

WOMEN LIVING WITH HIV IN THE SOUTH: HOW MENTAL HEALTH AFFECTS
MEDICATION ADHERENCE AND HIV CARE ENGAGEMENT

by

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Background/Significance

According to the Centers for Disease Control and Prevention (2019), the United States (U.S.) southern states account for 51% of new HIV diagnoses annually. Additionally, a cisgender woman accounts for one out of every five new HIV infections in the U.S. (U.S. Department of Health and Human Services, 2020). Furthermore, women in southern regions of the U.S. have the highest HIV rates and the lowest viral suppression out of all other regions (Centers for Disease Control and Prevention [CDC], 2020). Maintaining an undetectable viral load is the aim of HIV treatment as it can help people with HIV remain healthy and eliminate the risk of viral transmission to others (U.S. Department of Health and Human Services, 2021).

Daily adherence to antiretroviral therapy (ART) and engagement in HIV care help to achieve viral suppression (California Department of Public Health Office of AIDS, 2022). Barriers to ART adherence in women living with HIV (WLWH) include discrimination, HIV stigma, and mental health issues (Waldron et al., 2021). According to research, HIV-related stigma negatively influences people living with HIV (PLWH) increasing the risk of mental health disorders. Mental health concerns can negatively affect an individual's well-being and quality of life. For WLWH, mental health concerns can additionally affect HIV viral suppression and transmission (Waldron et al., 2021). Addressing these barriers and encouraging medication adherence and engagement in HIV care can help improve health outcomes for women and eliminate the risk of HIV transmission.

Twenty-one percent (21%) of women living with HIV report symptoms of depression, anxiety, and posttraumatic stress creating challenges in maintaining viral suppression (CDC, 2023). WLWH also experience mental health issues at higher rates than both men and women

who are not living with HIV (World Health Organization, 2022). This may be attributable, in part, to women with mental health disorders being in susceptible positions linked with HIV acquisition, such as intimate partner violence, inconsistent condom usage, previous sexually transmitted infections, and engaging in transactional sex (Waldron et al., 2021). Alternatively, due to the stigma and stress associated with disease management, HIV diagnosis may cause or worsen depression and anxiety in women (Armoon et al., 2022).

In the literature, there is a lack of research specifically addressing women's perceptions on how mental health affects ART adherence and HIV care engagement among WLWH in the southern U.S. However, research supports a positive correlation between HIV-related stigma and adverse HIV-treatment results (Gutiérrez, et al., 2022). Research has also suggested that HIV-related stigma is more prominent in the southern U.S. (Reif, et al., 2018).

The purpose of this project was to: (1) explore the existing literature on depressive symptoms in WLWH and how it impacts their ART adherence and engagement in HIV care, and (2) conduct a secondary data analysis using qualitative descriptive methods of my Signature Honors Project (SHP) mentor's dataset to describe how WLWH in the southern U.S. perceive the factors impacting their mental health, specifically depressive symptoms, and how their mental health status influences their ART adherence and HIV care engagement.

Review of Literature

Search Methods

In consultation with a medical librarian, search terms were established, inclusion and exclusion criteria were determined, and two electronic databases (PubMed Search and CINAHL Plus with Full Text) were used to conduct the literature search process. The search terms utilized

were WLWH, ART medication adherence, mental health, and southern United States. The inclusion criteria were articles that were conducted in the southern U.S., published in the last 5 years, included only WLWH, and primary research. The exclusion criteria were articles that were conducted outside of the southern, U.S., older than 5 years, included men living with HIV, and not primary research. In consultation with my SHP mentor, the search was widened to include all people living with HIV (PLWH) due to a minimal number of studies addressing HIV care engagement and ART adherence among women only. In addition, due to the lack of research on women in the southern U.S., the search was widened to include the entire U.S. rather than a specific region. Lastly, due to the limited number of significant articles published in the last 5 years, the search was expanded to include articles published within the last 10 years. Based on the revised inclusion and exclusion criteria, a total of 8 studies were included. The data from each article were then extracted into a matrix (Garrard, 2017) and organized based on the following categories: APA citation, year, study purpose/aims, methods, instruments, variables, sample, location, and key findings (see Appendix A).

Search Results

The goal of the literature review was to explore the existing literature on how mental health influences engagement in HIV care and medication adherence in PLWH in the United States. The findings are organized into the following categories: relationship between depressive symptoms and HIV care engagement and adherence in PLWH, factors related to depressive symptoms in PLWH, and potential ways to increase ART adherence and engagement in care in PLWH with depressive symptoms.

