-effects regression models to evaluate whether the active coping and barriers to care differ before and after the intervention, taking into account participants’ demographic characteristics and social determinants of health. The model covariates included time (baseline, 4-, or 6-month) and participants’ background characteristics. The models included participant-level random effects to account for the correlation among repeated observations within individuals.

## RESULTS

Participants’ characteristics are presented in Table 1. The average age of the participants was approximately 41.6 years at baseline (SD=7.0). The participants’ annual individual income averaged USD 6,167, with a high standard deviation of USD 25,510. Most participants completed high school (57.1%), and 28.6% completed middle school. More than half of the women were full-time employed (57.1%). The majority were married or living as married (60.4%), with a significant portion being separated, divorced, or widowed (33%). A small

percentage had never been married (6.6%). Many (39; 42.9%) had lived with HIV for more than 15 years. The most common reported mode of HIV transmission reported was sexual transmission (73.6%), with needle sharing (8.8%) and vertical transmission (3.3%) being less common.

Figure 2 illustrates the intervention outcomes across different assessment time points. Active coping scores demonstrated an upswing from baseline ( $50.5 \pm 9.4$ ) to 4-month ( $53.8 \pm 6.2$ ), followed by a slight dip at 6-month ( $52.8 \pm 7.2$ ). Controlling for demographic characteristics and social determinants of health within the mixed-effects model (Table 2), the increases in active coping from baseline to 4-month ( $p=0.0001$ ) and from baseline to 6-month ( $p=0.0054$ ) were statistically significant, while the reduction from 4-month to 6-month was not ( $p=0.3256$ ). Regarding barriers to care, a downward trend was noted from baseline ( $19.8 \pm 5.2$ ) to 4-month ( $17.4 \pm 5.2$ ), with the scores being stabilized at 6-month ( $17.8 \pm 4.3$ ). The decreases from baseline to 4-month and to 6-month were both statistically significant ( $p<0.0001$ ), while no significant change was observed between 4- and 6-month ( $p=0.4476$ , Table 2).

## DISCUSSION

The integration of online and offline modalities has been used in delivering HIV counseling and testing services to sexual minority populations in Thailand [36]. However, such an approach is novel in the context of intervention delivery for WLHA in Vietnam to the best of our knowledge. This paper presents the encouraging results of an intervention that synergistically combined in-person sessions, Zoom meetings, with social media chatting groups to empower Vietnamese WLHA. This comprehensive and engaging approach led to participants reporting not only improved coping skills but also reduced perception of barriers to care. The promising outcomes of this hybrid intervention underscore its potential as a valuable support mechanism for WLHA in Vietnam, contributing to the reduction of health disparities encountered by this marginalized group.

The positive effects observed in this intervention are attributable to the element of peer support, which played a central role in the empowerment of WLHA [31]. In this study, we designed an initial in-person group session aimed at fostering acquaintances and building trust among WLHA in the same group. The connections among WLHA can help to reduce feelings of loneliness and isolation associated with their HIV status, which is crucial to counter the stigma they face in society [37]. Subsequent to this initial session, the establishment of Zalo chat groups provided a continuous platform for participants to exchange personal experiences, challenges, successes, and resources. Such flexible and spontaneous interactions cultivated empathy, understanding, and solidarity among participants. The investigator-initiated activities concluded in the second in-person session and focused on encouraging continued emotional support, information exchange, and long-lasting supportive communities. This intervention setup has the potential to forge long-term relationships, contributing to sustained improvements in the empowerment and quality of life for WLHA. Future intervention efforts should consider leveraging non-professional, natural peer leaders to organize and facilitate support groups for WLHA.

The study findings shed light on future online-offline hybrid approaches in behavioral interventions for WLHA empowerment. While online intervention is a flexible, low-barrier intervention model, its efficacy when used as a standalone approach warrants further investigation. Future studies should evaluate the efficacy of online and offline intervention separately, and dive deeper into WLHA responsiveness to each online and offline component, aiming to identify those who benefit most from low-barrier online interventions. This could help in optimizing resource distribution and directing more intensive in-person resources toward individuals less responsive to online interventions. In terms of implementing different intervention modalities, anecdotal feedback from WLHA indicated a preference for in-person activities with an appreciation of the intimacy of face-to-face interactions. However, initial reluctance towards in-person participation was also observed, stemming from confidentiality concerns. Additionally, logistical issues, such as conflicts with family or work commitments, were cited as barriers to attending in-person sessions. Concerning the online components, while Zalo sessions faced minimal technical issues due to its widespread use in Vietnam, some participants encountered difficulties in installing and using the Zoom app on their mobile devices. Similar to experiences in other countries, implementing online interventions in Vietnam necessitates the provision of digital literacy training and technical assistance to ensure its feasibility, acceptability, and equitable implementation [38,39]. Future hybrid interventions should adopt a person-centered approach that accounts for the varied needs, preferences, and digital literacy levels of WLHA, ensuring that both online and offline elements are individually tailored to enhance engagement and effectiveness.

