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Effects of Perpetrator Types and Gender-Based Violence on Condom Use Among Tanzanian Female Sex Workers

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
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Walden University
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Abstract

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by

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MPH, Walden University, 2015

BS, University of West Georgia, 2009

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Public Health

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Abstract

HIV status among female sex workers (FSWs) continues to be a significant public health concern. Condom use is associated with HIV cases among FSWs. Gender-based violence (GBV) plays a role in FSWs HIV status. While studies have investigated the relationship between GBV and condom use, little is known about the impact of factors such as perpetrator type and substance use. I aimed to examine whether perpetrator type and substance use affect the relationship between GBV and condom use among FSWs in Tanzania. Secondary data analysis was performed on 1,502 FSWs extracted from the 2020 Tanzanian, John Hopkins Program for International Education in Gynecology and Obstetrics (JHPIEGO), HIV study. Using SPSS version 25, multivariable logistic regression analyses were performed to assess the impact of perpetrator types and subsequently substance use on the relationship between GBV and condom use. Of the 159 (10.5%) FSWs who reported experiencing GBV, 69 (84.25%) reported using condoms with 14% increased odds (*OR* = 1.14, 95% CI: 0.61-2.11) compared to those who did not. Including perpetrator types in the model resulted in 12% increased odds with no further change due to alcohol/substance use. Neither of these were statistically significant ($p > 0.05$). These analyses established no statistically significant relationship between GBV and condom use, with no further influence due to perpetrator types and alcohol/substance use. Findings may lead to social change through sexual health prevention programs by focusing on improving FSWs' sexual health habits and reducing the number of new HIV cases. Future studies should assess this relationship further using a more representative sample size of FSWs.

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Dedication

This capstone study is dedicated to my mom, Mrs. Aldrena Hall; my father, Mr. Carl Hall; my brothers, Delvin & Kelvin; my boyfriend & bonus son, Kevin & Kyrie; my sisters, Taitanna, Briana, and Shequita; and the rest of my family, friends, and co-workers who helped me along the way. Without your support, none of this would have been possible.

I would also like to dedicate this to those affected by HIV, both living and deceased. Without your inspiration to make a difference, I probably would not have made it this far in my educational and work career.

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I want to acknowledge the chair of my committee, Dr. Harrison Ndetan and my committee member Dr. Daniel Okenu. Without his countless efforts, long conversations, guidance, and support I probably would have given up. I would like to thank the team at USAID for answering my many questions regarding the dataset used for this capstone. I would also like to thank the team at JHPIEGO for allowing me to use their dataset. Lastly, I would like to acknowledge my support system for encouraging me to keep going during times of adversities and being listening ears when I know it was tiresome to hear about this project over and over again; thank you!

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Section 1: Foundation of the Study and Literature Review

Introduction

Human Immunodeficiency Virus (HIV) is prevalent in many countries, with countries in sub-Saharan Africa being among those with a high burden. This disease impacts many regardless of their sexual orientation, race, ethnicity, gender, age, and residing location (National Institute of Health, 2020). However, there are specific populations that are more inclined to being affected by HIV as a result of their risk behaviors (National Institute of Health, 2020). One of such is the population of female sex workers (FSWs). Sex workers (SWs), individuals who exchange sex for money and nonmonetary items (Centers for Disease Control and Prevention [CDC], 2019), are more likely to transmit or become infected with HIV and sexually transmitted infections (STIs). A primary determinant in terms of increased rates of HIV and other STI cases amongst FSWs is inconsistent condom use (CDC, 2019). SWs are 13 times more at risk for contracting HIV than individuals who make up the general population (e.g., men and women who do not have sex in exchange for money and goods; Avert, 2019). On a global scale, SWs make up 9% of new HIV infections (Avert, 2019), with HIV rates among female sex workers more prevalent in parts of sub-Saharan African countries, including Tanzania (Mpondo et al., 2017).

It is estimated that 150,000 individuals within Tanzania, primarily women, sell sex despite sex work being a punishable law (Avert, 2020). The prevalence of HIV amongst FSWs was estimated at 15.4% in 2018, with a chance of higher rates due to limited data (Avert, 2020). However, roughly 70% of SWs use condoms consistently or

on an inconsistent basis (Avert, 2020). Limited studies have been conducted to examine HIV amongst this population. However, as a result of sex being illegal and frowned upon, this population is subject to criminalization acts, including gender-based violence and human rights violations from healthcare and law enforcement workers (Avert, 2020). SWs who experience physical or sexual violence have less control over the terms of their transactions, increasing the likelihood of experiencing client condom refusal (Argento et al., 2019). It remains unclear how perpetrator type (casual nonpaying, regular nonpaying, and paying partners) affects this behavior.

In addition, substance use, including alcohol, acts as a facilitator to both gender based violence (GBV) and HIV in this population (Leddy et al., 2018). It increases their risk of GBV by impairing their ability to detect situations that may pose harm. The focus of this study was factors that are associated with increased risk of HIV, more specifically, GBV, condom use, perpetrator type, and substance use that contribute to Tanzanian FSWs' risk for HIV. My specific purpose was to investigate the effects of factors such as perpetrator type and substance use on the relationship between GBV and condom use. This information can be helpful in terms of increasing public health and health care workers understanding of FSWs' sexual behaviors to design interventions that will address factors that contribute to them being at increased risk for acquiring HIV.

Background

As previously mentioned, SWs risk of contracting HIV and other STIs is high compared to other populations. Limited studies have examined HIV amongst FSWs, including Tanzanian FSWs. Recent literature suggests that the high burden of HIV in

Tanzania and other sub-Saharan African areas is based on the structural and social aspects in which sex work is conducted (Leddy, Underwood, Decker, Mbwambo, Likindikoki, Galai, & Kerrigan, 2018). GBV and substance use impacts use of safe prevention measures, such as condoms (Leddy et al., 2018), by contributing to unprotected sex. Efforts to understand how GBV and condom use play a role in HIV cases among this group are minimal. GBV is a common issue among FSWs in Tanzania and contributes to their high-risk sexual behavior and risks of contracting STIs and HIV (Roberts et al., 2018). Substance use imbricates this issue, increasing chances of adverse health outcomes (Leddy et al., 2018).

The prevalence of GBV amongst Tanzanian FSWs is much higher compared to women that make up the general population (Leddy et al., 2018). Violence increases FSWs HIV risk by contributing to forced sex and exposure to increased HIV risk behaviors such as unprotected sex (Leddy et al., 2018). Lacking the power to negotiate male condom use with their clients places this high-risk population at extreme risk. In most cases, FSWs have difficulty suggesting condom use when GBV is involved, contributing to inconsistent condom use with clients (Decker et al., 2016).

Research has further validated the need for researchers and public health officials to understand associations between dangerous work environments and condom use amongst FSWs and non-paying partners. Understanding FSWs work environment and where GBV occurs based on perpetrator type could strengthen the understanding of additional factors contributing to GBV amongst this population.

Researchers have found a significant association between GBV and HIV. However, due to the complexity of causal pathways, this relationship is not fully elucidated as there are many potential intermediaries including condom use, perpetrator type, and substance use that have not been effectively studied. For example, studies have examined the relationship between GBV and HIV only amongst a specific perpetrator type such as regular non-paying. Despite various research on relationships between HIV, GBV, and condom use, little is known about multiple perpetrator types in the relation of consistent condom use to GBV. More information is also needed to understand perpetrator types' contribution to the prevalence of HIV cases among Tanzanian FSWs. Few studies have been done to assess how substance use (including alcohol use) contributes to FSWs being at increased risk for GBV and HIV, and specificity regarding perpetrator types is needed.

Problem Statement

According to Roberts et al. (2018), GBV toward FSWs is prevalent and contributes to different risk factors for HIV (i.e., poor mental health, high-risk sexual behavior habits, and STIs). Specifically, in Tanzania and Iringa, inconsistent condom use or misuse contributed to risks (Hendrickson et al., 2021). Alcohol consumption has shown to have a significant correlation with use of condoms for FSWs (Rastogi et al., 2014). According to the article by Rastogi, alcohol was a factor that influenced consistent condom use between the FSW and their respective partner, as condoms were less likely to be suggested. Mobile sex workers are more likely to report not using condoms and facing a greater chance of being unable to negotiate use of condoms with different

perpetrator types (Henderickson, 2018). The impact of violence on HIV risk can vary based on perpetrator type (e.g., non-paying regular, paying partners, non-paying casual). However, most assessments of this population address a portion of violence, including forced sex and perpetrator violence (Roberts et al., 2018).

Although GBV and alcohol use play a detrimental role in terms of FSWs risk of contracting HIV, most sex workers experience different forms of violence (e.g., verbal or physical), which increases HIV risk (Roberts et al., 2018). GBV and its influence on condom use when engaging in sex with a specific type of partner has been examined; however, without considering the specifics with multiple perpetrator type partners (i.e., non-paying regular, paying partners, non-paying casual) it is hard to determine whether a form of violence is more specific to one partner type compared to others (Tounkara, Diabate, Guedou, Ahoussinou, Kintin, Zannou, Kpatchavi, Bedard, Bietra & Alary, 2014). According to Decker et al. (2020), inconsistent condom use is a proximal risk for acquiring and transmitting HIV. The role of violence, coercion, and other facilitators that result in gender power indifferences typically are not considered when assessing condom use among FSWs and their sexual partners (Decker et al., 2020). These contributing factors to their HIV status can negatively impact their use of condoms, further placing FSWs at risk. Therefore, this study was conducted to expound upon current research to understand how perpetrator types and substance use affect the relationship between GBV and condom use among FSWs specifically in Tanzania.

