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## HIV/AIDS, treatment adherence, and lifestyle: A qualitative study

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### ABSTRACT

HIV treatment and medication adherence remain significant to prolonging the life of people with HIV/AIDS. Challenges to and beneficial factors that promote treatment adherence and the maintenance of a healthy HIV-positive lifestyle were examined among  $N = 100$  participants from three HIV/AIDS support networks in California. This study employed an anonymous, open-ended methodology, whereas much of the previous research has used interviews, focus groups, or researcher-generated Likert-type surveys. In addition, most of our participants were from small towns in Central California, whereas past studies have largely been based on urban samples. Although most of the thematic categories that emerged in our data confirmed previous research, several novel and understudied factors also were important. Implications for healthcare providers and counselors are discussed.

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HIV/AIDS; medication adherence; psychological factors; qualitative study; rural and small town populations; treatment adherence

HIV remains a profound problem in the United States, with nearly 1.1 million people living with the virus (Center for Disease Control & Prevention, 2014). Since the start of the epidemic in the 1980s, approximately 78 million people worldwide have contracted HIV (United Nations AIDS, 2014). Since then, treatment has progressed dramatically with an 80% decrease in mortality rates due to the use of HIV medication (National Center for Health Statistics, 2013). Even though these drugs cannot cure HIV, they greatly decrease the HIV viral load in the body and foster a stronger immune response (Schaecher, 2013), thus extending the life of those living with HIV. Maintaining a healthy lifestyle while living with HIV, for example, through treatment and medication adherence, safe sexual practices, and the use of sterile needles, also is essential to prolonging the life of people with HIV and reducing the spread of the virus. Identifying the populations of people most at risk for poor health behaviors, recognizing the specific barriers to living safely with HIV, and understanding the psychological, social, and lifestyle factors that promote

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treatment adherence are all key to preventing deaths and improving the overall health of people diagnosed with HIV.

The purpose of this qualitative study was to examine both the self-reported challenges to and beneficial factors that promote HIV treatment adherence, with the aim of developing new insights and perspectives on this topic. Most of the previous studies have been quantitative (using pre-existing, researcher-generated scales) or qualitative, but not anonymous, with the latter predominantly conducted via face-to-face interviews between researchers and individuals with HIV (e.g., Sylvain & Delmas, 2011). It is important to examine this topic using a variety of methodologies (all of which possess advantages and disadvantages)—even if they confirm existing research—to ensure that our knowledge on this subject is not biased due to our analytic tools (Somekh & Lewin, 2011). The main disadvantage of quantitative studies employing Likert-type scales is that participants' responses and the scope of data are limited. The primary disadvantage of qualitative interviews is their lack of anonymity; the presence of an interviewer or focus group moderator could bias the results, as people may hesitate to reveal sensitive, embarrassing, stigmatizing, or socially undesirable information (Hruschka et al., 2004; Ong & Weiss, 2000). Comparative studies show that social research participants disclose significantly more information in visually anonymous than nonanonymous settings (Joinson, 2001). Anonymity concerns are particularly relevant in the case of HIV/AIDS, as we are inquiring about a highly stigmatizing health condition and behaviors (Fee, 2013; Ong & Weiss, 2000). To address these concerns, we opted for an open-ended questionnaire format to provide participants with the greatest anonymity and flexibility in responding. Of course, there are disadvantages with this methodology, a point that we address in the Discussion section.

In addition, the majority of our volunteer participants were clients of two small, ethnically diverse HIV/AIDS support networks in Central California. Previous research has primarily sampled participants from support networks in large cities, resulting in a body of knowledge that is overly urban-oriented (e.g., Siegel, Lekas, Olson, & VanDevanter, 2010; Sylvain & Delmas, 2011). The perspectives and needs of clients from small town communities may differ significantly from those of urban centers, including challenges related to confidentiality/privacy, transportation (e.g., the need to travel longer distances to obtain medications and services), and access to medical and mental healthcare providers and support staff who are knowledgeable and experienced with HIV/AIDS (Graham, Forrester, Wysong, Rosenthal, & James, 1995; Heckman, Catz, Heckman, Miller, & Kalichman, 2004; Heckman et al., 1998; McKinney, 2002; Sarnquist et al., 2011; Schur et al., 2002). Hence, the present study adds to the diversity of the participant samples in the literature.

