

Capstone Project

A CAPSTONE PROJECT REPORT IN
Science in Public Health

Presented to the Faculty of the University of Missouri-Kansas City
in partial fulfillment of the requirements for the degree of

Public Health

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2020

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ABSTRACT

Background: Human immunodeficiency virus (HIV) is an issue in Kansas City, especially among homeless/unstably housed populations. The Kansas City Health Department initiated the KC Life 360 program to address the disproportionate HIV incidence rates in the Kansas City Transitional Grant Area (TGA). KC Life 360 provides housing related and employment services to homeless/unstable housed populations in the TGA. **Objective:** The purpose of this capstone was to conduct a program evaluation on KC Life 360 and to examine the effectiveness of the intervention. The focus was to understand relation between stable housing/employment and HIV health outcomes. Result and finding can improve the program's efficiency. Multipurpose regression model was conducted to demonstrate relation and understand between cost and viral load suppression at time of entry, as well as other variables. **Method:** Evaluation results were drawn based on data analysis of Gap Lodging (one of the housing components in KC Life 360) along with demographic information. **Results:** Results from Gap Lodging show that of the 17 participants, 77% maintained or improved their HIV health throughout their stay, but 23% showed no improvement. **Discussion:** The program has demonstrated that stable housing can positively influence one's HIV outcomes. This pioneering program showed the efficiency of housing intervention and advocated for it to be applied in the public health field. It also helped establish future studies which it can be used as a guideline for those studies to obtain their strengths, continue to build upon it and remove the limitations in order to see better outcomes. **Conclusion:** Findings showed that stable housing and employment are strongly related with HIV care in the homeless/unstably housed populations. This indicates that there are needs for more similar programs in order to stop this epidemic in the U.S.

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CHAPTER 1. INTRODUCTION

Individuals with HIV who are homeless or living in unstable housing and are underemployed or unemployed are less likely to have access to HIV healthcare (Smith et al., 2000). In contrast, when individuals are living in stable and affordable housing, it increases their likelihood to engage in care and adhere to antiretroviral therapy (ART), which in turn positively influences their overall health (Aidala et al., 2016). The definition of stable housing is having one's name on a rental lease or having a permanent home, either through independent payments or a federal subsidy, and it also implies access to basic life needs, such as nutritional food, clean water, and personal hygiene products (Giordano et al., 2018). Evidence shows that stable employment will influence HIV care retention and support housing stability (Nachega et al., 2015). In which higher income leads to better HIV care and health outcomes (Burns, Young, & Maniss, 2006). In order to maintain employment and increase incomes, a study done by Mamboleo et al. (2018) showed that job assistance and support services may help.

KC Life 360 promotes positive health outcomes for homeless/unstably housed people living with HIV/AIDS (PLWH) in the 11 counties of the Kansas City TGA. The most expected outcome for this program is to help participants reach and maintain viral load suppression: when the HIV virus stops replicating and spreading (Eisinger, Dieffenbach, & Fauci, 2019). In order to achieve this, the program works with other social service agencies. Besides agencies, others involved include program members, participants and their children (when applicable), as well as other community members.

This evaluation will focus on the program's effectiveness by collecting information and analyzing data of the participants. The data will be examined for viral load and CD4 counts (white

blood cell) from the patient's electronic medical record, which is updated every three to six months. The CD4 count monitors the progress of the body in response to ART treatment (Shoko & Chikobvu, 2019). Analysis of the lab data will be used to determine if the participant has reached or maintained viral load suppression. In this paper, the program design, program operation, evidence-based practice framework, and an analysis of the outcomes are used to display the effectiveness of the program.

CHAPTER 2. KC LIFE 360 DESIGN

Community & Needs

The target community is the homeless/unstably housed individuals living with HIV/AIDS in the Kansas City Metropolitan area. These individuals lack access to healthcare, job opportunities or assistance, and other basic life needs, such as transportation, food supplies, continued education, and support during the employment process. KC Life 360 is there to address these needs by coordinating care, housing, and employment stability in order to facilitate positive health outcomes.

Measurement Tools

Before having access to the lab data and patient information KC Life 360 required mastery of five training steps. First, access must be granted for Securing Client Outcomes through Technology (SCOUT), also known as the patients' electronic medical record. This is followed by access to lab data and training for how to assess viral load and CD4 count, examining the difference in viral load before and after clients enter the Gap Lodging hotel, and finally examining treatment effectiveness which correlates with housing status.

