

THE ROLE OF FORMAL AND INFORMAL SOCIAL SUPPORT ON DEPRESSION  
FOR INDIVIDUALS LIVING WITH HIV DISEASE

by

Amanda M. Bloomer-Clouse

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Approved by:

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Dr. Teresa Scheid

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Dr. Diana Rowan

---

Dr. Elizabeth Stearns

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## ABSTRACT

AMANDA M. BLOOMER-CLOUSE. The role of formal and informal social support on depression for individuals living with HIV disease. (Under the direction of DR. TERESA L. SCHEID)

The current literature on depression within HIV populations shows poorer outcomes for these individuals than those in the general population. To further these studies, I performed an analysis looking at the effects of formal and informal social support on an HIV population in the south. The data comes from a 2005 SAMHSA study of health outcomes of 320 HIV-positive individuals over a twelve month period. The individuals in this study were referred through an enhanced substance abuse program. Social support variables used included professional support, support from a partner, support from family and friends, and feelings of closeness to family and friends. Depression was measured in the study as the number of days depressed in the past 30 days. This variable was recoded into categories for the analysis in this paper. Regression analysis was used and findings showed variations in the effects of different forms of social support. Both formal and informal social support variables were found to have no significant effect on people living with HIV/AIDS. Race was found to be significant for levels of depression reported. Implications of this study could help to better future outcomes for individuals within this population.

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## LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
HIV	Human Immunodeficiency Virus
PLWHA	People living with HIV/AIDS
SAMHSA	Substance Abuse and Mental Health Services Administration

## INTRODUCTION

Since the discovery of the human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) in the early 1980's, people living with the virus have faced a variety of social barriers and problems such as stigma and fear of disclosing their serostatus to others. Due to the struggles of dealing with these issues compounded with coping with a serious illness, people living with HIV and AIDS (PLWHA) often have higher rates of depression (Kelly 1998; Walkup 2009). As a result of the evolving social climate surrounding the disease, the associated mental health problems have also changed over time (Walkup 2009). In the early years of the virus, there was an elevated level of fear since it was originally unknown how the disease was spread. Many people viewed HIV as a disease that only affected certain groups, such as homosexuals, intravenous drug users, and minorities; consequently the stigma surrounding the disease was high (Wilton 1990). People diagnosed with HIV were at high risk for suicide because at that time, testing positive was often viewed as a death sentence (Walkup 2000). People living with HIV have been found to have a higher lifetime prevalence of major depression (Kelly 1998). With the availability of more treatment options and an increase in public awareness surrounding the disease, mental health problems in PLWHA have decreased, although depression is still an issue for people living with HIV disease (Wyatt et al. 2013). Social support has been found to play an important role in minimizing the negative effects of HIV disease and in alleviating depression (Catz et al 2000)

For this thesis, I focus on the role of social support in reducing the symptoms of depression among a sample of HIV-positive individuals. All participants were referred through a substance abuse treatment program, and the support offered by this program



constitutes formal support. I will also examine the role of informal social supports, which have been more commonly studied. My first objective is descriptive: to examine the demographic variations in depression. The second objective is causal: to examine the effects of the different sources of social support on depression within this population. While previous studies have examined the role of social support in improving mental health outcomes, this study will differ by including both formal and informal sources of social support to gain a better idea of the role both forms of social support play in reducing depression. Furthermore, using an intersectionality framework, I will explore the role of both gender and race and of how they interact to affect depression and social support. This research will provide valuable insight for the sociology of health and mental health literature, as well as public health.

## BACKGROUND AND LITERATURE REVIEW

### Intersectionality

This research is based on an intersectionality framework which examines the role of multiple social statuses (i.e. gender, race, sexuality). Continuing inequality among different races and genders makes this paradigm essential in HIV research, as well as in the field of sociology and public health (Bowleg, 2012). Originally stemming from Black feminist theory, this framework “encourages exploring gender differences within racial groups, racial differences between gender groups, as well as class and age variation” (Mair, 2009: 668). Intersectionality emphasizes that social categories intersect at the micro level of analysis of individual experiences, and reflect the macro level issues, such as racism and sexism. Other approaches to multiple sources of inequality, such as cumulative advantage and disadvantage theory and cumulative inequality theory, state that the effects of inequality accumulate throughout the life course (Bowleg, 2012). The benefit of using an intersectionality framework is that rather than consider race and gender as separate factors that could be affecting depression, researchers need to consider the overlapping effect that these variables have taken together. Rather than only considering blacks and whites or men and women and finding whether one gender or race is more significant, this framework will also examine black women and white women, and black men and white men as separate demographic groups (Sandelowski, Barroso, and Voils, 2009). Many studies on intersectionality also focus on class and sexual orientation variations as well as class. However, class will not be considered in this study due to a lack of variation (almost all respondents were indigent and poor) and data on sexual orientation was not collected for this data.

