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# Depression in HIV-positive Individuals Living in a Residential Housing Community

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DEPRESSION IN HIV-INDIVIDUALS

DEPRESSION IN HIV-POSITIVE INDIVIDUALS LIVING IN A RESIDENTIAL  
HOUSING COMMUNITY

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for the Degree of Doctor of Nursing Practice

by

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## DEPRESSION IN HIV-INDIVIDUALS

**Abstract**

*Problem:* Depression is the most prevalent psychiatric disorder among individuals living with HIV. Depression rates are three times greater than those found in the general population. Undiagnosed and untreated depression can have a negative effect on the management of HIV infection, resulting in increased mortality and a poorer quality of life. The purpose of this quality improvement initiative was to assess the incidence of depression in HIV-positive individuals living in a residential community.

*Methods:* A prospective, descriptive, cohort design. Convenience sample of HIV-positive adult residents living in an HIV residential community. The nine-question patient health questionnaire (PHQ-9) was voluntarily completed by residents attending a quarterly residential meeting.

*Results:* There were 21 HIV-positive individuals who attended a meeting in May 2019 and completed the PHQ-9 ( $N=21$ ). There were 12 participants ( $n=12$ , 57%) whose PHQ-9 scores indicated depression (95% CI 36%, 78%). Of those, seven participants ( $n=7$ , 33%) had PHQ-9 scores above nine and required immediate referral.

*Implications for practice:* Nearly 60% of the participants in this project had PHQ-9 scores positive for depression, and over 30% required immediate referral to a mental health specialist. Mental health services are necessary for many individuals living with HIV. Having mental health services available or a referral process in place is recommended, especially in a Black community.

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### Depression In HIV-Positive Individuals Living In A Residential Community

The human immunodeficiency virus (HIV) is a retrovirus that weakens the immune system. Infection is transmitted through the exchange of blood, semen, breast milk and vaginal secretions (National Coalition for the Homeless, 2009). Specifically, HIV attaches primarily to the cluster of differentiation number four (CD4) surface protein of the developing T-cell in the thymus, thereby suppressing the T-cell's ability to develop further when an immune response is activated. Acquired immune deficiency syndrome (AIDS) results when the majority of T-helper cells (Th4) are infected. In 2015, the Centers for Disease Control and Prevention (CDC) estimated 1.1 million individuals living in the United States were infected with HIV (CDC, 2018). In 2017, there were 38,739 newly diagnosed cases of HIV, indicating the virus continues to infect individuals despite campaign efforts focused on preventing its spread (CDC, 2018). Fortunately, improved treatments for the virus with antiretroviral medication have resulted in decreased morbidity and mortality rates (Waldrop-Valverde & Valverde, 2005).

Homelessness is a common phenomenon among people living with HIV/AIDS. Social stigma, discrimination, and the high cost of medications necessary to manage the virus may contribute to homelessness for these individuals (National Coalition for the Homeless, 2009). McNamara (2008) found a strong relationship between access to housing for individuals living with HIV and improved access to health care services for necessary treatment. Adequate housing has also been attributed to better health outcomes for infected individuals (McNamara, 2008). However, Rourke et al. (2012) associated poorer mental health with a decrease in satisfaction with housing and a low sense of control over the socioeconomic aspects of one's life.

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Major depression is the most prevalent psychiatric disorder among individuals positive for HIV (Arseniou, Arvaniti, & Samakouri, 2014). In fact, “prevalence rates of major depressive disorder among persons living with HIV have been reported to be as high as 37%, three times the rate found in general populations” (Rao et al., 2012, p. 711). Nanni, Caruso, Mitchell, Meggiolaro, and Grassi (2014) found a correlation between depression, worsening viral loads, and CD4 counts. Research continues to determine if depression is caused by HIV, or if depression is a result of living with the disease (Arseniou et al., 2014). Nonetheless, undiagnosed and untreated depression can have a negative effect on the management of HIV infection, resulting in increased mortality and a poorer quality of life (Arseniou et al., 2014).

Diagnosing and treating major depression in HIV-positive individuals has been demonstrated to increase adherence to retroviral medication therapy and improve psychosocial functioning (Nanni et al., 2014). Although the prevalence of major depression is high, only half of HIV-positive individuals with depression are clinically diagnosed, and as many as 80% of those are not treated (Mascolini, 2016). In addition to being treated pharmacologically for depression with antidepressants, O'Donnell et al. (2016) found interventions such as the development of coping strategies addressing life stressors has had a positive impact on mental wellbeing. The Patient Health Questionnaire (PHQ-9) is a nine-item questionnaire used to screen for depression (Kroenke, Spitzer, & Williams, 2001). The PHQ-9 screening tool is completed independently by the patient and scored by the clinician (Kroenke et al., 2001). The PHQ-9 score can range from 0 (indicating no depressive symptoms) to 27 (indicating major depression) (Kung et al., 2012). The sensitivity and specificity of a PHQ-9

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depression score of greater than or equal to 10 is 95% and 84%, respectively (Kroenke et al., 2001).

The purpose of this quality improvement (QI) initiative was to determine the incidence of depression in otherwise homeless HIV-positive residents who were living in a residential community. In addition, increasing awareness of the importance of mental wellness was sought. The questions for this study were: In a residential community for HIV-infected individuals and their families,

1. how many residents attended a residential meeting where mental wellness strategies were presented, an opportunity for depression screening occurred, and resources for mental health services were given compared to the number of residents who live at the facility but did not attend the quarterly resident meeting?
2. how many residents volunteered to be screened for depression with the PHQ-9 compared to the number of residents who attended a residential meeting but did not volunteer to be screened?
3. what was the overall rate of PHQ-9 questionnaires scoring nine or higher?

The tenants residing at the residential housing community in this study were primarily Black. This reflects the national data of Black Americans representing over 40% of all new HIV infections (Adams & Simoni, 2016). Black Americans are more hesitant to seek behavioral health care for depressive symptoms in comparison to Whites (Nicolaidis et al., 2010). Also, Black Americans are least likely to address depressive symptoms with counseling or pharmaceutical agents (Dean et al., 2018). Nicolaidis et al.

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(2010) found a cultural distrust of Whites and healthcare existed, and was a barrier to seeking mental health services.