The goal of HIV treatment is to lower viral load to an undetectable level, meaning below 200 copies/mL. This is known as "Undetectable equals Untransmittable" (U=U) (Eisinger, Dieffenbach, & Fauci, 2019). This term means that people cannot transmit HIV when their viral load is undetectable. Undetectable viral load decreases morbidity related to HIV and improves an individual's quality of life by having satisfaction with emotional, mental, and environmental well-being (Cho, Jiang, Li, & Deming, 2019). Thus, in order to determine program effectiveness, viral load results will be measured to gauge treatment progression. CD4 count and viral load tests will be conducted every three to six months to monitor treatment effectiveness (Hall, Tang, Westfall, and Mugavero, 2013). Analytic tools are used to test viral load. The ideal treatment

result will also include maintaining CD4 count above 200 as dropping below this value means the disease has progressed to AIDS (Shoko & Chikobvu, 2019).

Partnerships

KC Life 360 will partner with a variety of community social services to achieve its mission. Catholic Charities of Kansas City St. Joseph, and reStart Inc are involved, and known as the subrecipient partners. A subrecipient partnership means that it is a non-federal entity that will receive federal funding by a pass-through entity, which refers to KC Life 360 (Heath, & Steinbauer, 2020). Catholic Charities of Kansas City-St. Joseph provides assistance to those in need in the Kansas City Metro Area, with these areas of focus: emergency services, employment processes, and support for continuing studies. ReStart provides housing-related services in the Kansas City area, such as emergency shelter, transitional living, transportation assistance, and permanent housing (KCHD, 2019). In addition, reStart uses their funding to assist clients in paying off any past due utilities and apartment deposits. Public health professionals consider the inability of people to pay off their utilities, rent, or buy food to be obstacles which need to be addressed in order to improve health outcomes (Thompson, Kreuter & Boyum, 2016).

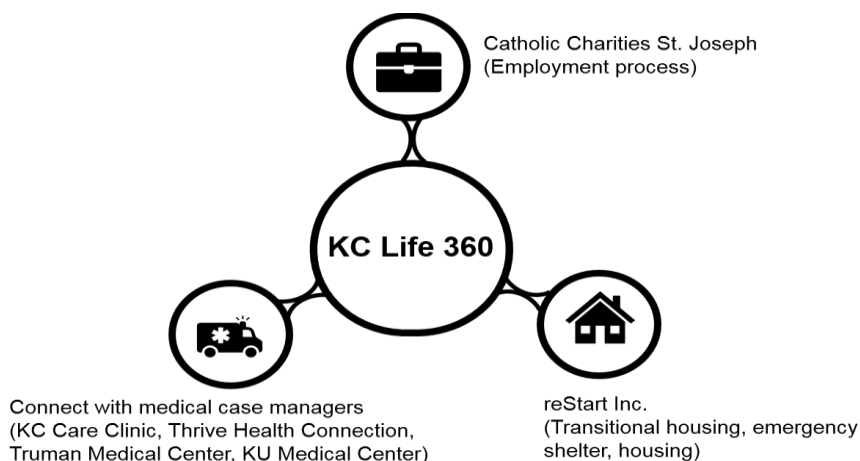


Figure 1. KC Life 360 Partnerships

Besides funded social services partners, this program also works with non-funded but leveraged community partners (See Figure 1). They are considered leveraged partners, because they don't get funds directly to support this project, but they do make referrals and provide additional support for the project (Heath, & Steinbauer, 2020). These four leverage community partners are: Truman Medical Centers, Thrive Health Connection, University of Kansas Hospital, and KC CARE Health Centers (KCHD, 2019). Each of these partners have a medical case manager, there to help monitor patients' appointments and input lab data into KC Life 360's SCOUT system.

Relationship between Stable Housing and HIV

Housing is a basic need in promoting good health (Thompson, Kreuter, & Boyum, 2016). Research shows individuals with stable housing are more likely to have improved access to healthcare, reduced risky behaviors, and fewer HIV complications (Shubert, & Bernstine, 2007). Some of the risky behaviors include having multiple sexual partners and exchanging sex for money, drugs, shelter, or gifts (Marshall, Kerr, Shoveller, Patterson, Buxton, & Wood, 2009). Therefore, housing status has a direct influence on sexual risk-taking behavior, drug usage and likelihood to pursue HIV treatment. Individuals living with HIV/AIDS are vulnerable, which means aid is critical to improve health outcomes, access to necessary resources, and reduce health disparities (CSH,2014). In order to resolve this issue, KC Life 360 collaborates with their subrecipient partners in order to fulfill participants' needs and help with housing status. Sustainability of housing is an ongoing process in which the medical case manager assesses the health condition of a person with HIV, while the housing/employment specialist assesses their willingness to start a job, so they can keep their home and meet their other needs. Without solving

the basic need for stable housing, it is hard for public intervention and medicine to implement and improve the health outcomes for patients with HIV/AIDS (Sok et al., 2018).