Purpose of the Study

The purpose of this quantitative study was to examine whether perpetrator type and subsequently alcohol and substance use affect the relationship between GBV and condom use among FSWs in Tanzania.

Research Questions and Hypotheses

The following research questions (RQs) and hypotheses were investigated:

RQ1: Does perpetrator type of clients of Tanzanian FSWs affect the relationship between GBV and condom use?

H_o1: Perpetrator type of clients of Tanzanian FSWs does not affect the relationship between GBV and condom use.

H_a1: Perpetrator type of clients of Tanzanian FSWs affects the relationship between GBV and condom use.

RQ2: Does alcohol and/or substance use influence the relationship between GBV and condom use among various perpetrator clients of Tanzanian FSWs?

H_o2: Alcohol and/or substance use does not influence the relationship between GBV and condom use among various perpetrator clients of Tanzanian FSWs.

H_a2: Alcohol and/or substance use influences the relationship between GBV and condom use among various perpetrator clients of Tanzanian FSWs.

Theoretical Foundation of the Study

Fishbein & Ajzen created the theory of reasoned action (TRA). This theory suggests that one's behavior (e.g., sex without a condom) is based on one's intention to engage in that behavior (Linke et al., 2013). The intent is a result of their observations of

attitudes towards the behavior and norms (Linke et al., 2013). Based on the TRA, an individual's outlook towards the behavior is based on how likely they think adopting a health behavior would be valuable and impactful in their life. The opinions of peers and other individuals impact behaviors. An individual may be more inclined to adopt a belief because of expectations as a result of pressure.

The theory of planned behavior (TPB) is an extension of the TRA. It is based on the same premise that a person makes a logical decision to engage in a specific behavior by assessing information that is available to them, while also looking at perceived control elements. A person belief regarding how likely or hard it would be to implement a behavior determines whether or not the behavior is adopted (Godin, 1994). Not all behaviors are controlled.

Both the TRA and TPB involve how health behaviors are based on intent to perform them. This intent is based on attitudes toward the behavior and subjective norms such as social and environmental surroundings, as well as perceived control over their behavior (Fishbein & Ajzen, 2009). Using these theories will allow for understanding of FSWs sexual health risks in relation to their attempt to use condoms and protective behaviors when engaging in intercourse with different perpetrators. The TRA and TPB allowed for a better understanding in how alcohol and substance use, violence, and perpetrator types influence sexual risk behaviors.

Nature of the Study

To address the research questions a cross-sectional design involving the Tanzanian population to evaluate approaches to reducing STIs among high-risk groups

that included FSWs, was used. Key study variables were condom use (categorical, nominal) as the outcome or dependent variable and GBV (binary categorical, nominal), perpetrator type (categorical, nominal), and substance use (binary categorical, nominal) as independent variables. Based on data type and research questions, a multivariable logistic regression model was used that included condom use as the outcome, GBV as the main predictor, and perpetrator type as a covariate for RQ1. For RQ2, a multivariable logistic regression model was used as well. Condom use was the outcome, GBV was the main predictor, and perpetrator type and alcohol/substance use were covariates.

Literature Review

As a result of structural risk factors of HIV, at-risk populations such as FSWs face a disproportionately high rate of HIV infection (Nyato et al., 2019). Within sub-Saharan Africa, FSWs chances of acquiring HIV are 13 times higher than other women in sub-Saharan Africa (Nyato et al., 2019). According to Nyato et al. (2019), Tanzanian FSWs are in need of HIV prevention services. Nevertheless, minimal studies have been conducted to understand factors contributing to the influx of HIV cases amongst this population. Although research is limited, most researchers have looked at GBV, substance use including alcohol, inconsistent condom use, and specific perpetrator type, which are the key variables for this study. These variables were assessed in other literature to determine how they contribute to the number of HIV cases within Tanzanian FSWs, but specific to few types of partners. The study design used for many of the selected articles was cross-sectional. Other study designs used were surveys and systematic reviews.

Literature Search Strategy

In order to obtain articles on the given topic, a literature search was done using the following key words: *sex work*, *prostitution*, *condom usage*, *female condoms*, *male condoms*, *sex workers and sexually transmitted infections*, *HIV, sex work*, *gender based violence*, *Tanzanian sex workers, perpetrator types, and female sex workers*, *paying*, *non-paying clients*, *Africa*, *sub-Saharan Africa, sexual behavior, alcohol use*, *female sex workers, consistent condom use, Tanzanian sex workers and HIV, gender based violence and substance use, Tanzanian female sex workers, and substance use and female sex workers.* This was done mostly by using the Walden University Library and accessing the following key databases: CINAHL Plus, PLOS One, Gale Onefile, Academic Search Complete, ProQuest Health & Medical Collection, EBSCOHost, CINAHL & Medline, Medline, ProQuest, and PubMed. The search was narrowed to peer-reviewed articles published between 2010 and 2020.

Review of the Literature and Key Variables

In recent and previous articles, researchers have assessed HIV amongst FSWs within Tanzania and other countries where HIV and FSWs are heavily populated. Their focus looked at GBV, substance use (including alcohol) and their relationship to behaviors that put FSWs at risk for contracting HIV. Other focus areas assessed were GBV and how it is associated with access to health care services and criminalization and stigma-associated barriers (Decker et al., 2016). In addition, researchers such as Rastogi, Charles, & Sam (2014) looked at the prevalence of condom use amongst FSWs and their partners by assessing what factors contributed to using condoms for protection or not

using protection when engaging in sexual acts. In taking these various approaches, researchers cannot truly recognize the fundamental factors contributing to HIV amongst this population if the focus is centered towards specific perpetrator types compared to all. Decker et al. (2016) expresses this concern in his article when he points out that patterns have been mainly studied by assessing paying perpetrator type and not non-paying, which could play a role in condom use patterns. Using data such as incident rates could strengthen the validity of results. Incorporating other associated factors, such as alcohol use and GBV, as well as inconsistent condom use, aids in determining how this predicts HIV infection within the specified population.

The variables used within this study are found in a vast number of reviewed articles; however, when assessing the variables, they are specific to a single perpetrator type and not multiple. This is evident in an article by Mooney et al. (2013) when it is mentioned that more research is needed in order to examine GBV and condom use between FSWs and regular, nonpaying perpetrator types. It is even more evident that my research study is needed when other authors, such as Lang et al. (2013), confirm the need for more research to compare the specifics of different perpetrator types and their relationship to HIV acquisition amongst this population. To better understand how each variable contributes to overall HIV infection among this group, further evaluation is needed to examine these factors to determine if there are similarities or differences based on perpetrator type of sexual partners.

For this given study, key variables under consideration were condom use (binary categorical, nominal) as the dependent variable and GBV (binary categorical, nominal),

perpetrator type (categorical, nominal), and substance use including alcohol (binary categorical, nominal) as independent variables.

Condom Use

Exchanging sex for money or goods plays a crucial role in the transmission of HIV. A vast amount of transmission results from unprotected sex with FSWs, either from clients to FSWs or FSWs to clients (Kamal et al., 2015). Based on the literature review, consistent condom use varied in terms of factors such as alcohol use. Rastogi et al. (2014) said a low percentage of FSWs partners engaged in consistent condom use. A factor that influences this outside of education and peer use is alcohol consumption (Rastogi et al., 2014). In addition, history of sexual violence is associated with lack of condom use (Wirtz et al., 2015). Kamal et al. (2015) said FSWs used condoms more consistently when they made decisions with their partners or alone compared to when their partners made decisions for them. According to Wirtz et al. (2015), condom negotiations are rare with this population as coercion, GBV (including sexual violence) reduces this right. Even if one wants to use a condom, the fear of being a victim of violence plays a role in suggesting.

GBV

GBV is common among FSWs. According to Lang (2013), it has been associated with increased HIV rates in multiple African countries, including Tanzania. GBV can increase SWs risk of contracting HIV and STIs due to improper condom use and inconsistency of use between them and their partners (Hendrickson, 2018). Hendrickson (2018) said the mobile aspect of sex work increases FSWs' likelihood of being victims of

GBV. Factors such as alcohol and other substances become a significant deterrent in terms of use of condoms, further putting SWs at harm for violent acts (Rastogi et al., 2014). In addition, Lang et al. (2013) said previous trauma involving GBV resulted in FSWs being fearful of their clients' responses to requests to use condoms during sexual interactions; therefore, they remained silent out of concern for their life.