### **Review of Literature**

The databases searched for this review were: ProQuest and Medline. Key search terms included HIV, homeless, PHQ-9, depression AND HIV, depression AND HIV AND education, African American OR Black AND HIV AND depression, African American OR Black AND depression AND beliefs and depression AND awareness. Inclusion criteria were publications in the last 10-years and English language. Excluded were publications on depression or HIV within the pediatric population, publications over 10-years, and non-English publications. Seventeen publications were selected for this review.

Individuals infected with HIV experience a condition that slowly diminishes the immune system, making them more susceptible to opportunistic infections, cancers and other immunologic-related disorders (Arseniou et al., 2014). Data from recent studies suggested a relationship between depression and worsening serum diagnostics such as viral loads and CD4 counts in HIV-infected individuals with depression (Nanni et al., 2014; Do et al., 2014). In addition, poorer health outcomes, increased mortality and a negative progression of HIV were associated with the comorbid condition of depression (Nanni et al., 2014; Do et al., 2014). Furthermore, depression may be associated with a decline in immune response which negatively impacted control of an HIV infection (Arseniou et al., 2014). “Depression may also alter the function of lymphocytes in HIV-positive people and decrease natural killer activity, contributing to the increased mortality

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in these patients” (Arseniou et al., 2014, p. 96). Nanni et al. (2014) estimated by 2030, major depression would be a leading cause of disability worldwide.

Studies have described depression as the most common psychiatric disorder associated with HIV (Arseniou et al., 2014; Nanni et al., 2014). The rate of depression is three times more prevalent among individuals living with HIV in comparison to the general population (Rao et al., 2012; Arseniou et al., 2014). Mascolini (2016) found more than one in three HIV-positive individuals suffered from major depression. Despite its prevalence, depression continues to be undiagnosed, untreated, and unrecognized among individuals living with HIV (Nanni et al., 2014; Mascolini, 2016; Do et al., 2014). Furthermore, when major depression is diagnosed and if treatment is provided, best-practice guidelines are usually not followed (Mascolini, 2016).

Medication adherence among HIV infected individuals may be affected by depression. Rao et al. (2012) reported depressive symptoms contributed to poor adherence when taking antiretroviral medications as prescribed. Also, Mascolini (2016) found a correlation between depression, risky behaviors, and poor medication adherence. Major depression contributed to substance abuse and risky behaviors, increasing the likelihood of viral transmission to others (Do et al., 2014). However, a correlation between medication adherence to antidepressants and increased CD4 counts was found when HIV-infected individuals were treated for their depression (Mascolini, 2016).

Gender may contribute to the prevalence of depression in HIV-infected individuals. Depression was found to be more common in HIV-positive women than in HIV-positive men (Nanni et al., 2014; Do et al., 2014). Additionally, HIV-positive women with depression were found to be at a greater risk for AIDS-related death

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(Arseniou et al., 2014). In fact, HIV-positive women with depression were twice as likely to die when compared to HIV-negative women with depression (Arseniou et al., 2014).

Economics, educational level, race and age may affect the incidence of depression in HIV-infected individuals. Do et al. (2014) reported poverty, lack of a high school diploma, and between the ages of 35- to 44-years increased the likelihood of depression in persons who were HIV-positive. Simoni et al. (2011) reported most people living with HIV are from socioeconomically disadvantaged environments and are exposed to toxic stress. This stress contributed to poor mental health, thus increasing the likelihood of developing depression practically two-fold (Simoni et al., 2011). In a study by O'Donnell et al. (2016), life stressors such as illness, safety concerns, and financial strain all contributed to depression in persons infected with HIV. African Americans are disproportionately exposed to toxic stressors as the result of systemic racism, which attributes to poorer mental health (Adams & Simoni, 2016). However, research has shown that African Americans rarely seek mental health services for depressive symptoms (Nicolaidis et al., 2010).

Awareness about depression and its symptoms may lessen the stigma associated with obtaining behavioral health services (Lopez, Sanchez, Killian, & Eghaneyan, 2018). The incorporation of depression screening into HIV programs targeting HIV-positive individuals, especially those who are socioeconomically disadvantaged, has been recommended (Do et al., 2014). Moreover, the early diagnosis and treatment of depression may improve their quality of life and increase medication adherence; therefore, recognizing depression and its prompt treatment has been recommended (Nanni et al., 2014).

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The PHQ-9 is a simple, relatively accurate depression screening instrument. Do et al. (2014) studied depression among persons infected with HIV, and found the PHQ-9 was adequate in identifying symptoms of depression among individuals despite their racial or ethnic background. However, the study by Do et al. (2014) utilized the PHQ-8 questionnaire, excluding the question related to suicide, due to lack of mental health training by staff involved. Regardless, Do et al. (2014) reported depression was frequent among individuals living with HIV who had regular access to health care. They found an estimated 12.4% (95% CI: 11.2%, 13.7%) had major depression and 13.2% (95% CI: 12.0%, 14.4%) had other degrees of depression, resulting in 25.6% (95% CI: 23.8%, 27.4%) with some degree of depression (Do et al., 2014).

Key concepts in the literature included poor health outcomes associated with depression, especially in those who were HIV-positive. Furthermore, decreased medication adherence and increased mortality rates occurred in individuals infected with HIV who were depressed. A major strength of the literature for those with HIV and depression, was the establishment of early diagnosis and treatment for depression, which was necessary to improve the quality of life. A major weakness was lack of evidence to determine if HIV caused major depression or if major depression was a result of living with a diagnosis of HIV.

Finally, the framework for this study is based on the logic model to incorporate inputs, activities, and outputs as the work towards attaining a goal. The benefit of using a logic model includes identifying activities having a direct impact on outcomes and provides a “blueprint” of how to plan, implement, and measure performance (Brosnan, 2017). Inputs refer to resources such as the staff, protocols and the environment of where

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the project will take place (Brosnan, 2017). Activities are the things that occur as the project is being implemented such as activities with residents and meetings with residential staff (Brosnan, 2017). Outputs are the direct result of the activity, such as completed PHQ-9 questionnaires (Brosnan, 2017). A logic model is used to provide organization and direction in evaluating a mission-motivated rather than a profit-motivated endpoint (Brosnan, 2017).

### **Method**

#### **Design**

A prospective, descriptive, cohort design. A logic model provided the guide for this study (Appendix A). A short (10-15 minute) educational session regarding mental wellness and awareness of depression with its effects on mental wellness was planned for five scheduled residential meetings during the month of May 2019 at each residential facility within the residential community. Pizza was provided to all attendees of the scheduled meetings. Participants who completed the PHQ-9 questionnaire were entered in a raffle to win \$25.00. The winner was chosen after all were screenings are collected. Residents were offered an opportunity to be screened for depression using the PHQ-9 at each of the five scheduled meetings, but all residents attending the scheduled meetings received information on available resources for mental health services (Appendix B).