## Predictors of treatment and medication adherence

In the following section, we briefly review the literature on factors known to influence HIV/AIDS treatment recommendation adherence, including medication adherence. Medication adherence is crucial because taking dosages consistently is a key factor in preventing resistance to treatment (Schaecher, 2013). Skipping doses or not taking the medication as directed allows the virus to replicate, leading to a higher chance of mutation. This can create a drug-resistant HIV variant in the body, leaving the individual vulnerable to increased viral load, a weakened immune system, increased healthcare costs, and AIDS-related illnesses that can result in death (National Institutes of Health, 2014; United States Department of Health & Human Services, 2012).

Factors predicting treatment adherence have been extensively researched in the field. Common factors that have been examined include psychosocial variables (e.g., social support), stigma and confidentiality regarding one's HIV status, demographics (such as age and sex), sociological factors (e.g., employment status, access to insurance, economic stability, etc.), lifestyle factors (e.g., drug and alcohol use; daily activity and routines; De Boni et al., 2016; Houston, Osborn, Lyons, Masvawure, & Raja, 2015; Katz et al., 2013; Olem, Sharp, Taylor, & Johnson, 2014; Rana et al., 2015), medication side effects, the fear of negative consequences such as getting sick (Olem et al., 2014), attitudes (e.g., positive vs. negative views of medications), and a wide range of other individual difference variables (e.g., spirituality, health maintenance self-efficacy; Drachler, Teixeira, & Leitem, 2016; Kagee & Delpont, 2010; Trevino et al., 2010; Tyer-Viola et al., 2014).

One of the strongest psychosocial predictors of treatment and medication adherence is social support (Houston et al., 2015). To illustrate, HIV-positive individuals who receive more assurance of worth from a variety of support persons are more likely to adhere to treatment recommendations over an extended period of time (Steers et al., 2004). Good communication and support from a doctor and nurse, along with a trusting relationship with one's primary healthcare provider, are important to medication adherence (Gauchet et al., 2007; Pomeroy et al., 2007, Simoni, Frick, & Huang, 2011). Mental health barriers, such as depression and negative affect, are also significantly associated with decreased treatment adherence (Blashill, Perry, & Safren, 2011; Gonzalez, Batchelder, Psaros, & Safren, 2011).

A major predictor of medication adherence is side effects. A systematic review and meta-analysis identified notable adverse effects, including sensory (e.g., taste disturbance) and gastrointestinal (e.g., nausea) effects (Al-Dakkak et al., 2013). A belief in one's ability to adapt and cope with side effects helps patients to adhere to medication regimens (Johnson, Dilworth, Taylor, & Neilands, 2011). In addition, confidentiality appears to be a strong indicator of treatment adherence. Keeping one's HIV status confidential

(Kagee & Delpont 2010) and the stigma of potential disclosure of one's HIV status to family and friends is a common self-reported impediment to adherence. For example, 50% of individuals who reported skipping a dosage of medication said that they did so because they feared family or friends would discover their HIV-positive status (Hosek et al., 2007). Certain lifestyle habits further moderate compliance with medication recommendations, including sleeping through medication dosages, inability to follow special instructions, and changes in daily routine (Murphy et al., 2000; Pomeroy et al., 2007).