Intersection between Employment/Income Levels and HIV Care

Employment status has a significant influence in HIV retention care and adherence to antiretroviral therapy (ART). Poverty and economic insecurity are two barriers to HIV care and medical services (Centers for Disease Control and Prevention, 2016). Evidence shows HIV retention care and continuous ART treatment are essential to achieving viral suppression, which is positively correlated with employment and stable income (Swann, 2018). Nachega et al., (2015) found that there is a higher percentage of employed PLWH who engage in ART than those who are unemployed. In addition, research shows that ART does not fully restore an individual's immune system, which would make PLWH at risk of developing other chronic conditions due to persistent immunodeficiency (Deeks, Lewin, & Havlir, 2013). These medical complications in combination with the side effects of ART treatment are related to lower productivity at work which often results in unemployment, negatively influencing quality of life (Mamboleo et al., 2018). A study done by Burns, Young, and Maniss (2006) indicates that stable employment provides economic support to PLWH allowing them to access fundamental life resources like transportation, food, and social capital. Overall, there are many benefits of stable employment that help to improve quality of life, mental health, self-esteem, and build social relationships leading to increased engagement in HIV retention care (Burns, Young, & Maniss, 2006).

Outcomes

KC Life 360 has achieved success as it has addressed unemployment and homelessness/unstable housing in PLWH by providing resources and assistance to encourage engagement and retention in HIV care (see Figure 2). Data collected in 2019 showed that there were 87 participants enrolled in the program. Out of the 87 enrolled, 50 received job placements

(57 percent) and 36 participants who obtained a job retained the position for 30 days (41 percent). The program assisted 27 participants in obtaining stable housing (31 percent) (KC Life 360, 2019).

