2021

Receiving Positive HIV Test Results From Home Testing and Suicidality

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This is to certify that the doctoral dissertation by

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Walden University
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Abstract

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MPH, Capella University, 2013

BS, Morgan State University, 2008

Dissertation Submitted in Partial Fulfillment

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Public Health

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Abstract

Limited studies have been conducted on whether receiving a positive result from at-home HIV testing correlates with suicidality (suicidal attempt or ideation). Based on the Ajzen theory of planned behavior, this cross-sectional study comprises a surveyed convenience sample of (N = 213) HIV -positive or negative adults who either tested for HIV at home or in-clinic. The purpose of this study was to explore any association between testing positive for HIV using the HIV at-home test kit and (a) suicidal attempt and (b) suicidal ideation; also, to discover any association between (c) HIV-negative and suicidality and (d) all HIV-positives (at-home or in-clinic positives) and suicidality. The covariates were: gender, access to care, income, education, partner status, age, race, and ethnicity. Bivariate analyses indicated that positive results from an HIV home test did not have a significant effect on suicidal attempts (p = .400) or suicidal ideation (p = 1.000). After multivariate logistic regression analysis, all HIV -positives (combined at-home and in-clinic positives) did not have any significant effect on suicidality (p = .063). However, being HIV -negative did have a significant effect on suicidality (p = .047). After controlling for the covariates, the results indicated that ages (25 to 34 years old; p =.044), race (Black or African American; p =.019), and education (2year or community college; p =.047) had a significant effect on suicidality. As such, the results indicated that suicidality remains a public health threat. Expanding available resources, monitoring those who use the HIV at-home test, and increasing highly trained professionals to identify suicidal risk in people who are either HIV -negative or positive so that they can be linked to care can all contribute to social change.

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Dedication

I dedicate this work to my children, Amelia, and Amari Hewitt, who have seen me struggle to balance being a mom and student. I thank you both for the forgiveness you have given in the absence of my undivided attention. Please know that my dream was to pursue my doctorate, and I owe you both for allowing me to pursue this dream so that you may realize your dreams are possible. To my husband, Willton Hewitt, thank you for always being there! Thank you, my loves.

I also dedicate this work to my late mother, Pauline Bassaragh, who taught me never to give up and fight for what I love. May your soul rest in peace, mom. To my dad, Michael Bassaragh, who always said, “Well, why not?” Well, daddy, I took that approach and completed my doctorate! I love you both!

To my sister, Angella Bassaragh, brothers Monroe (Wayne) and Michael Jr., and my nephew, Dajaun, I am the first Ph.D. in the family! Heart you lots.

Last but not least, to myself, Nekeisha A. Bassaragh-Hewitt, congrats, girl, you did it!

Acknowledgments

I want to thank my dissertation chair, Dr. Raymond Panas, and committee member, Dr. Patrick Tschida, for reviewing and helping to ensure that my study is of high quality and reason. I also want to thank Dr. Chinaro Kennedy for serving as my University Research Reviewer, providing honest feedback. Thank you, Dr. Ozcan, for readily helping me with my research questions, data analyses, and for being my CAO designee! Thank you, Walden University, for equipping me with this opportunity.

Thank you, Mrs. White, for saying "…and suicide," which sparked this dissertation. KM, for being a stranger helping to promote my survey through your network and to the only clinic, Area MS, which said yes to posting my flyer. Lastly, thank you to everyone that participated in this research, anonymous but highly significant!

Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction to the Study

Introduction

The HIV and the disease caused by the virus, AIDS, have placed a significant burden on global health. The United States first recognized symptoms of HIV in the 1980s when the first diagnosed cases of HIV appeared (Centers for Disease Control and Prevention [CDC], 2019a); however, evidence has shown that the virus has existed within the United States since mid to late 1970s (CDC, 2019a). Further research has shown that exposure to HIV may have occurred since the 1800s through zoonotic transmission-- apes to humans-- and originated in Central Africa (CDC, 2019a). Nevertheless, before HIV identification and an understanding of the mode of transmission many believed that HIV was exclusive to people who engaged in same-sex relationships. However, later research illustrated that HIV is inclusive of all sexualities (United States Department of Health and Human Services [HHS] n.d.-b), which indicated that education and awareness should be for all populations.

Before the availability of antiretroviral therapy (ART), acquiring HIV and developing AIDS was a cause of high morbidity and mortality rates. As a result, testing for HIV became a priority and occurred primarily in a doctor's office where the person had to present themselves physically to give blood samples (HHS, 2020a). The first HIV test became licensed in 1985 (HHS, n.d.-b); thus, an increasingly significant body of research on HIV/AIDS ensued, leading to the availability of ARTs. As a result, researchers started highlighting the effects of the disease on the global population (HHS, 2020a), the economy, and public health. Moreover, part of the Healthy People 2020

initiative was to ensure that at least 90% (World Health Organization [WHO], 2020c) of people unaware of their HIV status should know their status through testing. As such, testing options increased to ensure more people had access to testing.

In the pursuit to have more people tested for HIV, progress through scientific advancement now allows a person to purchase an at-home HIV test kit online and through drugstores and pharmacies to test themselves in the privacy of their own homes or wherever they chose. However, while the ability to conduct an HIV self-test at home is convenient, comfortable, and without loss of privacy (WHO, 2016), it also has its challenges due to the lack of a provider's or a counselor's presence to further explain the test results, if positive. Therefore, primary care providers are ideal in recognizing suicidality in patients (Raue et al., 2014). Limited research exists on how receiving positive HIV test results from at-home testing correlates with suicidality and is explored in the subsequent sections and chapters.

Suicidality encompasses the attempt, the thoughts or ideation, and the successful act of taking one's own life (Dabaghzadeh et al., 2015). Suicide, another phenomenon with an extensive history, has plagued the world for centuries and became established as a noun and a verb by the mid-18th century (Barraclough & Shepard, 1994). Many people have committed suicide, contemplated suicide, and have attempted suicide over their lifespan, making it an insurmountable public health threat to overcome. *Suicidality* includes both suicidal attempts and suicidal ideation and is the terminology used interchangeably throughout the study. However, I explored suicidality individually as suicidal attempts, suicidal ideation, and in combination as suicidal attempts or ideation.

Suicide is a difficult concept to understand to which there is no cure; however, treatment can help offset triggers. A trigger for suicide can include an HIV diagnosis. Wang et al. (2018) provided insight that people living with HIV/AIDS (PLWHA) commit suicide at a higher rate than those of the public absent of HIV/AIDS infection. The authors also indicated that other variables, such as having low educational backgrounds and lacking social support, were reasons someone would engage in suicidality (Wang et al., 2018). Additionally, the authors indicated that 31% of their participants had some form of suicidality due to an HIV diagnosis (Wang et al., 2018). However, inconsistencies exist in the relationship between suicidality and having HIV/AIDS (McNaghten et al., 2005). Whereas some studies have reflected high rates, other researchers have denied increases in suicidality in PLWHA (Komiti et al., 2001; Marzuk et al., 1988; Passos et al., 2014; Rabkin et al., 1993; Schlebusch et al., 2015 as cited in Rukundo et al., 2016).

Having evidence showing that testing positive for HIV can evoke suicidal attempts and suicidal ideations can help influence social change through increased education and awareness so that additional resources are available for anyone. Thus, in this study, I aimed to determine that gap in research to determine the correlation, if any, between positive HIV at-home results and suicidality using a cross-sectional study captured from an anonymous online survey. Additionally, I explored the population that tested in a clinic or providers' office, including the Emergency Room (ER) and urgent care facilities, and participants who are HIV -negative to determine the effects on the general population and enhance the study's robustness.

As a recap, Chapter 1 consists of the introduction, purpose of the study, significance, background, framework, research questions and hypothesis, nature of the study, definitions, assumptions, scope and delineation, limitations, as well as the theory of planned behavior (TPB) as the theoretical framework.

Background

Along with being HIV -positive, compounding evidence has shown that the possibility of having comorbidities such as depression, anxiety, and other psychiatric disorders (Ruffieux et al., 2019), is a conduit to increased suicidal rates (Carrieri et al., 2017). Similarly, Ruffieux et al. (2019) indicated that people living with HIV are more at risk for suicidality. Subsequently, according to the WHO (2020a), over 75 million people live with an HIV infection, and consequently, about 32 million deaths are related to HIV/AIDS, year to date. At the end of 2018, there were approximately 39 million PLWHIV, and about 777,000 deaths were associated with HIV (WHO, 2020b).

Furthermore, suicide has increased by at least 30% since 1999 (CDC, 2018b) and is one of the significant causes of mortality, with over 47,511 lives lost in 2019 (American Foundation for Suicide Prevention [AFSP], 2021). Additional 2019 data revealed that suicide and self-injury had surmounted a cost of $70 billion to the healthcare system (CDC, 2021b). The male population is four times more likely to commit suicide and represented 79% of all U.S. suicidal cases (CDC, 2016). As a result, suicide was the eighth leading cause of death for men in 2017, representing 2.6% of the population (CDC, 2019c), and was overall the 10th leading cause of death in the United

States (AFSP, 2021). Additionally, gay, lesbian, and men who have sex with men (MSM) are twice as likely to commit suicide than their heterosexual counterparts (CDC, 2016). As a result, over 10 million people have contemplated suicide; however, 3.3 million people made plans to commit suicide, resulting in 1.4 million attempted suicide in 2018 (CDC, 2020d).

Comparatively, the CDC (2017) reported that at least 40,000 people received an HIV diagnosis in 2015; however, about 162,500 or 15% of those who have HIV are still not aware of their HIV status. The question remains if not knowing their HIV status would increase suicidal attempts and ideation. As such, the concern for people not knowing their HIV status has propelled efforts to broaden testing strategies to help bring awareness to prevent HIV transmission. Hence, I aimed to discover any direct association between testing positive for HIV via home-testing and how it affects suicide attempts and suicide ideation since a provider is not available compared to those who used a clinic for testing where a provider or counselor is available to help with the understanding of the diagnosis.

Globally, over 8.1 million people still do not know their HIV status (HHS, n.d.-a); thus, the transmission of HIV disease is unavoidable. With this research, I aim to encourage more awareness to know one’s HIV status, highlight the effects of being HIV - positive or negative, and ultimately encourage linkage-to-care (LTC) to negate suicidality. Furthermore, the Cascade of Care, Figure 1, is the ideal sequential progression from testing to treatment and continuing to viral suppression. The study's

LTC can help determine how many people indicated that they would follow up for treatment and provider guidance to prevent suicidality.

The HIV continuum of care is a globally united strategic framework to help people ideally achieve and manage the steps from testing to viral suppression (Kay et al., 2016). However, viral suppression is hard to achieve, as the authors noted that only 30% of those living with HIV achieved viral suppression (Kay et al., 2016). Therefore, the increase in HIV home-testing ensures that positive people who did not know their HIV status prior will know their HIV status. Additionally, I hope to impact social change to help implement proper treatment regimens, lessen transmission, and ensure appropriate LTC (HHS, n.d.-a) and include counseling services to limit suicidal attempts and ideation.

Figure 1

Cascade of Care

Present-day advancement in testing for HIV allows people to use the United States Food and Drug Administration approved home testing kit in the privacy of their homes. Home testing aims to increase self-awareness of one's HIV status and encourages health departments to include self-testing in their strategies to increase HIV testing (CDC, 2020e). With the WHO establishing home-testing guidelines for HIV in 2016 (WHO, 2020b), there are limited data on how at-home testing relates to the impact of

knowing ones' HIV status, suicide risk, and availability of LTC services. Based on that limited data, I intended to identify the gap from the results of one's response to a positive HIV at-home test.

Problem Statement

Earlier studies, such as Perry et al. (1990), showed the correlation between HIV and suicide as a public health issue. Evidence of this issue is still current, illustrated by a study carried out by Carrieri et al. (2017), where these authors determined there remains a correlation between HIV and suicidality. However, there is no evidence of how at-home testing resulting in an HIV -positive result compared to those who test in person at a clinic or doctor's office manifests into suicidality. Accordingly, Schnall et al. (2014) indicated that evidence or research is lacking to determine the outcome for people who test positive using the at-home HIV test; subsequently, Wood et al. (2014) suggested that researchers assess the risks involved with home testing. Thus, more research is needed to assess the impact of home testing and suicide which validates the necessity of this study.

Croxford et al. (2016) determined that the rate of people who commit suicide after receiving an HIV -positive result is twice that of people who are HIV -negative. The authors also determined that periodic testing and subsequently delayed treatment contribute to the individual's mortality (Croxford et al., 2016). As a result, I explored the risks involved with home testing with the possibility of finding out one is HIV -positive for participants 18 years and older. While home testing favors anonymity, several concerns are unavoidable. Concerns such as whether the patient will present to the doctor for treatment, whether the patient will report the diagnosis, and what supportive care the

patient received are questions yet answered to help negate any concerns for increased suicidal attempt or thought.

Purpose of the Study

The purpose of this cross-sectional quantitative study was to examine the impact of receiving positive HIV test results from the at-home test and suicidal attempts and suicidal ideation. I intended to identify the correlation, if any, between testing positive for HIV using the at-home kit, suicide attempt (Research Question [RQ]1), and suicidal ideation (RQ2), HIV -negative and suicidal attempt or ideation (RQ3), and all HIV positives and suicidal attempt or ideation (RQ4). Additionally, covariates: partner status, income, education, age, access to care, race, ethnicity, and gender were included in the study. I used a convenience sampling approach, which included collecting primary data from an anonymous online survey administered nationwide through SurveyMonkey. The study addressed the gap regarding limited research on whether positive results from HIV home testing correlates with suicidal rates. The variables are as follows:

Independent variables: positive HIV at-home test results, HIV -negative, combined HIV-positive from both at-home and in-clinic

Dependent variables: suicide attempt, suicidal ideation, combined suicidal attempts or ideation

Covariates: partner status, income, education, age, access to care, race, ethnicity, and gender

Research Questions and Hypotheses

The underlying issues that helped develop this study stemmed from the HIV at-home test capabilities approved by the U.S. Food and Drug Administration (FDA). By nature, when a person receives negative news, they tend to act in disbelief and have feelings of anger and frustration, and the thought of self-harm may arise. Thus, I used these ideas to create the following four RQs:

RQ1*:* Is there an association between testing positive for HIV using the at-home test and suicide attempt? Does this association remain even after controlling for partner status, income, education, age, access to care, race, ethnicity, and gender?