## **HIV prevention and safe sexual practices**

Identifying the factors that prevent the spread of HIV is also essential to combatting the disease. First, adherence to antiretroviral medications is key to keeping a low viral load and thus helping to prevent the spread of HIV, as some HIV-positive individuals will engage in risky health behaviors such as unprotected sex. Safe sexual practices and sterile drug use are also important components (Ojcius, 2008). When used consistently and correctly, condoms are highly effective in preventing the spread of HIV (Centers for Disease Control & Prevention, 2013; Liu et al., 2014). Despite this, in one study 40.6% of HIV-positive men reported engaging in unprotected anal intercourse with men who were HIV-negative, and the more sexual partners people have, the more likely they are to engage in unsafe sex (Cunha et al., 2014).

Given the importance of condom use in preventing the spread of HIV, understanding why individuals decide not to practice safe sex is a key issue. A greater concern for emotional and physical intimacy over health concerns are common reasons for lack of condom use (Corbett, Dickson-Gomez, Hilario, & Weeks, 2009). Among women, personal barriers including negative attitudes, unsupportive environments, and power inequity within one's relationship are frequently cited reasons for not using a condom among women at high risk of contracting HIV (Kogan, Simons, Chen, Burwell, & Brody, 2013; Lotfi, Tehrani, Yaghmaei, & Hajizadeh, 2012). Predictors of increased condom use include higher education, unmarried status, HIV awareness, and the advocacy of good health (Wagner, Ghosh-Dastidar, & Slaughter, 2015). Understanding the reasons for unsafe sexual practices can help us to target at-risk individuals and design interventions to ameliorate these practices.

Although we have reviewed a large number of impediments to treatment and medication adherence separately, it is important to note the interconnected nature of these challenges and their potential cumulative effects. For example, HIV-positive individuals who miss medication dosages are also more likely to transmit HIV, due to both higher viral loads and increased risky behaviors (Kalichman & Rompa, 2003). Given the complexity of this

health problem and to cast a wide net, we posed multiple related questions to our participants, anticipating some overlap in responses. To summarize, our central research question was: What factors are perceived to hinder (and promote) adherence to treatment (including medication) recommendations and safe practices while living with HIV?

## **Methods**

### ***Participants and procedure***

$N = 100$  clients of the San Luis Obispo (SLO) AIDS Support Network, the Santa Barbara Pacific Pride Foundation, and the AIDS Project Los Angeles participated in the study. (Responses from 4 participants were discarded because they were largely incomplete; 1 was accidentally completed by a family member on behalf of the client.) These support networks serve an ethnically and socioculturally diverse population. The eligibility criteria for the study, specified in the informed consent document, were being over the age of 18 and diagnosed as HIV-positive. Because concerns about confidentiality are especially salient in small towns (Heckman et al., 1998; Schur et al., 2002), such as San Luis Obispo, to help protect anonymity, the survey did not request any identifying demographic information and participants indicated their consent by completing the survey (rather than by providing a signature). The study was approved by the Institutional Review Board at the California Polytechnic State University, San Luis Obispo.

### ***Paper-and-pencil version***

Potential participants were verbally asked to participate and a blank questionnaire (along with a clipboard, pen, and envelope) were hand distributed to clients either by the first author or by the staff and volunteer members of the three AIDS support networks. To ensure anonymity, participants were directed to complete the questionnaire privately in the waiting room of the support network office, to place their completed survey in the envelope and seal it, and then to deposit the envelope in an anonymous drop box. A sign advertising the study and copies of the questionnaire also were placed on a table in the waiting room at all three locations and clients could self-refer to the study. A box of small candy bars was placed next to the drop box and a sign indicated that participants could take one as a small token of appreciation for completing the study.

### ***Online version***

The SLO AIDS Support Network also distributed an online version of the survey to all eligible clients (using SurveyMonkey) and offered participants a raffle ticket for a \$50 online gift card for completing the questionnaire. Twelve percent of the total sample completed the online version of the study.