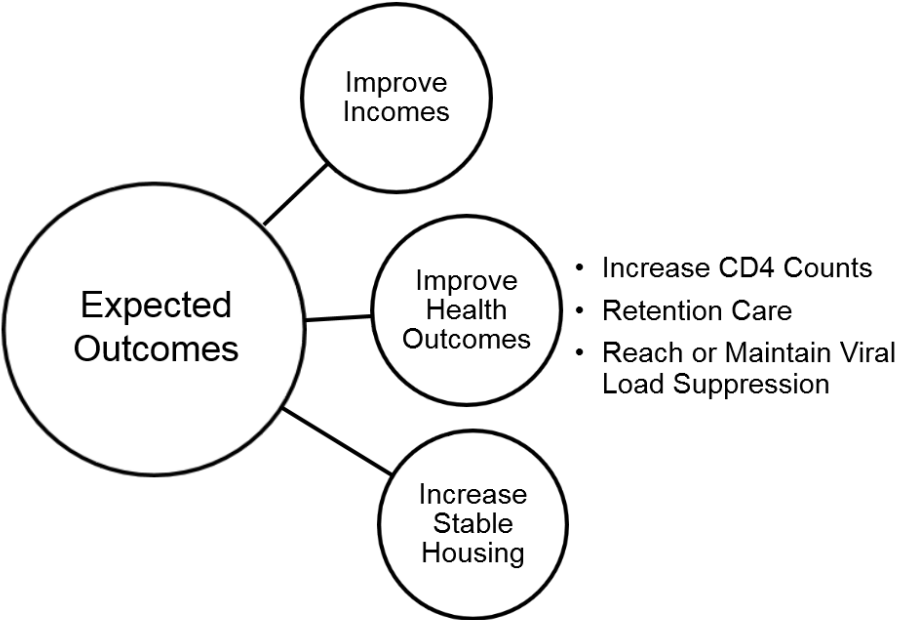


Figure 2. Desired Outcomes of KC Life 360

CHAPTER 3. METHODS

Population

People with HIV who are homeless, unemployed/underemployed, or have unstable housing are eligible for KC Life 360 if they meet certain medical criteria (e.g. not virally suppressed, newly diagnosed, or not engaged in routine HIV care). The program participants are previewed and referred to KC Life 360 from the Ryan White Medical Case Manager that is living in the TGA. Evidence shows that stable housing has a strong link with successful HIV treatment. Individuals with stable housing are likely to engage in medical care and other related services such as receiving HIV treatment, taking medicine regularly, and going to doctor visits regularly. Living conditions can exert a positive influence on overall health (Thiele, 2002). Stable housing is a human right. However, certain people such as homeless individuals do not have access to this right. PLWH are considered a vulnerable population because their illness results in stigma, lack of access to care, poverty, and negative social perception (Patrick, Flegel, & Stabrook, 2018). Given the factors listed above, the goal of the KC Life 360 program is to improve health outcomes for PLWH by providing housing related services, namely increasing employment/earned income to support greater housing stability. Therefore, KC Life 360's program provides resources to this vulnerable target population assisting with housing and related employment services, which will likely increase their treatment effectiveness and improve their overall health.

Intervention

While other organizations or programs focus on other specific interventions because of different populations or needs, the KC Life 360 program primarily focuses on the intervention of providing employment support services and housing related services. Despite assisting participants to obtain housing, one of the main goals of the program, KC Life 360 helps participants to keep

their housing by making monthly rent payments, utility payments, and meeting other needs such as food and clothes (WHO, 2020). Therefore, housing sustainability is another key focus in the program and is achieved mainly through increasing earned income. Evidence shows that sustainable housing (supported by earned income) is an effective intervention for HIV treatment and health outcomes (Grieb, Davey-Rothwell, & Latkin, 2013). Although KC Life 360 uses housing as an intervention to end the HIV epidemic, its primary focus includes increasing participants' income level to improve their housing sustainability and many subcategories that extend from it. KC Life 360 defines having follow up service for continued care, taking medicine regularly, and maintaining or reaching viral load suppression as positive outcomes for HIV intervention. These outcomes require a medical case manager to follow up with participants at least once every six to twelve months (Rajabiun et al., 2018). The medical case manager could provide resources to participants, connect participants with healthcare services, and document blood test results.

Comparison

The program goal is there to help participants to reach or maintain viral load suppression, by providing housing and employment related services. Health results will be compared before the participants enter Gap Lodging and after they exit the hotel. Also, participants will have a test on viral load and CD4 count. The test results are used to keep track of the participant's viral load level to observe whether they are reaching or maintaining viral load suppression or not.

CHAPTER 4. RESULTS

Demographic Data Analysis

Demographic variables are shown in Table 1. There were 15 African American and two Caucasian participants, this demonstrates a disproportionate net prevalence of HIV in minority communities. There were seven female and ten male participants. There were seven individuals with an HIV risk factors reported as male-to-male sexual contacts (MSM) and ten individuals that reported heterosexual contacts. Age ranged from 18 to 58. This shows that the greatest number of participants fall between the ages of 25-30.

Table 1. Displays demographic data analysis for Gap Lodging participants

Gap Lodging Demographics	Overall	
	N=17	(%)
AGE		
18-24	2	11.76
25-30	4	23.53
31-34	2	11.76
35-40	3	17.65
41-45	1	5.88
45-50	3	17.65
50+	2	11.76
GENDER		
Male	10	58.82
Female	7	41.18
RACE/ETHNICITY		
African American	15	88.24
Caucasian	2	11.76
RISK FACTOR		
Male to male sexual contact	7	41.18
Heterosexual contact	10	58.82

Gap Lodging Hotel

KC Life 360 offers a variety of assistance programs to unemployed or underemployed homeless PLWH, one of which is called Gap Lodging. Gap Lodging is an emergency hotel voucher

program which houses participants and their children (when applicable) until they are placed in permanent supportive housing or have obtained subsidized housing from a federal program like Housing Opportunities for People With AIDS (HOWPA) or Section 8 (a housing voucher program). Analysis of the results showed that of the 17 adult participants, the average length of stay was 57 days, the shortest length of stay was 14 days, and longest length of stay was 114 days. This shows that assistance was delivered rapidly and at a minimal cost, totaling \$47,646.19 for all participants. The results also show that 100 percent of participants who were virally suppressed at time of entry-maintained suppression throughout their stay. Of those who were not virally suppressed at time of entry into the Gap Lodging program, 43 percent became suppressed before exiting. Out of those who were not virally suppressed at time of entry and did not become suppressed before exit (n=4), one participant showed a decrease throughout the program and two had no changes, while the fourth participant showed an increase. No changes in viral load, or an increase in viral load might be caused by a test not being updated on time, by the participants not visiting a doctor regularly, or by the participant dealing with family or mental issues. Stable housing influences retention of care as demonstrated by the 76 percent of participants who attended a six-month follow-up doctor visit after exiting the hotel (see Figure 3).