The study faced several inherent limitations. Firstly, the one-group design without a control group limited our ability to evaluate the intervention outcomes rigorously. Unmeasured psychosocial factors, which could potentially change over time and impact the intervention outcomes, were not included in the analysis. Secondly, the relatively small sample size constrained our capacity to examine the intervention outcomes within specific subgroups and prevented us from identifying factors mediating the relationship between participants' demographic characteristics and intervention outcomes. Thirdly, the observation period was short, and a longer duration is required to understand the sustainability of the intervention activities and outcomes. Fourthly, participants were recruited exclusively from Hanoi, the capital city with concentrated healthcare resources and a more accepting social atmosphere towards WLHA. Consequently, our findings may not be generalizable to other regions in Vietnam. Furthermore, the reliance on self-reported measures for evaluating intervention outcomes could introduce recall and social-desirability biases. Lastly, the study was conducted during the COVID pandemic, the fears of infection and other challenges posed by the pandemic may have impacted WLHA's engagement in intervention activities, as well as their coping and barriers to care.

Despite these limitations, this study has presented compelling evidence that a hybrid online-offline intervention has the potential to empower WLHA in Vietnam. By integrating interactive, engaging activities both digitally and in person, the intervention has shown considerable promise in supporting WLHA to cope with stigma and various life challenges and actively seek healthcare. Since many of the challenges faced by WLHA, such as HIV stigma and gender disparities, are not unique in Vietnam, this intervention could be



adapted for broader application in future initiatives to enhance the well-being and treatment outcomes for WLHA in global settings.

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## DATA SHARING

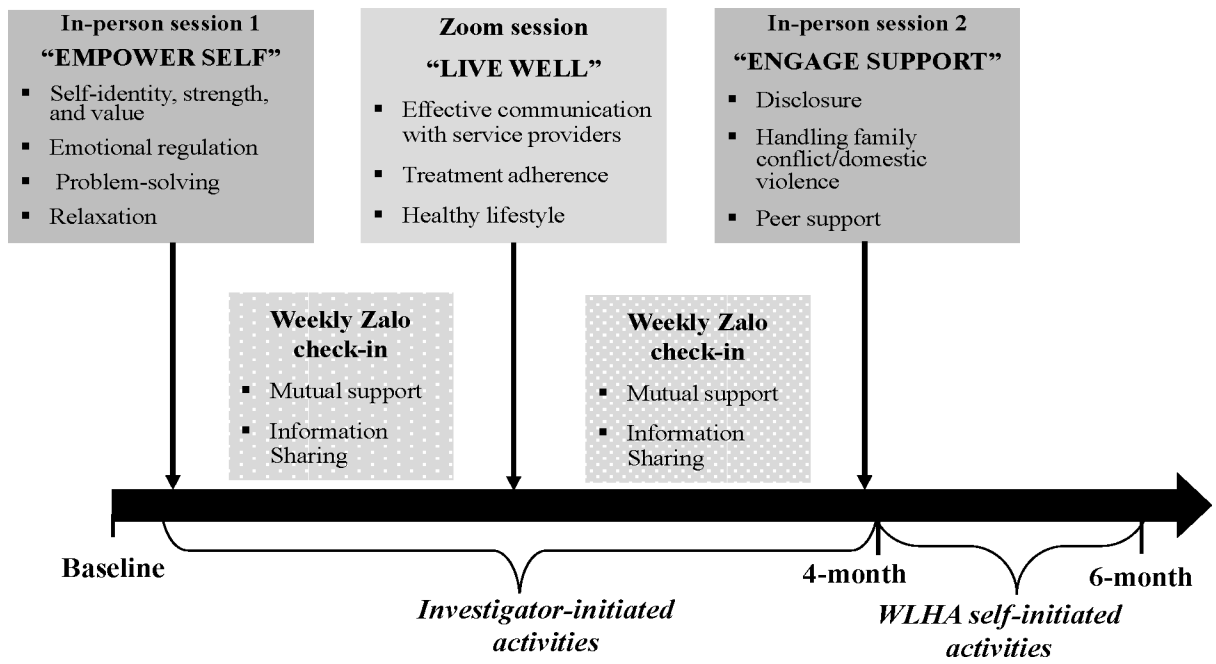
Due to the sensitive nature of the data, surveys conducted with WLHA at baseline and follow-ups will not be shared. However, the intervention manual can be made available upon request to the corresponding author.