Relationship between depressive symptoms and HIV care engagement and adherence in PLWH: The literature review revealed that in HIV research it is well-established that depression decreases ART adherence and engagement in care (Uthman et al., 2014). Uthman et al. (2014) conducted a meta-analysis which found that people living with HIV who also have depressive symptoms have a 42% lower likelihood of achieving good ART adherence compared to those without depressive symptoms. The studies included in this meta-analysis (N=111) were published over an expansive time period between 1993 and 2013 (Uthman et al., 2014). However, it is important to note that the U.S. only accounted for 67% of the data as this review was done on a global level. It is also important to note that there were significantly lower rates of medication adherence in high-income countries (with the U.S. accounting for 80%) as opposed to low-income countries (Uthman et al., 2014). This data may be skewed due to 92 out of 111 studies covering high-income countries, whereas only 8 studies covered lower-income countries (Uthman et al., 2014). By the time the meta-analysis by Uthman and colleagues was published in 2014, the HIV research had clearly established the relationship between depression and ART adherence and engagement in care. Therefore, most of the literature published in the U.S. over the past 10 years has focused on the factors impacting depressive symptoms in PLWH and interventions to increase ART adherence and engagement in care among PLWH who have depressive symptoms.

Factors related to depressive symptoms in PLWH: Three out of eight articles included in the literature review discussed important factors contributing to depressive and mental health-related symptoms in PLWH. However, only one article showed a correlation between contributing factors and decreased medication adherence and engagement in care. Relf et al. (2019) utilized baseline data (N=123) from the Women's Interagency HIV Study and multi-

group structural equation modeling to explore the relationships between depressive symptoms, group-based medical distrust (GBM), everyday discrimination (EVD), and internalized stigma. Depressive symptoms were found to be a significant mediator between GBM, EVD, and internalized stigma reducing ART adherence, engagement in care, and quality of life (Relf et al., 2019). Out of 123 participants, most were women of color, socioeconomically disadvantaged, and at higher risk for many layers of discrimination such as racism, sexism, ageism, and classism (Relf, et al., 2019).

Similarly, investigators conducting a pilot randomized control trial (RCT) composed of 119 Black WLWH sought to find the associations between adversities (racial and HIV-related discrimination, gendered racial microaggressions (GRM)), socioeconomic factors (income, education, and housing), trauma exposures, depressive and PTSD (Post Traumatic Stress Disorder) symptoms, viral load, and medication adherence (Sharma et al., 2022). Sharma et al. (2022) found that GRM frequency, GRM appraisal, and the number of traumas contributed to depressive symptoms and posttraumatic stress disorder symptoms in WLWH. However, all study participants met the criterion of low ART adherence and/or were considered at risk for not maintaining viral suppression due to missing HIV-related medical visits (Sharma et al., 2022). Potentially due to the study sample, regression analysis showed no significant association between medication adherence and the tested variables (Sharma et al., 2022).

Looking at a different and recent cause of depressive symptoms in WLWH, Delvin et al. (2022) completed qualitative interviews to explore the effects of the COVID-19 pandemic on HIV care. Delvin et al. (2022) were unable to determine how depressive symptoms impacted medication adherence, however, 16 out of 25 participants reported that the pandemic interfered with their HIV care and increased anxiety, depression, and other forms of psychological distress.

Many women mentioned that the pandemic resulted in HIV care physicians canceling appointments and challenges maintaining ART adherence, however, this does not show either correlation or causation between depressive symptoms (Delvin, et al., 2022).

Potential ways to increase ART adherence and engagement in care in PLWH: Four out of eight articles included in the literature review discussed potential ways to increase ART adherence and/or HIV care engagement in the presence of depressive and mental health-related symptoms in PLWH. Tatum & Houston (2017) found that self-efficacy can increase adherence in PLWH experiencing varying levels of depressive symptoms. Whereas Momplaisir et al. (2018) found that in pregnant WLWH, perinatal case management can offset the negative impact of depression during pregnancy and postpartum, which can help further increase viral suppression.

Lastly, two articles (Smith & Cook, 2019; Fernandez et al., 2022) found that instability of housing decreases adherence, suggesting that stable housing would increase adherence. Smith & Cook (2019) discovered that PLWH who had dependable housing were over six times more adherent than those who did not. Whereas Fernandez et al. (2022) found that unreliable housing decreased adherence due to difficulty storing medications, misplacing medications, substance use issues, depression, competing physical illnesses, chronic stress, and a lack of food.

Purpose

As the literature review revealed, it has been established that depressive symptoms negatively affect PLWH which further affects their medication adherence and engagement in HIV care. However, research explicitly addressing the effect of depression on ART adherence and HIV care engagement among WLWH in the southern U.S. is lacking. In order to develop effective HIV care engagement and medication adherence interventions specific to this priority

population in the southern region of the U.S., it is important to understand their particular experiences and needs. Therefore, due to the gaps within the literature, the goal of this SHP was to describe how WLWH in the southern U.S. perceive the factors impacting their mental health, specifically depressive symptoms, and how their mental health status influences their ART adherence and HIV care engagement by answering the following research questions:

In what ways do WLWH in the southern U.S. describe their mental health status, specifically depressive symptoms, influences their ART adherence and HIV care engagement?