## Measures

Participants were provided with an open-ended questionnaire that included four items: (a) “As an individual with HIV, what are some of the challenges you face in maintaining your treatment recommendations?”; (b) “As an individual with HIV, what helps you to maintain these recommendations?”; (c) “What are the biggest difficulties or challenges you face that influence whether or not you practice safe maintenance of HIV (safe sexual relations, condom use, sterile needles)?”; and (d) “What are the biggest difficulties or challenges you face in maintaining your recommended medications?”

## Results

The data were analyzed following content analysis methods (Hruschka et al., 2004; Neuendorf, 2016) and major content themes (e.g., social support) were compiled and summarized. First, the participants’ open-ended responses to the four questions were transcribed verbatim into an Excel spreadsheet. A total of 554 different words/phrases were coded. Note that a single line of text could be coded according to multiple content categories if it contained multiple responses. For example, “forgetting to take them or suicidal thoughts” (see Table 1, Question 4) was coded as two separate categories: Category 1 = memory difficulties (“forgetting to take them”) and Category 8 = psychological factors (“suicidal thoughts”).

The initial coding of responses was conducted by the first author. In conjunction with grounded theory, this was an inductive process and emergent themes were identified (Glaser & Strauss, 1967). The process was iterative and involved reviewing all of the responses, developing a preliminary list of concepts, coding the responses, then creating new, collapsing, and/or eliminating categories, solidifying the list, and recoding the responses (Hruschka et al., 2004). Subsequently, as an indicator of reliability, two research assistants independently coded the responses using the codebook developed by the first author. The researchers generally agreed on the classification of participants’ responses into thematic content categories and intercoder reliability was substantial (Landis & Koch, 1977). The mean percentage of agreement among the three coders was 84.1% for Question 1, 91.2% for Question 2, 75.0% for Question 3, and 92.2% for Question 4. Disagreements in coding were resolved through discussion with the goal of achieving consensus among the three coders. In the few cases where consensus could not be reached, majority rule was followed.

The major content categories for each of the four questions and sample participant responses are presented in Table 1. Note that the table presents the percentage of participants who reported each of the thematic content categories, and excludes participants who reported experiencing “none” or who provided no response (i.e., left the question blank).

**Table 1.** Percentage of participants who reported experiencing the barrier/beneficial factor.

	Thematic content categories	Percentage
<b>Barriers to treatment adherence</b>	Medication burdens (e.g., “having to always take all of the medication”; “eating enough food for taking the meds”; “a lot to swallow”; “pill size”)	25
	Memory difficulties (e.g., “forgetfulness”)	23
	Scheduling/time management (e.g., “taking medications on time”; “fluctuating schedule”; “coordinating treatment schedules”)	19
	Medication side effects (e.g., “chronic nausea”; “diarrhea”; “fatigue”)	17
	Healthy lifestyle concerns (e.g., “maintaining correct and balanced diets to minimize side effects”; “staying active [active]”)	13
	Psychological factors (e.g., depression, stress, substance abuse)	13
	Insurance/money concerns (e.g., “making sure I’m insured”; “getting meds approved on time, [company name withheld] does not like to pay”)	12
	Moving/housing issues (e.g., “I move often”; “signing back up for service after just moving to a new state”)	11
	Appointment challenges (e.g., “seeing my doctor on time,” “getting an appt.”)	9
	Lack of social support (e.g., “a place to meet other HIV positive men [online, forum]”)	8
	Negative mindset and perspective	8
	Work and school concerns	6
	Privacy issues (e.g., “keeping my HIV status private ...”; “I want my HIV private, no one to know!”)	3
	Misc.	13
<b>Factors promoting treatment adherence</b>	Social support (e.g., “The support community in place here. Family ASN and my doctor”; “having a partner also infected to help when I’m down”; “noing [knowing] I have to take care of my dog”)	30
	Mindset and perspective (e.g., “try to say ‘I get to’ take my meds instead of ‘have to’”; “wanting to live”)	27
	Routine and organization (e.g., “laying out my meds a week in advance”)	21
	Prioritizing health/sobriety (e.g., “being in good general health helps keep up with meds”)	18
	Resources and education	9
	Reminders (e.g., “keeping your meds in sight”; “setting a timer on my phone to remind”)	8
	Distractors (e.g., acupuncture, TV, work, “stay busy”)	6
	Fear of consequences of not taking medications (e.g., “I know I must take my meds or die”)	6
	Medication refills and appointments (e.g., “maintaining appts., don’t miss any MD appts.”; “calling in my scripts in plenty of time”)	5
	Relying on oneself	5
	Nothing helps	4
	Having insurance/income (e.g., “Obamacare”)	4
	Confidentiality (e.g., “take medications with me and take them at work secretly”)	3
	Misc.	10
<b>Barriers to maintenance of healthy HIV-positive status</b>	Practices safe maintenance of HIV (e.g., “always be safe ... I would never wish this on ANYONE else”)	29
	Not sexually active (e.g., “I no longer have sex at all”)	23
	Stigma prevents sexual activity (e.g., “I would never have unprotected sex, but sometimes I avoid sex to avoid revealing my status”)	20
	Hedonistic reasons (e.g., “being passionate at the moment”; “depends on how horny I am and/or how hot he/she is”; “laziness, convenience”; “I like bareback sex”)	7
	Drug/alcohol barriers	4
	Disclosure of HIV status	4