$H1_0$: There is no association between testing positive for HIV using the at-home test and suicidal attempt.

$H1_A$: There is an association between testing positive for HIV using the at-home test and a suicide attempt, and this association remains even after controlling for partner status, income, education, age, access to care, race, ethnicity, and gender.

RQ2: Is there an association between testing positive for HIV using the at-home test and suicide ideation? Does this association remain even after controlling for partner status, income, education, age, access to care, race, ethnicity, and gender?

$H2_0$: There is no association between testing positive for HIV using the at-home test and suicidal ideation.

$H2_A$: There is an association between testing positive for HIV using the at-home test and suicide ideation, and this association remains even after controlling for partner status, income, education, age, access to care, race, ethnicity, and gender.

RQ3*:* Is there an association between being HIV -negative and suicidal attempts or ideation? Does this association remain even after controlling for education, income level, gender, race, ethnicity, and age?

$H3_0$: There is no association between being HIV -negative and suicidal attempts or ideation.

$H3_A$: There is an association between being HIV -negative and suicidal attempts or ideation, and this association remains even after controlling for education, income level, gender, race, ethnicity, and age.

RQ4: Is there an association between all HIV -positives and suicidal attempts or ideation? Does this association remain even after controlling for education, income level, gender, race, ethnicity, and age?

$H4_0$: There is no association between all HIV -positives and suicidal attempts or ideation.

$H4_A$: There is an association between all HIV -positives and suicidal attempts or ideation, and this association remains even after controlling for education, income level, gender, race, ethnicity, and age.

Theoretical Framework

The theory used for this study was the TPB. The TPB, initially named the theory of reasoned actions in 1980, was thought to be a predictor of people's actions and intent to partake in a certain behavior specific to time and place (Lamorte, 2019). The TPB was synergistic to this study because a person's sexual behavior puts themselves and others at risk for acquiring HIV. Thus, the TPB looks at the individual's choices (Ajzen, 2019).

Asare (2015) concurred that using the TPB to assess people's choice in using condoms can help protect against sexually transmitted diseases (STD), including HIV, because it encourages identifying indicators that promote risky behavior. When a person engages in unsafe sexual practices, it increases the risk factors that put them at risk for HIV, and ultimately that person may choose to commit suicide (Nath et al., 2018).

Moreover, engaging in sexual practices is innate to a living being. Unless a person is medically or biologically incapable of engaging in sexual practices, one will naturally follow nature's course if the desires and means are available. The age people usually engage in sexual practices is relative to the age range of people testing positive for an STD, including HIV. Therefore, the TPB relates to the research study because it considers the actions a person will take once they determine their HIV status.

There are six constructs of the TPB, three of which are related to this study. The three related constructs with associated variables are illustrated in Table 1.

Table 1

Constructs of the Theory of Planned Behavior

Attitudes	Behavioral intention	Perceived behavioral control
Suicide attempt	HIV home kit usage	Access to care
Suicidal ideation		LTC

Nature of the Study

This was a quantitative cross-sectional research study based on the TPB. I collected primary data from respondents 18 years and older who have taken an HIV test before through an anonymous survey distributed through SurveyMonkey. Additionally, a recruitment flyer, placed at a clinic, masked name, Area MS, advertised the online survey. The online platform had multiple security layers in place to protect confidentiality and anonymity. Furthermore, the survey captured data from respondents who have tested in person at a clinic or doctor's office to include urgent care or the emergency department and those who are HIV -negative. Data collected on respondents who are HIV -negative gave perspective to determine the association of suicidality in respondents who were negative. The information collected from the control groups- - respondents who tested in -clinic or doctor's office- were compared to respondents who used the at-home test.

I initially intended to conduct binary logistic regression (see Warner, 2013) to examine the association between the independent variable, HIV -positive result using the

at-home test kit, and the dependent variables, suicide attempt, and suicide ideation. Then, I intended to conduct a multivariable logistic regression analysis (see Warner, 2013) to examine whether an association that resulted from using binary logistic regression remained after controlling for partner status, income, education, age, access to care, race, ethnicity, and gender. However, because of the small sample size for HIV -positive respondents, I conducted bivariate analyses based on subjects in the defined groups.

Additionally, due to the small sample size of HIV -positive participants who used the HIV at-home test, RQs 3 and 4 were added for secondary analyses. The result from the data analyses might help with understanding the gap in the literature.

Prior to the main study, the survey was piloted to increase validity and reliability. A summary of the pilot study is included in subsequent sections. I used the IBM SPSS Statistics Version 27 program to perform the data analyses.

Definitions

The following definitions are specific terms pertinent to my study:

People living with HIV/AIDS: People who have confirmatory positive tests indicating positivity for HIV/AIDS and managing the disease (CDC, 2020b).

Presumptive positive HIV test: a positive home-test kit result where further confirmatory is needed (CDC, 2020a).

Self-testing or home testing: The use of a rapid HIV test done at the person's house and outside of a doctor's office, local health department that may be purchased online and through pharmacies such as Walgreens and CVS for testing at home (CDC, 2020f).

Suicidality: Suicidal attempt and suicidal ideation (Dabaghzadeh et al., 2015).

Suicide attempt: The harming of oneself with the desire to end one's life but did not cause death (Dabaghzadeh et al., 2015).

Suicide ideation: Thinking or planning to commit an act of harming oneself (Dabaghzadeh et al., 2015).

Assumptions

The assumptions made in this study rested on the fact that this is a primary research that I developed, and validation of the instrument occurred and remained unbiased. Firstly, I assumed survey response would create an adequate sample size for HIV -positive respondents. Secondly, because HIV is a protected disease, I hoped that participants would answer, honestly, the sensitive questions regarding suicide and HIV. Thirdly, I favored the assumption that participants will present to doctors for follow-up care after receiving at-home testing results to be LTC and work with providers to negate any suicidality. Finally, I favored the assumption that I would determine causation from this cross-sectional study as to why people would choose to participate in suicidality; however, cross-sectional studies do not give such answers and only represent the correlation.

Scope and Delimitations

I chose to focus on HIV, suicide attempts, and suicide ideation because, despite the availability of ART and efforts to prevent disease, such as promoting contraceptive devices like condoms, HIV is still a very prominent public health issue globally. Similarly, suicide is a preventable public health concern that is still very prominent

irrespective of education, counseling, and medication (if needed). Therefore, both HIV and suicidality are relevant and current public health topics.

This study included respondents who are HIV- positive or negative whether they tested at home using the HIV at-home kit, without a provider being immediately available to explain the test results, or in a clinic, with a provider. These inclusion criteria were to ensure that the study captured a broad target audience and increase study robustness. However, the study excluded anyone under 18 years of age, people who did not consent, and people who have not taken an HIV test. These exclusion criteria were based on the fact that I would need parental consent for participants under 18 years old, and participants who have not taken an HIV test would not add value to the study.

Conversely, the study might not reflect the inclusivity of all gender groups, diversity in sexual orientation, age, and people who do not have access to the internet, which could have resulted in a larger sample size and more completed surveys. Additionally, capturing a younger target audience, under 18 years of age, could have yielded greater generalizability and lessened delimitations of the study.

Limitations

Limitations resulted from people not wanting to address sensitive topics such as HIV diagnosis and suicidality, which created an inadequate sample size of HIV -positive respondents regardless of the survey being available nationwide. Another limitation was using nonprobability convenience sampling to aid with recruitment instead of a probability approach that would have been more representative of the population. Nonprobability sampling created an overrepresentation of HIV -negative respondents in

the study, which affected generalizability. However, this overrepresentation of HIV -negative respondents was used as leverage for secondary data analyses for RQs 3 and 4.

Moreover, the year 2020 experienced the COVID-19 pandemic that provided greater limitations by creating challenges such as limiting issuing a paper-based survey, connecting with STD clinics, and physical contacts for recruitment. Lastly, using a cross-sectional study design where data were captured at a specific point prevented the ability to identify any causal relationship between the variables; however, it captured correlational data.

Significance

The study may help medical providers or health agencies identify the need to create programs to provide support services to people who use the home test and identify those at higher risk for suicidal attempts and suicidal ideation. The goal was to determine if the benefits outweigh the risk of testing for HIV at home. Ibitoye et al. (2014) reiterated that home testers default to interpret the results themselves, however convenient, but these tests may bring confusion and potential risk of suicidal attempts and ideation.

Consequently, suicide and self-injury have cost the United States about $70 billion in 2019 (CDC, 2021b), whether that person is HIV -positive or HIV -negative. The average cost for lifetime treatment per HIV -positive person is $379,668 based on 2010 dollars (CDC, 2019b). Thus, from a public health standpoint, this study may contribute significantly to the field by increasing awareness of one's HIV status, providing proper LTC, and ultimately reducing suicidal ideation and attempts.

The study served to bring about social change to eliminate the stigma around being HIV -positive, seeking care, and understanding the impact of the relationship of knowing one's HIV status and how it influences suicidality. Additionally, because evidence has suggested that HIV is a predictor for suicidality, I aim to bring more awareness that help is available for people experiencing conflict after their HIV diagnosis. Many resources are available, such as LTC programs that aim to pair those who test positive with treatment programs, counseling programs, and other vital resources to achieve viral suppression and ultimately live a healthy lifestyle. Thus, the generalizability of this study remains promising.

Summary

Over the years, HIV and suicide have plagued communities worldwide. Many people are still unaware of their HIV status, and even with prevention strategies, the numbers still increase, and deaths still occur despite new attempts to increase testing and treatments. In this study, I aimed to discover the correlation between being HIV -positive or HIV -negative and suicidality and whether that association remained after controlling for partner status, income, education, age, access to care, race, ethnicity, and gender.

I considered the at-home testing in the absence of a provider and whether receiving a positive result may trigger suicidal attempts or suicidal ideation. I used a cross-sectional approach and obtained data through convenience sampling from a survey administered online. I considered suicidal attempts and suicidal ideation individually and in a combined recoded variable. For the secondary analysis, I explored the association between people who test negative for HIV and suicidal attempts or ideation and for all

people who test positive for HIV and suicidality. To summarize, in this first chapter, I introduced the study, provided the RQs, and other pertinent information related to its overview. Chapter 2 addresses the literature review, detailing the study's recency and relevance, and provides validation of the inclusion of independent and dependent variables and covariates in this study.

Chapter 2: Literature Review

Introduction

HIV and suicide are two of public health's biggest threats. Much research on both topics, individually and collectively, has been conducted not limited to determine causation and effect. Evidence has shown that following an HIV diagnosis, some people may choose to harm themselves or have thoughts of harming themselves. Since the at-home HIV kits were introduced in the last decade, limited research has been conducted on how one would receive their HIV diagnosis. Therefore, I aimed to determine the association between positive HIV at-home results and suicidality. And to determine the association between HIV -negative and suicidality and all HIV -positives, and suicidality.

In this chapter, I explore the literature related to HIV and suicide prevalence and their recency as a public health concern which helps to illustrate this study's necessity. O'Rourke et al. (2020) noted that suicide had surpassed diseases such as liver disease, diabetes, and HIV as the seventh leading cause of "years of potential lives lost," with close to half a million people going to the emergency room each year for suicidal attempts. The authors also confirmed that suicide is still a prominent public health concern as it is the 10th leading cause of death amongst Americans (O'Rourke et al., 2020).

Similarly, Carrico et al. (2010) provided insight in earlier decades that suicide was a problem amongst people diagnosed with HIV irrespective of ART. Wang et al. (2018), who conducted a cross-sectional study on the psychosocial events of PLWHA, determined that suicide is prevalent for this population. Furthermore, while HIV is no

longer a disease of death, the comorbidities and advancement to AIDS certify HIV as a current and impactful disease.

Schnall et al. (2014) explored the rates of HIV incidence in adolescence and the possibility that home testing can account for faster diagnosis; however, the threat of suicide remains for this population. The study results indicated that youth from low-income areas might benefit from home testing due to the lack of medical care access, but concerns are still evident (Schnall et al., 2014).

Thus, Chapter 2 provides information on the literature search strategies, conceptual framework, literature review related to key variables and concepts, and the summary and conclusion.

Literature Search Strategy

HIV and suicide are well-researched topics, and these search terms produced thousands of results. Search words related to the study included *HIV at-home test kits, HIV rapid test, gender, age, race, ethnicity, suicide rates, home testing kits, support services, educational and income level,* and *STDs*. Combination search words included *HIV and suicidality,* which produced 1,134 results, *income level, and HIV,* which produced 1,190 results, *socioeconomic status, and HIV,* producing 7,044 results. *HIV at-home test and suicide,* which was the basis of my dissertation, produced four results, but none were directly related to the dissertation topic.

Database search engines for topical events were EBSCO, CINAHL, and PubMed, along with websites such as the CDC, National Center for Biotechnology Institute, National Institutes of Health, WHO, Google, and Yahoo. The timeframe for the articles

and topics ranged from 1990 to 2020. Relevancy and recency in the literature review were captured within the last 5 years; however, seminal literature was used to link past indications with current events. The focus of the articles was to determine the correlation between HIV and suicide. Kuhlman et al. (2017) examined the imminent public health concern for suicidal attempts and ideation that contributed to many deaths in the United States and presented the consistent viewpoint that suicide is still a current public health issue.

Conceptual Framework

Ajzen developed the TPB to foretell how people respond in certain situations (Ajzen, 1991, as cited in Asare, 2015). The TPB "posits that attitude toward the behavior, subjective norm, and perceived behavioral control influence behavioral intention" (Asare, 2015, p. 2). This definition or conceptual way of interpreting the meaning behind the TPB made it an ideal conceptual framework for this study. Acquiring HIV, subsequently getting tested, and suicidality are due to people's intentions and behavior.

Ayodele (2017) believed that the stronger the behavioral intent for a person to engage in an act, the higher the likelihood they will perform that action. Ayodele concluded that using the TPB is a predictor of people's HIV testing intentions as an extension of TPB's behavioral intention aspect.