How do WLWH in the southern U.S. describe the factors impacting their mental health, specifically depressive symptoms?

Methodology

Study Design

I conducted a cross-sectional, qualitative descriptive study using secondary data from a parent study, my SHP mentor's project titled "Modeling perceptions of social location and decision-making among women living with HIV in the South" [NIH/NINR: R21NR020164]. My SHP mentor's research gathered qualitative data from 40 in-depth interviews conducted with WLWH in the South.

Sample

Since my SHP is a secondary analysis, the sample is drawn from my SHP mentor's sample of WLWH in the Southern U.S. The inclusion criteria for the parent study were people who: (1) self-identify as a woman; (2) self-identify as Black, Latina, or White; (3) are living with HIV or AIDS; (3) are ≥ 18 years of age; (4) are able to read and communicate in English; and (5) are mentally competent to provide informed consent. The inclusion criteria for this SHP were

parent study participants who specifically discuss depressive symptoms or any other mental health symptoms as a barrier to HIV medication adherence or engagement in care. I read through each of the 40 transcripts from my SHP mentor's project. For each transcript, I wrote a summary of the content and determined eligibility for inclusion in my study.

Data Management

This project has IRB [UMCIRB 21-001403] approval and I was approved as study personnel. I used the de-identified qualitative transcripts to further protect the privacy of the participants.

Data Analysis

In analyzing the data, I used a thematic analysis approach to search for, identify, and evaluate the qualitative transcripts. Braun and Clarke (2006) outlined a thematic analysis approach I used consisting of six steps: (1) becoming familiar with the data, (2) generating codes, (3) generating themes, (4) reviewing themes, (5) defining and naming themes, and (6) locating exemplars. Following this approach allowed for a step-by-step framework for data analysis. First, I became familiar with the data by reading through all 40 transcripts from my SHP mentor's project, searching for the inclusion criteria specific to this project, and writing transcript summaries. In this process, I also completed the initial stages of generating potential codes. Codes were developed, reviewed, and related ones were grouped together to search for themes. Themes are patterns of concepts and codes found within the transcripts and they were reviewed and refined to make sure they accurately represented the data. Themes were reviewed and clearly defined so they could be understood by all readers and exemplars were located within the data. Exemplars included specific quotes from the transcripts that clearly illustrated the themes. By adhering to Braun and Clarke's thematic analysis approach, I have provided a

comprehensive and insightful description of the transcripts that fit my inclusion criteria from my SHP mentor's project.

Results

Sample

The parent study included 40 in-depth interviews with WLWH from the Southern U.S. to understand the facilitators and barriers they experienced when engaging in HIV care and adhering to ART medications. Twelve (N=12) of the 40 transcripts were included based on discussions within the narratives by participants regarding the relationship between mental health and ART adherence and/or HIV care engagement.

The demographic characteristics of the participants were: 66.7% of participants were >50 years old, 83.3% of participants identified as African American, 58.3% of participants have lived with HIV for >20 years, 66.7% of participants were living below the federal poverty line, 83.3% of participants lived in non-rural areas, and 25% of participants finished high school or GED equivalent. A detailed demographic table can be found in the appendices (see Appendix B).

Research Question One Results: In what ways do WLWH in the southern U.S. describe their mental health status, specifically depressive symptoms, influences their ART adherence and HIV care engagement?

The purpose of the first research question was to identify how WLWH in the southern U.S. describe their mental health status, specifically depressive symptoms, influences their ART adherence and HIV care engagement. Multiple women directly related their mental health status, specifically depressive symptoms to decreased ART adherence and/or HIV care engagement. Some of these women were able to access mental health resources and increase their ART adherence and/or HIV care engagement. Some women never experienced decreased ART

adherence and/or HIV care engagement but believe that is due to mental health resources positively impacting their experience of living with HIV.

Depression decreases ART adherence and HIV care engagement

Decreased ART adherence and/or HIV care engagement due to depressive symptoms was referenced by ten (N=10) participants. Specifically, participant A stated:

I can, shit, I can be upset and depressed about something and I just say well, I won't take it today. I will take it tomorrow, but tomorrow's not promised. That's what your mind tells you, and you do what your mind tells you when you're in another state of mind with depression. That's the way it affects me, I don't know how it affects nobody else. I can get into an attitude, a mood swing with depression I'm going through where I just won't take it today.

Participant P stated, "And I got into a deep depression, so I literally stopped taking meds for almost a year. I just didn't care. Both participants directly related depression to decreased ART adherence.