(Continued)

**Table 1.** Continued.

	Thematic content categories	Percentage
	Partner struggles and concerns (e.g., “other not wanting to practice safe sex”)	4
	Housing and transportation issues	3
	Misc.	10
<b>Barriers to medication adherence</b>	Memory difficulties (e.g., “taking/remembering/making a habit”)	19
	Side effects (e.g., fatigue, nausea, dizziness, sleep disturbances, etc.).	12
	Pill burden (e.g., “too many pills”; “I just get sick and tired of having to take them every damn day”)	9
	Refill and pharmacy difficulties (e.g., “accessibility. My pharmacy is in LA ... “long distance from my pharmacy”)	9
	Movement (e.g., “traveling, keeping meds on hand”; “make sure I bring my pills with me when I stay overnight somewhere”)	6
	Poor timing (e.g., “take meds at the same time every day”)	6
	Insurance and expense (e.g., “when med are not authorized ...”)	3
	Psychological factors (e.g., depression, suicidal thoughts)	3
	Lack of social support/not receiving advice or help (e.g., “I do not get help from my family or friends”)	3
	Misc.	12

Note. Participants may have provided multiple responses to each question; therefore, the percentages for each question do not sum to 100. Percentages for Questions 1, 3, and 4 are based on the number of participants who experienced barriers. Question 1: 25% of participants reported no barriers, Question 3: 31% reported no barriers, and Question 4: 41% reported no barriers.

## Discussion

The central purpose of this study was to examine the barriers and beneficial factors that contribute to HIV treatment and medication adherence, with the aim of investigating previously unidentified influences on adherence, through the use of an open-ended, anonymous questionnaire. Numerous studies have examined these factors through face-to-face qualitative interviews, focus groups, or standard close-ended Likert-type surveys. A disadvantage of interviews and focus groups is their lack of anonymity (e.g., participants may be reticent to divulge information to the interviewers) and closed-ended surveys utilize researcher-generated questions (i.e., the researchers’ *a priori* assumptions and beliefs). Relatively little research has employed a completely anonymous and open-ended methodology (Gauchet et al., 2007; Tyer-Viola et al., 2014). In addition, the majority of our participants were recruited from two small town HIV/AIDS support networks in Central California, while much of the extant research has focused on large urban populations (Bottonari et al., 2010; Hosek et al., 2007; Langness et al., 2014).