Previous research utilizing an intersectionality framework has explored the gender and racial variations of depression and social ties amongst older adult (Mair, 2009). This study reports that factors generally associated with reducing risk of depression can vary when examined by race and gender. For example, unmarried black women are more likely to experience depression, and rely on social ties from familial relationships instead of a spouse. On the other hand, marriage was not a significant factor in predicting depression among black men. Another finding was that unmarried, childless men were more likely to experience depression than married, childless women of any race. However, these findings concluded that more research was necessary to fully understand the intersectionality between race and gender and its effect on depression (Mair, 2009).

Intersectionality further explains the comorbidity of HIV and depression through the use of a syndemic model (Wyatt et al. 2013). This model explains how HIV/AIDS is mutually problematic with alcohol and substance abuse, violence and trauma, and stress and depression among those living in poverty. Within this model, demographic factors like gender and ethnicity are actually considered additional risk factors for HIV infection. Unlike behavioral risk factors, these risk factors cannot be alleviated through the use of intervention techniques. Instead, race and gender are complicated and socially constructed, requiring a sociocultural perspective to be taken in understanding the future of HIV within populations at greater risk.

## Mental Health

Studies show that people living with HIV/AIDS (PLWHA) have higher prevalence rates of mental illnesses (Walkup 2009). In HIV literature, depression is the most commonly studied mental illness as it is the most prevalent among PLWHA.

Studies have reported rates of major depression ranging between 22% and 45% of the

sample (Kelly 1998). In a 1994 study conducted by the World Health Organization, 955 participants were studied across multiple countries. In this study, lifetime prevalence rates for major depression were recorded as high as 26% (Maj 1994). As a point of comparison, the overall lifetime prevalence of depression for the United States is only 6.7% (Kessler, Chiu, Demler, and Walters 2005). In another study, 197 bisexual and homosexual men were interviewed using the Structured Clinical Interview for DSM-III-R. The findings were that 35% of men without symptoms and 56% of men with symptoms reported a lifetime history of depression (Kelly 1998). As in the general population, depression is more common among women than in men. Even after controlling for stage of illness, women with HIV also have higher rates of depression than men (Gielen 2001).

#### Substance Abuse

Mental health problems are often found comorbidly with substance abuse (Poikolainen et al 2001). One possible reason for this is that alcohol and other substances are believed to help in relieving stress or anxiety or to help one feel more relaxed (Eckardt et al. 1998). Substance use also puts people at higher risk for HIV. Injection-drug use is the third most frequently reported risk factor for HIV infection, following male-to-male sexual contact and high-risk heterosexual contact (CDC 2011). Additionally, people living with HIV have been found to be more likely than the general population to consume alcohol, with about half of HIV-positive individuals reporting some alcohol consumption. Furthermore, rates of heavy alcohol consumption among PLWHA are twice as high as the general population (Hormes, Gerhardstein, and Griffin 2011).

Previous studies show that there is evidence connecting depression to HIV, depression to alcohol, and alcohol to HIV, though few studies examine the relationship between all three of these (Longmire-Avital, Holder, Golub, and Parsons 2012). One recent study that did so found that gender played an important role in drinking habits and motivation to quit drinking (Longmire-Avital, Holder, Golub, and Parsons 2012). Depression was the sole factor in predicting drinking for men, making them more likely to drink when depressed. For women depression was not a factor for drinking and motivation to quit was the predictor (Longmire-Avital et al. 2012).

#### Role of Social Support

Studies have shown that PLWHA experience stigma due to issues such as fear of transmission as well as discrimination against groups and behaviors associated with HIV such as homosexuality, drug use, and unprotected sex (Walkup 2009). However, certain protective factors, such as social support, seem to reduce the damaging effects of stigma. According to Walkup, "... when individuals learn they have HIV, the impact may be lessened if they have supportive friends. If people who have supportive friends are not hit as hard as others by news of a diagnosis and so have better well-being outcomes, then the presence of friends may moderate the stress effect of the diagnosis (by, for example, buffering its impact.)" (Walkup 2009, 557). It should be noted that social support is studied across multiple disciplines and, as a result, does not have a consistent definition (House 1988). Social support is commonly defined as functions (emotional, informational, and instrumental) performed by family, friends, or other close individuals (Thoits 2011).