While the TPB was ideal for this study, it has limitations that can affect its application's generalizability to the study. The TPB believes that all people have the necessary means to operate within the constructs; it assumes everyone has equal

opportunities and does not consider change, economics, and people's inhibitions (Lamorte, 2019).

Despite these limitations, TPB suited the purpose of my dissertation. TPB is a more definite conceptual theory than the health belief model, which aims to detect why people do not engage in activities that will guide healthy behaviors such as completing annual medical checkups, eating nutritiously, and engaging in frequent exercise.

Literature Review Related to Key Variables and/or Concepts

The key variables in this study are HIV test results and suicidality- suicide attempt and a suicide ideation- income level, access to care, gender, partner status, age, race, ethnicity, and education level. The following paragraphs provide elaboration on the key variables.

HIV At-Home Testing

The FDA approved two at-home HIV test kits to improve testing strategies (Ibitoye et al., 2014), increasing the number of people tested for HIV and profitability. Both the Oraquick at-home HIV test (OraSure, Bethlehem, PA) and the Home Access HIV-1 Test Systems (Home Access Health Corporation, Hoffman Estates, IL) are available to purchase from pharmacies and online. The Oraquick provides more convenience because it allows the patient to provide a fluid sample from their mouth, with results in 20 to 40 minutes, at their preferred location and does not need a laboratory for analysis and interpretation (HHS, 2020a). However, the Oraquick rapid HIV at-home will give the user a presumptive positive test, if positive. The patient will have to complete additional confirmatory testing (HHS, 2020a). On the other hand, the Home

Access HIV-1 Test System is a confirmatory test that allows the user to self-collect blood and return it to a laboratory for analysis and interpretation; results are available in 3 to 7 days (HHS, 2018).

The WHO (2020b) endorsed the HIV self-test (HIVST) through acknowledgment, recommendation, and stating that the HIVST aims to reach first-time testers and for 90% of people with undiagnosed HIV to know their status by 2020 (WHO, 2020c). The stigma associated with going into a clinic or doctor's office for any sexually related infection is one factor that prevents many people from knowing their status and ultimately limiting treatment (see Avert, 2016). According to the CDC (2020e), the at-home test's availability has increased the number of diagnosed HIV infections in gay and bisexual men, one of the most prominent groups infected with HIV. Thus, having the ability to increase testing is promising for treatment (see CDC, 2020e).

Therefore, people's attitudes towards testing for sexually transmitted infections are taking a positive turn, as evident in Ahmed-Little et al.'s (2016) study, which explored the nontraditional setting of HIV testing at home. The participants were issued HIV rapid tests. Results indicated that 96.6% of those who took the test strongly agreed that testing in their own home's privacy was more comfortable and convenient (Ahmed-Little et al., 2016).

Similarly, Kumwenda et al. (2019) determined that at-home testing can improve testing rates, improve testing coverages, and increase the number of times people, complete testing. While many people may still question the completeness and accuracy in using the home test, Choko et al. (2015) explored topics related to testing accuracy,

safety, LTC, and overall health outcome for HIV home self-testing. The authors found that 94% of those who completed the HIVST were satisfied with the test (Choko et al., 2015).

Suicidality

Suicidality refers to suicidal attempts and suicidal ideation in this research study. It is separated into four RQs—the following sections address the reasons for the covariates included in this study.

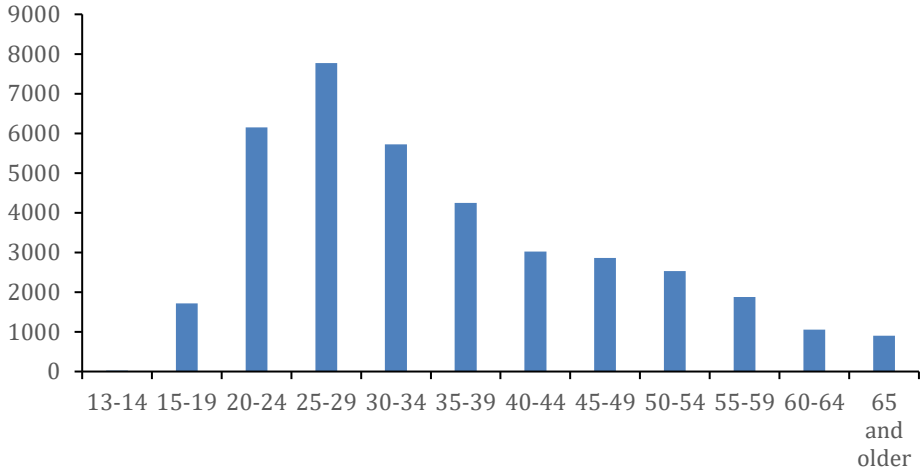
Age

Younger people between the ages of 13 and 24 are more disproportionally affected and more likely to be newly diagnosed with HIV/AIDS (CDC, 2021a). Younger people tend to be more involved in risky sexual behaviors, which puts them at risk for contracting HIV and other STDs. Schofield et al. (2008) reported that 13 to 15 % of teens in America reported sexual intercourse before age 15.

However, Figure 2 shows that the highest age category of people with new HIV infections is between ages 25 and 29, followed by ages 20 to 24.

Figure 2

New HIV Diagnosis US and Dependent Areas by Age at Diagnosis, 2018



Note. [a] Includes the 50 states, District of Columbia, and 6 dependent areas of American Samoa, Guam, the Northern Mariana Islands, Puerto Rico, the Republic of Palau, and the US Virgin Islands. https://www.cdc.gov/hiv/statistics/overview/index.html

People within these age groups of newly diagnosed infections are more likely to engage in risky sexual behaviors through the limited use of condoms, creating more opportunities to transmit diseases sexually. Similarly, suicide is higher among people between the ages of 10 and 54 and is the second cause of death for people between 10 and 34 (Suicide Prevention Resource Center, [SPRC] n.d.). Suicide is the fourth leading cause of death for those between ages 34 and 54, while it is the fifth leading cause of death for those between the ages 45 and 54 (CDC, 2021b). Therefore, participants 18 years and older fall within the study's target age range; however, the study excludes participants under the age of 18.

Suicide Attempt and Suicide Ideation

While data on suicidal attempts and suicidal ideation are not readily available, the most recent data year (2015) shows that approximately 575,000 people visited the hospitals for self-harm-related injuries (AFSP, 2021). Additionally, data from the 2018 National Survey of Drug Use and Mental showed that approximately 1.4 million people 18 years and older had made at least one suicide attempt. Adult females attempted suicide at least 1.5 times as often as males (AFSP, 2021). Additionally, the AFSP (2021) reported that based on the 2019 Youth Risk Behaviors Survey, 8.9% of youths, grades 9 to 12, reported at least one suicide attempt within the last 12 months. The female students (11%) who attempted suicide almost doubled the rate of the male students (6.6%). The American Indians (AI) or Alaskan Natives (AN) students (25.5%) had the highest suicidal attempt rate reported compared with White students at 7.9% (AFSP, 2021).

Further research by Niu et al. (n.d.) indicated that in their systematic review of articles related to HIV, mental health disorders, and suicide in China, having mental health problems such as anxiety and depression is prominent among HIV-positive people. The authors also indicated that people with HIV had thoughts of suicide, had attempted suicide, and had successfully committed suicide because of their HIV diagnosis. Niu et al. (n.d.) also reported that about 6.9% of those who attempted suicide done so after receiving a positive HIV result and that 48% of MSM had suicidal ideation after receiving positive results compared to those who received negative results. Similarly, Komiti et al. (2001), as cited in Robertson et al. (2006), documented that HIV diagnosis

is a predictor of suicidal ideation and attempt. Thus, both Niu et al. (n.d) and Robertson et al. (2006) show that HIV diagnosis could influence suicidal ideation and attempts.

Cooperman and Simoni (2005) noted that 27% of women in their research attempted suicide within the first week after receiving HIV diagnosis, and 42% indicated that they attempted within the first month. Knowing that people tend to attempt suicide soon after their diagnosis is critical because early intervention from providers can help offset any suicidal thoughts and attempts. The need for provider follow-up is especially imminent for those using the at-home test kits; however, medical providers are not immediately available and are only available when the person initiates the follow-up making it more urgent.

Owens et al. (2002) indicated that non-fatal self-harm usually leads to repeated suicidal behavior, which ultimately leads to suicide. However, the Owens et al. study indicated that of this non-fatal self-harm repeated suicidal behavior, 90 % of the people who attempted suicide does not go on to die by suicide.

Income

Globally, there is a disproportionate disadvantage to anyone who is not of high socioeconomic status. Having limited or no income can affect many health outcomes. The CDC (2018a) acknowledged that having a sustainable income is an indicator of having better health. Despite efforts to encourage economic growth and stability for all people, an income gap still exists between lower-income families and wealthier families (Menasce et al., 2020). Having a low income is a predictor for poorer health and invites risky sexual behavior, leading to an STD.

Ransome et al. (2016) emphasized that the two key variables in HIV diagnosis and outcome are income inequalities and socioeconomic deprivation. The authors also demonstrated that HIV testing and accessibility to testing are the main components to help reduce the burden of HIV as determined by the CDC. However, low-income or lack of access to health is a contributing factor limiting access to testing and treatment. Contrarily, Parkhurst (2010) indicated that within African Nations, HIV is linked to both the wealthy and the impoverished communities.

Similarly, suicide rates are also influenced by low income, as evident by research from Lee et al. (2017). They conducted a cross-sectional study, which shows that lower socioeconomic position (SEP) increases suicide rates. People with lower income may not have access to the resources necessary to seek help with suicidal ideation. Thus, one can conclude that income is a variable contributing to both HIV and suicide.

Education

Education is another essential variable that influences income, HIV status, and suicide. According to Muyunda et al. (2018), “studies have shown a strong association between education and HIV prevalence” (para.1). The statement by Muyunda et al. complements that people who did not complete high school were more likely to engage in activities related to exchanging sex for money or drugs, according to the (University of Pennsylvania School of Nursing, 2017). Having limited skills and limited opportunities (Davey-Rothwell et al., 2012) due to a lack of education increases the risk of engaging in risky sexual behavior, leading to HIV infection and suicide.

Pompili et al. (2013) indicated that people with a higher educational background tend to engage in less suicidal activities than people with lower educational backgrounds. Lu et al. (2018) also concluded from their longitudinal study that educational level, amongst other variables, were predictors for suicidal ideation and attempted suicide in people with newly diagnosed HIV-making education level a viable variable.

Gender

Women, in particular, are more at risk for acquiring HIV from having an infected partner due to injection drug use, according to Ickovics et al., 2002 (as cited in Davey-Rothwell et al., 2012). Additionally, women who engage in risky sexual behavior to provide food or other necessities for their families (Bene & Merten, 2008; Jarama et al., 2007 as cited in Davey et al., 2012) have a greater risk for developing HIV. However, African-American men, particularly MSMs, remain at higher risk for HIV and account for higher HIV infections (University of Pennsylvania School of Nursing, 2017).

The AFSP (2021) reported that men die 3.63 more times by suicide compared to women. In comparison, Tsirigotis et al. (2011), in their study, comprised 33 males and 114 females from ages 14 to 33, indicated that women were more likely to attempt suicide than men. Additionally, in their study, the authors found that women were more likely to engage in more creative forms of suicide, such as using pharmaceuticals, compared to men, who are more likely to hang themselves. Therefore, since suicidality is still a public health concern for both genders, male and female, it also serves as a viable variable to include in this study.

Race and Ethnicity

HIV and suicide are not discriminatory diseases (HHS, 2021a); however, HIV disproportionally affects Black or African Americans and Hispanic or Latino communities more than other races and ethnicities. While Black or African Americans make up only 13% of the U.S. population, they represent 41% of people with HIV; Hispanics or Latinos represent 18% of the U.S. population; yet they account for 23% of HIV cases (HHS, 2021a). The preceding statistics are compared to Whites, who represent 60% of the U.S. population yet only account for 29% of all HIV infections.

In the United States, the overall suicide rate is 14.2 per 100,000 (SPRC, 2020). The AI or AN population accounts for a suicide rate of 22.1 per 100,000, followed by the White population 18.0 per 100,000, Hispanics 7.4 per 100,000, and Black population 7.2 per 100,000). Suicide rates usually peak during the middle to older years, as indicated for the White population; however, suicide tends to peak during adolescence to young adulthood in the Black population and taper towards older years (SPRC, 2020). Thus, affirming that race and ethnicity are appropriate covariates for this study.

Partner HIV Status

Having a partner who is HIV -positive does not indicate that a person who is HIV -negative will acquire an HIV infection from that infected partner. Many HIV -positive people sustain meaningful sexual relationships if they maintain their treatment regime to have undetectable viral loads, use contraceptives, and communicate with their partners (CDC, 2019d). However, if the HIV -positive partner is not consistently taking medication and cannot maintain an undetectable viral load (CDC, 2019d), they would

create opportunities to infect their partners. The risk of infecting one's partner is greater if they do not practice safe sex, resulting in negative consequences of not only acquiring HIV but could also result in suicidality.

Linkage-to-Care

LTC is an essential next step after receiving an HIV -positive test result, whether from at-home testing or going into the clinic. LTC includes supports such as therapy, counseling, mentorship, treatment, and follow-up care and testing. The CDC and other agencies have funded numerous programs that are directly available for people with HIV. HIV care service programs help the patient understand the diagnosis and treatment regimen as needed for disease management. Early LTC is important for treatment; however, as many as 50% of newly diagnosed patients do not receive any treatment within the first six months of testing positive (Philbin et al., 2014). This lack of follow-up could result from many factors not limited to fear, denial, or lack of access to resources. With this many people not following up after a positive HIV result, it decreases the ability to achieve viral suppression and increases HIV transmission and possible suicidality.

Based on HIV Care Continuum for 2018, the data suggest that of the 1.2 million PLWHIV, 65% received medical care; about 50% have remained in care, and 56% achieved viral suppression. Additionally, 80% of people diagnosed as HIV-positive in 2018 were LTC (HHS, 2020b). These numbers can be improved upon to enable an adequate reduction in HIV rates and suicidality. Achieving lower HIV rates and reducing suicidality starts with HIV testing.