With respect to reported barriers, as revealed in Table 1 (Question 1), a wide variety of responses was obtained from participants. First, we focus on the relatively novel and understudied barriers to adherence, as they have the potential to shed new light and stimulate new research on this topic. One interesting finding was that a sizeable number of individuals (13%) reported that striving to maintain a healthy diet, appropriate levels of physical

activity, and an optimal weight were their most significant barriers to treatment adherence. The corollary of this finding is that taking care of oneself physically may lead to better HIV treatment adherence. Indeed, 18% of our participants reported that eating healthily and maintaining overall physical health and well-being were their most significant contributors to treatment adherence (e.g., “being in good general health helps keep up with meds”). Even though these general health habits may not be directly related to treatment and medication regimens, our results suggest that diet, exercise, and other health behaviors are perceived to influence treatment consistency, and that changes in general health habits could promote compliance. Healthier lifestyle habits also may boost self-efficacy, which, in turn, has been found to bolster treatment adherence (Nokes et al., 2012).

With respect to reported beneficial factors (Table 1, Question 2), another interesting finding was that numerous participants listed general stress-relievers and distractors (6%) as their most important contributors to treatment adherence. For example, these factors included acupuncture, drinking tea before sleep, watching television, work, and staying busy. Again, these activities may seem unrelated to treatment adherence, but they also may point to a person’s means of coping with or distracting from the stress of living with HIV and other daily life stressors. Previous research indicates that life stressors (e.g., finances, relationship and employment status, etc.) can significantly impact adherence, and effective coping with these stressors can improve the overall health of the individual (Bottonari, Safren, McQuaid, Hsiao, & Roberts, 2010), thus leading to increased HIV treatment adherence. Our results suggest that programs and clinical interventions designed to support HIV-positive individuals should emphasize the development of general healthy behaviors and personal coping and stress reduction techniques. For example, nutritional counseling, exercise programs, and other wellness activities (e.g., Qigong, yoga, mindfulness meditation) could have indirect effects on treatment adherence. Because the latter types of programs are often not readily accessible in rural/small town communities, they could be offered by staff and volunteers at HIV/AIDS support networks, and information about online resources (e.g., [www.yogaglo.com/](http://www.yogaglo.com/)) and smartphone Apps could be disseminated to clients.

With regard to safe practices while living with HIV (Table 1, Question 3), such as condom use, a large proportion of respondents (29%) indicated that they regularly employed safe practices (i.e., they practiced safe sex, abstained from drug use or needle sharing, etc.). Consistent with Bernier et al. (2016), a sizeable number of participants (23%) reported that they were not sexually active or were deliberately celibate, and 20% of respondents indicated that the stigma surrounding their HIV status effectively prevented them from initiating sexual relationships, highlighting the fact that stigma is a major challenge for HIV-positive individuals (Fee, 2013; Hosek et al., 2007).

However, some participants reported not using condoms, due to partner concerns (4%), alcohol/substance abuse (4%), and hedonistic reasons (7%), such as a desire for increased physical and emotional intimacy (similar to Smith & Reilly, 2005).

Next, we consider the most frequent responses, which confirm much of the prior research on HIV treatment adherence. Consistent with prior studies, 25% of participants reported that medication burden (e.g., “too many pills”) was their most significant impediment to treatment adherence (e.g., Cohen, Meyers, & Davis, 2013). Medication side effects (17%) also were a frequently reported barrier (e.g., Al-Dakkak et al., 2013), even though the newer HIV medications have decreased pill burden and certain side effects (Geretti & Tsakiroglou, 2014). With respect to barriers to medication compliance (Table 1, Question 4), respondents noted common challenges, including difficulty remembering to take medications (19%). This is consistent with previous research that found that more than half of all participants reported forgetting or being busy or asleep at medication time as reasons for missing a dosage (Gonzalez et al., 2004).