Perpetrator Type

Perpetrator type of FSWs varies; it can be a client, police officer, nonpaying partner, or regular partner. For the purpose of this study, I focused on non-paying regular, non-paying casual, and paying partners. According to other literature, it is evident that the variables mentioned above (i.e., condom use, GBV, and substance use use) play a significant role in HIV acquisition amongst Tanzanian FSWs and FSWs of other countries. What is not evident is whether each variable's roles differ based on perpetrator type. Mooney et al. (2013) further confirms the need for additional studies to determine the link between GBV and condom use with regular non-paying partners. Lang et al. (2013) also mentioned a need to understand more on the differences amongst perpetrator types and how abuse is related to high-risk sexual behavior habits that increase SWs chances of acquiring HIV. As previously discussed, GBV and condom negotiation roles are factors in terms of HIV infection among this population. These patterns were only assessed with one form of perpetrator type and not others. As a result, there is mixed evidence regarding how perpetrator types may influence roles of other variables.

Substance Use

Substance use played a role in increasing HIV infection in this population. This factor was looked at by observing the role it played in terms of consistent condom use and whether it played a role in GBV against FSWs. Substance use was a significant predictor in terms of whether or not FSWs used condoms. Rastogi et al. (2014) said consistent condom use between SWs and their partners was based not just on whether partners consumed alcohol but also on whether the SW consumed alcohol. Leddy et al. (2018) said interested parties wanting services from SWs will pay for drinks to express interest in their services. In cases such as this, both parties are under the influence.

In addition, consumption of alcohol has also played a role in GBV (Leddy et al., 2018). Use of alcohol inhibits SWs' negotiation ability when using condoms and impairs their cognitive ability to detect potentially harmful situations that result in GBV from their partners or other individuals (Leddy et al., 2018). However, Decker et al. (2019) said amount of use mixed with other substance use does not increase nor play a role in terms of risk of GBV and inconsistent condom use; what does is episodic drinking at the time of the sexual encounter.

Theoretical Framework

As previously mentioned, I used the theory of reasoned action (TRA) and theory of planned behavior (TPB). Martin Fishbein and Icek Azen created the TRA in 1975. The TPB, an extension of the TRA, was created in 1980 to provide reasoning as to why individuals engage in particular behaviors at an exact location and time. The TRA and TPB has been applied to predict different health behaviors such as condom use, alcohol

use, and illicit drug use. Several studies have used the TRA/TPB to look at safer sex behaviors in men. This was done by observing and comparing multiple safe sex behaviors in gay men and how their intention and perceived control over their sexual behaviors contributed to the act of safe sex (Rye, Fisher, & Fisher, 2001).

With the theory presumption that a person has complete control and can make a logical decision and way their options in performing a behavior, this theory could assist with justifying the behavior of inconsistent condom use amongst FSWs and their perpetrator type partners as well as how the influence of GBV, alcohol and other substance uses contribute to their increase HIV risk. The TRA model would indeed confirm that safe sex behavior practices result from whether FSWs intend to utilize the safe sex practices depending on their outlook or view toward the act of practice and their norms. The TPB adds the factor of perceived control to this point (Rye, Fisher, & Fisher, 2001). The idea is that the ones who thought they have control contribute to their reasoning of justification to do such behavior (Rye, Fisher, & Fisher, 2001). It is hypothesized that FSWs' intent to perform safe sex behaviors are impacted by their belief involving not being in control. The assumption is that this hypothesis varies according to perpetrator type in that whether the partner is non-paying regular, non-paying casual, and paying partners it influences their safe sex behavior practices.

In exploring the factors of condom use, GBV, perpetrator type, and alcohol use, the TRA/TPB looks at specific psychological antecedent influences (1. Behavior beliefs/attitudes, 2. Normative beliefs, and 3. Perceived control beliefs) and their contribution to the intent in performing such behavior (Roth, Ngugi, Benoit, Jansson, &

Hallgrimsdottir, 2014). LaMorte (2009) refers to attitudes as to how one portrays and evaluates the intended behavior (FSW in favor of practicing safe sex or opposed to practicing safe sex). Behavior and beliefs are based on what drives the FSWs to favor safe sex practices. The stronger the intention, the more likely that behavior will be adopted (LaMorte, 2009). Norms are based on what others think and say (LaMorte, 2009). Lastly, perceived control involves at how easy or difficult it is to incorporate the behavior (LaMorte, 2009). Perceived control concerning this study could be FSWs decision to use condoms despite receiving payment or not.

Definitions

Variables within this study and other pertinent terms are defined.

Human Immunodeficiency Virus (HIV): HIV is considered a virus that attacks cells that are used to defend the body against infection, which causes victims to be more susceptible to other infections and diseases (National Institute of Health, 2021). According to the National Institute of Health (2021), HIV is spread by a person coming in contact with bodily fluids of an infected person, commonly through unprotected sex or sharing of injection drug equipment.

Female Sex Worker (FSW): A female who accepts monetary goods or money in exchange for sexual services, either regular or sometimes (Avert, 2019). This service can be on formal or organized as well as distinctive from other relationships, social or sexual (Avert, 2019).

Gender Based Violence (GBV): GBV, used as a nominal independent variable, refers to harmful acts towards a FSW based on their gender (e.g., physical, sexual, or

verbal abuse). It is considered a serious violation of one's human rights and is considered a life-threatening issue (United Nations High Commissioner for Refugees, n.d.).

Perpetrator types: A nominal independent variable used to describe a person who sexual assaults someone regardless of the age of the victim (United Nations, 2017). For the purpose of this article, perpetrator type refers to the person that engages in sexual acts with FSW. The following perpetrator types will be assessed in relation to FSWs

Non-paying casual: Perpetrator client who does not pay for sex and is not a regular sex partner.

Non-paying regular: Perpetrator client who does not pay for sex and is a consistent partner.

Paying partner: Perpetrator client who pays for sex.

Assumptions

This study was based on the premise that multiple perpetrator types and alcohol/ substance use affect the relationship between GBV and condom use among Tanzanian FSWs. The assumption was made that the relationship between condom use and HIV is established as well as the relationship between GBV and condom use. Studies conducted previously have produced minimal evidence specifically towards multiple perpetrator types other than clients and non-paying regular (Decker et al., 2016). Another assumption was that the FSWs who participated in the survey were honest and felt comfortable disclosing accurate information in that their information was secure and confidential. It was also assumed that the data is based on FSWs engagement with different perpetrator types compared to a specific partner, as the definitions or classifications used to describe

the specifics of perpetrator types may not match that of how FSWs classify or define given partner. Lastly, the assumption was made that the information used to form this secondary source was collected and synthesized accurately. Making the above mentioned assumption provided a more probable cause that the information presented was valid in that results accurately reflected the designated population and variables being studied. This in return contributed to this study being a reliable source for information on the designated topic.

Scope and Delimitations

The study's scope is based on secondary data from a cross-sectional study with respect to FSWs within Tanzania between the years of 2018-2019. The focus of this study sought to understand how perpetrator types and substance use, including alcohol, contribute to the relationship between GBV and condom use in Tanzanian FSWs. Although there is literature that looks at these variables and the relationship amongst all of them, specifics are needed to understand this relationship without focusing on one type of partner (Dunkle & Decker, 2013) and more focus on multiple perpetrator partners non-paying casual, paying partners, and non-paying regular, and others. To mitigate this issue and make room for effective interventions, it is vital to have a broader understanding of how any partner affects this relationship amongst this demographic.

This study was based on data collected through surveying FSWs age 18 or older and other high-risk populations of HIV and other STIs within Tanzania. The data included FSWs within specific regions of Tanzania, Dar es Saalam and Shinyanga, (USAIDS, 2020). Also, the dataset may exclude a specific age range that can be vital to

this analysis based on a response that was not accounted for. Based on the data, my analysis was generalized to FSWs selected from specific venues within Tanzania. The analysis results from this study will provide a quantitative understanding of how different perpetrator types influence or impact the relationship of condom use and GBV amongst FSWs in Tanzania. The outcome of this study may imply that there is not a difference in the above-mentioned relationship regardless of perpetrator type partner. Regardless of the matter, the knowledge obtained can be applied and examined in other countries where sex workers are at increased risk of HIV.

Limitations

Data were originally captured for a purpose other than the designated research questions for this study. As such, not all variables of interest are available at the most desirable measurement levels or format. Cross-sectional study designs are limited in how much value it contributes in research. Experimental and analytical observational designs (such as cohort and case-control) are preferred to establish claims. Other limitations include participant self-report when completing the initial survey. Self-report can result in potential bias in the study results. Subjects may have chosen a more socially acceptable answer rather than being truthful and accurate. In addition, recall bias can interfere if situations the survey refers to could have been something from the past or a traumatic experience the participant is trying to forget. Leading questions were avoided, and the time for recalling situations was limited to a specific timeframe to reduce self-reporting bias. Lastly, some responses within the survey are assumed to be inferred in that there is no clear response, which can impact the reliability of study results. The data collected

included specific perpetrator types (e.g., non-paying casual, non-paying regular, paying partner) and did not account for other types outside this research study. Therefore, further studies may be needed to examine other perpetrator types.