Conversely, social support can also negatively impact an individual's mental health. If a person loses social support as a result of disclosing his or her diagnosis, it could have the opposite effect and could worsen distress (Walkup 2009). One longitudinal study in Canada found that there was a slight reduction in social support over a four-year time span, suggesting that loss of support is a real concern among this population (Burgoyne 2004). Additionally, people with HIV are at risk for becoming socially isolated due to the stigma and fear of death associated with the diagnosis. The longer a person has been infected and remains socially isolated, the greater the risk for depression (Lichtenstein 2002).

Though negative effects are possible, the majority of the current literature on social support and HIV has cited positive outcomes (Gielen 2001; Leserman 1999; Lam 2007; Jia 2004; Metts 1996). Social support has been shown to have an effect on physical health in terms of progression of the disease as well as lower rates of depression and other psychological factors (Gielen 2001; Stewart 2005; Theorell 1995). The research also points out that it is often an individual's perception on the level of social support that matters, rather than actual levels of social support. Women who perceived higher levels of social support reported fewer symptoms of depression, anxiety and stress (Serovich 2001). Additionally, white men have been shown to have a positive relationship between perceived social support and mental well-being and were also less likely to engage in risky behaviors as a result (Ostrow 1991).

One of the prevailing theories to explain the role social support plays is the stress model, which is also referred to as the buffering model (House, 1988; Moneyham 2005; Murphy 2000). Stressors, or environmental factors that increase the likelihood of stress,

predispose individuals to depression. Viral loads are higher for HIV patients when stress is higher, and depression and associated issues are known stressors. In the stress model, social support serves as a form of protection, or buffer, against the negative effects of stress. This allows individuals with social support to cope better with stressful situations and reduces the psychological symptoms of stress, such as depression (Moneyham 2005). The buffering model will guide this research in addition to the intersectionality framework.

#### Different Forms of Support

Social support can be provided from both formal and informal sources. Most commonly studied is informal support, which is provided by family and friends (Metts 1996; Serovich 2001). The other source is formal support, which comes in the form of healthcare professionals or other structured sources. Within both of sources, different types of support are identified. First, there is emotional support, which includes love, caring, and encouragement. Next, there is informational support, which includes advice and problem-solving. Lastly is instrumental support, which consists primarily of assistance with daily living activities (Thoits 2011). Formal support is more likely to be informational or instrument, although certainly it can involve emotional support.

Few studies examine the role of formal social support in terms of health outcomes. However, positive outcomes have been observed when this has been done. In a 2005 study, 451 HIV positive women were selected from Miami, New York City and the New Jersey metropolitan area and were randomized into either an intensive support group or a low-intensity comparison group. The study found that this type of intervention was significant for decreasing levels of depression over the next year after it was conducted (Laperriere 2005).

## Demographic Variations

Rates of depression, HIV, and social support all vary greatly across demographic groups. When it comes to gender, women are 70 percent more likely than men to experience depression at some point in their lives (Kessler, Berglund, Demler, Jin, and Walters 2005; Moneyham 2005). For HIV, men make up the majority of cases in the United States, accounting for approximately three-fourths of all reported cases (CDC 2011). In terms of social support, women are more likely to have larger social support networks and are more likely to maintain close relationships (Umberson 1996).

Rates of depression vary widely by race. Non-Hispanic whites are 40 percent more likely to experience depression than non-Hispanic blacks (Kessler, Berglund, Demler, Jin, and Walters 2005). For HIV, minority groups are very disproportionately affected in comparison to whites. Recent estimates show that while blacks account for 14 percent of the United States population, they accounted for 44 percent of new HIV infections in 2009 (CDC 2011). Furthermore, black women made up 57 percent of all new HIV infections among women that year (CDC 2011). Hispanics represent approximately 16 percent of the United States population but accounted for 20 percent of all new HIV cases in 2009. The HIV infection rate for Hispanic men is three times that of white men and the rate for Hispanic women is more than four times that of white women (CDC 2011).