#### **Setting**

The setting was a residential community specifically for HIV-positive individuals and their families who would otherwise be homeless. The community included seven residential facilities located in an urban, metropolitan area in the Midwest with over three million residents. The total population in the main city was 308,626 (United States

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Census Bureau, 2018). According to the state department of health and senior services (DHHS), in 2016, there were 3,410 people living in the city who were HIV-positive (DHHS, 2018). The homeless population in the city was estimated to be 42.9 per 10,000 individuals, or 6,990 homeless individuals (National Alliance to End Homelessness). In 2018, only 105 HIV-positive individuals were housed in 103 apartments available within the seven residential sites of the residential community.

### **Sample**

A convenience sample of HIV-positive residents and their families who attended a scheduled meeting for residents at a residential facility located within the residential community. Informed consent was obtained from any resident who volunteered to be screened for depression. The desired sample size was 50. Inclusion criteria were age 18-years and older, and living in the residential community. Exclusion criteria were individuals younger than 18-years or do not live in the residential community.

### **Approval Process**

The project was approved by the residential community. Approvals from the DNP committee, university IRB, and university graduate school were obtained. Since depression screening was anonymous, a possible risk for this study was a resident screening positive for depression but choosing not to seek behavioral health services for further evaluation. A benefit of this study included all residents who attended a residential quarterly meeting heard a presentation on mental wellness and depression, and

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were offered the opportunity to be anonymously screened for depression. In addition, all residents who attended were given information on mental health resources.

### **Data Collection and Analysis**

Demographic data included age, gender, race/ethnicity, highest educational level attained, and facility of residence was collected. In addition, PHQ-9 scores were recorded. All personal information was removed and data was coded by letters identifying the residential facility where the participant resided. The PHQ-9 questionnaire was the depression screening instrument for this project and scores were recorded. Descriptive statistics and a one-sample  $z$  test were used for data analysis.

All participants completed a demographic form that was attached to the PHQ-9 questionnaire. Residential staff have the ability to find the participant from the information provided on the demographic form. Participants disclosed their age, head of household status, gender, race/ethnicity and residential community of residence. Participants who had a high score on the depression screening had their demographic information sent to residential staff immediately. Residential staff were in attendance at each meeting; therefore, screenings with high scores were provided to staff at the time of the event. A client services housing coordinator is staffed by the facility to provide supportive services and referrals for behavioral health services. Regardless of recommended referral to mental health services, it was the decision of the participant to be evaluated by a mental health specialist. All persons in attendance of the educational session received a mental health referral brochure that included various behavioral health resources and suicide prevention hotlines.

### **Procedures**

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A team including the chief program officer, a social worker and a residential manager for the residential communities, and the primary investigator met at intervals for project planning. Participants were recruited by phone calls and by flyers advertising the scheduled meetings were placed on the walls at each residential facility. Education and resources to promote mental health wellness, depression screening, and to provide mental health service options were given at residential meetings scheduled at each facility in the month of May 2019. The PHQ-9 was selected as the screening tool for depression. Depression screenings were voluntary and recorded anonymously.

### Results

Out of the 100 HIV-positive residents living within the seven housing facilities within the community, there were 21 individuals who attended the meetings ( $N=21$ ). Of those, 100% completed PHQ-9 surveys ( $n=21$ ). There were eight participants from residence D ( $n=8$ , 38%), six participants from residence E ( $n=6$ , 29%), two participants from residence A ( $n=2$ , 10%), one participant from residence B ( $n=1$ , 5%), two participants from residence C ( $n=2$ , 10%), and two participants from residence F ( $n=2$ , 10%). There were no attendees from residence G ( $n=0$ , 0%). (Appendix C)

Participant gender included 10 females ( $n=10$ , 48%), two transgender females ( $n=2$ , 10%), and nine males ( $n=9$ , 43%). Four participants had less than a high school diploma ( $n=4$ , 19%), three had a high school diploma ( $n=3$ , 14%), eight had some college ( $n=8$ , 38%), three had a college degree ( $n=3$ , 14%), and three participants chose not to answer ( $n=3$ , 14%). All participants identified as head of household ( $n=21$ , 100%). For race/ethnicity, 15 were Black ( $n=15$ , 71%), two were White ( $n=2$ , 10%), one was Hispanic ( $n=1$ , 5%), and two were other race/ethnicities ( $n=2$ , 10%). One participant

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identified as both Black ( $n=1$ , 5%) and the other participant identified as both White and Native American ( $n=1$ , 5%). There were no participants between the ages of 18-24 ( $n=0$ ) and ages 38-44 ( $n=0$ ). Three participants were between the ages of 25-31 ( $n=3$ , 14%), three participants between the ages of 32-38 ( $n=3$ , 14%), and 14 participants were aged 44-years and older ( $n=14$ , 67%).

The PHQ-9 scores included four or less ( $n=9$ , 43%), indicating little to minimal depression. Residence E had 1 survey in this category ( $n=1$ , 5%); Residence D had 4 ( $n=4$ , 19%), Residence A had 2 ( $n=2$ , 10%), and Residence C had 2 ( $n=5$ , 10%). The PHQ-9 scores between five and nine ( $n=5$ , 24%) indicated mild to moderate depression. Residence E had 2 surveys in this category ( $n=2$ , 10%) and Residence D had 3 ( $n=3$ , 14%). The PHQ-9 scores included ten or greater, indicating moderately severe to severe depression, requiring immediate referral at the time of the meeting. Residence E had 3 surveys in this category ( $n=3$ , 14%); Residence D had 1 ( $n=1$ , 5%), Residence B had 1 ( $n=1$ , 5%), and Residence F had 2 ( $n=2$ , 10%). Therefore, 12 out of 21 ( $n=12$ , 57%) participants were experiencing depressive symptoms.

To determine the incidence of depression among HIV-positive individuals living in a residential setting, a one-sample  $z$ -test was used and the confidence interval was computed around a mean to assess whether the sample rate of HIV-positive participants differed from the rate of depression among general population of individuals infected with HIV (Appendix A). The  $\alpha$ -level for this project was 5% or .05; (95% CI 0.36, 0.78). A null hypothesis ( $H_0$ ) would include a sample rate of HIV-positive persons with greater rates than the found in the general population. An alternative hypothesis ( $H_A$ ) was the sample rate of HIV-positive persons not different from the general population. Brody,

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Pratt, and Hughes (2018) found the rate of depressive symptoms among the general population during 2013-2016 was 8.1%.