Significance of the Study and Implications for Positive Social Change

HIV status among Tanzanian FSWs is a significant public health concern. Encouraging SWs to utilize HIV preventative services to get tested and obtain preventative care is one of the leading contributing factors to FSWs seroconversion status (Nnko et al., 2020). Despite being aware of its importance, there remains a deficit in the uptake of HIV prevention services amongst sub-Saharan Africa (Nnko et al., 2020). This is primarily due to the stigma associated with being a FSW, being fearful of one's life in the event that their HIV status is revealed and being fearful of what may happen (increased risk for GBV) if they mention preventative measures (e.g., condoms) with a particular perpetrator partner (Nnko et al., 2020). Understanding the role of perpetrator types and their influence between GBV and condom use can provide a positive social change. It can encourage the utilization of HIV prevention services to aid in utilizing protective measures that can lower HIV risk amongst this high-risk population.

This study is significant because research on perpetrator-type clients of Tanzanian FSWs and their influence on the relationship between consistent condom use and GBV is limited. The study provided additional information on how perpetrator-type factors and alcohol and/or substance use contribute to GBV and its effects on FSWs sexual health risk behaviors and HIV and STI status. The study can contribute to public health by providing evidence on possible factors that can contribute to the use of condoms and

other preventative methods. It can provide a foundation for future research on whether perpetrator types vary in their influence over the relationships between GBV and condom use, and how substance use (specifically alcohol use) influence this affect to further examine what causes those differences for a specific perpetrator type to have more of an influence than the other. This study's findings may foster the development of interventions that promote female condoms alone in the absence of male condoms when condom use is not open for negotiation. Findings can also assist with suggestions for future interventions and the services being offered.

Conclusion

FSWs are disproportionately at risk for HIV and the spread of the virus (Decker et al., 2019). Their profession exposes them to GBV and substance use (including alcohol), both of which contribute to their increased HIV status. These factors are barriers to negotiation measures for condom use with clients and other forms of perpetrators (Tounkara et al., 2014). In most cases, research has only looked at these associations by examining specific partner types, such as non-paying regular. Given that there are different perpetrator types, it is clear that researchers need to better understand how perpetrators contribute, as they all play a meaningful role (whether positive or negative) in terms of understanding HIV acquisition among Tanzanian FSWs.

This study fills this gap within the literature by assessing multiple perpetrator types in terms of their relationship with condom use and GBV as well as how alcohol and other substances increases this risk. Findings from this study could give researchers a better understanding of whether perpetrators vary in terms of their influence over the

relationship between GBV and condom use and how alcohol and other substances influence this effect. In all, study findings may foster development of interventions that could ensure more positive protective measures when FSWs are engaging with partners.

Section 2: Research Design and Data Collection

Introduction

The purpose of this study was to look at whether the relationship between GBV and condom use among FSWs in Tanzania is influenced by perpetrator type and substance use, including alcohol. Within this chapter I detail the research design and rationale and the methodology of the study, which includes sample size, data analysis, threats to validity, and ethical considerations.

Research Design and Rationale

A quantitative secondary analysis of data from a cross-sectional study, provided by JHPIEGO ,that assessed treatment of STIs amongst SWs was used for this study. Key variables for RQ1 were GBV, and perpetrator type as the independent variables, and condom use as the dependent variable. For RQ2, the independent variables are GBV, perpetrator type, and substance use, including alcohol. The dependent variable under consideration is condom use. For RQ2, alcohol and other substance use were assessed as covariates to determine influence on condom use.

Using secondary data is more cost-efficient than collecting and using primary data; it can also shorten the study process since data are already collected (Payne & Payne, 2004). One consideration in using secondary data is to ensure that the sample is large enough and representative of the study population.

Additional knowledge regarding Tanzanian FSWs and HIV risks can be obtained based on analysis of variables. This can contribute to the delivery of more efficient risk reduction services to this population.

Methodology

This section includes a description of the study population, sample size, and procedures that were used to collect data based on the dataset and materials provided from secondary sources. I also discuss instruments, operationalization of variables, and the data analysis plan.

Study Population

The study population of this study was FSWs in Tanzania who were 18 and older. Due to barriers in terms of having access to healthcare (e.g., stigma as a result of occupation and fear of violence and discrimination) there is a reluctance from FSWs in terms of seeking treatment and services, which contributes to the increase in HIV cases among Tanzanian FSWs (Nnko et al., 2020).

I looked at FSWs specifically within Tanzania. FSWs were recruited from two different regions within Tanzania, Dar es Salaam and Shinyanga. Both cities have the highest number of FSWs within Tanzania (Nnko et al., 2019). Dar es Salaam is the largest city in Tanzania. Shinyanga is one of the smaller cities that includes tea plantations and mining sites, making this location a high-traffic area for FSWs (Nnko et al., 2019).

Sampling and Sampling Procedures

The data used for this study was generated for the use of another study. The original collectors ,JHPIEGO, used a non-probability sample method for the sampling strategy. Non-probability sampling is when the probability of a volunteer being selected

for a sample cannot be calculated as part of the sample (Statistics How To, 2021). Venue-based recruitment was done by going to venues FSWs often used when working.

For FSWs to qualify and be able to participate in this study, they had to meet specific eligibility criteria. For this study, 1,502 FSWs were recruited. Participants had to be 18 or older, referred from preselected recruitment venues, and sexually active within the last 6 months. Half of their reported income was generated from sex work. If FSWs were intoxicated or used recreational drugs, they were excluded from participating.

The dataset is from the JHPIEGO, which can be made available to approved research institutions upon request. In order to request access, a form was completed where questions regarding reasoning for the request and use of data were answered. Documentation of IRB approval was submitted. Upon approval, the dataset became available with terms of restriction (could only be used for this study) from the JHPIEGO. The dataset could have also been requested by having a supervised faculty member submit a detailed email stating the purpose of the study and reasoning for the request.

The dataset requested from the JHPIEGO includes the study population for this study. The original study was conducted in Tanzania in 2020, and data were still valid for secondary analysis. Data were captured using an electronic data capturing system, Medidata. SPSS was used to analyze data, check for missing data, and recoding. Overall, the given dataset is a reliable source for producing valid information that can contribute to this research.

Power Analysis and Sample Size

Sample size plays a crucial role in research. Larger sample sizes lead to more accurate results in terms of conclusions; however, this can be time-consuming and costly in primary studies (Creswell & Creswell, 2018). I examined associations between the specified independent and dependent variables using power analysis to help determine appropriate estimations for my target sample size.

GBV was measured as a nominal variable. Condom use was measured as a categorical binary variable with two levels: yes or no. In an article by Decker et al. (2016), the sample size of 1,817 was used to examine the number of FSWs who experienced GBV and inconsistent condom use (ICU). Based on results, 1,098 FSWs experienced GBV alone, and 65% of those who experienced GBV also engaged in ICU, with an adjusted odds ratio of 1.49 and 95% CI [1.18-1.87]). Using the preliminary figures within G-Power 3.1.9. 2 software at 80% power and 5% type 1 error rate, the requisite sample for this study was determined to be 937 FSWs. The sample for this secondary research consisted of 1,502 FSWs participants.

Instrumentation

For this study, I used data provided by JHPIEGO. Data were collected in 2019 and later published by USAID in 2020. The instrumentation used for collecting this data was a survey that was administered to FSWs during periods within the observational study. Although data were accessible to the public, results from the primary study that collected the data are not available.

Operationalization of Variables

The dependent or outcome variable in this study is condom use. The independent variables include GBV, perpetrator type, and alcohol use.

Dependent Variable

In using the secondary data from JHPIEGO, whether or not a FSW used a condom with their perpetrator type partner (i.e., non-paying regular, non-paying casual, and paying partners) was used as my dependent variable. This variable was coded as a binary categorical variable to include 1 (or Yes) if the respondent indicated having used condom with any partner and 2 (or No) if indicated otherwise.

Independent Variables

GBV is considered a binary categorical variable, with the response of yes or no to acts of GBV. GBV was combined using acts of sexual, physical, and emotional acts of abuse. Any participant who documented experiencing one of the above mentioned acts was considered to have experienced GBV. It was coded as 1=Yes and 2=No.

Perpetrator type was defined by three separate binary categorical variables: regular non-paying, casual non-paying, and paying partners. Respondents were originally quarreled separately on whether condoms were used with each of these perpetrator type partners. For the purpose of this analysis, they were coded as 1= having reported 0-1 partner and 2= having reported 2 or more partners. These 3 types could not be combined into a single variable because they were not mutually exclusive. A FSW could have more than one type of partner.

Within the given study, the role of alcohol and substance use was captured separately. Both variables were combined into a single binary categorical variable that assessed whether they reported the use of any substance during sex. This was coded as 1=Yes and 2= Otherwise (No).

Marital status was assessed in other studies and was one of two that were mentioned within the secondary data set used for this study. This categorical variable was originally coded with four separate categories, divorced/widowed/separated, single, polyamorous marriage, and monogamous marriage. For the interest of the study this categorical variable was recoded to have three separate categories, divorced/widowed/separated, single, and married and was coded as 1, 2 and 3, respectively.

Employment status was also looked at given previous literature. The categorical variable originally was coded to reflect four responses, employed, self-employed, unemployed, and casual labor. For the purpose of this study, the variable was recoded as employed, unemployed, and casual labor and was denoted 1, 2 and 3.

Data Analysis Plan

Data management and analyses was conducted using SPSS, version 25. Utilizing SPSS, one can access the data, perform data exploration and validity checks, prepare data for analyses (data manipulation) and subsequently perform data analysis. This platform has advanced statistical analysis modules, offering the capability to assess the relationships inherent in the research questions.