Some participants mentioned that their depressive symptoms caused them to become disengaged in care. Participant I stated:

It was for a period of about maybe two years I was not receiving care. I wasn't dealing with the [clinic] at the time, I was actually going the [county clinic], but of everyone knows going there you're going to instantly be labeled, so that, at the time, it got to me mentally, going there every day to receive medication and things of that nature and treatment, so I just stopped going.

When asked about barriers to attending HIV care appointments, participant S stated, “I would say just depression.” When asked to clarify how depression impacts her engagement in HIV care the participant further stated, “I will just miss the appointment. I just won't go.”

Four (N=4) of these participants mentioned that once they were connected to mental health resources such as support groups and therapy, they experienced a positive impact on their experience of living with HIV. Specifically, Participant U mentioned how her support group has been a strategy to help manage her mental health symptoms. She stated:

We talk about mostly like mental health. It's more like a mental health thing, the support groups. But I have been to HIV groups. People just like me. I've been to groups like that. That really helped. I have been to a lot of seminars, and learning different stuff about being positive and living positive.

Participant FF mentioned that her therapist and spirituality positively impacted her experience living with HIV. She stated “I go to a therapist and I tell people, I said, “Yeah. God can do everything.” I said, “But he provides people with certain gifts and tools and talents to help other people because we’re supposed to be working with each other.” She directly stated that her Christianity makes it easier for her to take her medications. Participant BB mentioned that mental health counseling and antidepressants helped increase her ART adherence. She stated: “And I had one doctor to tell me that he was going to take me off of all my medications for HIV until I decided I was ready to take it and be very consistent with it.” She further stated:

I had to decide that I needed mental health counseling through their office for depression and quit beating... Quit ignoring it. And to go on medication for a little while, because it's okay to also live with depression and be a thriving member of society even with HIV.

Mental health resources increase ART adherence and HIV care engagement

Two (N=2) participants didn't mention decreased ART adherence and/or HIV care engagement, however, they mentioned mental health resources positively impacted their experience of living with HIV. Specifically, participant C mentioned that she attends therapy, which helps improve her experience of living with HIV. She explained, "Because I can have somebody to talk to other than my doctors, I have a therapist that I can tell her everything, and whatever me and her talk about, she keeps it between me and her." Participant F mentioned how the Ryan White Program helped her access mental health resources. She stated:

And depending on how you look at it, like I said, it gave me access to adequate healthcare. It gave me access to a specialized team for when I was pregnant. It gave me access to a scholarship, so I could finish school. It gave me access to a doctor and a therapist and everything that I trusted. And it's so many resources out here.

Access to mental health resources can help positively impact the experience of living with HIV and increase ART adherence and/or HIV care engagement.

Research Question Two Results: How do WLWH in the southern U.S. describe the factors impacting their mental health, specifically depressive symptoms?

The purpose of the second research question was to understand how WLWH in the southern U.S. describe the factors impacting their mental health, specifically depressive symptoms. Each participant reported some form of mental health concerns and common co-occurring factors were identified. These factors were patterns identified within the transcripts, although not all participants explicitly linked them to their mental health concerns. Some participants directly related some of these co-occurring factors to their poor mental health. Other participants mentioned these co-occurring factors but did not discuss a direct relationship between the two. I am not making a direct correlation between these co-occurring factors and

mental health, rather, I am identifying patterns among the transcripts, so as to identify potential variable that may be amenable to change in future intervention work.

Co-occurring factors impacting the mental health of WLWH

The themes identified as co-occurring factors were stigma/discrimination, lack of resources, lack of social support, death/trauma, and substance use disorder.

Stigma/Discrimination

The conceptualization of stigma was based on the landmark work of Eric Goffman and was defined as being dishonored or shamed because of either who you are or how you identify (Goffman, 1963). This co-occurring factor was referenced by nine (N=9) participants. Numerous participants stated that stigma negatively impacted their engagement in care and ART adherence.

Participant I stated:

The stigma with HIV is horrible. It is terrible. And of course, we get the stigmas, 'No one's going to love you, no one's going to be with you. They're going to know. They're going to put your business on the street, nobody's going to ever want to be with you again,' blah, blah, blah, blah. That whole thing. Then of course, the picking, people wanting to put information out there to basically shame you for some reason or another, and it makes you not want to take the medication until you really have to take the medication.

This participant directly stated that stigma decreased her ART adherence. Participant KK mentioned she felt stigmatized when she was first diagnosed with HIV which impacted her mental health negatively. She stated:

Well, we always have family gathering for certain holidays and certain events, and when I went to my mom's house, when I was very first diagnosed and I went to my mom's, we

were there for Thanksgiving and she offered... everybody was offered a plate, and then I noticed that my plate was a disposable plate.

She then further stated: “And it kind of threw me, because one, I hadn’t fully accepted myself at the time then, this is my mother.” This participant directly stated that stigma experienced from her family negatively impacted her mental health.