Summary

In summary, Chapter 2 presented information on the literature review related to the study's key variables HIV at-home test, education, income, partner status, gender, age, race, ethnicity, and LTC related to HIV and suicidality. The literature review provided information on the history of at-home testing and benefits pertaining to at-home testing, such as convenience and anonymity. I examined the literature indicating that suicidality could result after an HIV diagnosis as a basis to illustrate the necessity of this study. Additionally, the literature supports that HIV at-home testing can pose a risk for suicide ideation and attempt. It was illustrated that many people do not go on for additional care once they receive HIV -positive results. However, while the literature review presented information on HIV and suicidality, there was limited information about how at-home testing affects suicidal attempts and suicidal ideation once positive test results are received. Thus, this study will attempt to fill that gap. The upcoming Chapter 3 provides more information on how the data will be collected.

Chapter 3: Research Method

Introduction

HIV and suicide remain independent public health concerns. The purpose of this quantitative cross-sectional study was to identify the association between receiving a positive HIV test result using at-home testing and suicide attempts and ideation. And to determine the association between HIV -negative and suicidality and all HIV -positives and suicidality. At-home testing allows for privacy, without any immediate connection with a provider or caseworker to help explain the results, leaving the individuals with uncertainty and the independence to seek follow-up care. With the unknown uncertainty of the potential risk of suicidality, I aimed to determine an association between the variables in the study.

The covariates: partner status, income, education, age, access to care, race, ethnicity, and gender were controlled for RQ1 and 2. However, all covariates were controlled except partner status and access to care in RQ3 and 4. RQs 3 and 4 were subsequently included for secondary analyses to enhance the robustness of the study. Thus, this chapter consists of information on the research design and rationale, methodology, threats to validity, and summary.

Research Design and Rationale

A cross-sectional approach was the best fit for this study because I measured the outcome and exposure variables simultaneously instead of after the outcome as consistent with case-control and cohort studies. The cross-sectional study is a type of observational study where the associations between variables are measured and capture prevalence and

estimation. Participants are selected based on their exposure status (see Setia, 2016). Cross-sectional studies are preferred for population-based surveys, such as the data collection instrument used in this study (see Appendix), and allow researchers to collect data over a shorter period. Data captured in a cross-sectional study occurs only once compared with cohort studies that follow participants over time (see Setia, 2016). It allows flexibility with surveys which are simpler to distribute, quantify, and analyze. Therefore, because this was a one-time study, a cross-sectional study was best for this research.

Subsequently, the purpose of this study was to help detect the prevalence of suicidality in the HIV -positive population and those who are HIV -negative. I hoped to examine the effect of testing positive for HIV using the at-home test compared to those who test in person at a doctor's office. I intended to answer whether testing positive for HIV using an at-home test impacted a person’s decision to attempt suicide or if they had suicidal thoughts. Thus, the following variables listed in Table 2 were included in the analyses.

Table 2

Variables Included in the Study

Independent variable	Dependent variable	Covariates
HIV results negative or positive	Suicide ideation	Access to care
	Suicide attempt	Partner HIV status
		Income level
	Suicidality	Education level
		Gender
		Age
		Race
		Ethnicity

Methodology

Population

The CDC's 2017 data have suggested that 162,500 people are not aware of their HIV status; thus, this was the estimated target population. As such, the target population consisted of born males and born females age 18 years and older who have used the at-home HIV test and have tested for HIV in a doctor's office, whether their HIV results were positive or negative. This target was selected because the FDA approved (OraSure Technologies, 2016) the Oraquick at-home HIV test for people 17 years of age and older. However, because I needed parental consent for people under 18 years old, I decided to

exclude them from the study. Additionally, according to the 2010 to 2016 HIV data, while HIV rates have decreased in people ages 13 to 24 years, rates have increased for people between the ages of 25 and 34 years old, while rates have remained steady in people ages 33 to 44 years and those greater than 55 years (HHS, 2021b). Similarly, suicide, suicidal attempts, and suicidal ideation are highest among 10 to 34-year-olds (SPRC, n.d.). Consequently, recruiting participants over the age of 18 who fell within the target population's parameters allows for faster response time due to not needing parental consent, therefore, allowing the ability to apply generalizability to the total adult population.

Sampling and Sampling Procedures

In this study, I used a survey as the data collection instrument. Knowing that using a survey is a limitation of research studies, I employed a nonprobability convenience sampling procedure. Participants were anonymously recruited through the distribution of the survey online through SurveyMonkey. The use of a nonprobability sampling procedure was due to anticipated low survey response rates. Convenience sampling is more cost-effective, time-efficient, and it allows the researcher to use the sample available (Jager et al., 2017). The inclusion criteria were people 18 years and older who completed an HIV test, whether by using an at-home HIV tests such as Oraquick or the Home Access HIV-1 Test System (although the type of test was not indicated), and those who had tested through a clinic or doctor's office.

Inclusion of those who tested in-person and received positive results from a provider served as a comparison group to compare the effect of receiving positive results

with participants who used the at-home HIV test. Additionally, those who tested negative for HIV were included in the study. Exclusion criteria were people under 18 years old and those who have not taken an HIV test. The study was made available nationwide to provide a good response rate, resulting in a larger sample size.

Sample Size Calculation

As noted above, the CDC (2017) determined that 162,500 people do not know their HIV status, and thus were the target sample size (*N*) for this study. A larger sample provides more accuracy in the data collected and speaks to the population's generalizability (Creswell & Creswell, 2018). According to Bujang et al. (2018), having a sample size of at least 500 for studies involving logistic regression is sufficient for the target population's generalizability. The acceptable α or Type 1 error is 0.05 or 5%. The Type 1 error reveals that the probability that a possible positive HIV diagnosis from an at-home test does not effect either suicide attempts or suicidal ideation. Therefore, it is better received to make a false-positive correlation than a β or Type 11 error with an acceptable value of 0.8, resulting in a false-negative correlation (see Creswell & Creswell, 2018).

While having a 500 or greater sample size would have been ideal for this study, the sample size was based on the Raosoft (2004) sample size calculator. To determine the sample for this study, α with an effect size of .05 and a .85% confidence interval (CI) or statistical power resulted in a sample size of $n = 207$; at 90% sample size of $n = 271$; at 95% sample size of $n = 384$, and at 99%, a sample size of $n = 661$ would have been

needed. Subsequently, after data were collected, a sample size of $N = 213$ was used for this study based on respondents who fully and partially completed the survey.

Recruitment, Participation, and Data Collection

I collected primary data through a researcher-developed survey issued online through SurveyMonkey. Participants were recruited from secure web links posted on social media sites such as LinkedIn, Facebook, Google ads, and pay for responses from SurveyMonkey and snowball sampling that fit the inclusion criteria through convenience sampling. Additionally, a flyer was placed at a clinic, anecdotally called Area MS. The purpose of the flyer was to alert those in the clinic of the available study. The demographic information collected included age, race, gender, ethnicity, income level, and educational level. Overt questions on suicide attempts and suicidal ideations were not included; however, survey questions consisted of language such as "thought about harming oneself" and "having attempted to harm oneself." The rationale behind using survey instrumentation occurred because of the ease of administering in various ways such as online, in-person or mailed, and over the telephone (see Phillips, 2016; Ponto, 2015) and has been vital in research studies for many years (Ponto, 2015). Surveys can also answer questions about the association between the variables included in this study and provide information regarding the trends (Creswell & Creswell, 2018).

While the survey design is convenient, cost-effective, and readily distributed to a larger number of people, the limitations to using surveys are that the return rate for completion is slow and minimal (Jones et al., 2013). Despite these limitations, Ponto (2015) stated that surveys have more rigor in their data collection due to using

scientifically proven strategies, which results in a more generalizable sample; thus, surveys are still needed to advance knowledge.

Before completing the online survey, respondents were given information on the study, through informed consent, with the ability to select *yes* if they wanted to participate in the research or *no*, to decline participation. The informed consent stated that the survey was anonymous, and that no personal identifying information would be collected. Once the participants completed the study, whether fully or partially, they concluded their participation in the study. There was not any personably identifiable information collected; thus, follow-up on the participants was not conducted.

Because I conducted primary research and developed the survey, I piloted the study. For the pilot study, I recruited a small sample of 19 people to pass the survey instrument's content validity. Pilot studies test for spelling errors, content errors, or unclear questions (Jones et al., 2013) to give validity. Piloting the study before administering the survey was crucial to help prevent skewed data. The pilot study involved the same rigor as the main study by recruiting online, and the survey was sent to family and friends. Evidence of reliability and validity was established throughout the piloting of the survey to ensure accuracy in the questions.

Research Questions

The following RQs, along with the hypotheses, were evaluated in this study:

RQ1*:* Is there an association between testing positive for HIV using the at-home test and suicide attempt? Does this association remain even after controlling for partner status, access to care, education, income level, gender, race, ethnicity, and age?

$H1_0$: There is no association between testing positive for HIV using the at-home test and suicidal attempt.

$H1_A$: There is an association between testing positive for HIV using the at-home test and a suicide attempt, and this association remains even after controlling for partner status, access to care, education, income level, gender, race, ethnicity, and age.

RQ2: Is there an association between testing positive for HIV using the at-home test and suicide ideation? Does this association remain even after controlling for partner status, access to care, education, income level, gender, race, ethnicity, and age?

$H2_0$: There is no association between testing positive for HIV using the at-home test and suicidal ideation.

$H2_A$: There is an association between testing positive for HIV using the at-home test and suicide ideation, and this association remains even after controlling for partner status, access to care, education, income level, gender, race, ethnicity, and age.

RQ3*:* Is there an association between being HIV -negative and suicidal attempts or ideation? Does this association remain even after controlling for education, income level, gender, race, ethnicity, and age?

$H3_0$: There is no association between being HIV -negative and suicidal attempts or ideation.

$H3_A$: There is an association between being HIV -negative and suicidal attempts or ideation, and this association remains even after controlling for education, income level, gender, race, ethnicity, and age.

RQ4: Is there an association between all HIV -positives and suicidal attempts or ideation? Does this association remain even after controlling for education, income level, gender, race, ethnicity, and age?

$H4_0$: There is no association between all HIV -positives and suicidal attempts or ideation.

$H4_A$: There is an association between all HIV -positives and suicidal attempts or ideation, and this association remains even after controlling for education, income level, gender, race, ethnicity, and age.

Data Analysis

Initially, I intended to conduct binary logistic regression and multivariate logistic regression for RQs 1 and 2; however, due to the small sample size for HIV -positive people, who used the at-home test kit, I conducted bivariate analyses. I conducted bivariate and multivariate logistic regression for RQs 3 and 4. All analyses were conducted through IBM SPSS Statistics Version 27.

Some variables were recoded to increase the sample size for analysis to take place. The recoding of variables applied to the two additional RQs included for secondary analyses. HIV -negative variable was recoded into a dichotomous variable (0 = Nosuicidalattempts/ideation; 1 = Yessuidicalattempt/ideation) to obtain a new variable for RQ3. The participants who indicated that they used the at-home HIV test were

combined with the participants who tested in-clinic to form a new variable for RQ4. This new variable, all HIV test results, was dummy coded into a dichotomous variable 0 = HIV -negative and 1 = HIV -positive. Also, suicidal attempts and suicidal ideation were merged into one dichotomous variable.

Additionally, removing those who did not meet the inclusion criteria, errors, and duplication occurred to ensure completeness**.** Respondents should not have completed the survey more than once. Table 3 provides the variables' operationalization, including how they are measured, the type, and how they are coded (see Table 3). The study will fail to reject the null hypothesis if p – values are greater than $p < .05$. However, the study will reject the null hypothesis in lieu of the alternate hypothesis if the p-value is less than or equal to $p < .05$.

Table 3

Operationalization of Variables

Variable	Measure	Type	Code
HIV testing method	Categorical	Independent	1-At-home 2-Clinic or doctor's office, including hospital ER or Urgent Care
HIV -negative	Categorical	Independent	1-Yessuicidaltattempts or ideation 0-Nosuicidalattempts or ideation
Test result (at-home)	Categorical	Independent	1-Positive 2-Negative 3-Need more testing 4-Did not follow-up pr have not received results
HIV -results (combined clinic and at-home-recoded)	Categorical	Independent	0-Negative 1-Positive
Suicide attempt (at-home test)	Categorical	Dependent	1-Yes 2-No
Suicide ideation (at-home test)	Categorical	Dependent	1-Yes 2-No
Suicidal attempt/ideation (Recoded)	Categorical	Dependent	0-No 1-Yes
Income level	Categorical	Covariate	1 -Under $24,000 2- $24,001- 35,000 3 -$35,001-44,000 4 - >$ 44,000
Educational level	Categorical	Covariate	1 – High school or less 2- Some college 3- 2-year college/community college 4- Bachelor's degree 5 – Higher than a Bachelor's degree

Partner tested (Recoded)	Categorical	Covariate	1-Yes results positive 0-Negative/Not tested/Not sure
Gender	Categorical	Covariate	1- Born Male 2- Born Female 3- Transgender (male to a female) 4- Transgender (female to male) 5- Other
Access to care	Categorical	Dependent	1 -Yes 2 – No
Ethnicity	Categorical	Dependent	1 - Non-Hispanic 2- Hispanic 3- Latino
Race	Categorical	Dependent	1 – American Indian or Alaska Native 2- Asian 3- Black or African American 4- Hispanic or Latino 5 - White
Age	Categorial	Dependent	1 - 18 – 24 years old 2 – 25-34 years old 3 – 35-44 years old 4 – 45-54 years old 5 > 55 years old

Note. Operationalization of variables.

Data Analysis RQ1

RQ1: Is there an association between testing positive for HIV using the at-home test and suicide attempt? Does this association remain even after controlling for partner status, access to care, education, income level, gender, race, ethnicity, and age?

I intended to use binary logistic regression to examine the main effects of testing positive for HIV using the at-home test and suicide attempt and to examine whether the association remained even after controlling for covariates; a multivariable logistic regression will be conducted. However, due to the small sample size of HIV -positive respondents, data analysis shifted to bivariate analyses.