Data Management

The data for this study was downloaded from a granted accessed portal provided by JHPIEGO and imported into SPSS, retaining only the variables relevant for analyses. Using the explore tab, each of the variables were examined for accuracy, assessed for missingness, and determined if there were any abnormalities within the data. This data exploration and integrity check will help us determine the validity of the data. Variables were recoded as mentioned above to make suitable for analyses. This included recoding inappropriate responses to missing and collapsing certain levels of categorical variables.

Data Analyses

The first step in analyzing the data entailed conducting a complete descriptive statistic of the analytical sample. Since all the variables inherent in this study are categorical, descriptive statistics included performing frequencies of each variable, reporting n (%).

Research Questions and Hypotheses

The following RQs and hypotheses was developed for the purpose of this study:

RQ1: Does perpetrator type of clients of Tanzanian FSWs affect the relationship between GBV and condom use?

H_o1: Perpetrator type of clients of Tanzanian FSWs does not affect the relationship between GBV and condom use.

H_a1: Perpetrator type of clients of Tanzanian FSWs affects the relationship between GBV and condom use.

Pearson's Chi-square, correspondingly, Fisher's exact test (for small cell counts) was used, preliminarily, to assess the existence of a 3-way relationship between perpetrator type, GBV and condom use, pairwise, reporting the p-value for statistical significance.

The main relationship between GBV and condom use was examined using binary-logistic regression, generating crude odds ratios (OR) and the associated 95%CI. The actual research question was analyzed using a multi-variable logistic regression model that assesses the likelihood that FSWs who experienced GBV will report using condoms while controlling for the specific perpetrator type they were subjected to, generating adjusted odds ratio (AOR) and the corresponding 95% CI.

RQ2: Does alcohol and/or substance use influence the relationship between GBV and condom use among various perpetrator clients of Tanzanian FSWs?

H_o2: Alcohol and/or substance use does not influence the relationship between GBV and condom use among various perpetrator clients of Tanzanian FSWs.

H_a2: Alcohol and/or substance use influences the relationship between GBV and condom use among various perpetrator clients of Tanzanian FSWs.

A similar statistical plan was implemented for RQ2, using Pearson's chi-square test (or Fisher's exact test for small cell counts) to assess, preliminarily, how substance use relates to each of perpetrator type, GBV, and condom use. The main analysis for RQ2, also employed a multi-variable logistic regression model that assessed the likelihood that FSWs who experienced GBV reported using condoms while controlling for the specific perpetrator type they were subjected to as well as their use of illicit

substances (including alcohol). The desired outcome for this analyses was also adjusted odds ratio (AOR) and the corresponding 95% CI. Furthermore, the influence of social demographics such as employment and education, were also be explored using multi-variable logistic regression.

Statistical significance for each analysis was assessed at the 5% level of significance. The basic assumption for each of these analyses is that the dependent variable is binary categorical (nominal), which was assessed and assured at the data manipulation phase. In fact, all the variables in the anticipated analyses were expected to be categorical and appropriate for the proposed analytical plan.

Threats to Validity

Threats of validity within quantitative research are based on the determination that one can draw meaningful and helpful inferences based on scores from the instruments used during analysis (Creswell & Creswell, 2018). When assessing the research, there are three forms of validity to look for, content validity (do the items measure the correct content that is intended?), predictive validity (Are scores predictive of a specific measure? Is there a correlation amongst the results?), and construct validity (Are the items measuring hypothetical constructs or concepts? [Creswell & Creswell, 2018]). Knowing the validity of the instrument used helped determine whether or not the chosen instrument is good for this research.

There are multiple threats to validity that can cause concern in determining whether the chosen variables affect the outcome and not another factor (Creswell & Creswell, 2018). With that being said, external, internal, and statistic conclusion validity

were assessed to ensure threats are minimized—the main threats to account for include both internal threats and external threats.

Internal Validity Threats

Internal validity threats, the procedures during research that can impact the correct inferences from the data, will be discussed and accounted for in this section. Possible threats include history, regression to mean, and instrumentation.

History can impact the validity of this study due to time passing between the time of multiple sexual encounters and the time the questionnaire is administered to FSWs within the original study. This could interfere with FSWs recalling encounters, the specific type of perpetrator the encounter was with, and whether it was a protected or unprotected encounter. Possible events could take place that may influence their response (Creswell & Creswell, 2018). Within the original study, this was accounted for by ensuring that the timeframe in which FSWs had to recall was kept within a specific range and that they have had encounters within the last six months prior to enrolling in the original study.

Regression to the mean is a result of selecting participants whose responses lean towards the mean of the study (Creswell & Creswell, 2018). As a result of the original study, FSWs could have been selected based on their sexual history, which could be favorable to the intended outcome. In accounting for this, previous researchers ensured to select FSWs from different pre-selected venues.

External Validity Threats

External validity threats occur when incorrect inferences are drawn based on the sample data (Creswell & Creswell, 2018). Specific external threats to account for would be a sample bias, Hawthorne effect recall bias, and selection bias.

Sampling bias is when the sample is not a good representation of the identified population (Siegle, 2015). It can limit the generalization of the findings by only accounting for a particular group (Siegle, 2015). The particular focus for this given data is that pre-screening and advertising within specific venues took place. This can interfere with the results. FSWs may have already decided that they wanted to adopt better protective measures to reduce their chances of contracting STIs; therefore, behaviors may have been altered prior to participation. As a result, the method of sampling used, non-probability sampling, further increases the risk of sampling bias, given that there is no random selection of FSWs. In mitigating this issue, the original researchers had to ensure that the right questions were asked within the survey to capture the pertinent information that will help with the validity and accuracy of the results to answer the given research question.

Hawthorne effect can occur once the studied participant is in a research study and understands that their behavior is being observed (Siegle, 2015). As a result, this makes room for the studied population, FSW, to alter their sexual behavior (not participate in the number of at-risk behaviors as usual) while participating because they know the researcher is observing them. To avoid this, participants were ensured that their responses to surveys and participation within the study were entirely confidential.

Threats to Construct

There is much ambiguity within threats of construct, mainly how it can be defined and how the constructs relay to one another (Trochim, n.d.). The way variables are measured and defined can be a threat to construct validity (Trochim, n.d.). In this study, this was minimized by utilizing the data dictionary and a report JHPIEGO that provides the true meaning of each variable within the survey and how they are defined and measured.

Ethical Procedures

The given dataset is restricted for public use and requires access by the data administrative owner. Public use is restricted until approval is granted. Approval is granted for research purposes only, specific terms will apply, and the dataset is available under the terms of a restricted license from JHPIEGO. The data owner already had identifiers removed before granting access to this study. In addition, any variable that was a potential identifier was removed from public use or was aggregated. The data access was limited to the researcher only. Specific terms were provided on how long access will be granted for the purpose of this study and what is needed to ensure that all data is removed from the designated devise used during analysis.

Summary

For this study, a quantitative secondary analysis was used to determine if the relationship between GBV and condom use among FSWs in Tanzania is influenced by perpetrator type and, subsequently, substance use (mainly alcohol). Using SPSS, binary logistic regression was used to examine the relationship between GBV and condom use

and multivariable logistic regression was used to assess effects of perpetrator type and substance use on these relationships. Outcomes from analysis included odds ratio and the adjusted odds ratios, along with corresponding 95% confidence intervals. In Section 3, results from data analysis are presented.

Section 3: Presentation of the Results and Findings

Introduction

This study was conducted with the goal to examine if perpetrator type and substance use (including alcohol) affect relationships between GBV and condom use among Tanzanian FSWs. Understanding how these factors impact this relationship will help lower the number of HIV cases within this population. Within this study, two RQs were answered:

RQ1: Does perpetrator type of clients of Tanzanian FSWs affect the relationship between GBV and condom use?

H_o1*:* Perpetrator type of clients of Tanzanian FSWs does not affect the relationship between GBV and condom use.

H_a1*:* Perpetrator type of clients of Tanzanian FSWs affects the relationship between GBV and condom use.

RQ2: Does alcohol and/or substance use influence the relationship between GBV and condom use among various perpetrator clients of Tanzanian FSWs?

H_o2*:* Alcohol and/or substance use does not influence the relationship between GBV and condom use among various perpetrator clients of Tanzanian FSWs.

H_a2*:* Alcohol and/or substance use influences the relationship between GBV and condom use among various perpetrator clients of Tanzanian FSWs.

In this section, data analysis methods are presented. Then, results of descriptive and inferential statistics are presented. The section concludes with a brief summary of results and how they relate to the RQs.

Accessing the Data Set for Secondary Analysis

Data collection took place between May 2018 and August 2019 on FSWs in Tanzania. Analysis was done on the FSW subsample from the JHPIEGO. The subsample consisted of 1502 FSWs. While sampling was not random, the large sample size hopefully ensured representativeness. There was one dependent variable and three main independent variables. All dependent variables were binary categoric variables. Two control variables were assessed: marital and employment status. These variables were not of interest in terms of answering the RQs, but were included in the models to control for them. To assess relationships between these variables, the multi-variable logistic regression approach was used. First, descriptive statistics were done to assess all given variables. Then, to assess the relationship between GBV and condom use, a binary logistic regression model was used followed by multivariable logistic regression to assess the effects of perpetrator type and substance use on these relationships.