Lack of Resources

Lack of resources was defined as a lack of financial or material items that may aid HIV care engagement and ART adherence. This theme included financial stress and housing instability. This co-occurring factor was referenced by five (N=5) participants. Numerous participants expressed concerns regarding financial stress. For example, Participant A stated: “It's really difficult. The only way I can definitely really afford anything is nothing but a room. That's another reason, a big loss for my son. I couldn't afford to put him nowhere.” She further stated: “It hurt me so bad, I'm broken up about it now, but I'll be all right.” This participant directly related financial stress to negatively impacting her mental health. Another participant stated: “I was also underinsured, severely underinsured, and that was a thing that was concerning.” When participant F was connected to resources such as the Ryan White Program, which assists with medication costs that insurance does not cover, she reported a positive impact. Participant F stated:

But financially, I don't really have to worry about anything because whatever my health insurance doesn't cover through Ryan White and the HMAP, it gets taken care of. So, those are some advantages, and programs, and stuff that help out. So it's not a financial burden. Even for appointments, and labs, and everything, it's not really a financial burden at all, because of programs like that.

This participant reported that the Ryan White Program gave her access to a therapist and positively impacted her mental health and experience of living with HIV.

Three (N=3) participants expressed concerns regarding housing instability and/or homelessness. When participants were connected to various resources to aid in housing, they reported a positive impact. For example, participant GG stated, “Well, I got housing through [name of organization] and I don't have to pay rent because I'm unemployed. I've been in that program for about six years.” Participant C stated, “Because I was in a situation where I had to go to the shelter and I stayed in the shelter for five months. And by me having HIV, I was able to get on the voucher program.” Both participants reported mental health care positively impacting their experience of living with HIV.

Lack of Social Support

Lack of social support was defined as a lack of a support group, far away support systems, and a lack of connectedness. This co-occurring factor was referenced by four (N=4) participants. Numerous participants reported lack of social support, for example, participant A stated, “I was in denial for a long time. I ain't talking to nobody, stay away. Kind of ducked me, moved me back from my family. I wish they knew, they don't do no talking or anything like that. It kind of had me in denial for a minute, but I learned to come out of that.” This participant reported isolating herself after she was first diagnosed with HIV. Participant U stated, “Because I just felt my self-esteem. I felt like people were watching me. People were talking about me. I felt like I was alone. I think that's the reason why. I just, that's the way I just felt.” This participant reported feeling alone due to experiencing HIV-related stigma.

Some participants related their isolation to COVID-19. For example, participant I stated:

With the pandemic, there's not too many things that make it easy to take medication,

especially with how everyone's mental states are getting, with people being so withdrawn now and so antisocial, so to speak. It's hard for people to wrap around getting behind a pill that you have to take every single day.

The interviewer clarified this statement with the participant and confirmed that COVID-19 decreased her medication adherence. Participant A stated:

See, in here I don't have company. I don't play that company, I don't play that. This is a serious thing [COVID-19] that's going on and I may have a lot of friends, and I see people not wearing masks in gatherings of over five people, I don't need to be around them. I don't need nothing to do with that because I know what that does and how it affects a person like me at high risk, ready to take me out. And I ain't taking any chances.

This participant isolated herself due to the fear of contracting COVID-19.

Death/Trauma

Death/trauma was referenced by three (N=3) participants. Multiple participants reported death/trauma negatively impacting their mental health. Participant CC stated:

It's like when my mother passed away two years ago yesterday, I believe, yeah. It was two years ago yesterday. I took it very hard, and I do have psychiatrist options at the [clinic name]. I go every three months because of my depression, and it's good because I have that option of venting where sometimes you have all the stress, and you can't talk to your family, because they're only one-sided. And you need outside that circle, and I have a wonderful psychiatrist. I have a wonderful psychologist there.

This participant reported her mother's death negatively impacting her mental health. She also reported mental health resources positively impacting her experience of living with HIV.

Substance Use Disorder

Substance use disorder was referenced by three (N=3) participants. Participant GG directly related her mental health and substance use to decreased adherence and engagement in care. She stated:

It was like years I had stopped going, but I was mentally incapacitated and I was going through some things with drugs, and I just didn't feel the need to live anymore. And so, I stopped taking medicine, stopped going to the doctor for about five, six years, and then I just started going back.

Participant A mentioned that drinking alcohol was how she would cope with her depression. She stated, "But I tell you, a lot of that came along with my addiction. I was a big, big alcoholic. I drank and drank and drank to try to cover everything I didn't care." Once connected to resources, this participant mentioned she was able to get herself clean. She stated, "And my addiction of drinking that had drove me to drinking so bad, I went in there and was told to call Stoplight and I got myself cleaned up."