### **Discussion**

Five educational sessions were provided to HIV-positive individuals living in a residential setting during the month of May 2019. The importance of recognizing and addressing depression was discussed and attendees were presented with the opportunity to complete a PHQ-9 survey. Only 20% of the residents attended a meeting, but 100% of those who did attend, completed a PHQ-9 screening. The incidence of depression found was nearly 60%, of those who were positive for depression, over 30% had high scores warranting immediate referral to a mental health provider. Of the 21 participants that completed the PHQ-9, 71% identified as Black and of those, 47% were women.

Attendees were interactive during the sessions, often asking questions and providing personal testimonies related to life stressors. One participant reported initially deciding not come to the meeting because she felt like it would be useless and felt that speaking about life stressors and depression would make her feel worse, but she changed her mind and decided to attend. She reported trying to explain to her physician during a hospitalization that she thought her symptoms were due to depression but reported the doctor dismissed her concerns and attributed her symptoms to her HIV infection. All attendees at each meeting received a brochure that included mental health resources and they were encouraged to speak with someone if they were experiencing depressive symptoms.

Of the 21 participants that completed the PHQ-9, 71% identified as African American or Black and of those, 47% were women. According to recent literature,

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African American women, regardless of HIV status tend to be reluctant to seek behavioral health services due to the cultural expectation of being the Strong Black Woman who never needs help psychologically, despite often being expected to do the work of two adults in the household (Watson & Hunter, 2015). Studies have also shown that African American men tend to be less enthused towards the idea of seeking mental health services in comparison to their White counterparts (Latalova, Kamaradova & Prasko, 2014). However, stigma towards mental health and seeing it as a sign of weakness is all too common within the African American community (Menke & Flynn, 2009).

Limitations for this project were the small sample size and lack of participants from each of the seven residential facilities. Chi-square statistics could not be used to conclude a statistical significant comparison of rates of depression among the seven different residential facilities participants resided in.

Recommendations from this DNP capstone study is the implementation of depression screening such as the PHQ-9 at the time of admission and at annual health exams. This may create an opportunity for staff to hold discussions with residents on this topic in addition to providing referrals early for those who are experiencing depressive symptoms.

Implications for practice include increased awareness of mental health through educational sessions focusing on identifying life stressors and coping strategies. In addition, screening for depression using the PHQ-9 among individuals infected with HIV living in a residential setting is highly recommended. This study was intended to increase

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awareness of depression among HIV-positive adults in a residential community and to identify the incidence of depression within a residential community.

### **Conclusion**

Rates of depression are disproportionately higher in persons infected with HIV, especially Black women. Depression screening among HIV-positive tenants were not required at the residential site of this project. However, seven participants required immediate referrals for PHQ-9 scores indicative of moderate to severe depression. Those participants may not have sought mental health assistance voluntarily for their symptoms. Reducing stigma and fear about depression and the healthcare system may enhance the maintenance of health and overall quality of life for individuals living in an HIV-positive residential community.

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## DEPRESSION IN HIV-INDIVIDUALS