Results

Descriptive Statistics

The sample description was based on a sample size of $n = 1502$. In order to display all categorical variables, frequency tables were used.

Condom use of FSWs in Tanzania was reported in Table 1. 54.0% ($n = 811$) of FSWs reported using condoms, while 17.5% ($n = 172$) never used them, and 34.6% ($n = 519$) did not answer. Number of participants who reported having experienced GBV can also be seen in Table 1. 89.4% (n = 1343) of participants did not experience GBV, while 10.6% ($n = 159$) did experience it. Furthermore, 58.3% ($n = 875$) of participants used

alcohol and drugs during their last sexual encounter, while 41.7% (*n* = 627) did not (see Table 1).

As shown in Table 1, 59.4% of participants (*n* = 892), reported having at most one regular non-paying partner. 65.5% of FSW participants (*n* = 983) had no more than one paying partner, and in terms of casual nonpaying partners, they were split relatively equally, with 38.3% (*n* = 575) having one or none and 27.2% (*n* = 408) having more than one partner. Due to all 983 participants having more than one paying partners, this variable was not used in further analyses. It was, however, included in the univariate model, coded as 1 = more than one and 2 = missing, to see if there were differences in terms of condom use between participants who reported their number of paying partners and those who did not.

Out of all participating FSWs, 984 (65.5%) reported being single, 44 (2.9 %) married/cohabiting, and 474 (31.6%) either divorced, separated, or widowed.

Lastly, the participants' employment status was assessed (Table 1). As can be seen, 48.1% FSWs were employed (including self-employed), 15.8 % also did casual labor, and 36.1% stated they were unemployed

Table 1

Distribution [n(%)] and likelihood (odds ratio (OR), 95% Confidence Interval (CI), and p-value) of condom use based on GBV, perpetrator type and other variables among FSWs in Tanzania (n=1502)

Variable		Total n (%)	CU | Yes n (%)	No	OR (95% CI)	p-value
Condom Use	Yes	811 (82.5)	_	_	--	--
	No	172 (17.5)	_	_		
GBV	Yes	159 (10.6)	69 (84.1.)	13 (15.9)	1.14 (0.61-2.11)	0.68
	No	1343 (89.4)	742 (82.4)	159 (17.6)	REF	
Casual non-paying partner	0-1	575 (58.5)	450 (78.3)	125 (21.7)	2.13 (1.48-3.07)	<.001
	2+	408 (41.5)	361 (88.5)	47 (11.5)		
Regular non-paying partner	0-1	892 (90.7)	730 (81.8)	162 (18.2)	1.80 (0.91- 3.55)	0.09
	2+	91 (9.3)	81 (89.0)	10 (11.0)		
Paying Partner	0-1	--	--	--	--	--
	2+	983 (100.0)	--	--	--	--
Drug/Alcohol	Yes	875 (58.3)	473 (82.0)	104 (18.0)	0.91 (0.65- 1.28)	0.60
	No	627 (41.7)	338 (83.3)	68 (16.7)		
Employment	Employed	722 (48.1)	331 (82.8)	69 (17.3)	1.06 (0.68-1.44)	0.02
	Casual Labor	238 (15.8)	195 (83.0)	40 (17.0)	1.08 (0.64-1.51)	
	Unemployed	542 (36.1)	285 (81.9)	63 (18.1)	REF	
Marital Status	Single	984 (65.5)	422 (77.9)	120 (22.1)	1.34 (0.50- 2.18)	
	Divorced/Widowed/Separated	474 (31.6)	368 (89.3)	44 (10.7)	3.19 (2.31- 4.06)	
	Married/Cohabiting	44. (2.9)	21 (72.4)	8 (27.6)	REF	<.001

Note. CU = condom use, OR = odds ratio, CI = confidence interval. Percentages of CU category: Out of n=1502 responses, n=519 were labeled missing due to missing responses . CU yes and no values are based on FSWs response for each category and do not reflect the overall sample, given missing responses.

Bivariate Analyses

To assess bivariate relationships between the predictor as well as socio demographic variables and condom use, odds ratios their confidence intervals were calculated, along with Chi-squared p-values for independence between variables. As seen in Table 1,159 FSWs experienced GBV. Of those, only 82 (51.6%) answered questions regarding condom use, among whom 69 (84.2%) reported using condoms. FSWs who reported having experienced GBV had a 14% increase of reporting using condoms during sex compared to those with no similar experience (*OR* = 1.14, 95% CI: 0.61-2.11). However, this was not statistically significant (p = .68). When examining respective perpetrator types (i.e., casual non-paying, regular non-paying, and paying partners), more FSWs reported having zero to one partner for both casual non-paying and regular non-paying partners as opposed to two or more. This was not the case with paying partners, among whom all (n = 983) selected two or more partners. Those who reported having at most one casual nonpaying partner were two times more likely to use condoms with their partner compared to those who reported having more than one partner (*OR* = 2.18, 95% CI [1.48-3.07]). This was the only statistically significant predictor (p = <.001). FSWs who reported at most one regular non-paying partner were 1.80 times more likely to use condoms compared to those who reported having more than one regular non-paying partner (*OR* = 1.80, 95% CI [.91-3.55]), but this was not statistically significant (p = .09). Lastly, among those who had paying partners, none reported having zero to one. All (n = 983) reported having at least two partners. When looking at substance use, those who used alcohol and other substances were less likely to use condoms, with 9% reduced odds

(*OR* = .91, 95% CI [.65- 1.28]); however, this was also not statistically significant (*p* = .60).

For demographic variables that had more than two categories, relative frequencies were also determined (see Table 1), along with the chi-squared independence test. It was determined that both marital status and employment status had a significant effect on condom use, with it being preferred amongst those who are single and employed. Table 1 also indicated that FSWs who were divorced, widowed, or separated had greater odds (*OR*= 3.19, 95% CI [2.31-4.36]) in using condoms compared to those who were single (*OR*= 1.34, 95 % CI [.50-2.18]). Lastly, those that are employed showed an *OR* of 1.06 signifying that employed SWs have a slightly higher chance of using condoms compared to those that are unemployed.

Multivariable Analyses

To assess the cumulative effect of the variables of interest on condom use, five multiple logistic regression models were created.

First, to look at RQ1, GBV was assessed to see its sole capability in predicting condom use. The model was not statistically significant ($\chi 2$ (1) = 0.171, *p* = .679). Thus, GBV is not able to predict condom use by itself. Second GBV and the number of each type of perpetrator partner as predictors, and condom use as the criterion was assessed (see Table 2). The model was statistically significant ($\chi 2$ (3) = 19.804, *p* < .001) and had a Cox & Snell R^2 of .020 and Nagelkerke R2 of .033. As shown In Table 2, the only statistically significant predictor was the number of casual non-paying partners. FSWs who had zero to one casual non-paying partner were two times more likely to use

condoms compared to a FSW who stated otherwise (*OR*=2.08, 95% CI [1.44-3.00]). In addition, table 2 showed that those who reported experiencing GBV had a 12% increase in using condoms after adjusting for perpetrator types. Although the magnitude of that affect reduced from 14% (seen in table 1) to 12% odds, the statistical significance remains the same—there was no change.

Table 2

Relationship Between GBV and Condom Use Given Perpetrator Partner Types

Variable	B	S.E.	Wald	df	p-value	AOR	95% CI	
							Lower	Upper
GBV	0.1	0.3	0.1	1	0.72	1.12	0.60	2.10
Casual non-paying partners	0.7	0.2	15.4	1	0.00	2.08	1.44	3.00
Regular non-paying partners	0.4	0.4	1.5	1	0.22	1.53	0.77	3.05

Table 3

Relationship Between GBV and Condom Use Given Perpetrator Partner Types and the Influence of Drug/Alcohol Use

Variable	B	S.E.	Wald	df	p	AOR	95% CI	
							Lower	Upper
GBV	0.1	0.3	0.1	1.0	0.72	1.12	0.60	2.09
Casual non-paying partners	0.7	0.2	15.4	1.0	0.00	2.08	1.44	2.99
Regular non-paying partners	0.4	0.4	1.5	1.0	0.23	1.53	0.77	3.04
Drugs and/or alcohol use during sex	-0.1	0.2	0.2	1.0	0.67	0.93	0.66	1.30

In reference to RQ2, GBV and drug and alcohol use as the independent predictors, were examined (Table 3). The model was not statistically significant (χ^2 (2) = 0.437, p = .804). Thus, GBV and alcohol/drug use cannot predict condom use.