Data Analysis RQ2

RQ2: Is there an association between testing positive for HIV using the at-home test and suicide ideation? Does this association remain even after controlling for partner status, access to care, education, income level, gender, race, ethnicity, and age?

I intended to use binary logistic regression to examine the main effects of testing positive for HIV using the at-home test and suicide ideation and examine whether the association remained even after controlling for covariates; a multivariable logistic regression will be conducted. However, due to the small sample size of HIV -positive respondents, data analysis shifted to bivariate analyses.

Data Analysis RQ3

RQ3: Is there an association between being HIV-negative and suicidal attempts or ideation? Does this association remain even after controlling for education, income level, gender, race, ethnicity, and age?

I used bivariate analysis to examine the association between testing negative for HIV using either the at-home test or tested in a clinic and suicide attempt or ideation. Multivariable logistic regression was conducted to determine whether the association remained after controlling for covariates.

Data Analysis RQ4

RQ4: Is there an association between all HIV -positives and suicidal attempts or ideation? Does this association remain even after controlling for education, income level, gender, race, ethnicity, and age?

I used bivariate analysis to examine the association between participants who tested positive for HIV from either the at-home test or in-clinic test and suicide attempt or ideation. Multivariable logistic regression was conducted to determine whether the association remained after controlling for covariates.

Threats to Validity

The threats to external validity could be the participants not being honest with their responses due to the survey's sensitive nature regarding their HIV status and exposure to suicidality. Additionally, the instrumentation may encourage poor responses due to the instrument's possible ambiguous wording; thus, the pilot study should have eliminated those risks and allow for clarity, reducing or limiting the bias (see Szklo & Nieto, 2019).

Curlin et al. (2017) conducted a retrospective observational analysis to compare oral fluids between the OraQuick to those retrospectively obtained from enzyme immunoassay. The authors' study suggested that people infected with HIV may have

received a false-negative result from using the at-home test, affecting the study's validity. Additionally, the overrepresentation of HIV -negative respondents also caused threats to the validity of study results. The larger sample of HIV- negative people in the study might have influenced the results of the data analysis.

Ethical Procedures

Before any data collection, Walden University's Institutional Review Board (IRB) approved the study to ensure no harm to participants and ensure proper security measures were in place. This study followed appropriate ethical procedures during recruitment throughout the study. It does contain sensitive information; however, participants remained anonymous. As such, no known harm to human participants occurred in this study. The data collection method consisted of a survey distributed online through SurveyMonkey, where no researcher or participant interactions occurred. The participants would direct any questions or concerns to the Walden University's IRB. Otherwise, there will be no follow-up upon completion of the study. Information provided on the survey cannot identify any person, as all information collected was from anonymous respondents.

Additionally, respondents had the opportunity to review, accept or deny the informed consent before completing the survey. SurveyMonkey adheres to strict guidelines for data privacy. It complies with the Health Insurance Portability and Accountability Act (HIPAA), General Data Protection Regulation (GDPR), and the California Consumer Privacy Act (CCPA) (SurveyMonkey, 1999-2020). The company ensured that I could indicate that the responses remain anonymous without tracking

names and ensuring that data submitted are protected through secure TLS cryptographic protocols. Once downloaded from SurveyMonkey, data files will have password protection; accounts will not be shared. Data will only be accessible by the researcher and Walden University for quality assurance if needed. SurveyMonkey also ensured that web links posted on a social media site would open in a new browser for privacy and encryptions. Walden University's approval number for this study is 08-28-20-0241029, and it expires on August 27, 2021.

Summary

I conducted a cross-sectional study and originally intended to conduct binary logistic regression and multivariate analysis for RQs 1 and 2. However, due to the smaller sample size for HIV -positive participants who used the at-home HIV test, I shifted to using descriptive and bivariate analyses to answer RQs 1 and 2. Furthermore, I incorporated HIV -negative and suicide attempt or ideation (RQ3) and all HIV -positives and suicide attempt or ideation (RQ4) for secondary data analyses using bivariate analysis and multivariate logistic regression to determine the association between the independent and dependent variables for both RQs 3 and 4.

All four RQs controlled for gender, income, education level, partner status, access to care, race, age, ethnicity; however, except for access to care and partner status, RQs 3 and 4 controlled for the remaining variables- gender, income, education level, age, race, and ethnicity. Participants had to complete informed consent and answer screening questions before participating in the study. I gained Walden University's IRB approval.

To summarize, Chapter 3 consisted of information on the data analyses, recruitment criteria, sample size, sampling procedure, population, methodology, ethical procedure, operationalization of study variables, and threats to validity. Chapter 4 provides information on the results from the data analyses.

Chapter 4: Results

Introduction

The purpose of this cross-sectional, anonymous online survey study was to determine the association, if any, between receiving positive HIV results from the at-home test and suicidality. Suicidality was explored across four RQs. The data were collected from males and females 18 years and older who have taken an HIV test and received either a positive or negative result. RQ3 and 4 were added for secondary analyses due to the limited number of HIV -positive participants who tested at home.

The RQs, along with the hypotheses, are as follows:

RQ1*:* Is there an association between testing positive for HIV using the at-home test and suicide attempt? Does this association remain even after controlling for partner status, access to care, education, income level, gender, race, ethnicity, and age?

$H1_0$: There is no association between testing positive for HIV using the at-home test and suicidal attempt.

$H1_A$: There is an association between testing positive for HIV using the at-home test and a suicide attempt, and this association remains even after controlling for partner status, access to care, education, income level, gender, race, ethnicity, and age.

RQ2: Is there an association between testing positive for HIV using the at-home test and suicide ideation? Does this association remain even after controlling for partner status, access to care, education, income level, gender, race, ethnicity, and age?

$H2_0$: There is no association between testing positive for HIV using the at-home test and suicidal ideation.

$H2_A$: There is an association between testing positive for HIV using the at-home test and suicide ideation, and this association remains even after controlling for partner status, access to care, education, income level, gender, race, ethnicity, and age.

RQ3*:* Is there an association between being HIV -negative and suicidal attempts or ideation? Does this association remain even after controlling for education, income level, gender, race, ethnicity, and age?

$H3_0$: There is no association between being HIV -negative and suicidal attempts or ideation.

$H3_A$: There is an association between being HIV -negative and suicidal attempts or ideation, and this association remains even after controlling for education, income level, gender, race, ethnicity, and age.

RQ4: Is there an association between all HIV -positives and suicidal attempts or ideation? Does this association remain even after controlling for education, income level, gender, race, ethnicity, and age?

$H4_0$: There is no association between all HIV -positives and suicidal attempts or ideation.

$H4_A$: There is an association between all HIV -positives and suicidal attempts or ideation, and this association remains even after controlling for education, income level, gender, race, ethnicity, and age.

Chapter 4 consists of the results from the online survey administered through SurveyMonkey. It also addresses the pilot study, data collected, the timeframe of the data collected, recruitment strategy, response rates, discrepancies found, and descriptive

statistics. Additionally, bivariate analyses were performed to determine whether there is an association between testing positive for HIV using the at-home test and suicidal attempt (RQ1) and suicidal ideation (RQ2). Bivariate analyses and multivariate logistic regression were conducted to determine the association between HIV -negative and suicidal attempt or ideation (RQ3) and all HIV -positives and suicidal attempt or ideation (RQ4). Summarization of the results and the statistical significance at p-value < 0.05 are discussed for each RQ.

Pilot Study

The pilot study occurred before the main study, and the data were not included in this analysis as it was solely to test the questions. The pilot started in August 2020 and lasted until September 2020. A total of 19 people completed the pilot study through a unique collector link generated by SurveyMonkey, which allowed me to open and close the survey as necessary. Recruitment of persons for the pilot study included sending the survey link to family and friends and posting online; thus, those respondents were not included in the sample size. The results of that study shaped the main study of this research. Significant feedback included using skipped logic to progress through the questions that were not pertinent to some of the respondents. As a result of the pilot study, I changed, added, and rearrange some of the survey questions to better capture the data needed to answer the RQs.

Data Collection

After the pilot study and subsequent IRB approval, the main study lasted from September 2020 to December 2020. The study's short timeframe occurred because I had

an overrepresentation of those who tested negative for HIV compared to the positives that I received, whether they tested positive at home or within a facility. Collector links were created in SurveyMonkey (https://www.surveymonkey.com/r/mainHIV) and (https://www.surveymonkey.com/r/HIVTestSui) that were posted on social media sites such as LinkedIn, Facebook, Twitter, and Google add as well as on the recruitment flyer to recruit participants. There were 20 questions about the constructs and 26 total questions, including the consent and inclusion criteria. The survey questions varied from dichotomous to multiple answer selections with a nominal scale (e.g.1, 2, 3, 4) depending on the question selection. The dichotomous variables were coded on a nominal scale, 1=Yes and 2 = No; 0 = No while 1 = Yes for recoded dummy variables. The respondents were asked to select from a dropdown box that asked them how they tested for HIV-whether they used the HIV at-home test kit or in-clinic- which had codes 1 and 2, respectively, and progressed based on their answers following skip pattern.

At the end of the 3-month recruiting period, the data were directly downloaded from SurveyMonkey into a SPSS.sav file. I subsequently saved it to my computer for direct analysis through IBM Statistics Version 27. Once in SPSS, the variable names, labels, measurements, and values were captured. I verified the data by removing unnecessary information and duplicated questions such as those created internally to SurveyMonkey. As a result of the cleaning, I had 213 completed and partially completed responses out of 416 total responses from the main study (436 total, including pilot study participants). Therefore, the study sample size N = 213, set at .85 or 85% statistical power

due to the anticipated low response rates and challenges in recruiting HIV -positive persons, was used for analyses in the study. The response rate was 48%.

Initially, I only intended to include those who tested positive for HIV using the at-home test kit and those who tested positive from a facility with a provider to determine how one would react to receiving positive test results when no provider is available. However, due to the small sample size for the HIV -positive participants, I expanded the study to include HIV -negative participants to determine their relationship with suicidality. I also intended to include a Spanish version; however, I decided not to pursue the Spanish version because of the cost to develop the survey in multiple languages. Another intent was to administer a paper-version of the survey in addition to the online survey.

Subsequently, many challenges with the COVID-19 pandemic arose; certain STD facilities were closed, people were teleworking, and they were not allowing people into their building to offset SARS- CoV-2 infection. Thus, the survey was primarily administered online. While I was able to connect with a clinic, Area MS, I only provided them with the flyer to promote the survey to be completed online to eliminate contact with high touched areas and the possibility of discussion of the survey that needed to maintain confidentiality and anonymity.

Another change that occurred from what I initially intended was the coding of the variables, now revised and updated. Some variables were recoded into different variables to merge data into one variable, such as at-home positive and clinic positive, which resulted in a larger sample size for HIV -positive people. These changes led to more

comprehensive data and insight into the general population's viewpoints surrounding suicide and enhanced the study's robustness for data analyses.

Statistical Assumptions

In this study, I intended to determine any correlation between using the HIV at-home test kits and suicidal attempts and suicidal ideation. However, due to inadequate responses in those who tested positive using the at-home test kits ($n = 5$), the sample was inadequate for those who thought about harming themselves and those who harmed themselves as a result of being HIV -positive; thus, binary logistic regression and multivariate logistic regression could not be performed due to the small sample size to answer RQ1 and 2. Descriptive statistics were provided. Cross-tabulations analyses were conducted, and Fisher's Exact test ($p < .05$) was used to determine statistical significance and appropriately provided in the results for both RQ1 and 2.

Bivariate analyses and multivariate logistic regression analyses were conducted to determine any association between HIV -negative and suicidal attempt or ideation (RQ3) and all HIV -positives and suicidal attempt or ideation (RQ4). All RQs were controlled for the covariates: partner status, income, education, age, access to care, race, ethnicity, and gender except for partner status and access to care in RQs 3 and 4. For RQs 3 and 4, the Chi-Square ($p < .05$) from bivariate analyses determined whether to conduct a multivariate logistic regression in which Omnibus Tests of Model Coefficients ($p < .05$) determined statistical significance; 95% CI was also reported.

Data Analysis and Results

Descriptive Statistical Analysis

The participants (*N* = 213, 100%) consented to participate in the study and met the inclusion criteria of 18 years and older and had taken an HIV before using either the at-home test kit or tested in a clinic or doctor's office whether HIV -positive or negative. Those who did not consent and those who did not meet the inclusion criteria were excluded from the study.

Table 4 shows that most of the participants fell between ages 25 and 34 (*n* = 73, 34.3%), while participants 55 years and older (*n* = 18, 8.5%) represented the least selected age category. The most frequently selected gender identity was selected by participants who identified as born female (*n* = 112, 52.6%) followed by born male (*n* = 86, 40.4%).

The prominent race was White (*n* = 96, 45.1%) followed by Black or African Americans (*n* = 56, 26.3%). Non-Hispanics emerged as the dominant ethnicity (*n* = 166, 77.9%). Most frequently selected income data are from those who earned higher than 44,001 annually (*n* = 79, 37.1 %), while education level illustrated that most participants (*n* = 57, 26.8%) had a bachelor's degree (see Table 4).

Table 4

Demographic Characteristics for Population

	Frequency *n*	Percentage *%*
Age		
18-24 years old	33	15.5
25- 34 years old	73	34.3
35- 44 years old	57	26.8
45-54 years old	23	10.8
> 55 years old	18	8.5
Gender		
Born male	86	40.4
Born female	112	52.6
Transgender (male to a female)	4	1.9
Other	3	1.4
Race		
American Indian or Alaska Native	6	2.8
Asian	22	10.3
Black or African American	56	26.3
Hispanic or Latino	24	11.3
White	96	45.1
Ethnicity		
Non-Hispanic	166	77.9
Hispanic	27	12.7
Latino	9	4.2
Annual income		
Under $24, 000,	57	26.8
$24,001-35,000,	40	18.8
$35,001-44,500,	26	12.2
More than $44,001,	79	37.1
Educational level		
High school or less	24	11.3
Some college	41	19.2
2-year college/community college degree	31	14.6
Bachelor's degree	57	26.8
Higher than a bachelor's degree	51	23.9

Note. N= 213

Table 5 illustrates that most participants identified as a female who has sex with males, only (*n* = 85, 39.9%), followed by I am male who has sex with females only (*n* = 53, 24.9%) (see Table 5).