Many scholars have noted the importance of social support to treatment adherence (e.g., Gonzalez et al., 2004; Langness et al., 2014), and 30% of our participants cited social support as a main contributor to treatment adherence. Participants listed a wide range of types of support, such as friends and family, clinical staff and counselors, as well as dogs, which parallels prior research on the significance of support animals for HIV treatment adherence (Saber, Neilands, & Johnson, 2014). Social support is influential in terms of providing both tangible assistance (e.g., reminding individuals to take their medication; Rana et al., 2015) and intangible aid, such as increased self-esteem and self-efficacy to continue adherence (Sylvain & Delmas, 2011). Besides social support, the extant research has consistently emphasized the salience of “mindset and perspective” to treatment adherence (Gonzalez et al., 2004; Malloy, O’Carroll, & Ferguson, 2014). Twenty-seven percent of our participants cited this category as significant (e.g., keeping a positive outlook, self-discipline, and persistence, wanting to live and have a better quality of life, etc.). Another frequently reported beneficial factor (21%) was the maintenance of a consistent routine and organization (Magidson, Blashill, Safren, & Wagner, 2015; Olem et al., 2014).

HIV-positive individuals living in rural and small town communities face more pronounced challenges related to maintaining confidentiality, transportation, and access to qualified and experienced healthcare providers (Graham et al., 1995; Heckman et al., 2004; Heckman et al., 1998; McKinney, 2002; Schur et al., 2002). Privacy issues (3%), housing/transportation issues (3%), and, in particular, appointment challenges (9%; e.g., “seeing my doctor on time”; “getting an appt.”) and refill/pharmacy issues (9%; e.g., “long distance from my pharmacy”) emerged as salient themes in this study, consistent with

the literature indicating that those living with HIV/AIDS in small towns face added burdens in maintaining their treatment recommendations (McKinney, 2002; Schur et al., 2002). Albeit costly, home-based services could help to alleviate clients' concerns about privacy and stigma, as well as transportation difficulties (Graham et al., 1995; Heckman et al., 2004; McKinney, 2002; Schur et al., 2002). Technology-based services, such as online support groups, tele-counseling, and smartphone Apps (e.g., Mango health, [www.mangohealth.com](http://www.mangohealth.com)) can provide remote and mobile support, and these were cited by participants as tools that were useful or desired; however, their success is predicated on ready and reliable access to technology (e.g., "sometimes I need money to keep cell phone on for reminder" [call from clinic]).

### **Limitations**

There are a number of limitations associated with this type of research. We opted to use an open-ended questionnaire in the present study, to provide participants with a high level of anonymity and flexibility in responding. The central weakness of this research methodology, relative to nonanonymous interviews, is that the latter allow for greater probing, and thus potentially more depth and clarity in participants' responses (Somekh & Lewin, 2011). Furthermore, to preserve anonymity in the small town locations, no demographic information was requested, and hence demographic analyses could not be conducted. As with all open-ended data (interview transcripts, etc.), the written responses were analyzed and summarized, and this process is subject to errors in interpretation and data reduction (Hruschka et al., 2004), and as with all self-report studies (including interview and Likert-type survey research), causality cannot be ascertained. For example, although our participants indicated that depression decreased treatment adherence, depression also may be a result of poor adherence. All self-report studies have this shortcoming and assume that people are completely forthcoming and sufficiently introspective to accurately report the motivations for their behaviors (Somekh & Lewin, 2011). More observational and other report studies (e.g., reports from family and friends) are needed in the literature. Lastly, generalizability is limited by the use of a nonrandom convenience sample.

The results obtained from this study confirm much of the previous research on this topic and also offer new insights for future analysis. In particular, healthcare providers and counselors who work with individuals with HIV should consider the multiple influences that may impact treatment and medication adherence, such as diet and exercise, and individualized coping and stress management techniques. Although the causal association between healthy lifestyle habits and increased treatment adherence has not been empirically established, numerous participants noted its effect on treatment

adherence, suggesting that holistic health education is central to treating the chronic disease of HIV.

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