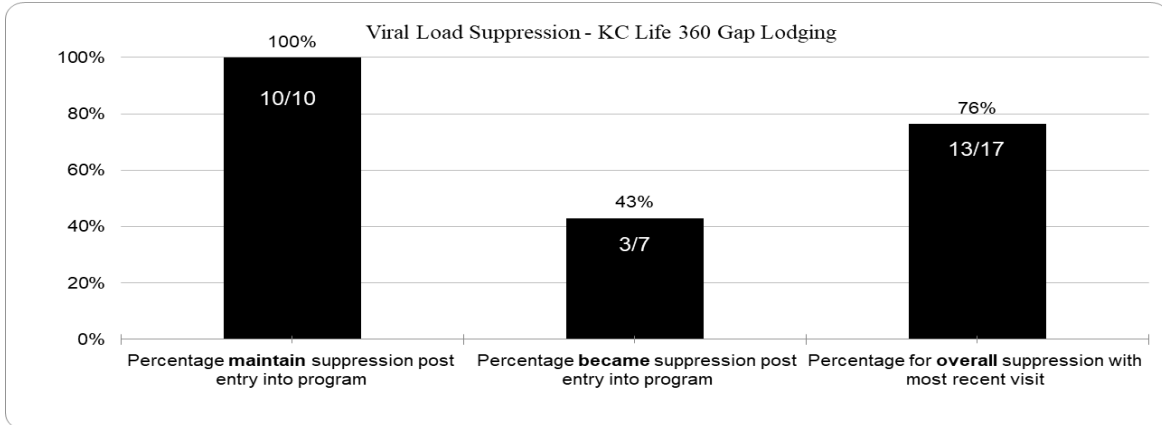


Figure 3. Viral Load Suppression of KC Life 360 Gap Lodging (Before & After Exit)

Summary of Findings

Pearson correlation coefficient was conducted in Table 2, and the result indicates 41 percent of the sample of men reported MSM contact. Age and most recent viral load results at time of exit have a moderate correlation ($r = .568, p < .05$), and cost of the stay and viral load are moderate correlated ($r = .584, p < .05$).

Table 2. Pearson correlation coefficient interpretation shows positive relationship between risk factor and age, most recent viral load results at time of exit with age, and most recent viral load at time of entry compared to cost

	Race	Gender	Sexual Orientation	Age	Most recent viral load result at time of entry	Most recent viral load at time of exit	Cost
Race	1						
Gender	0.306	1					
Sexual Orientation	0.436	0.700**	1				
Age	-0.108	-0.075	0.182	1			
Most recent viral load result at time of entry	0.141	-0.179	-0.033	-0.194	1		
Most recent viral load at time of exit	0.082	0.069	0.248	0.568*	0.13	1	
Cost	0.274	0.122	0.082	-0.067	0.584*	0.113	1
N=17							
** Correlation is significant at the 0.01 level							
* Correlation is significant at the 0.05 level							

In addition, frequency table was conducted in Table 3, where results indicated that there was a higher incidence of cases in African American compared to Caucasian. In the sample there are ten males seven females, ten individuals reported heterosexual contact and seven MSM contact.

Table 3. Frequency in race, gender, and risk factor among program participants

			Frequency	Percent	Valid Percent	Cumulative Percent
Race	Valid	White	2	.2	11.8	11.8
		African American	15	1.5	88.2	100
	Total		17	1.7	100	
Gender	Valid	Male	10	1	58.8	58.8
		Female	7	.7	41.2	100
	Total		17	1.7	100	
Risk Factor	Valid	MSM	7	.7	41.2	41.2
		Heterosexual	10	1	58.8	100
	Total		17	1.7	100	

Linear regression model was conducted to understand the cost and most recent viral load at time of entry, which indicated that one standard deviation increase in cost is related to .05 deviation of viral load. The collected value for cost and viral load at time of entry is presented in Figure 4 as dots. The lower and upper bounds of 95% confidence interval showed that 95% of the suitable slope of the regression line for these values is between 0.009 and 0.071. The *t*-value

corresponds with significance value, both support the predictor of standardized coefficient beta.