Table 5

Descriptive Statistics Sexual Preference

	Frequency *n*	Percentage %
I am a male who has sex with males only	29	13.6
I am a male who has sex with females only	53	24.9
I am a male who has sex with both males and females	15	7.0
I am a female who has sex with males, only	85	39.9
I am a female who has sex with females, only	3	1.4
I am a female who has sex with both males and females	19	8.9
Missing System	9	4.2

Note. N = 213.

Table 6 represents how the participants indicated they tested for HIV, whether they presented to the doctor or used the at-home test kit. The majority of participants indicated that they tested in a clinic or doctor's office, including hospital ER or urgent care (*n* = 159, 74.6%) compared to those who tested at-home using the HIV at-home test kits represented (*n* = 44, 20.7%). Participants who indicated that their results were positive from the at-home HIV test (*n* = 5, 2.3%).

Additionally, Table 6 illustrates the response to the question if you tested positive after using the at-home HIV test if they harmed themself (*n* = 3, 1.4%) indicated yes. Participants who thought to harm themselves (*n* = 1, 0.5%) indicated yes (see Table 6).

Table 6

HIV At-Home Test Method and Responses After Test

	Frequency *n*	Percentage *%*
HIV test method		
At-home using the HIV at-home test kit……	44	20.7
Clinic or doctor's office, including hospital ER or UC	159	74.6
Tested at-tome results		
Positive	5	2.3
Negative	33	15.5
Need more testing	5	2.3
Did not follow-up or have not received results	2	0.9
Harmed self (at-home)		
Yes	3	1.4
No	2	0.9
Though about harming self (at-home test)		
Yes	1	0.5
No	2	0.9

Note. N = 213

Table 7 shows the recoded variables to account for all HIV -positive (*n* = 30, 14.1%) combined from both at-home and in-clinic tests while (*n* = 173, 81.2%) were negative or not positive for other reasons. For combined suicidality, (*n* = 61, 28.6%) said yes, they have some form of suicidal ideation or have attempted suicide due to being HIV -positive. Amongst HIV -negative people (*n* = 55, 25.8%) indicated yes, they had forms of suicidality (see Table 7).

Table 7

Combined All HIV Results, Suicidality, and HIV -Negative-- Recoded

	Frequency *N*	Percentage *%*
HIV Result		
Positive	30	14.1
Negative/Other	173	81.2
Combined all suicidality indication		
Yes	61	28.6
No	127	59.6
Combined HIV negative and suicidal attempt or ideation		
YesSuicidalattempt or ideation	55	25.8
NoSuicidalattempt or ideation	125	58.7

Note. N = 213

Table 8 shows that (n = 25, 11.7%) of HIV -positive participants indicated that they had access to healthcare. The participants who test positive for HIV (n = 8, 3.8%) indicated that they had a positive partner (see Table 8).

Table 8

Access to Healthcare and Partner Status

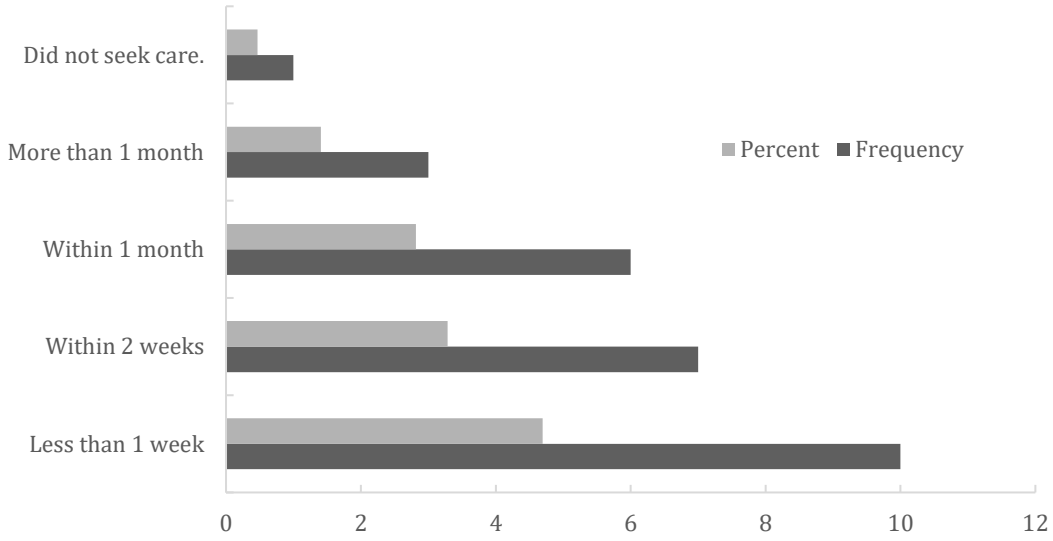
		Frequency *n*	Percentage *%*
Access to healthcare			
	Yes	25	11.7
	No	1	0.5
Partner tested positive/not tested			
	Yes test positive	8	3.8
	No/Negative/Notsure	18	8.5

Note. N = 213

Figure 3 shows that most people indicated that they waited less than 1 week to seek medical care after receiving a positive HIV diagnosis (see Figure 3).

Figure 3

How Long After You Received Your Positive HIV Test Result, You Sought Medical Care.



Note. $N = 213$

Bivariate Analyses

To provide data analysis for the independent variable HIV test results and the dependent variables suicidal attempt (RQ1) and suicidal ideation (RQ2), cross-tabulation analyses were performed to show the relationship between the independent and dependent variables. The Fisher's Exact Test ($p < .05$) was used to indicate the presence or absence of any statistical significance.

For RQ3 and 4, bivariate analysis and multivariate analysis were conducted to determine any associations between the independent and dependent variables. Results from Chi-Square analyses ($p < .05$) determined whether to conduct a multivariate logistic regression in which Omnibus Tests of Model Coefficients ($p < .05$) determined statistical significance; 95% CI was also reported.

Research Question 1: HIV -Positive From At-Home Test and Suicidal Attempt

Subsequently, Table 9 shows the cross-tabulation result; HIV–positive participants ($n = 3$) who used the at-home test kit had attempted suicide. Thus, after the Chi-Square analysis, the Likelihood Ratio, $p = .400$, and Fisher's Exact Test $p = .400$, greater than the study's set p-value, $p < .05$; therefore, I failed to reject the null hypothesis (see Table 9).

Table 9

Bivariate Analysis: HIV At-Home Test and Suicidal Attempt

		How did you test for HIV?		
		At-home using the HIV at-home test kit	Clinic or doctor's office, including hospital ER or Urgent care	Total
Did you harm yourself because you tested positive for HIV? Answer if you used the at-home HIV test.	Yes	3	0	3
	No	1	1	2
Total		4	1	5

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	1.875[a]	1	0.171	0.400	0.400	
Continuity Correction[b]	0.052	1	0.819			
Likelihood Ratio	2.231	1	0.135	0.400	0.400	
Fisher's Exact Test				0.400	0.400	
Linear-by-Linear Association	1.500[c]	1	0.221	0.400	0.400	0.400
N of Valid Cases	5					

a. 4 cells (100.0%) have expected count less than 5. The minimum expected count is .40.

b. Computed only for a 2x2 table

c. The standardized statistic is 1.225.

Research Question 2: HIV -Positive From At- Home Test and Suicidal Ideation

Table 10 shows the cross-tabulation relationship that one HIV -positive participant had suicidal ideation. The Chi-Square test shows the Fisher's Exact test, p = 1.000, and the Likelihood Ratio, p = 1.000, greater than the study's set p-value, $p < .05$; therefore, I failed to reject the null hypothesis (see Table 10).

Table 10

Bivariate Analysis: HIV At-Home Test and Suicidal Ideation

		How did you test for HIV?		
		At-home using the HIV at-home test kit	Clinic or doctor's office, including hospital ER or Urgent care	Total
Did you think about harming yourself because you tested positive for HIV? Answer if you used the at-home HIV test.	Yes	1	0	1
	No	1	1	2
Total		2	1	3

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	.750[a]	1	0.386	1.000	0.667	
Continuity Correction[b]	0.000	1	1.000			
Likelihood Ratio	1.046	1	0.306	1.000	0.667	
Fisher's Exact Test				1.000	0.667	
Linear-by-Linear Association	.500[c]	1	0.480	1.000	0.667	0.667
N of Valid Cases	3					

a. 4 cells (100.0%) have expected count less than 5. The minimum expected count is .33.
b. Computed only for a 2x2 table
c. The standardized statistic is .707.

Research Question 3: HIV -Negative and Suicidal Attempt or Ideation

RQ3 was added for secondary analysis to determine the relationship between participants who tested negative for HIV and having any suicidal attempt or ideation. Bivariate analysis and multivariate logistic regression were conducted.

Amongst participants who are HIV -negative, Table 11shows the cross-tabulation analysis data for participants who used the at-home HIV kit (n = 16) compared to clinic testers (n = 39) who indicated that they had some form of suicidal ideation or have attempted suicide. Conversely, participants who used the at-home HIV test kit(n = 18) and the clinic testers (n = 107) who are HIV -negative indicated they had not thought of or attempted suicide. After cross-tabulation, Chi-Square test analysis resulted in p = .020 and the Likelihood Ratio, p = .024, which is within the study's set p-value $p < .05$.

Subsequently, further analysis using multivariate logistic regression indicated after controlling for the covariables: gender, education, race, ethnicity, age, and income, as reflected in Table 12, Hosmer and Lemeshow's Test p =.832, However, the Omnibus Test of Model Coefficients indicated that for the overall model, p =.047, which falls within the study's limit of $p < .05$. Therefore, I rejected the null hypothesis in lieu of the alternate hypothesis, which indicated that being HIV- negative had a significant effect on suicidality.

Statistical significance was found for the following categorical variables: age range category 2, p = .044, 95 % C1 [.044, .961], Exp (B) .205; race category 3, p = .019, 95 % CI [1.21, 9.14], Exp (B). 3.338; and education level category 3, with p = .047, 95% CI [.077, .984], Exp (B) .275 (see Tables 11-12).

Table 11

HIV - Negative and Suicidal Attempt or Ideation With Chi-Square Analysis

		HIV Negative		
		YesSuicidalattempt/ideation	NoSuicidalattempt/ideation	Total
How did you test for HIV?	At-home using the HIV at-home test kit……	16	18	34
	Clinic or doctor's office, including hospital ER or Urgent care	39	107	146

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.380[a]	1	0.020		
Continuity Correction[b]	4.464	1	0.035		
Likelihood Ratio	5.093	1	0.024		
Fisher's Exact Test				0.024	0.019
Linear-by-Linear Association	5.350	1	0.021		
N of Valid Cases	180				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 10.39.

b. Computed only for a 2x2 table

Table 12

Multivariate Logistic Regression Variables in Equation

							Exp(B)	95% C.I. for EXP(B)	
		B	S.E.	Wald	df	Sig.	)	Lower	Upper
Step 1[a]	What is your age range?			7.322	4	.120			
	What is your age range?(1)	-1.019	.878	1.348	1	.246	.361	.065	2.016
	What is your age range?(2)	-1.586	.789	4.040	1	.044	.205	.044	.961
	What is your age range?(3)	-.723	.846	.729	1	.393	.485	.092	2.549
	What is your age range?(4)	-.344	.931	.137	1	.712	.709	.114	4.394
	What is the gender you identify?			3.903	3	.272			
	What is the gender you identify?(1)	2.084	1.376	2.294	1	.130	8.034	.542	119.162
	What is the gender you identify?(2)	1.798	1.361	1.745	1	.187	6.035	.419	86.904
	What is the gender you identify?(3)	.256	1.906	.018	1	.893	1.292	.031	54.148
	What is your race?			6.774	4	.148			
	What is your race?(1)	-.479	1.031	.216	1	.642	.619	.082	4.671
	What is your race?(2)	.145	.637	.052	1	.820	1.156	.332	4.029
	What is your race?(3)	1.205	.514	5.501	1	.019	3.338	1.219	9.140
	What is your race?(4)	.979	.870	1.268	1	.260	2.662	.484	14.642
	What is your ethnicity			1.700	2	.427			
	What is your ethnicity(1)	.037	1.040	.001	1	.972	1.038	.135	7.960

	What is your ethnicity(2)	-.858	1.004	.730	1	.393	.424	.059	3.034
	What is your annual income?			1.677	3	.642			
	What is your annual income?(1)	-.180	.529	.116	1	.734	.835	.296	2.355
	What is your annual income?(2)	.032	.574	.003	1	.956	1.032	.335	3.181
	What is your annual income?(3)	-.701	.594	1.393	1	.238	.496	.155	1.590
	What is your educational level?			5.289	4	.259			
	What is your educational level?(1)	-.179	.763	.055	1	.814	.836	.188	3.728
	What is your educational level?(2)	.043	.657	.004	1	.947	1.044	.288	3.787
	What is your educational level?(3)	-1.290	.650	3.937	1	.047	.275	.077	.984
	What is your educational level?(4)	-.315	.538	.342	1	.559	.730	.254	2.097
	Constant	.146	1.875	.006	1	.938	1.158		

a. Variable(s) entered on step 1: What is your age range?, What is the gender you identify?, What is your race?, What is your ethnicity?, What is your annual income?, What is your educational level?.

Research Question 4: HIV -Positives and Suicidal Attempt or Ideation

RQ4 was added for secondary data analysis to determine the relationship between all participants who tested positive for HIV (combined at home and in a clinic) and suicidal attempts or ideation. Bivariate analysis and multivariate logistic regression were conducted. Table 13 shows the cross-tabulation data represented all HIV results (n = 188); of which (n = 27) are HIV-positive. In which (n = 17) of HIV -positive participants indicated suicide attempts or ideation compared to (n = 10) who indicated that they did not have any form of suicidality.