Other demographic variables, such as income and education level, can also be important factors in understanding the effects HIV. One study in 2002 examined HIV mortality rates in terms of socioeconomic status and found that people with lower socioeconomic status were less likely to have access to healthcare and treatment for HIV, and had an increased mortality rate as a result (Wood 2002). Additionally, lower levels of



education have been associated with higher levels of HIV risk behaviors, putting people in this population at a greater risk for transmission of the virus (Kelly 1995).

## RESEARCH OBJECTIVES

The purpose of this paper is to identify the demographic differences in depression in this specific population using an intersectionality framework and to explore the role of social support on depression. Since formal support is rarely discussed in the literature, this study will provide a comparison between formal and informal sources of support. The first objective is to look into any demographic variations in the amount of depression, with a focus on the variations across racial categories. Within this objective, I propose two hypotheses.

H<sub>1</sub>: White women will report more depression than black women, and white men will report more depression than black men.

H<sub>2</sub>: Women will report higher levels of social support than men.

The second research objective is to analyze the effect of social support on reported levels of depression. Within this objective, I propose two additional hypotheses.

H<sub>3</sub>: Participants reporting higher levels of formal social support will report less depression.

H<sub>4</sub>: Participants reporting higher levels of informal social support will report less depression.

## METHODOLOGY

For this study, I will be using the data from a five-year study that took place from 2003 to 2008 that was funded by the Substance Abuse and Mental Health Services Administration (SAMHSA). The grantee was the Regional HIV/AIDS Consortium in Charlotte, NC, and the evaluator for the program was Dr. Teresa Scheid, who provided me with access to this data. This study involved interviewing people living with HIV with co-occurring substance abuse problems. Participants were referred to the study through an enhanced substance abuse program. The majority of the interviews were face-to-face, with a small amount of interviews conducted by phone. Interviews were in a standard survey format with a qualitative supplemental portion and were conducted by clinicians in the program who were trained to administer the survey. Interviews were conducted at intake into the substance abuse program and follow-up interviews were conducted six and twelve months later.

For the intake period of the survey, there were a total of 320 participants. By the twelve-month follow-up, 165 participants answered all of the interview questions for a retention percent of 51.56% of the original sample. There were a total of 210 variables in the data set, which included similar variables at each time period. This paper examines 12 of those variables, which were selected based on the current literature regarding HIV and mental health. This study primarily uses the 320 responses from the intake interviews in order to utilize the greatest number of responses possible. However, the number of days depressed and the measure of formal social support at time 3 will be used in the final regression analysis. This allows for causal analysis of the effects of social support on depression.

The dependent variable for this study is depression. The variable was originally measured as the number of days a respondent reported feeling depressed in the past 30 days, with responses ranging from 0 to 30. This variable was recoded into categories. The coding was as follows: 0 for Never (0 days), 1 for Infrequently (1-9 days), 2 for Sometimes (10-19 days), 3 for Frequently (20-29 days), and 4 for Always (30 days). As shown in Table 1, the distribution at intake is as follows: Never (28.3%), Infrequently (20.1%), Sometimes (16.0%), Frequently (7.2%), and Always (28.3%).

The independent variables in this study are the measures of formal and informal social support. One variable is used to look at the effects of formal support: participation in substance abuse treatment. Four variables are used to look at the effects of the different types of informal support: presence of a main partner to help the respondent cope, practical help from others, presence of someone to talk to about important issues, and feelings of closeness to family and friends. Substance abuse treatment was coded as 0 for no and 1 for yes. Presence of a main partner to help cope was coded as coded ranging from 0 to 4, with 0 for not at all and 4 for a lot. The other three social support variables were all coded with 0 for no, 1 for sometimes, and 2 for yes. Table 1 shows the questions asked as well as the frequencies for the independent and dependent variables.

Additionally, this study controlled for gender, race, physical health status, disability status, education level, and use of alcohol in the past 30 days. Gender was coded as 1 for male and 2 for female. Race was coded with 1 for black and 2 for white. Due to small sample sizes, all other races were coded as missing. Health status was self-rated and ranged from 1 to 5, with 1 being poor and 5 being excellent. The disability variable was created off of a work status variable. The work status variable had different

types of employment listed with one option for disabled. I created the new disability variable by coding all responses for those on disability as 1 and all else as 0. Education was a continuous variable measured in the number of years of education completed. Self-rated health and disability status are controlled for to account for any effects caused by physical health problems. Days of alcohol use in the last 30 days was measured as a continuous variable with responses ranging from 0 to 30. While the literature states that income can be an important factor in HIV populations as well, it will not be controlled for in this study due to a lack of variation among the sample; the majority of the sample was indigent. The minimum income was \$0 and the maximum was \$2140, with a mean of \$406.19. The frequencies, means, and standard deviations for all variables being used in the study are reported in Table 2.