Discussion

The purpose of this research was to: (1) identify how WLWH in the southern U.S. describe their mental health status, specifically depressive symptoms, influences their ART adherence and HIV care engagement, and (2) understand how WLWH in the southern U.S. describe the factors impacting their mental health, specifically depressive symptoms.

Numerous similarities exist between the research findings and the literature review. First, the literature review established that depression decreases ART adherence and engagement in care (Uthman et al., 2014). This finding was found in the qualitative data and was identified by numerous participants. In addition, another similarity was that the literature review identified co-occurring factors such as stigma/discrimination (Relf, et al., 2019; Sharma et al., 2022), lack of

social support (Delvin, et al., 2022), death/trauma, (Sharma et al., 2022), housing instability (Sharma et al., 2022), and substance use disorder (Fernandez et al.,2022) that lead to depressive symptoms in WLWH. These co-occurring factors were similar to the research findings regarding factors impacting the mental health of WLWH in the southern U.S.

The results of the literature review revealed that treatment self-efficacy in the context of depression (Tatum & Houston, 2017), stable housing (Smith & Cook, 2019; Fernandez et al., 2022), and perinatal case management during pregnancy and postpartum (Momplaisir et al., 2018) can help increase ART adherence and/or engagement in care. The qualitative data suggests that mental health resources can increase ART adherence and/or HIV care engagement.

Therefore, it is important to ensure women have access to available mental health resources and if not, they should be connected with resources to promote ART adherence and HIV care engagement. The Collaborative Care Model is an evidence-based intervention that screens for depression in primary care settings and uses care coordinators to offer mental health support as well as monitor treatment (American Psychological Association, n.d.). This model has been found to offer support to PLWH by reinforcing self-management and awareness of depression (Fuller, et al., 2019).

Strengths and Limitations

The strength of this research was that it addressed a gap in the literature. There was limited prior research describing women's experiences with depressive symptoms and their adherence. Since there is limited previous research on this topic, this research demonstrates that connecting WLWH to mental health resources has the potential to improve ART adherence and HIV care engagement. This research also addressed the lack of articles describing the impact of depressive symptoms in WLWH in the Southern U.S. This research identifies co-occurring

factors that WLWH in the Southern U.S. believe negatively impact their experiences of living with HIV and could be potential contributors to poor mental health outcomes.

The primary limitation of this research is the use of secondary data. The parent study aimed to describe facilitators and barriers WLWH experienced when engaging in HIV care and adhering to ART medications. Therefore, the parent study was based on research questions that were not tailored to explore the mental health status of or the specific relationship between depression and ART adherence and engagement in care.

Implications

Overall, after identifying specific co-occurring factors leading to depressive symptoms in WLWH which further lead to decreased engagement in care and ART adherence, these themes can be identified early, and patients can be connected to resources to increase HIV care engagement and ART adherence. Screening for depressive symptoms in WLWH could be an effective secondary prevention strategy to identify and address symptoms before they lead to decreased engagement in care and/or ART adherence. A study completed among men living with HIV in Taiwan suggested that screening for depressive symptoms and prescribing antidepressants if needed would improve ART adherence (Yen, et al., 2022). Similarly, a study conducted in Tanzania found that depression is highest during the first month after HIV diagnosis and suggested that screening for depressive symptoms during this time would be essential (Madundo, et al., 2023). The Substance Abuse and Mental Health Services Administration (SAMHSA) identified that screening among people living with HIV (PLWH) is underused but critical (Substance Abuse and Mental Health Services Administration and Health Resources and Services Administration, 2016). SAMHSA recommended using the Patient Health Questionnaire (PHQ-2 and PHQ-9) and the Substance Abuse and Mental Illness Symptoms

Screener (SAMISS) to screen for depression in PLWH. However, further research must still be conducted regarding the co-occurring factors leading to depressive symptoms in WLWH and the impact of mental health resources in WLWH in order to better describe the relationship.

Specifically, the Collaborative Care Model has been found to motivate some patients to address depressive symptoms (Fuller, et al., 2019). Further research could also help identify which interventions and mental health resources would be best in addressing depressive symptoms in WLWH.