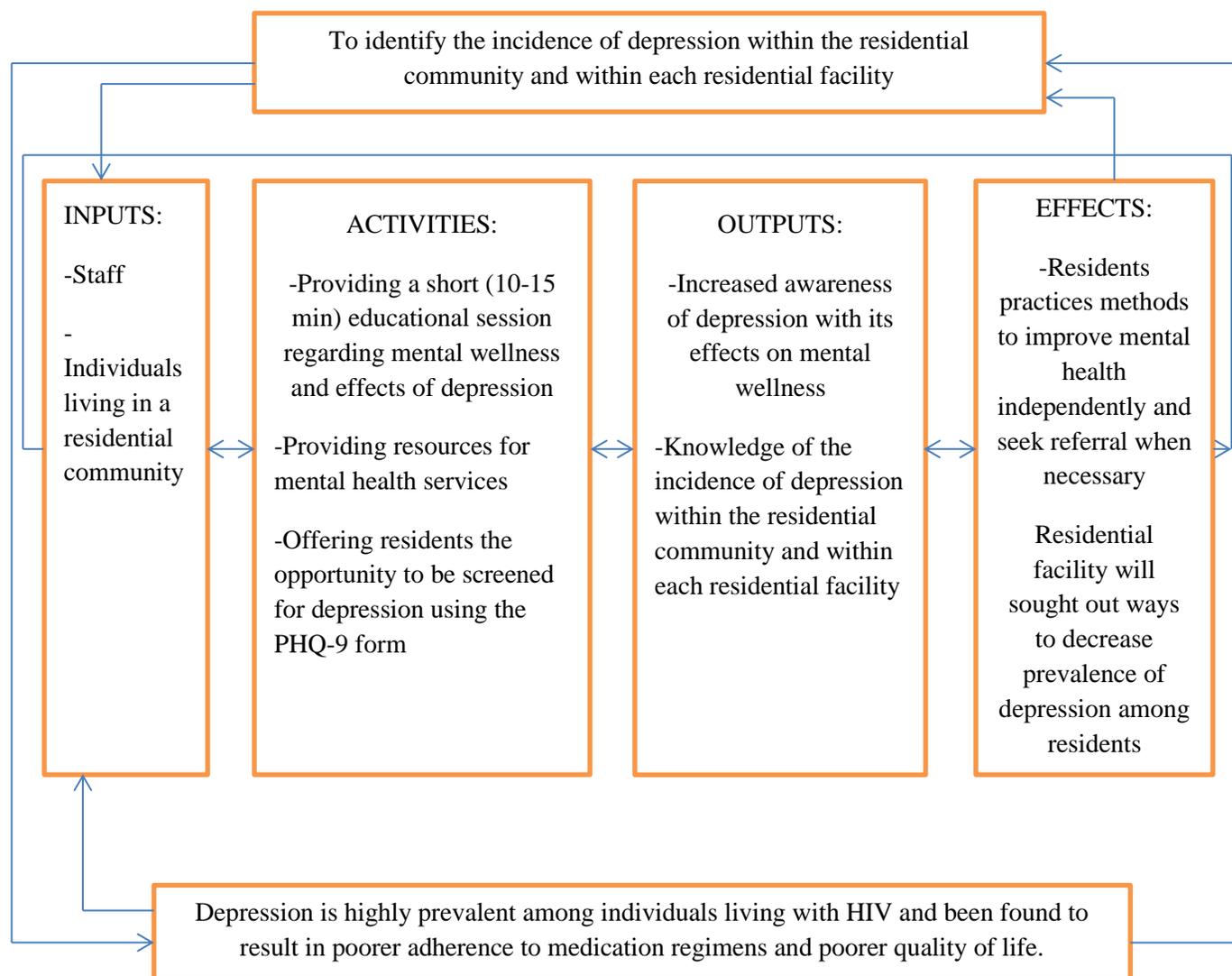
**Logic Model**

Figure 1. Logic Model used as the framework for this study which incorporate inputs, activities, and outputs as the work towards attaining a goal. Adapted from “Evaluation of health care quality for DNPs,” by C. A. Brosnan, 2017, In J. V. Hickey & C. A. Brosnan (2<sup>nd</sup> Ed.), *Conceptual models for evaluation in advanced nursing practice* (pp. 61-85).

## DEPRESSION IN HIV-INDIVIDUALS

**Appendix A**

Table X

Participants with PHQ-9 scores indicative of mild to severe depression

		<u>95% CI</u>	
PHQ-9 scores	Rate	Lower Level	Upper Level
5 and above	0.57	0.36	0.78

Note. CI = Confidence interval. Out of 21 participants, 57% (0.57) had PHQ-9 scores 5 and above, indicative of depressive symptoms. According to the 95% confidence interval, the rate of depression among HIV-positive individuals living in a residential setting is between 0.36 and 0.78.

$$95\% \text{ CI} = \bar{x} \pm (1.96 \times se_x)$$

$$= 0.57 + (1.96 \sqrt{0.57 (1 - 0.57)/21})$$

$$= 0.78$$

$$= 0.57 - (1.96 \sqrt{0.57 (1 - 0.57)/21})$$

$$= 0.36$$

## DEPRESSION IN HIV-INDIVIDUALS

## Appendix B

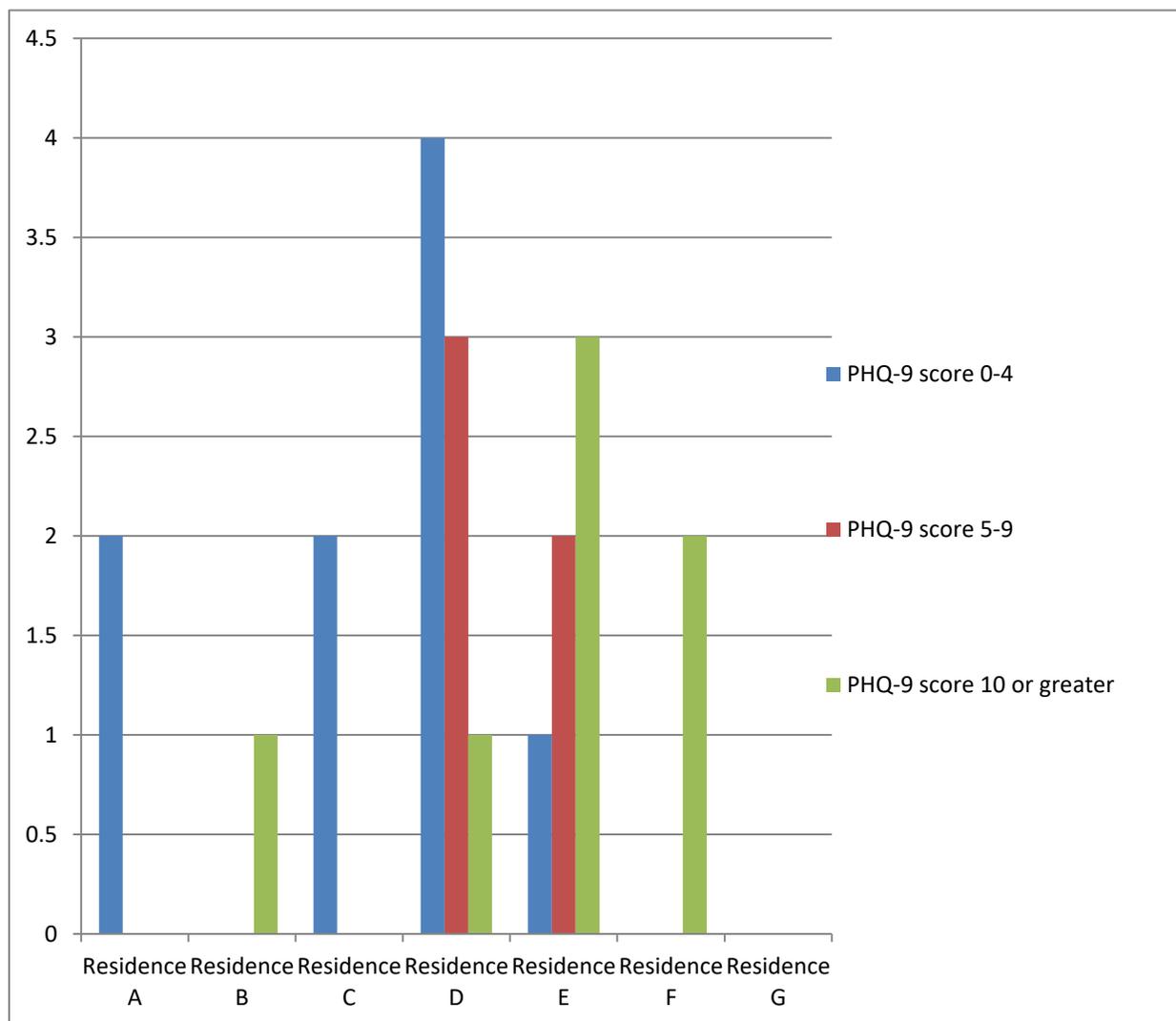


Figure X. PHQ-9 scores of participants per facility.