## DATA ANALYSIS

For the analysis, I report frequencies for my categorical dependent and independent variables, as shown in Table 1. The basic descriptive statistics have also been calculated and are presented in Table 2. Next, I present bivariate models with my dependent and independent variables. I conducted chi-square for the dichotomous variables (gender, race, and disability status) and t-tests for the continuous variables (education). A correlation matrix will be performed with all the continuous variables.

I will present several regression models. I will start with the basic demographics of gender and race by days of depression at time 3. In the next model, I will add in disability status, education, self-reported health status, and age. In the third model, days of alcohol use will be included. In the fourth model, informal social support variables and days of depression at intake will be added in. The final model will include the formal social support variable from time 3. By using this nested model approach, I will be able to better determine which of the variables have an effect on depression at time 3. All analyses will be conducted using SPSS 19.

### Univariate Models

Table 1 shows the independent and dependent variable information at Time 1 (T1). Help coping was asked as “Did this person (main partner) help you cope?” The four possible responses with frequencies are as follows: No (21.8%), A little (20.0%), Quite a bit (7.3%), and A lot (50.9%). Practical help was asked as “Do you feel you receive practical help from others?” The three possible responses with frequencies are as follows: No (17.5%), Sometimes (13.9%), and Yes (68.7%). Someone to talk to was asked as “Do you feel you can talk to someone about important issues?” The three possible responses

with frequencies are as follows: No (21.8%), Sometimes (15.1%), and Yes (63.1%). Feelings of closeness was asked as “Do you feel close to family/friends?” The three possible responses with frequencies are as follows: No (17.5%), Sometimes (19.1%), and Yes (63.3%). Lastly, Depression was measured by asking respondents “In the last 30 days, how many days did you feel depression?” To eliminate the skew created by the majority of people answering with the extremes of 0, 15, and 30, this variable was recoded into five range categories which are defined with frequencies as follows: Never: 0 Days (28.3%), Infrequently: 1-9 Days (20.1%), Sometimes: 10-19 Days (16.0%), Frequently: 20-29 Days (7.2%), and Always: 30 Days (28.3%).

Table 1: Independent and dependent variable information at Time 1			
Variable	Question	Coding	Frequency
Help coping	Did this person (main partner) help you cope?	No	21.8%
		A little	20.0%
		Quite a bit	7.3%
		A lot	50.9%
Practical help	Do you feel you receive practical help from others?	No	17.5%
		Sometimes	13.9%
		Yes	68.7%
Someone to talk to	Do you have someone you feel you can talk to about important issues?	No	21.8%
		Sometimes	15.1%
		Yes	63.1%
Feelings of closeness	Do you feel close to family/friends?	No	17.5%
		Sometimes	19.1%
		Yes	63.3%
Depression	In the last 30 days, how many days did you feel depression?	Never (0)	28.3%
		Infrequently (1-9)	20.1%
		Sometimes (10-19)	16.0%
		Frequently (20-29)	7.2%
		Always (30)	28.3%

Table 2 shows the descriptive statistics at Time 1 for the independent and dependent variables. For Depression, the N is 318, the mean is 1.871, and the standard deviation is 1.590. For SA Program Participation, the N is 305, the mean is 0.121, and the standard deviation is 0.327. For Help Coping, the N is 110, the mean is 1.873, and the standard deviation is 1.257. For Practical Help, the N is 252, the mean is 1.512, and the standard



deviation is 0.776. For Someone to Talk to, the N is 252, the mean is 1.413, and the standard deviation is 0.826. For Feelings of Closeness, the N is 251, the mean is 1.458, and the standard deviation is 0.775. For Alcohol Use, the N is 320, the mean is 9.028, and the standard deviation is 10.945.