Table 4

Demographic Factors and the Relationship Between GBV and Condom Use Given Perpetrator Types

Variable	B	S.E.	Wald	df	p	AOR	95% CI	
							Lower	Upper
GBV	0.1	0.3	0.1	1	0.80	1.08	0.57	2.02
Casual non-paying partners	0.6	0.1	12.6	1	0.00	1.96	1.35	2.83
Regular non-paying partners	0.6	0.4	2.5	1	0.11	1.75	0.88	3.51
Unemployed			0.1	2	0.94	REF		
Employed	-0.1	0.2	0.1	1	0.73	0.94	0.64	1.38
Casual labor	-0.01	0.2	0.0	1	0.97	0.99	0.63	1.55
Married			21.3	2	0.00	REF		
Single	-0.3	0.4	0.4	1	0.52	0.75	0.32	1.77
Divorced/Separated/ Widowed	-1.1	0.5	6.3	1	0.01	0.32	0.13	0.78

Next, GBV, the number of various types of partners, and demographic variables (employment and marital status) were looked at. The model was statistically significant ($\chi 2$ (7) = 42.973, p = <.001) and had a Cox & Snell R^2 of .043 and Nagelkerke R^2 of .071. As can be seen in Table 4, it showed significant predictive power of the number of casual non-paying partners and marital status. The casual non-paying partners variable had an *AOR* over 1, which indicates that participants who had two or more casual non-paying partners had an *OR* for condom use 1.96 times smaller than those who had one or none

casual non-paying partners. Furthermore, the marital status showed that the *AOR* for the divorced, widowed, or separated participants is 0.32, indicating that they have 0.32 times the odds ratio of not using condoms compared to married or cohabiting.

Lastly, GBV, drug and alcohol use, number of casual and regular non-paying partners, and demographic information (marital and employment status) was assessed (Table 5). The model was statistically significant (χ^2 (10) = 50.990, p = <.001) and had a Cox & Snell R^2 of .051 and Nagelkerke R^2 of .084. The statistically significant variables were casual non-paying partners and marital status, the same as Table 4. Their effects were also the same as depicted in Table 4.

Table 5

Role of Demographic Factors on the Relationship Between GBV and Condom Use Given Perpetrator Types and Use of Alcohol/Drugs

Variable	B	S.E.	Wald	df	p	AOR	95% CI	
							Lower	Upper
GBV	0.1	0.3	0.04	1	0.83	1.07	0.57	2.02
Casual non-paying partners	0.7	0.2	12.6	1	0.00	1.96	1.35	2.83
Regular non-paying partners	0.6	0.4	2.5	1	0.12	1.75	0.87	3.50
Drugs and/or alcohol use during sex	-0.04	0.2	0.1	1	0.82	0.96	0.68	1.35
Unemployed			0.1	2	REF			

Variable	B	S.E.	Wald	df	p	AOR	95% CI	
							Lower	Upper
Employed	-0.1	0.2	0.1	1	0.74	0.94	0.64	1.38
Casual labor	-0.0	0.2	0.0	1	0.97	0.99	0.63	1.55
Married			21.2	2	REF			
Single	-0.280	0.4	0.4	1	0.52	0.76	0.32	1.77
Divorced/Separated/Widowed	-1.1	0.5	6.3	1	0.01	0.32	0.13	0.78

Summary

There was a 14% increased odds FSWs in Tanzania who reported experiencing GBV also reported using condoms during sex. While neither of these relationships were statistically significant, inclusion of perpetrator types in the model resulted in a slight reduction to 12%, while alcohol/substance use led to no further change (12% increased odds). Further controlling for sociodemographic, specifically marital status and employment resulted in a slight reduction of the likelihood to 7% increased odds., which was again not statistically significant.

Section 4: Application to Professional Practice and Implications for Social Change

Introduction

This study was done using secondary data analysis to determine whether perpetrator types and substance use affected the relationship between GBV and condom use among Tanzanian FSWs. Analysis for the study involved using a cross-sectional design to evaluate approaches for reducing STIs among this population. Variables that were assessed in this study included condom use as the dependent variable and GBV, perpetrator types, and substance use as independent variables. Analysis was conducted using multivariable logistic regression to assess the relationship between GBV and condom use while controlling for the specific perpetrator type and alcohol/substance use as well as sociodemographics (marital status and employment).

Summary of Key Findings

Within the given study, three categorical independent variables (GBV, perpetrator types, and alcohol use) and one categorical dependent variable (condom use) were assessed to determine if perpetrator types played a role on the relationship between GBV and condom use (RQ1), and if alcohol use further influenced this role (RQ2) while considering marital and employment status. Frequencies of answers regarding condom use with different perpetrator types showed that paying partners had the highest response, with $n = 983$ (65.5%). Regular non-paying partners were relatively lower, at $n = 892$ (59.4%). Casual non-paying partners were the group where the least number of condoms were used, with $n = 575$ (38.3%). As mentioned previously, all missing values were

excluded from further analyses. In examining general demographic variables, marital and employment status, descriptive statistics were used to obtain frequencies for each variable. Results indicated that 65.5% of FSWs were single, with 31.6% reported divorced, widowed, or separated and 2.9% who reported being married. When assessed employment status, 36.1% of FSWs reported being unemployed, while 15.8% did some form of casual labor.

Based on results, no significance was shown to support that GBV influenced condom use ($\chi 2$ (1) = 0.171, p = .679). The chances of condoms being used between FSWs and casual nonpaying partners were low for FSWs who had more than two partners (*OR* =2.08, 95% CI [1.44- 3.00]) compared to those that had none to one partner. This variable was the only statistically significant predictor of condom use out of all independent variables assessed. However, marital status also significantly affected condom use. Furthermore, when assessing alcohol use and GBV, no significance was found ($\chi 2$ (2) = 0.437, p = .804); alcohol and other substance use did not predict condom use. Lastly, when looking at all independent variables and accounting for variables in relation to condom use, the model was statistically significant ($\chi 2$ (10) = 50.990, p = <.001). Given results, a more representative sample is needed to show this relationship between GBV and condom use.

Interpretation of Findings Compared to Peer-Reviewed Literature

Many FSWs have experienced GBV, which has contributed to increased rates of HIV within Tanzania (Lang, 2013). This is a result of inconsistent condom use among FSWs and their perpetrator type partner (Hendrickson, 2018). Although results of current

analyses were indicative of an increased likelihood that FSWs who reported GBV would also report using condoms during sex, this association was not statistically significant. This analysis might have been underpowered. Many FSWs within the secondary data set did not report GBV that further reduced the size of the analytical sample.

Perpetrator Type. Based on previous literature, there is a need for researchers to understand how perpetrator types affect factors that contribute to FSWs HIV status. Lang et al. (2013) mentioned the need to gain a better perspective on the differences amongst perpetrator types in their contribution to GBV and high-risk sexual behaviors that put SW at increased chances of contracting HIV. Studies, such as the one conducted by Lang et al. have assessed these factors by looking at one form of perpetrator type (i.e., paying partners) and not others (Decker et al., 2014). Although not statistically significant, the odds of FSWs using condoms during sex when experiencing GBV was 2% less (showing a slight change) when perpetrator types were accounted for. There is a chance perpetrator types play a role in relationships between GBV and condom use, again given the possibility of the analysis being underpowered.

Substance Use. Previous literature examined the role substance use and alcohol played in consistent condom use as well as GBV against FSWs and concluded that it was a significant predictor in the use of condoms by FSWs (Rastogi et al., 2014). Within this analysis, there was no relationship found between use of alcohol and other substance use and condom use. Again, this was not statistically significant, and the analysis could be underpowered, meaning there is a chance it could confirm that alcohol and substance use does play a role in condom use.

As previously mentioned, there was an increased likelihood of use of condoms with GBV experience, even though there was no statistical significance. The odds were less in terms of using condoms when experiencing GBV after accounting for perpetrator type; however, this was not statistically significant as well. Further analyses with a more representative sample are needed to confirm and add to current knowledge regarding the topic.

Interpretation of Findings Based on Theoretical Concept

The theoretical frameworks for this study were the theory of reasoned action and theory of planned behavior. Intentions to perform specific behaviors result from individuals' attitudes towards engaging in said behavior after considering one perceived social norm about the behavior (Morrison et al., 2008). Both theories can be adapted to contextualize condom use in terms of FSWs and perpetrator type. Use of condoms varies based on partner or perpetrator type. Although there was not a relationship found between the variables assessed in this study, prior research has shown a relationship between them. If the TRA and TPB were applied to the use of condoms, it would suggest FSWs attitude against using protection could be based on their belief that they would experience GBV from a perpetrator type.

Within this research, multiple regression analyses confirmed the relevance of the TRA and TPB by accounting for a variance in condom use among perpetrator types based on marital status. Condoms were not used between FSWs who had more than two casual non-paying partners because the subjective norm (Albarracin, Johnson, Fishbein, & Muellerleile, 2001) of those considered important (the perpetrator type partner beliefs

could be adopted as important given that they are clients and impact the work the SW does) think that condoms should not be used when engaging in sexual behaviors with them. Another perspective could be the attitude toward not using condoms could be based on the belief that using or suggesting a condom could influence a specific outcome that the SW may be trying to avoid (e.g., GBV or losing a prospective client). In addition, FSWs social norms and perceived attitudes toward the violent behavior had a positive or negative impact on their intent to use condoms with respective perpetrator types. The fact that FSWs were more inclined to use condoms after being divorced, widowed, or separated, compared to single, could be a result of having better outlooks or positive attitudes, perceived stronger norms, and having stronger intentions towards using condoms with partners based on previous experiences. Because of previous marital status, condom use could be influenced based on FSWs attitudes involving having to protect themselves and their marital partners.