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Appendix A

Literature Matrix

APA Citation	Purpose	Methods	Instruments	Variables	Sample	Location	Results
Relf, M. V., Pan, W., Edmonds, A., Ramirez, C., Amarasekara, S., & Adimora, A. A. (2019). Discrimination, medical distrust, stigma, depressive symptoms, antiretroviral medication adherence, engagement in care, and quality of life among women living with HIV in North Carolina: A mediated structural equation model. <i>JAIDS Journal of Acquired Immune Deficiency Syndromes</i> , 81(3), 328–335. https://doi.org/10.1097/qai.0000000000002033	Explore the moderating effect of age on EVD; GBM distrust; enacted, anticipated, internalized HIV stigma; depressive symptoms; HIV disclosure; engagement in care; antiretroviral medication adherence; and QOL among WLWH.	Multigroup structural equation modeling	Everyday discrimination scale, group-based medical distrust scale, HIV-related enacted stigma scale, HIV-related internalized stigma scale, HIV-related anticipated stigma scale, center for epidemiologic studies depression scale, healthcare utilization scale, medication adherence self-report for HIV care, HIV disclosure scale, brief health status assessment instrument.	Internalized HIV stigma, group-based medical distrust, quality of life, depressive symptoms, ART medication adherence, anticipated HIV stigma, engagement in care, everyday discrimination, enacted HIV stigma, HIV disclosure	123 WLWH	NC, US	Depressive symptoms were a significant mediator between group-based medical distrust, everyday discrimination, and internalized stigma reducing antiretroviral therapy medication adherence, engagement in care, and QOL. EVD, GBM, and internalized stigma adversely affect depressive symptoms, antiretroviral therapy medication adherence, and engagement in care, which collectively influence the QOL of women living with HIV.
Sharma, R., & Dale, S. K. (2023). Using Network Analysis to Assess the Effects of Trauma, Psychosocial, and Socioeconomic Factors on Health Outcomes Among Black Women Living with HIV. <i>AIDS and Behavior</i> , 27(2), 400-415. https://doi.org/10.1007/s10461-022-03774-7	To model adversities (racial and HIV-related discrimination and gendered racial microaggressions), socioeconomic factors (income, education, and housing), and the number of trauma exposures as a network of interconnected variables and their associations with depressive and PTSD symptoms, viral load, and medication adherence.	Pilot RCT	LEC-5, MDS-Race, Davidson Trauma Scale, CESD scale, MDS-HIV, GRMS-BW, self-report measures. Viral load count was obtained through blood draws, and medication adherence was measured via Wisepill adherence monitoring device.	Demographics (income, education, housing), # of trauma experiences; racial discrimination; HIV-related discrimination; gendered racial microaggressions; depression, PTSD; medication & viral load	119 BWLWH	FL, US	Regression analysis showed no significant associations between predictor variables and medication adherence. It may be due to a low base rate (n = 12) of less than 80% medication adherence.

<p>Devlin, S. A., Johnson, A. K., McNulty, M. C., Joseph, O. L., Hall, A., & Ridgway, J. P. (2022). "Even if I'm undetectable, I just feel like I would die": a qualitative study to understand the psychological and socioeconomic impacts of the COVID-19 pandemic on women living with HIV (WLWH) in Chicago, IL. <i>BMC Women's Health</i>, 22(1). https://doi.org/10.1186/s12905-022-01812-z</p>	<p>Explore how the pandemic has impacted WLWH, including challenges related to HIV care, employment, finances, and childcare. They also investigated how HIV status and different psychosocial stressors affected their mental health.</p>	<p>Semi-structured qualitative interviews</p>	<p>Interview questions based on two established conceptual frameworks, minimizing the potential effect of research bias inherent in qualitative methodologies. Questions were developed using the HIV and COVID-19 syndemic model.</p>	<p>COVID-19, retention in HIV care, ART adherence, social/psychological stressors, mental health, social isolation</p>	<p>25 WLWH</p>	<p>IL, US</p>	<p>Most participants reported COVID-19 impacted their HIV care, such as appointment cancellations and difficulties adhering to antiretroviral therapy. 16 participants reported that the COVID-19 pandemic had disrupted their HIV care (e.g., appointment cancellations, loss of provider, or ART non-adherence). 16 participants reported increased anxiety and depression and other forms of psychological distress.</p>
<p>Uthman, O. A., Magidson, J. F., Safren, S. A., & Nachega, J. B. (2014). Depression and adherence to antiretroviral therapy in low-, middle- and high-income countries: a systematic review and meta-analysis. <i>Current HIV/AIDS reports</i>, 11(3), 291–307. https://doi.org/10.1007/s11904-014-0220-1</p>	<p>To test whether the association between depression and adherence differs based upon rates of depressive symptoms and ART adherence in study samples; publication date; country income group (low, middle, high); and study characteristics (sample size, design). Further, they sought to identify whether there was a difference in prevalence rates of depressive symptoms and ART adherence by country income group.</p>	<p>Systematic review and meta-analysis</p>	<p>Conducted searches on the PUBMED, EMBASE and Cochrane CENTRAL databases.</p>	<p>Used key words "depressive disorder" OR "depressive" AND "disorder", "Depression" AND "HIV" OR "HIV" AND adherence AND antiretroviral AND "therapy" OR "therapy" OR "therapeutics" OR "therapeutics".</p>	<p>Of 2,861 citations, 111 studies that recruited 42,366 PLHIV</p>	<p>67% USA, 4.5% France, 3.6% Ethiopia, and 3.6% South Africa</p>	<p>The higher the prevalence of depressive symptoms of PLHIV recruited in the studies, the lower the likelihood of achieving good adherence to ART. There were significantly higher rates of adherence in low- vs. higher income countries.</p>