Appendix C

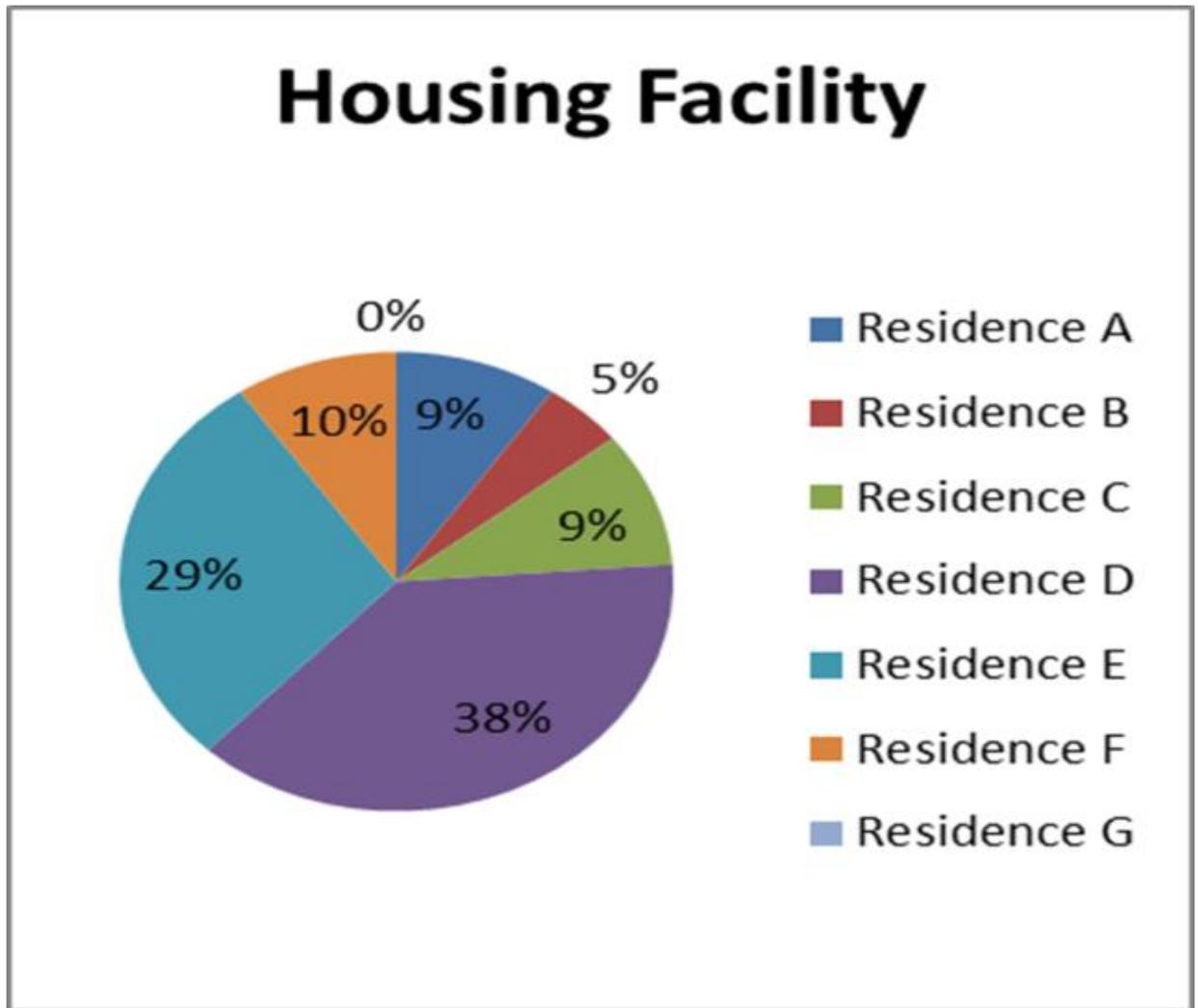
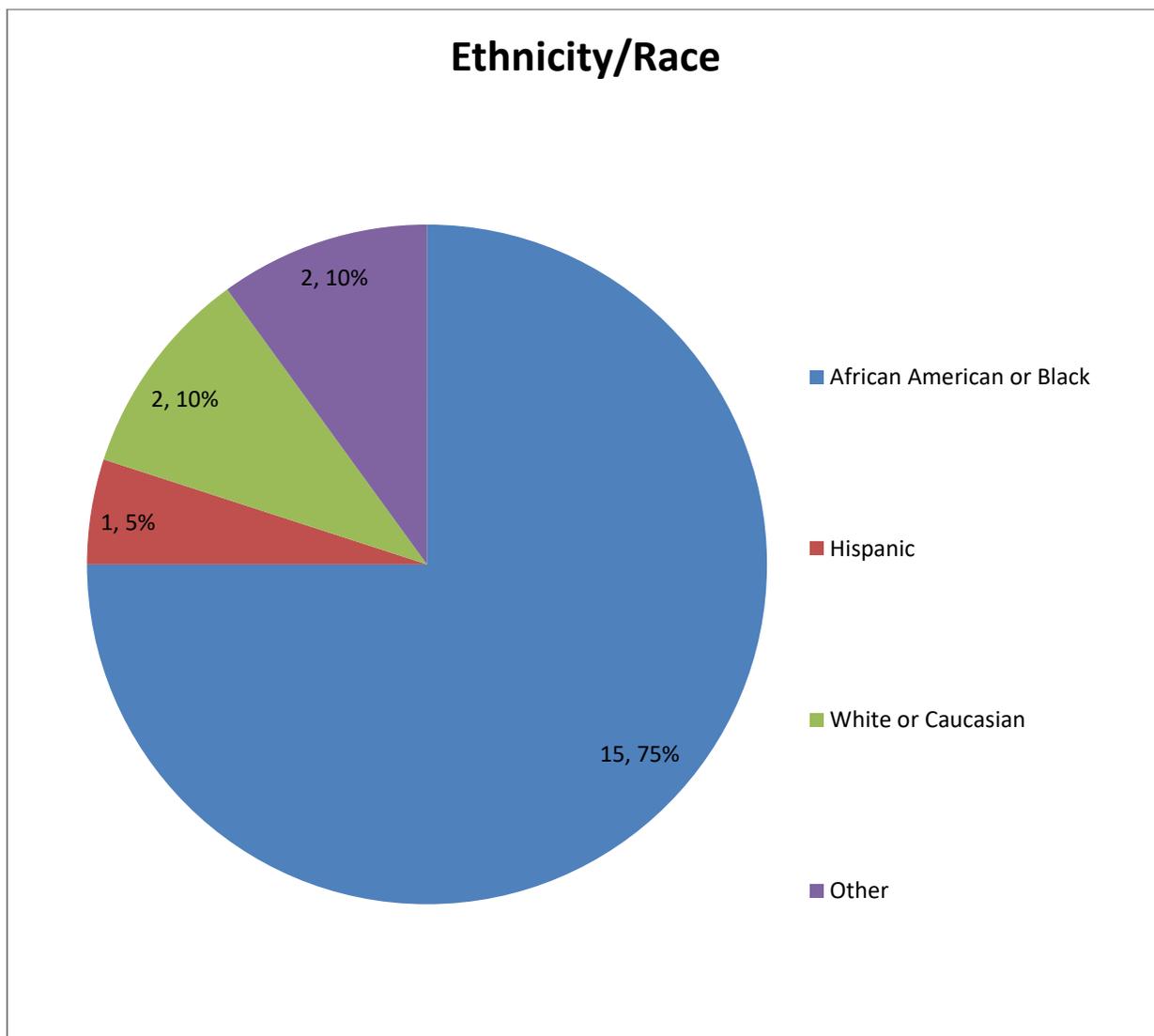


Figure X. Percentage of participants per residential community.