Variable	N	Mean	Standard Deviation
Depression	318	1.871	1.590
SA Program	305	0.121	0.327
Help coping	110	1.873	1.257
Practical help	252	1.512	0.776
Someone to talk to	252	1.413	0.826
Feelings of closeness	251	1.458	0.775
Alcohol Use	320	9.028	10.945

Table 3 shows the frequencies for the control variables at Time 1. For gender, 61.1% of the sample is male and 38.9% is female. The sample is 83.9% Black and 16.1% White. Self-rated physical health was measured on a scale of 0 to 5, with 0 being Poor and 5 being Excellent. The frequencies are as follows: Poor (24.8%), Fair (34.0%), Good (27.0%), Very Good (10.8%), and Excellent (3.5%). In the variable created for Disability Status, 40.9% of the sample was reported as not disabled, and 59.1% as disabled. Total years of education reported ranged from 3 years to 18. The majority of participants (78.3%) had a high school education or below.

Table 3: Control variable frequencies		
	Frequency	Valid Percent
<b>Gender</b>		
Male	193	61.1%
Female	123	38.9%
Total	316	100.0%
<b>Race</b>		
Black	265	83.9%
White	51	16.1%
Total	316	100.0%
<b>Physical Health Status</b>		
Poor	78	24.8%
Fair	17	34.0%
Good	85	27.0%
Very Good	34	10.8%
Excellent	11	3.5%
Total	315	100.0%
<b>Disability Status (T1)</b>		
Not Disabled	131	40.9%
Disabled	189	59.1%
Total	320	100.0%
<b>Years of Education</b>		
3	1	0.3%
6	2	0.6%
7	4	1.3%
8	14	4.4%
9	41	12.8%
10	44	13.8%
11	44	13.8%
12	100	31.3%
13	25	7.8%
14	21	6.6%
15	8	2.5%
16	13	4.1%
18	3	0.9%
Total	320	100.0%

## Bivariate Models

Table 4 shows a correlation matrix of all the variables at Time 1. There is a significant negative correlation between Depression and Practical Help (.01 level), Talks to Someone (.05 level), and Feelings of Closeness (.01 level). This means that there are less days of depression when there is more social support as measured by higher levels of practical help, talking to someone, and feelings of closeness. Physical health also had a negative correlation with Depression (.01 level). This means that poor health was correlated with more days of depression. Substance Abuse Treatment had a significant correlation with race (.01 level) and a negative correlation with physical health (.05 level). Practical Help had a significant correlation with Talks to Someone and Feelings of Closeness, both at the .01 level. The variable for Talks to Someone had a significant correlation with Feelings of Closeness (.01 level) and Years of Education (.01 level). Gender had a significant correlation with Years of Education (.01 level), Disability Status (.05 level), and Age (.01 level). Race had a significant correlation with Age at the .05 level. Years of Education was significantly correlated to Physical Health at the .05 level and Age at the .01 level. Disability Status was significantly correlated to Age at the .01 level.

Table 4: Correlation matrix of variables at Time 1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Depression (1)	1											
SA Treatment (2)	.113	1										
Help Coping (3)	-.047	-.122	1									
Practical Help (4)	-.164**	.008	.150	1								
Talks to (5)	-.141*	.017	.137	.677**	1							
Feels Close (6)	-.170**	.048	.081	.760**	.717**	1						
Gender (7)	.057	-.030	.001	-.022	-.003	.002	1					
Race (8)	.006	.170**	.043	.065	-.103	-.049	.016	1				
Education (9)	.060	.066	.116	.012	.126*	.013	-.157**	.021	1			
Health (10)	-.150**	-.122*	-.020	.100	.111	.080	-.041	.033	.112*	1		
Disability Status (11)	-.040	.044	.002	-.087	-.062	-.086	-.124*	.052	.071	-.057	1	
Age (12)	-.042	.000	-.099	-.074	-.048	-.092	-.185**	-.133*	.154**	-.021	.213**	1

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\*. Correlation is significant at the 0.05 level (2-tailed).

Table 5 shows a Chi-Square analysis of gender and race by depression. The majority of respondents answered as either Never (0 days) or Always (30 days). Black Females had the lowest percent of respondents who reported Never (21.8%) and White Males had the highest rate of Never (34.5%). However, White Males had the highest percent of respondents who reported Always (31.0%), with Black Females close behind with 30.7 percent of respondent answering Always. White Females responded Always the least at 19 percent. The Pearson Chi-Square analysis was not significant (.165).