Tatum, A. K., & Houston, E. (2017). Examining the interplay between depression, motivation, and antiretroviral therapy adherence: a social cognitive approach. <i>AIDS care</i> , 29(3), 306–310. https://doi.org/10.1080/09540121.2016.1220481	To examine the relationship between depressive symptoms, two types of motivation, and adherence, with self-efficacy as a mediator.	Participants were drawn from two prior cross-sectional studies.	CES-D, AIDS Clinical Trials Group adherence questionnaire, TSRQ	ART adherence, motivation, self-efficacy, depression	121 PLWH	IL, US	Path analysis revealed that self-efficacy fully mediated the relationship between the three predictor variables (depressive symptoms, intrinsic motivation, and extrinsic motivation) and adherence.
Smith, A. B., & Cook, P. F. (2019). Comorbid mental health disorders in persons living with HIV: Adherence to antiretroviral therapy. <i>Archives of psychiatric nursing</i> , 33(4), 364–370. https://doi.org/10.1016/j.apnu.2019.04.008	Identifying and understanding factors that affect ART adherence has the potential to improve the lives of PLWH.	Secondary data analysis	Self-report questionnaires, information was then obtained daily for 10 weeks from participants by MEMS pill bottles and from smartphone surveys, Brief COPE, SOC, MSPSS, CES-D, HAT-QoL	ART adherence, mental health, substance abuse	41 PLWH	CO, US	Logistic regression analyses indicated that PLWH who had reliable housing were over six times more adherent than those with unreliable housing.
Moplaisir, F. M., Aaron, E., Bossert, L., Anderson, E., Taha, M., Okafor, V., Kemembin, A., Geller, P., Jemmott, J., & Brady, K. A. (2018). HIV care continuum outcomes of pregnant women living with HIV with and without depression. <i>AIDS care</i> , 30(12), 1580–1585. https://doi.org/10.1080/09540121.2018.1510101	To evaluate the association between possible or definite depression with four outcomes: viral suppression at delivery, care engagement within three months postpartum, retention and viral suppression at one-year postpartum.	Retrospective cohort analysis	EPDS	Depression, retention in care, HIV care continuum, maternal health	281 WLWH during pregnancy to 1 year after delivery	PA, US	Despite the high prevalence of psychosocial stressors, most women achieved viral suppression at delivery but postpartum, retention and viral suppression were poor. These findings likely reflect the beneficial effects of intensive PCM (perinatal case management) to offset the negative impact of depression in pregnancy and postpartum.

<p>Fernandez, S. B., Lopez, C., Ibarra, C., Sheehan, D. M., Ladner, R. A., & Trepka, M. J. (2022). Examining Barriers to Medication Adherence and Retention in Care among Women Living with HIV in the Face of Homelessness and Unstable Housing. <i>International journal of environmental research and public health</i>, 19(18), 11484. https://doi.org/10.3390/ijerph191811484</p>	<p>To explore experiences of housing instability among WLWH and to understand its role in their ability to adhere to antiretroviral medication and remain retained in care.</p>	<p>Qualitative study guided by a phenomenological approach</p>	<p>Interviews were conducted using a semi-structured interview guide</p>	<p>Housing instability, homelessness, medication adherence, retention in care</p>	<p>16 WLWH</p>	<p>FL, US</p>	<p>Across different housing situations, transience and instability of housing situations impacted the ability to take medication as prescribed and stay engaged in care. Women with housing instability also reported unmet and competing needs that included depression, chronic stress, substance use issues, competing physical illnesses such as pancreatitis, and a lack of food.</p>
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Appendix B

Table 1. Demographic characteristics of participants (N=12)

<i>Variable</i>	<i>N</i>	<i>Percent</i>
Age		
Mean	49.8	
<40	2	16.7
40-50	2	16.7
>50	8	66.7
Race		
Black	10	83.3
White	2	16.7
Sex assigned at birth		
Female	11	91.7
Male	1	8.3
Gender Identity		
Woman	12	100
Man	0	0
Years Living with HIV		
< 10 years	2	16.7
10-20 years	3	25
> 20 years	7	58.3
Socioeconomic Status		
Above FPL	4	33.3
Below FPL	8	66.7
Geographic Location *by zip		
Non-rural	10	83.3
Rural	2	16.7
Level of Education		
Less than high school	1	8.3
Finished high school or GED equivalent	3	25
Some college	6	50
Technical, vocational, or community college	1	8.3
College degree or above	1	8.3
Health Insurance		
Insured	11	91.7
Uninsured	1	8.3
Employment Status		
Employed full or part-time	3	25
Unemployed	9	75