## Appendix D



*Figure X.* Race/ethnicity of participants.

Appendix E

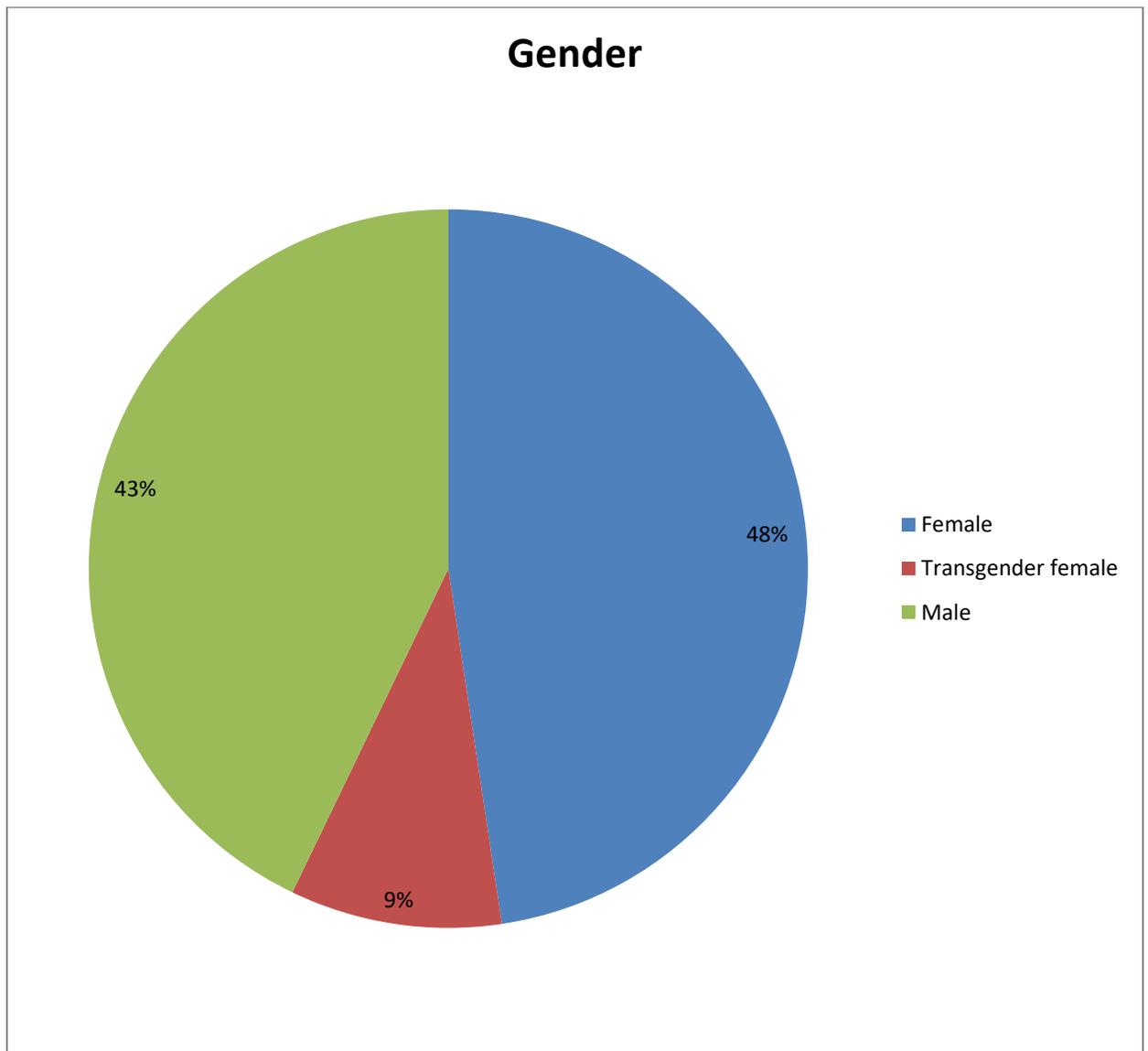


Figure X. Gender of participants.