Table 5: Chi-square analysis of race and gender by days depressed						
		Never (0 Days)	Infrequently (1-9 Days)	Sometimes (10-19 Days)	Frequently (20-29 Days)	Always (30 Days)
Black Male	Count	50	37	18	11	43
	% within Gender by Race	31.4%	23.3%	11.3%	6.9%	27.0%
	% of Total	16.1%	11.9%	5.8%	3.5%	13.9%
White Male	Count	10	2	4	4	9
	% within Gender by Race	34.5%	6.9%	13.8%	13.8%	31.0%
	% of Total	3.2%	0.6%	1.3%	1.3%	2.9%
Black Female	Count	22	20	21	7	31
	% within Gender by Race	21.8%	19.8%	20.8%	6.9%	30.7%
	% of Total	7.1%	6.5%	6.8%	2.3%	10.0%
White Female	Count	6	3	7	1	4
	% within Gender by Race	28.6%	14.3%	33.3%	4.8%	19.0%
	% of Total	1.9%	1.0%	2.3%	0.3%	1.3%
Total	Count	88	62	50	23	87
	% within Gender by Race	28.4%	20.0%	16.1%	7.4%	28.1%
	% of Total	28.4%	20.0%	16.1%	7.4%	28.1%
Pearson Chi-Square Significance .165						

## Multivariate Models

Table 6 shows a nested regression model which includes five models at Time 3. In the first model, only race and gender were tested against the depression variable. Race was significant at the .01 level with Blacks reporting more days of depression. Gender was not significant.

In Model 2, disability status, level of education, health status, and age were incorporated. Similar to the first model, race was significant at the .05 level with Blacks reporting more days of depression. Physical health was significant at the .01 level with poor physical health increasing a person's likelihood of experiencing depression. No other variables in this model were statistically significant. Model 3 adds in the alcohol use variable. Alcohol use is not shown to be a significant factor. Race and physical health remain the only significant variables, showing that race and physical health have a significant effect on depression.

In Model 4, the independent social support variables are added in, including Help Coping (Time 1), Practical Help (Time 1), Talks to Someone (Time 1), Feelings of Closeness (Time 1), and Depression (Time 1). Race is significant at the .05 level, with Blacks still reporting more days of depression. Physical health is significant at the .01 level, with poor physical health more likely to be associated with experiencing days of depression. Depression from Time 1 was significant at the .01 level, with those reporting depression at Time 1 more likely to report depression at Time 3. No other variables were statistically significant.

Model 5 adds in the final variable of Substance Abuse Treatment (formal support) from Time 3. Race continues to be significant at the .05 level with Blacks more likely to report depression. Physical health also remains significant, this time at the .05 level, with people with poor health more likely to report depression. Depression from Time 1 was significant at the .01 level again, with those reporting depression at Time 1 more likely to report depression at Time 3. No other variables were significant in this model.



Table 6: Nested regression model of depression at Time 3

	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>
Race	.708** (.256)	.659** (.258)	.651* (.261)	.626* (.293)	.717* (.295)
Gender	.101 (.228)	.060 (.238)	.047 (.244)	.041 (.255)	.109 (.258)
Disability Status (T3)		.081 (.243)	.075 (.245)	.093 (.269)	.080 (.274)
Education		-.038 (.055)	-.040 (.056)	-.049 (.064)	-.058 (.064)
Health		-.267** (.101)	-.270** (.102)	-.302** (.108)	-.267* (.112)
Age		.005 (.017)	.005 (.017)	.032 (.020)	.034 (.021)
Alcohol Use			-.003 (.011)	-.010 (.013)	-.014 (.013)
Help Coping (T1)				.105 (.103)	.038 (.107)
Practical Help (T1)				-.115 (.264)	-.156 (.269)
Talks To Someone (T1)				-.189 (.230)	-.159 (.239)
Feelings of Closeness (T1)				.060 (.299)	.116 (.301)
Depression (T1)				.247** (.085)	.261** (.088)
SA Treatment (T3)					-.494 (.401)

\*p < .05, \*\*p < .01, \*\*\*p < .001  
N = 145

## LIMITATIONS

There are a few limitations to this study. First, the interview is self-report, which is potentially less accurate due to memory bias. An example of this memory bias relates to the questions asking about the number of days feeling depressed. The participant was specifically asked to respond without including the influence of drug or alcohol use, but the self-report may have included the number of days with this type of influence which could have distorted the data.