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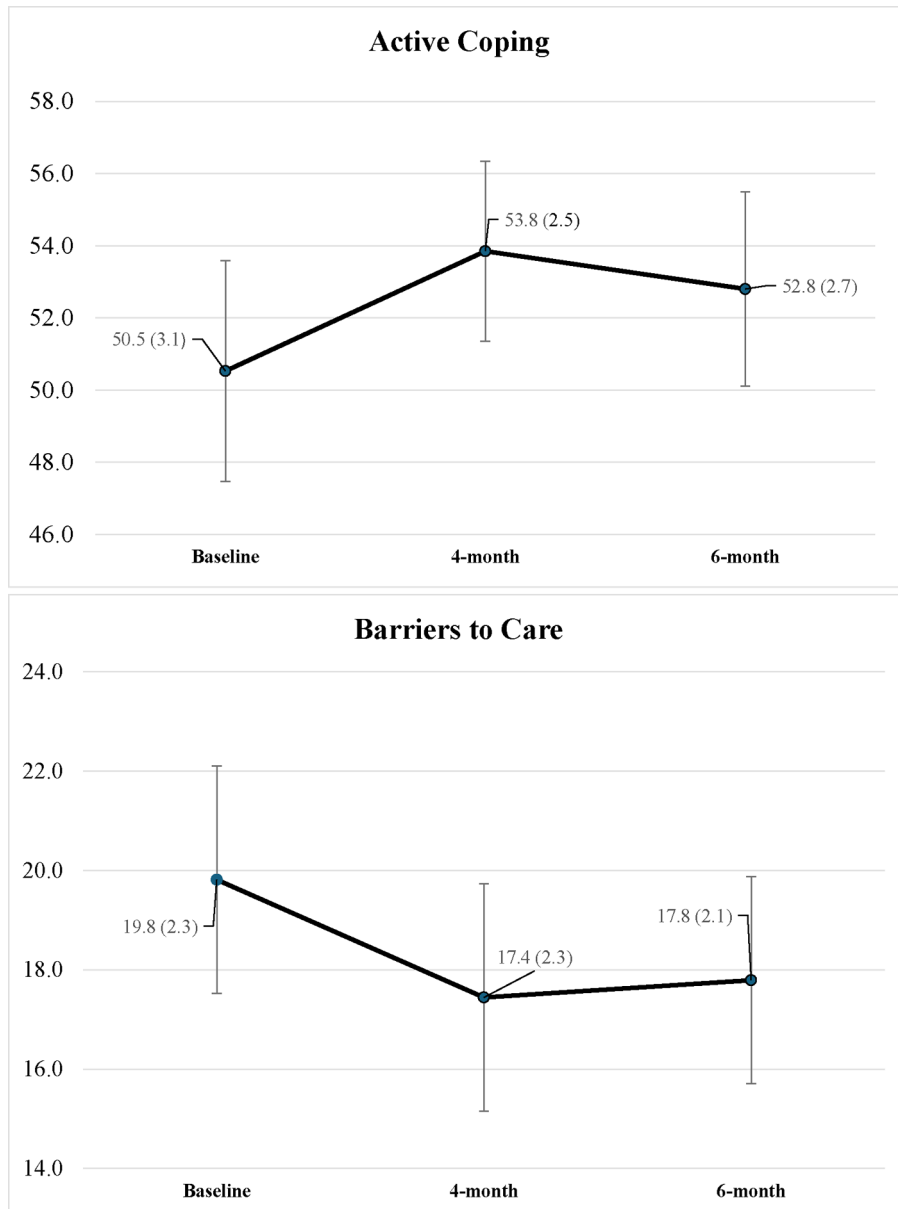
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**Figure 1.** Timeline and Activities of Online-Offline Hybrid Intervention Pilot



**Figure 2.** Plots of Intervention Outcomes at Baseline and Follow-up Assessments

**Table 1.**

## Participants' Characteristics at Baseline (N=91)

	Number	%
Age (Mean +/- SD)	41.6	7.0
Annual individual income in USD (Mean +/- SD)	6167.1	25510.2
Education		
Elementary school	3	3.3
Middle school	26	28.6
High school	52	57.1
College and above	10	11.0
Full time employed	52	57.1
Marital status		
Married/living as married	55	60.4
Separated/divorced/widowed	30	33.0
Never married	6	6.6
Years of HIV infection		
Less than 5 years	7	7.7
5–10 years	13	14.3
11–15 years	32	35.2
More than 15 years	39	42.9
HIV transmission		
Sexual transmission	67	73.6
Needle sharing	8	8.8
Medical procedures	1	1.1
Vertical transmission	3	3.3
Unknown	12	13.2

**Table 2.**

Mixed-effect Models of Outcome Measure Overtime

	Active Coping			Barriers to Care		
	Estimate	SE	p	Estimate	SE	p
Timepoint						
From baseline to 4-month	-3.237	0.813	0.0001	2.498	0.471	<.0001
From baseline to 6-month	-2.410	0.855	0.0054	2.128	0.497	<.0001
From 4-month to 6-month	0.827	0.839	0.3256	-0.370	0.486	0.4476
Age in years	0.055	0.102	0.5902	0.011	0.066	0.8702
Individual income	-0.003	0.003	0.3266	0.000	0.002	0.9314
Years of education	0.120	0.244	0.6236	-0.043	0.155	0.7792
Being fulltime employed	-0.718	1.016	0.4806	-0.655	0.606	0.2815
Currently married	-1.940	1.209	0.1104	-1.302	0.750	0.0846
Years of HIV infection	0.000	0.000	0.9556	0.000	0.000	0.0922
Sexually transmission of HIV	1.037	1.445	0.4740	-0.463	0.898	0.6067