Appendix F

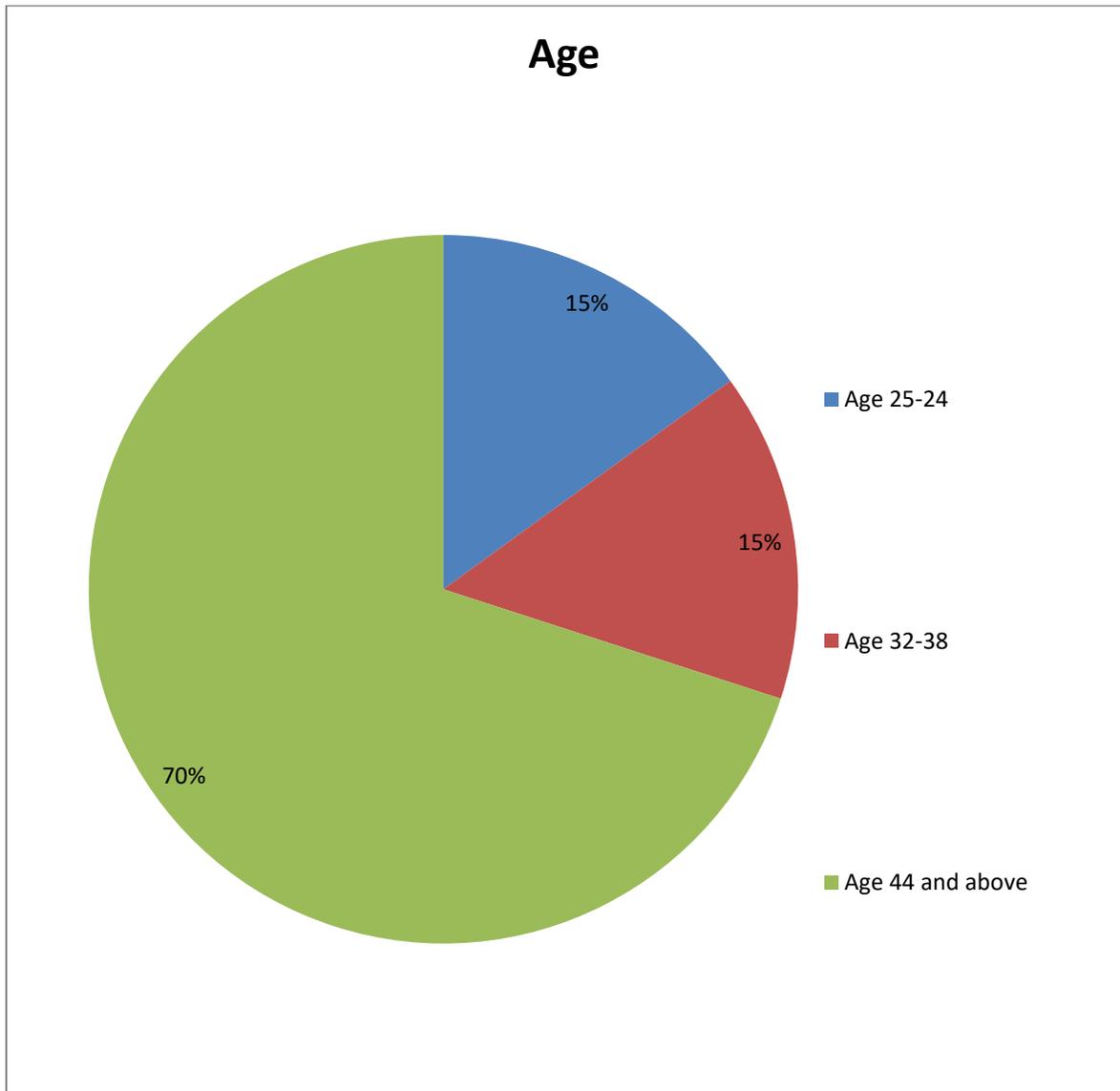


Figure X. Age of participants.

Appendix G

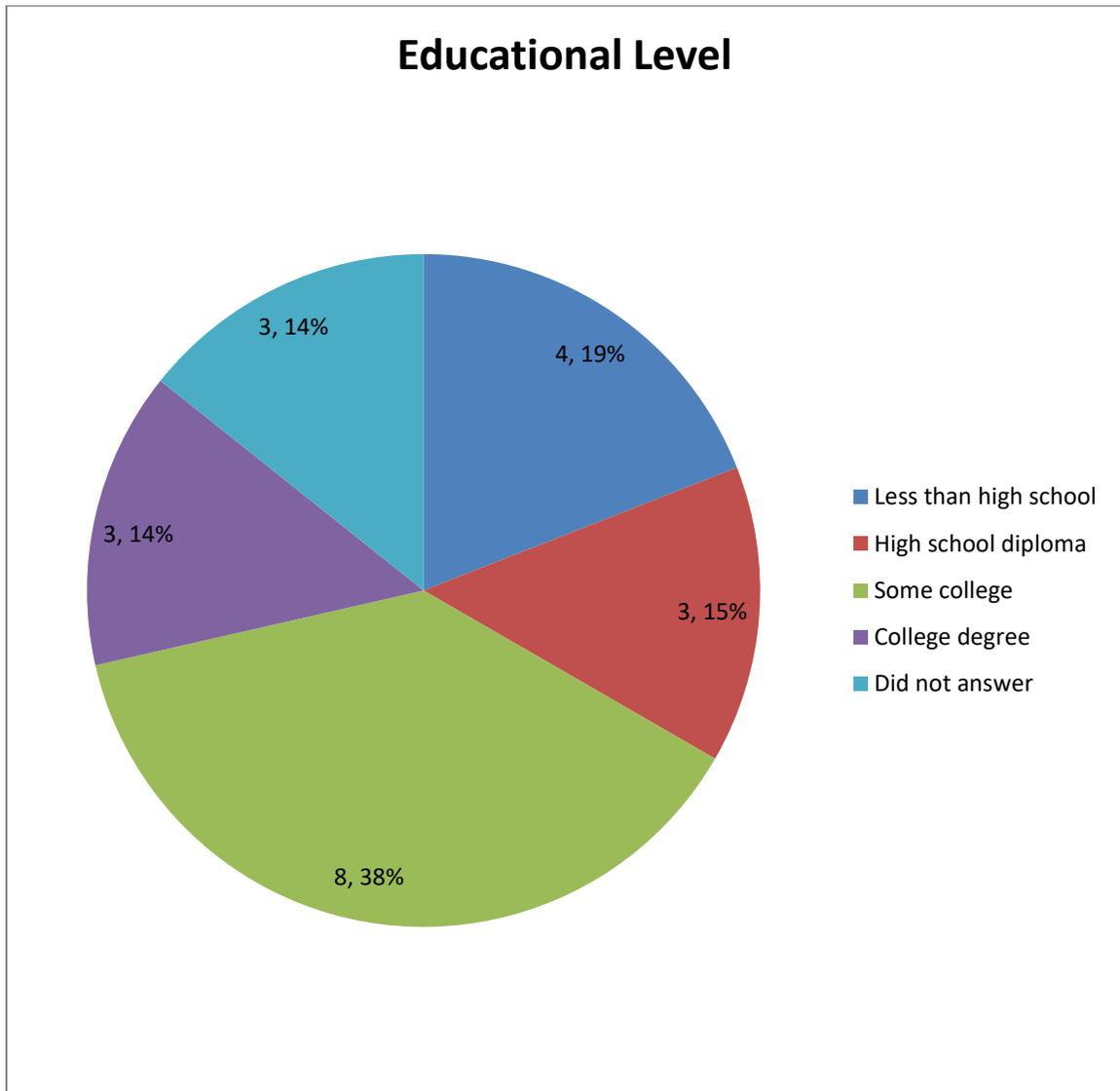


Figure X. Educational level of participants.