After Chi-Square Test analysis, p = .000 and the Likelihood Ratio, p = .000, and both fell within the study's set p-value, p < .05. However, further analysis using multivariate logistic regression, the Omnibus Test of Model Coefficients indicated p = .063 while Hosmer and Lemeshow Test p = .192, both greater than the set p-value of the study p <. 05; therefore, I failed to reject the null hypothesis after controlling for covariates gender, education, race, ethnicity, age, and income, as reflected in Table 14. However, statistical significance was observed for race category (3) p = .010, 95% CI [.109, .743], and with an Exp (B) of .285, which indicated that Blacks or African Americans are more likely to engage in suicidality (see Tables 13-14).

Table 13

All HIV -Positives and Suicidality With Chi-Square Analysis

		All suicidal attempt/ideation from at-home combined with clinic and negative		
		No	Yes	Total
Both At-home and Clinic test result	Positive	10	17	27
	Negative/Other	117	44	161

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	13.395[a]	1	0.000		
Continuity Correction[b]	11.818	1	0.001		
Likelihood Ratio	12.503	1	0.000		
Fisher's Exact Test				0.001	0.000
Linear-by-Linear Association	13.324	1	0.000		
N of Valid Cases	188				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.76.
b. Computed only for a 2x2 table

Table 14

Multivariate Logistic Regression-Variables in the Equation

								95% C.I. for EXP(B)	
		B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Step 1[a]	What is your age range?			7.411	4	.116			
	What is your age range?(1)	.262	.769	.116	1	.733	1.300	.288	5.865
	What is your age range?(2)	1.124	.675	2.773	1	.096	3.076	.820	11.546
	What is your age range?(3)	.389	.719	.293	1	.588	1.476	.361	6.034
	What is your age range?(4)	-.394	.831	.224	1	.636	.675	.132	3.440
	What is the gender you identify?			3.293	3	.349			
	What is the gender you identify?(1)	-2.079	1.368	2.308	1	.129	.125	.009	1.828
	What is the gender you identify?(2)	-1.834	1.358	1.822	1	.177	.160	.011	2.290
	What is the gender you identify?(3)	-.651	1.906	.116	1	.733	.522	.012	21.891
	What is your race?			7.095	4	.131			
	What is your race?(1)	.202	.946	.046	1	.831	1.224	.191	7.822
	What is your race?(2)	-.215	.629	.117	1	.732	.806	.235	2.766
	What is your race?(3)	-1.255	.488	6.601	1	.010	.285	.109	.743
	What is your race?(4)	-.575	.789	.532	1	.466	.563	.120	2.640
	What is your ethnicity			1.203	2	.548			

	What is your ethnicity(1)	.383	1.048	.134	1	.715	1.467	.188	11.454
	What is your ethnicity(2)	.943	1.011	.870	1	.351	2.569	.354	18.644
	What is your annual income?			3.785	3	.286			
	What is your annual income?(1)	.740	.493	2.258	1	.133	2.096	.798	5.504
	What is your annual income?(2)	-.118	.557	.045	1	.832	.888	.298	2.647
	What is your annual income?(3)	.703	.587	1.434	1	.231	2.019	.639	6.376
	What is your educational level?			3.349	4	.501			
	What is your educational level?(1)	.266	.708	.141	1	.707	1.305	.326	5.225
	What is your educational level?(2)	.175	.596	.086	1	.769	1.191	.370	3.831
	What is your educational level?(3)	1.074	.630	2.904	1	.088	2.927	.851	10.067
	What is your educational level?(4)	.249	.520	.229	1	.632	1.283	.463	3.556
	Constant	-.029	1.835	.000	1	.987	.971		

a. Variable(s) entered on step 1: What is your age range?, What is the gender you identify?, What is your race?, What is your ethnicity?, What is your annual income?, What is your educational level?.

Summary

To review, Chapter 4 provided the results from the data analyses for all four RQs. This was a cross-sectional, quantitative research study that collected primary data from an online survey. A total sample size of 213 participants was used for analysis after a three-month data collection period. The inclusion criteria for participants were age 18 years and older and must have taken an HIV test before. Thus, the study included participants who used the HIV at-home test kit, tested in a clinic or doctor's office, including ER and urgent care facilities, whether HIV -negative or positive. This study intended to determine the association between testing positive for HIV using the at-home test kit and suicidality.

Initially, I intended to conduct a binary logistic regression to determine correlation for both RQ1 and 2, then conducted a multivariable logistic regression to determine if the associations remained after controlling for the covariates: gender, age, race, ethnicity, income, education, access to care, and partner status. However, due to the small sample size of participants who tested positive using the at-home test kit, bivariate analyses were reported for RQ1 and 2 instead. RQs 3 and 4 were added in the study for robust secondary data analyses due to the small sample size for HIV -positive respondents.

RQ1 and 2 had the same independent variables, receiving positive HIV results from at-home test; however, the dependent variable for RQ1 was suicidal attempt and RQ 2 suicidal ideation. Bivariate analyses were conducted for both RQ1 and 2. The independent variable was HIV -negative and suicidality-dependent variable for RQ3. All

positive HIV results (independent variable) and suicidality (dependent variable) (RQ4). Bivariate analysis and multivariate logistic regression analyses were conducted for both RQ3 and RQ4. All research questions were controlled for income, gender, education, partner status, access to healthcare, race, age, and ethnicity except for partner status and access to care in RQ3 and RQ4. These covariates were added to determine if the associations would remain after controlling for the covariates.

For RQ1, Chi-Square Test results in Table 9 indicated that Fisher's Exact Test, p =.400, indicating that I failed to reject the null hypothesis due to the study's constant p-value of $p < .05$. Similarly, I also failed to reject the null hypothesis for RQ2, Fisher's Exact Test, p =1.000, a p-value more than the study's constant value $p < .05$.

RQ4, Chi-Square test analysis indicated $p = .000$, and the Likelihood Ratio of .000, which both fall within the study's set p-value, $p < .05$. However, further analysis using multivariate logistic regression, the Omnibus Test of Model Coefficients indicated, p =.063 while Hosmer and Lemeshow Test p =.192, both greater than the set p-value of the study $p <. 05$; therefore, I failed to reject the null hypothesis after controlling for covariates gender, education, race, ethnicity, age, and income, as reflected in Table 14. However, statistical significance was found for race category (3), $p = .010$, 95% CI [.109, .743].

On the other hand, RQ3, Chi-Square test analysis, resulted in $p = .020$ and the Likelihood Ratio, $p = 024$, which are within the study's set p-value, $p < .05$. Additionally, the Omnibus Test of Model Coefficients indicated p =.047, which is within the study's limit of $p < .05$. Therefore, I reject the null hypothesis in lieu of the alternate hypothesis.

Statistical significance was found for age category (2) p = .044, 95 % C1 [.044, .961]; race category (3) p = .019, 95 % CI [1.21, 9.14]; and education category (3) p = .047, 95% CI [.077, .984] as illustrated in the multivariate output in Table 12. Chapter 5 provides a discussion and interpretation of the finding, limitation of the study, recommendations, implication, and conclusion.

Chapter 5 Discussion, Conclusions, and Recommendations

Introduction

HIV/AIDS has remained a major public health threat globally. Similarly, suicidal attempts, suicidal ideations, and successful suicide remain a constant threat to public health, with suicide being one of the leading causes of death (Dabaghzadeh et al., 2015), necessitating strong public health efforts to reduce burden systematically. HIV/AIDS and suicidality have cost the healthcare systems billions of dollars to manage and reduce prevalence and incidence rates. Efforts such as implementing prevention strategies through medical care and public health campaigns to increase education, conduct contact tracing for HIV, administer medication, provide therapy, and other efforts to combat both diseases have been deployed.

Knowing the health risk indicators is important in assessing health behaviors (Meadowbrooke et al., 2014) because it allows providers to implement more thorough screening practices to identify suicidal risk. Thus, the TPB was used as the conceptual framework to set a foundational basis for the constructs used in this study. I examined the behaviors associated with being HIV -positive relative to being HIV -negative and the intended behaviors of harming oneself or thinking about harming oneself as a coping mechanism. I recruited adults 18 years and older who have taken an HIV test, and I excluded those under 18 years of age. Respondents meeting the inclusion criteria and consented to participate in the study then completed an online survey distributed through SurveyMonkey. This cross-sectional quantitative research study used bivariate analyses

and multivariate logistic regression to assess the association between the independent and dependent variables.

Therefore, the purpose of this study was to determine the association between receiving an HIV -positive result from at-home testing and suicidal attempt and suicidal ideation for RQs 1 and 2, respectively. RQ3 assessed the association for HIV -negative and suicidal attempt or ideation, and RQ4 assessed the association for all HIV -positive and suicidal attempts or ideation. The covariates were income, gender, education, partner status, race, ethnicity, age, and access to care.

Interpretations of Findings

I used bivariate and multivariate logistic regression to conduct data analyses for the four RQs. Thus, the interpretations of the results are presented next.

Research Question 1: HIV -Positive From At-Home Test and Suicidal Attempt

RQ1: Is there an association between testing positive for HIV using the at-home test and suicide attempt? Does this association remain even after controlling for partner status, access to care, education, income level, gender, race, ethnicity, and age?

After the bivariate analysis, there was no statistically significant association between receiving positive HIV results from the at-home test and suicidal attempt due to Fisher's Exact test, p =.400, and Likelihood Ratio, p = .400, because both results are greater than $p < .05$. Therefore, I failed to reject the null hypothesis for RQ1.

The results indicated that further research is needed with a larger sample size of participants who indicated that they used the at-home HIV test kit and received a positive result. A larger sample size could help further enhance research in determining the effects

of receiving a positive result from at-home tests and suicidal attempts. Further research should also consider the covariates in determining suicidal risk. Perhaps the study could also be extended to people under the age of 18 who are at high risk of suicide and HIV. Moreover, the overrepresentation of participants who tested negative compared to HIV -positive participants could have negatively impacted the study results by failing to detect a statistical effect between the independent and dependent variables, limiting the interpretations for RQ1.

Research Question 2: HIV -Positive From At-Home Test and Suicidal Ideation

RQ2*:* Is there an association between testing positive for HIV using the at-home test and suicide ideation? Does this association remain even after controlling for partner status, access to care, education, income level, gender, race, ethnicity, and age?

After the bivariate analysis, there was no statistically significant association between positive HIV results from the at-home test and suicidal ideation due to Fisher's Exact test, $p = 1.000$, and Likelihood Ratio, $p = 1.000$ because both results are greater than $p < .05$. Therefore, I also failed to reject the null hypothesis for RQ2.

Like RQ1, the results indicated that further research is needed with a larger sample size of HIV -positive participants who tested at home. With a larger sample size, further research could discover the effects of receiving positive results from at-home tests on suicidal ideation and possibly find a correlation between testing positive for HIV using the at-home test kit and suicidal ideation. Like RQ1, further research should also consider the covariates and be extended to people under the age of 18 who are at high

risk of suicide and HIV. As with RQ1, the overrepresentation of HIV -negative respondents impacted the ability to detect any association between the variables for RQ2.

Research Question 3: HIV -Negative and Suicidal Attempt or Ideation

RQ3*:* Is there an association between being HIV -negative and suicidal attempts or suicidal ideation? Does this association remain even after controlling for education, income level, gender, race, ethnicity, and age?

Pearson's Chi-Square $p = .020$ and Likelihood Ratio of $p = .024$ indicates being HIV -negative had a significant effect on suicidality when the p-value was set at $p < .05$ for this study. Having forms of suicidality is consistent with the vast majority of research on the general population who are HIV -negative, as indicated in Table 11.

After controlling for the equation's covariables, gender, education, race, ethnicity, age, and income, as reflected in Table 12, the Omnibus Test of Model Coefficients indicated $p = .047$, is within the study's limit of $p < .05$, allowing me to reject the null hypothesis in lieu of the alternate hypothesis. Statistical significance was found for age range (category 2), $p = .044$, 95 % C1 [.044, .961], race (category 3), $p = .019$, 95 % CI [1.21, 9.14], and education level (category 3), $p = .047$, 95% CI [.077, .984], as illustrated in the multivariate output in Table 12.

As indicated in the analyses and illustrated in the literature review, age, race, and education are all predictors of HIV and suicidality. The study results indicated that Black or African Americans (race category 3) were more likely to engage in suicidality; however, according to the literature, the AI or ANs population had the highest suicidal rate and accounted for 22.1 per 100,000. The White population accounted for 18.0 per

100,000; Hispanics accounted for 7.4 per 100,000; 7.2 per 100,000 for the Black or African American population (SPRC, 2020) which disconfirms the literature review's finding. Further interpretation of the literature review shows that suicide rates usually peak during adolescence to young adulthood in the Black or African American population and taper towards older years (SPRC, 2020).

The study results also showed that participants in the age range 25 to 34 years old (category 2) account for more likely to engage in suicidality, which falls within the literature review limits. Additionally, study results show that participants with an education level, such as a 2-year college or community college degree (category 3), were more likely to engage in suicidality than the other educational categories. However, people with higher education are less likely to participate in suicidality than people with lower educational backgrounds (see Pompili et al., 2013), therefore, disconfirming what the literature review indicated.

The findings for the overall RQ extend the knowledge that suicidality is present in the HIV -negative community and not only for people who are HIV -positive, as indicated. However, while this helps illustrate what is known, these results support that more target campaigns are needed to help negate these predictors and have proper support in place. One cannot examine how the variables contribute to having such thoughts or behavior from this study. Thus, further research is needed.

Research Question 4: All HIV -Positives and Suicidal Attempt or Ideation

RQ4: Is there an association between all HIV -positives and suicidal attempts or suicidal ideation? Does this association remain even after controlling for education, income level, gender, race, ethnicity, and age?

When aggregated, binary logistic regression for all those tested positive for HIV whether at home or in a clinic or doctor's office, including ER and urgent care facilities, Pearson's Chi-Square, p = .000 and Likelihood Ratio, p =.000 indicated statistical significance, are within the study's $p < .05$ limit. However, further analysis using multivariate logistic regression, the Omnibus Test of Model Coefficients indicated p = .063, which is greater than the set p-value of the study $p <$. 05; therefore, I failed to reject the null hypothesis after controlling for covariates, education, race, ethnicity, age, and income, as reflected in Table 14. However, statistical significance was observed for race category (3) -Blacks or African American- p = .010, 95% CI [.109, .743]. Finding statistical significance for Blacks or African Americans went against what the literature reviews indicated as AI or AN, Whites, and Hispanics were more likely to commit suicide according to the literature. As with the other three research questions, more research is needed to determine suicidality exposure while HIV -positive.