Secondly, there were two variables missing that could affect both substance use and mental health outcomes. The first variable would be the date of diagnosis and the time period between diagnosis and reference to the program. It is possible that the emotions associated with the diagnosis could lead to poorer mental health outcomes immediately following the diagnosis, which would impact the relationship between the independent and dependent variables (Walkup 2009). The second variable is sexual orientation, which has been associated with higher rates of depression and substance abuse. This population is at a higher risk to due stigma, social isolation, and other related social barriers (Hughes, 2002).

While income and education information was collected, it is important to note that there was very little variance in this sample. The majority of the sample had an educational level below a high school diploma and most individuals had very limited income. In a more socioeconomically diverse population, we would expect to see these variables have a greater significance.

Additionally, due to the specific region studied located around Charlotte, North Carolina and the sample used, this study is not generalizable to a larger population. It should also be noted that the social support variables used in this study are based on perceived support rather than actual levels of social support. However, studies show that perceived support has a more significant effect on mental health outcomes than actual support (McDowell 2007). Lastly, due to the comorbid occurrence of mental health issues and alcohol, it is not possible to parse out which problem came first for the individuals in this sample.

## CONCLUSION AND DISCUSSION

My first objective is to explore demographic variations in the amount of depression, specifically among different races. My first hypothesis states that white women will report more depression than black women, and that white men will report more depression than black men. My second hypothesis states that women will report higher levels of social support than men. In terms of H<sub>1</sub> and H<sub>2</sub>, as shown in the Chi-Square analysis, White Males had the highest rate of reporting Always for days depressed (31.0%) and White Females reported this the least (19.0%). This is contrary to most research which reports females reporting more depression than men. Black Females had the second highest rate of reporting Always with 30.7 percent. This is also against most research, as Blacks typically report less depression than Whites. All five regression models show a significant relationship between race and depression, with black men and women reporting more depression than white men and women. This variation from current literature could be accounted for by the sample demographics, which was 87% Black. Also contrary to most literature, gender was not a significant variable in relation to depression or social support in the regression analysis.

My second objective is to analyze the effect of social support of depression. My third hypothesis states that participants reporting higher levels of formal social support will report less depression. For formal support, I use the variable of participation in a substance abuse treatment program. As shown in Model 5 of the regression analysis, this variable was not significant. While few studies have looked at formal social support in terms of health outcomes, positive significant outcomes are typically found, though this

was not the case with this data. This may be because in studies that do find results, typically the formal support is in the form of a support group.

My fourth hypothesis states that participants reporting higher levels of informal social support will report less depression. For informal social support, I used the variables of Help Coping, Practical Help, Talks to Someone, and Feelings of Closeness. The regression models show that none of these variables were significant. While I would have expected to see a significant relationship between depression and each of the forms of informal social support, it is interesting to note that this was not the case for this sample. Blacks typically report higher levels of social support. However, due to the stigma surrounding HIV and associated issues such as mental health problems and homosexuality, the role of social support could be diminished within this population.

Other significant findings not pertaining to a hypothesis were found as well. Self-reported health status was significant in all four regression models that it was included in. This is consistent with previous studies showing that physical health status plays a crucial role in mental health status. Additionally, depression present during Time 1 was also significant (.01 level) in relation to the level of depression at Time 3.

## FUTURE RESEARCH

This paper has some important implications for future studies. For one, race and gender findings here were atypical to previous studies. The race findings were the reverse of what is usually seen, where in this case black people reported more depression than white people, and social support was insignificant in this sample. This could be important for future studies to focus on the remaining racial issues that exist in the HIV population, where stigma is still a problem. As for gender, it was found to be insignificant in the regression model while typically this is an important factor with depression.

Future research would benefit by exploring some of the other key factors, such as sexual orientation and date of diagnosis, that were not available within this data. It would also be beneficial to produce more studies examining the role of formal support on depression. While it was found to be insignificant in this sample, other studies have found a long-term benefit from this type of support.

Additionally, future investigation into the different types of informal social support would be beneficial. It would greatly benefit treatment models for those with HIV and depression to know more specifically what types of support help to prevent or lessen depression. The lack of significance for the informal support variables is an important finding, and further exploration of variables of this nature would be valuable to complete. This population faces significant physical and mental health barriers. By finding ways to break down the social barriers, some of the health-related issues could be alleviated as well.

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