Table 4. Linear regression model

	Standardized Coefficient Beta	t	Sig.	95% Confidence Interval	
				Lower Bound	Upper Bound
Most recent viral load results at time of entry	0.584	2.783	0.014	0.009	0.071

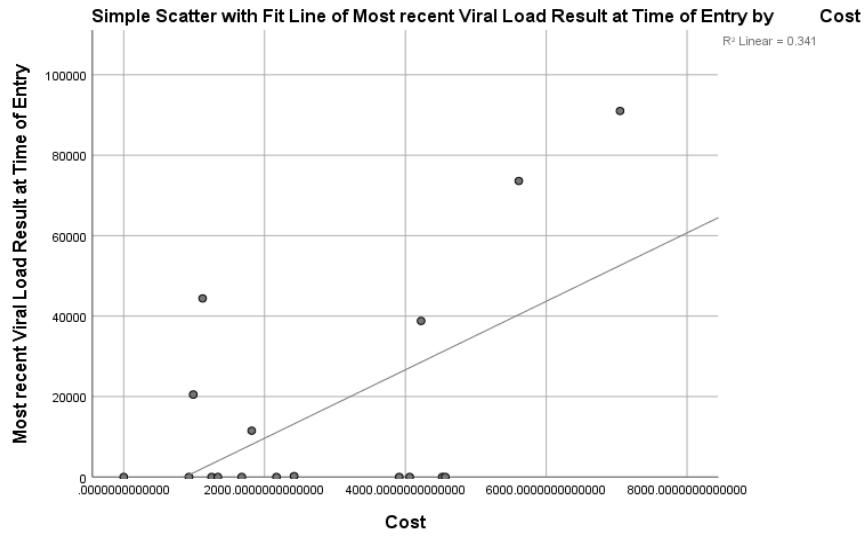


Figure 4. Relationship between Viral load with Cost

CHAPTER 5. DISCUSSION

The purpose of this evaluation was to examine the effectiveness of housing intervention to HIV outcomes by conducting multipurpose regression model. Based on the findings, results showed that stable housing was a potential significant factor to HIV care and adherence to ART treatment. Correlation between age and viral load results at time of exit might show that older participants are less likely to reach viral load suppression due to health comorbidities or other factors preventing them from accessing care. Lastly, cost and viral load are positively related, which could be due to systematic health inequality, stigmas, lack of employment opportunity, lack of long term and secure housing, as well as potential mental health issues. Overall, these findings indicate that there is a need for similar programs to be established around the U.S. in order to resolve this epidemic.

Public Health Impact

Based on the findings, it demonstrates that there is a need to have more similar programs, to address this health gap between health inequality in minority communities. This might also bring impact to policymakers to make law to protect the right for PLWH, to reduce stigma and discrimination at work or school. In addition, it might also bring attention to the board of education to deliver safe sex education in school in early age, so they have acquired information and awareness of the risk they might encounter without protected sex.

Strengths and Limitations

Overall, the program has several strengths and limitations discovered in this evaluation. This program's strengths include building stable partnerships and coalitions with other social services, as well as establishing a strong network of communication. These partnerships with a variety of social services provide help and advice that lead the program participants to the right

path in terms of living a healthier life. Other than partnerships, this program also does evidence-based interventions by providing housing assistance and related services to improve HIV health outcomes. The information they use will benefit future programs and studies as a point of reference. Most importantly, the program is influencing the community by extending assistance to participants' children if applicable.

However, this program has some limitations, such as a small number of participants and lack of support for group sessions. The first shortcoming creates limitations to extrapolating the data to a larger population. With this small amount of sample size, it is hard to draw a definite conclusion for the overall impact this program potential has on the Kansas City population. The second limitation does not give the opportunity for people to have support groups that might allow them to share experiences, improve self-esteem, increase retention care, and overcome stigmas. This negatively impacts the public's mental and emotional health, since they can't express their emotion through support group.

CHAPTER 6. CONCLUSION

Overall, this program addresses HIV health disparity among homeless/unstably housed populations in Kansas City metro area. This program is beneficial as a guideline to gain an in-depth understanding of the homeless population with HIV and explain the various needs that the program is assessing. The findings have demonstrated that stable housing, employment support, and increasing incomes are the major factors for improving HIV health outcomes. Resolving this epidemic may help release more medical resources and federal funding, which can be applied to the study of or the formation of programs for other epidemic diseases.

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