As reflected, suicidality is present in HIV -positive people from the bivariate analysis and confirms what the literature indicated; however, that association no longer remained once the covariates were introduced. Therefore, this should not limit the implementation of programs geared towards recognizing suicidal risks for HIV -positive persons.

Theoretical Framework Analysis and Interpretations of Findings

This study's theoretical framework was the TPB, which indicates how people would behave due to time and place based on inherent behavioral intentions (see Lamorte, 2019). Earlier studies indicated that people living with HIV are more at risk than the general population for committing suicide or possessing suicidal ideation or attempt, which fits within the TPB constructs

I employed the TPB framework in this study because I wanted to evaluate people's actions once they received a positive HIV result from at-home testing and how it contributes to suicidality. I assessed the attitudes, behavioral intentions, and perceived behavioral control of a person once they received positive results. The attitudes indicated that once a positive HIV result is garnered, it leads to the behavioral intention of attempting suicide or having suicidal ideations. However, the perceived behavioral control of this behavior is whether the person intended to seek care and how long it would take for them to seek care. As illustrated in Figure 3, more participants tend to seek care within 1 week of receiving an HIV -positive diagnosis indicating that they want care from a professional who can help link them with HIV care services. Thus, this interest in wanting to seek care could help negate any feeling of suicidality.

Neither RQ1 nor RQ2 provided any statistical significance to indicate that the TPB constructs are typical of a person. The study results did not indicate that participants who test positive for HIV are more prone to attempt suicide nor possess greater suicidal ideations/thoughts than the general population. As such, I cannot interpret that using the

TPB framework rationalized the study's findings. Therefore, more research is needed to expand this study further.

As secondary analyses, RQ3 and RQ4 indicated statistical significance; however, I failed to reject the null for RQ4. In RQ3, I rejected the null hypothesis in favor of the alternate hypothesis, indicating that suicidality is widespread in the non-HIV community. Exploring this population is necessary to determine triggers and build statutes to negate these behaviors.

Limitations of the Study

There were several limitations to this study. First, the major limitation was that the study followed a nonprobability convenience sampling procedure and was a cross-sectional study. Using convenience sampling minimized my ability to generalize study findings. Additionally, being a cross-sectional study could also have contributed to the limited findings as a cross-sectional study tends only to determine associations and not causations.

Secondly, this was a sensitive survey assessing HIV results and suicidality, potentially affecting the sample size. HIV -positive participants represented $n = 30$, of which $n = 5$ participants tested positive using the at-home test kit. In comparison, $n = 173$ were HIV -negative, with a total sample size of $N = 213$. The sample size was calculated using the Raosoft sample size calculator. Due to the low response rates of surveys, α level .05 with a .85%, where $n = 207$ was used for this study.

The small sample size of those who used the at-home test and received positive results led to a smaller sample of respondents who indicated they had attempted or had

thoughts of suicide, leading to the limitation of analyses conducted in the study. According to Owens et al. (2002), a larger sample size would give more precision in estimates because rarely is suicide an outcome event.

As such, I intended to conduct binary logistic and multivariable regression; however, I could only conduct bivariate analyses for RQs 1 and 2. I incorporated two additional research questions for secondary analyses as examined in RQ3 and 4 to help robustness. I conducted binary logistic regression and multivariate logistic regression analyses for these subsequent RQs.

Thirdly, as a primary research study, the survey developed by the student may have been biased and not inclusive of all sexualities, ethnicities, genders, income levels, ages, educational backgrounds, or other demographic data representatives of the total population. Additionally, survey questions could have been underdeveloped and ambiguous and not capturing data adequately and accurately. Also, respondents' responses to the survey may not reflect their true HIV status or their encounter with suicidality and may not have been reflected honestly on survey results.

Finally, all the limitations of this study could influence the findings of the study. Moreover, the study was conducted during the COVID-19 pandemic that sent people into social distancing, isolation, and other atypical living situations that limited one-on-one in-person interactions. Furthermore, the pandemic caused the inability to connect with an STD/HIV clinic to administer the survey. Most places were closed or resorted to telework/distant services; therefore, the paper-based survey was subsequently replaced with the recruitment of participants primarily online. Such recluse activities, loss of a

family member, and loss of income could have compounded triggers for HIV -negative and HIV -positive respondents during the pandemic, which may have influenced their decision to attempt suicide or develop suicidal ideations. Thus, all factors are important, and more research is needed to expand the true nature of the study.

Recommendations

I aimed to determine if any association existed between receiving positive HIV results from home tests and suicidality. I explored four RQs in this study, and three failed to reject the null hypothesis, indicating further research is needed. Further research is important to determine the correlation between positive HIV results using the at-home test kits and suicidality. Additionally, further research is needed to explore exposure to suicidality in respondents who are HIV -negative. It is also needed to determine the causal relationship.

Despite the study results, strong indications indicate that the respondent's exposure to suicidality is still a current public health event that should be highly prioritized. One should also consider the timeframe once a person is diagnosed with HIV when they decide to seek care from LTC services and the timeframe they choose to engage in suicidality as a factor for suicidal risk. Therefore, it is necessary to further explore this topic with a larger sample size of HIV -positive participants without a pandemic's extenuating circumstances. Having a larger sample size allows for a more robust statistical analysis of data to give proper interpretation and presentation. Additionally, while this study was heterogeneous, it needed to use a probability sampling

vs. a non-probability sampling procedure to recruit the participants, therefore appealing to generalizability.

Subsequently, another recommendation is to ensure the validity and reliability of the instrument. I developed the survey and conducted a pilot test of the survey to ensure validity and reliability. However, inconsistencies, bias, and ambiguity could have impacted the study results; therefore, it is recommended to use a tested instrument. The instrument should be void of bias and inclusion of all population types, not limited to age, gender, sexual orientation, ethnicities, race, and other demographical representations.

Lastly, when HIV was first discovered back in the 1980s, processes and social dynamics were different than they currently are. Differences between education and income levels could have also affected access to care and treatment. And medication might not have been widely available to everyone. Since ART is now available, HIV is no longer fatal and is now considered a chronic and manageable disease (Health Resources and Services Administration, 2020). Also, medication is now available to prevent HIV -negative people from acquiring the disease using pre-exposure prophylaxis (PrEP) and prevent transmission of the disease once an HIV exposure is known, using post-exposure prophylaxis (PEP; CDC, 2020c). A physician can prescribe both PrEP and PEP to aid in preventing HIV infection in the event of exposure. Prior, one might have been susceptible to suicidality out of fear due to social stigmatization and the thought that living with HIV was a high mortality disease. However, now with the availability of these medications, HIV is no longer considered a deadly disease, resulting in people changing their attitudes towards suicidality given an HIV diagnosis. Thus, further research should

retrospectively consider the differences in availability and affordability of treatment when HIV was first discovered and now.

Implications For Social Change

Since suicide and HIV remain, two of public health's biggest threats, the purpose of this study was to determine if using the at-home test kit would increase suicidal rates once one receives a positive HIV diagnosis while at home. In contrast, there was no statistical significance for receiving positive HIV results from at-home tests and suicide attempts and no statistical significance for receiving an HIV-positive result from at-home tests and suicidal ideation. There was also no effect on suicidality for all HIV -positives. However, there was statistical significance between respondents who were HIV -negative and suicidality. Efforts should still be centered around patient-level access to the at-home test and the potential threat of the person being alone, with no provider or supportive person present to help discern the results and negate the possibility of suicidality in response to the result.

As such, there should be thorough monitoring of the at-home HIV test being sold so that LTC is pre-arranged, a benefit that would negate any negative outcome. One should determine if follow-up and tracking of the results could be implemented, given that the purpose of the at-home test kit is to encourage anonymity and increase testing. Addressing the preceding statements can help campaign efforts to create impactful programs through future studies and for possible associations between at-home tests and suicidality.

Increasing the awareness that receiving HIV results from home testing can evoke negative emotions could help social change by promoting counseling services and healthcare providers to have screening questions for high-risk patients. Implementing a screening initiative may lead to the recommendation of in-clinic testing vs. using the at-home test, which may be an alternative for those at-risk. The literature suggested that people who are newly diagnosed with HIV are likely to have either attempted suicide or had some form of suicidal ideation within 6 months to 1 year after their diagnosis. This evidence is supported in Lu et al.'s (2018) cross-sectional study where 114 HIV -positive participants were interviewed for any form of suicidal attempt or ideation and found high prevalence within 6 months to 1 year of diagnosis. It is important to follow up with patients once they are diagnosed with HIV/AIDS. Thus, the hope is that I can help influence social change by helping organizations to build capacity to be better equipped to help such patients based on the results from this study.

The evidence in this study suggested that HIV -negative participants are most inclined to suicidality compared with HIV -positive participants. It serves imperative for providers to determine suicidal risk in the general population. Perhaps having screening opportunities at each doctor’s appointment may help determine the suicidal risk to ensure that people are linked with the proper support services, especially when day-to-day conditions are uprooted due to unforeseen tragedies such as a pandemic.

Conclusion

In conclusion, this appears to be one of the first studies to address receiving a positive HIV result from using the at-home test kit and suicidality. The study was a cross-sectional quantitative research, collecting primary data through an online survey. Inclusion criteria were people 18 years and older and who have taken an HIV test. People under the age of 18 were excluded from participation. The purpose of this study was to determine any association between receiving positive HIV results and suicidal attempts and suicidal ideation while controlling for covariates: gender, education, income, partner status, age, race, ethnicity, and access to care. The theoretical framework was Ajzen's theory of planned behavior.

Many participants indicated that they are HIV -negative (n = 173) compared to participants who indicated that they were HIV -positive (n = 30). The vast differences in response indicate further research with a larger sample size of HIV -positive participants to determine any correlation with suicidality and determine the sensitivity and specificity of the HIV at-home test results for accuracy will be needed.

I failed to reject the null hypothesis for positive results from at-home HIV test and suicidal attempt (RQ1) and suicidal ideation (RQ2), as well as failed to reject the null hypothesis for all HIV- positive and suicidality (RQ4). However, I rejected the null hypothesis in lieu of the alternate hypothesis for HIV -negative and suicidality (RQ3). Nonetheless, there are indicators that PLWHA are inclined to participate in self-harm than the general population, as determined by other research studies. Therefore, more research is needed to expand this topic to identify both correlation and causation of

suicidality triggers related to HIV. The study's limitations, being a primary research, potential bias from the survey, the COVID-19 pandemic - which limited access to HIV services - the sample size, and use of non-probability convenience sampling all could have contributed to the study results. However, this was an important study as suicide and HIV remain global public health threats. Determining which variables lead to increased suicidality as a result of HIV is yet to be determined.

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Appendix: Survey Questionnaire

1. What is your age range?

- 18-24 years old
- 25- 34 years old
- 35- 44 years old
- 45-54 years old
- > 55 years old

2. What is the gender you identify?

- Born Male
- Born Female
- Transgender (male to a female)
- Transgender (female to male)
- Other

3. What is your race?

- American Indian or Alaska Native
- Asian
- Black or African American
- Hispanic or Latino
- Native Hawaiian / Other Pacific Islander
- White

4. What is your ethnicity?

- Non-Hispanic
- Hispanic
- Latino

5. What is your sexual preference?

- I am a male who has sex with males only
- I am a male who has sex with females only
- I am a male who has sex with both males and females
- I am a female who has sex with males, only
- I am a female who has sex with females, only
- I am a female who has sex with both males and females

6. What is your annual income?

- Under $24, 000, annually
- $24,001-35,000, annually
- $35,001-44,500, annually

- more than $44,001, annually

7. What is your educational level?

- High school or less
- Some college
- 2-year college/ community college degree
- Bachelor's degree
- Higher than a bachelor's degree

For the next questions, If you have tested for HIV using an at-home HIV test kit and in a clinic or doctor's office to include hospital ER and urgent care, please answer based on the most recent test location. For example, if you tested at-home in February 2020 and then you tested again in the clinic in April 2020, please answer based on April's location.

8. How did you test for HIV?

- At-home using the HIV at-home test kit……
- Clinic or doctor's office, including hospital ER or Urgent care

9. If you tested in a clinic or doctor's office, what was your test result?

- Positive, and I spoke with someone about my results
- Positive, I did not talk about my results
- Negative
- Still waiting on results

10. If you tested positive for HIV in a clinic or doctor's office, did you?

- I harmed myself
- Thought about harming myself
- Did not think about or tried to harm myself
- Thought about harming their partner

11. Did you think about harming yourself because you tested positive for HIV? Answer if you tested in a clinic or doctor's office

- Yes
- No

12. Did you harm yourself because you tested positive for HIV? Answer if you tested in a clinic or doctor's office

- Yes
- No

13. If you used the HIV at-home test, what were your test results?

- Positive
- Negative
- Need more testing

- Did not follow-up or have not received results

14. If you tested positive after using the at-home HIV test, how did you feel?

- Same, no change
- Relieved? My test was negative
- My result was positive, and I harmed myself
- My result was positive, and I thought about harming myself
- My results were positive, and I wanted to harm my partner

15. Did you think about harming yourself because you tested positive for HIV? Answer if you used the at-home HIV test.

- Yes
- No

16. Did you harm yourself because you tested positive for HIV? Answer if you used the at-home HIV test.

- Yes
- No

17. If you used the HIV at-home test, and your result was positive, what did you do after receiving your test results?

- Received medical follow-up
- Call 1800 number on the package for guidance
- Consulted therapist
- Spoke to no one about your test results

18. If you tested at-home, will you follow-up for more testing?

- Yes
- No

19. How long after you received your positive HIV test results, did you seek medical care?

- Less than 1 week
- Within 2 weeks
- Within 1 month
- More than 1 month
- Did not seek care.

20. Has your partner been tested for HIV?

- Yes, and results were positive
- Yes, and results were negative

- No
- Not sure