These findings exemplify the need for public health officials to generate HIV prevention interventions specific to FSWs and factors that may contribute to their beliefs about using condoms. Work and attitudes toward using condoms play an essential role in terms of reducing risky sexual behaviors among this group.

Limitations

There were a few limitations that were consequences of data collection. There were no participants with one or none paying partners, which led to an inability to utilize this variable in subsequent analyses. The main variable of interest, gender-based violence, was prevalent in only 10% of the sample, thus making its variance lower, resulting in a

lower potential for covariance with other variables. The variable condom use also resulted in a lower variance because of 20% non-missing participants not using condoms. Questions within the secondary data were not well delineated to allow for a clear definition or operationalization of the variables, specifically perpetrator types and condom use.

While there is no reason to believe that the answers are systematically missing, which would skew the results of the analyses in any way, not having as many missing answers would undoubtedly increase the power of the analyses. It may be that the lack of effect was due to a lack of power. However, this could not have been avoided, since it is very plausible that many of the FSWs in the sample simply did not have sexual relations with a certain type of partner in the given timeframe and thus did not have anything to report in response to the questions. Lastly, marital and employment status were the only two demographic variables assessed within this study, as other variables such as HIV status, were not available and could not be looked at to determine its possible effects on the given variables.

Future studies should aim to collect samples in which the participants varied more on the phenomena of interest to reliably explore the relationships amongst these variables.

Recommendations

This research study used secondary data to examine the influence of perpetrator type and substance use on the relationship between GBV and condom use. As a result of missing responses within the dataset, further research is needed with a more

representative sample to determine this influence between the dependent and independent variables within this study. As a result of condom use varying based on perpetrator types (i.e., regular non-paying, casual non-paying, and paying partner) future researchers may want to assess this using a larger sample size and possibly look at what factors influence this variation (e.g., HIV status, prior relationship, compensation, and more).

Implications for Professional Practices and Social Change

The findings from this study provide additional information on the potential factors that contribute to FSWs using condoms during sexual acts with perpetrator types. Although not statistically significant, the inclusion of perpetrator type reduced condom use in FSWs who experienced GBV. Public Health workers' awareness of these factors' impact on condom use could contribute to a social change implication where sensitization workshops and material are developed to help health care workers, law enforcement, and others with being culturally competent and aware of factors that impact this group as well as educate on how to engage with SWs. Developing workshops and other guidance specifically on this population and the factors that impact their health can potentially reduce the stigma associated with SW. By doing this, SWs may feel more comfortable discussing their health concerns and seeking sexual health interventions and support groups for violence victims.

In addition, findings showed marital and employment status as significant predictors of condom use among FSWs. Knowing sex workers who were or are currently in a relationship has the potential to use condoms over those that are single could suggest where to target education and interventions that promote condom use. Implications for

social change could be creating safe space discussion meetings where FSWs that are more inclined to use condoms (e.g., separated/divorced/widowed) share their stories and reasonings, which may positively influence others who are less inclined to use a condom. Being able to relate to others can positively affect one's decisions. Lastly, knowing condoms are more likely to be used by FSWs who are employed could suggest implementing policies and programs that aid in career development and assist with job placement for FSWs.

With this knowledge, preventative techniques could promote protective measures with all perpetrator type partners instead of some when engaging in sexual activity. In return, a reduction in HIV cases amongst this population has the potential to occur.

Conclusion

HIV is a global issue that affects many, including FSWs. FSWs remain disproportionately burdened by HIV and remain one of the populations that need engaging the most in terms of preventative care and treatment services. Engaging in sexual activity without condoms contributes to the number of HIV cases within this population, not to mention GBV association to this risky sexual behavior (i.e., no condom use during sex as a result). Some even argue that alcohol and other substances are other mediators that increase their risk of acquiring HIV . To understand this more, this research study sought to understand if FSWs respective perpetrator type of partners played a role in their relationship between GBV and condom use and whether alcohol use enhanced that role. Because of the significant number of missing responses and no relationship between GBV and condom use, the research questions remain unanswered.

However, there were statistically significant relationships found between casual non-paying partners and condom use and marital status when looking at divorced, widowed, or separated. In addition, results showed no relationship between alcohol and substance use and condom use when FSWs engaged with different perpetrator types. These findings could contribute to positive social change by identifying how condom use varies based on perpetrator type and the number of partners to promote effective preventative sexual health programs. Future studies should examine the above relationships with more representative sample size and look at the influences of other variables that could impact these relationships. In understanding the relationships between these variables, better and more initiatives can be developed to increase condom use amongst this population, further lowering HIV infection rates.

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Complex Samples Results

Research Question 1

In RQ1, I examined whether perpetrator type of clients of Tanzanian FSWs affect the relationship between GBV and condom use by using the 2019 data on FSWs from the JHPIEGO. Table 1 provided general descriptive statistics and assessed the likelihood of condom use based on the independent variables. Model 1 (depicted in Table 1) included condom use, GBV, casual non-paying partners, regular non-paying partner, paying partner, drug and alcohol use, and sociodemographic variables employment and marital status. Model 2 assessed GBV to see if it predicted condom use (table 2). Model 3 added perpetrator type to GBV as predictor variables to assess condom use (table 2).

Table A1

Distribution [n(%)] and likelihood (odds ratio (OR), 95% Confidence Interval (CI), and p-value) of condom use based on GBV, perpetrator type and other variables among FSWs in Tanzania (n=1502)

Variable		Total n (%)	CU | Yes n (%)	No	OR (95% CI)	p-value
Condom Use	Yes	811 (82.5)	_	_	--	--
	No	172 (17.5)	_	_		
GBV	Yes	159 (10.6)	69 (84.1.)	13 (15.9)	1.14 (0.61-2.11)	0.68
	No	1343 (89.4)	742 (82.4)	159 (17.6)	REF	
Casual non-paying partner	0-1	575 (58.5)	450 (78.3)	125 (21.7)	2.13 (1.48-3.07)	<.001
	2+	408 (41.5)	361 (88.5)	47 (11.5)		
Regular non-paying partner	0-1	892 (90.7)	730 (81.8)	162 (18.2)	1.80 (0.91- 3.55)	0.09
	2+	91 (9.3)	81 (89.0)	10 (11.0)		
Paying Partner	0-1	--	--	--	--	--
	2+	983 (100.0)	--	--	--	--
Drug/Alcohol	Yes	875 (58.3)	473 (82.0)	104 (18.0)	0.91 (0.65- 1.28)	0.60
	No	627 (41.7)	338 (83.3)	68 (16.7)		
Employment	Employed	722 (48.1)	331 (82.8)	69 (17.3)	1.06 (0.68-1.44)	0.02
	Casual Labor	238 (15.8)	195 (83.0)	40 (17.0)	1.08 (0.64-1.51)	
	Unemployed	542 (36.1)	285 (81.9)	63 (18.1)	REF	
Marital Status	Single	984 (65.5)	422 (77.9)	120 (22.1)	1.34 (0.50- 2.18)	<.001
	Divorced/Widowed/Separated	474 (31.6)	368 (89.3)	44 (10.7)	3.19 (2.31- 4.06)	
	Married/Cohabiting	44. (2.9)	21 (72.4)	8 (27.6)	REF	

Note. *CU = condom usage, OR = odds ratio, CI = confidence interval. Percentages of CU category: Out of n=1502 responses, n=519 were labeled missing due to missing responses . CU yes and no values are based on FSW response for each category and do not reflect the overall sample, given missing responses.*

Table A2

Relationship Between GBV and Condom Use Given Perpetrator Partner Types

Variable	B	S.E.	Wald	df	p-value	AOR	95% CI	
							Lower	Upper
GBV	0.1	0.3	0.1	1	0.72	1.12	0.60	2.10
Casual non-paying partners	0.7	0.2	15.4	1	0.00	2.08	1.44	3.00
Regular non-paying partners	0.4	0.4	1.5	1	0.22	1.53	0.77	3.05

Overall, for RQ1 no significance was shown to support that GBV influenced condom use ($\chi 2$ (1) = 0.171, p = .679). The chances of condoms being used between FSWs and casual non-paying partners (perpetrator type) were low for the FSWs who had more than two partners (*OR* =2.08**,** 95% CI [1.44- 3.00]) compared to those that had none to one partner. This variable along with marital status was the only statistically significant predictor of condom use out of all independent variables assessed.

Research Question 2

In RQ2, I examined whether the use of alcohol and/or substance use further influenced the relationship between GBV and condom use with Tanzanian FSWs (Table A3).

Table A3

Relationship Between GBV and Condom Use Given Perpetrator Partner Types and the Influence of Drug/Alcohol Use

Variable	B	S.E.	Wald	df	p	AOR	95% CI	
							Lower	Upper
GBV	0.1	0.3	0.1	1.0	0.72	1.12	0.60	2.09
Casual non-paying partners	0.7	0.2	15.4	1.0	0.00	2.08	1.44	2.99
Regular non-paying partners	0.4	0.4	1.5	1.0	0.23	1.53	0.77	3.04
Drugs and/or alcohol use during sex	-0.1	0.2	0.2	1.0	0.67	0.93	0.66	1.30

Overall, for RQ2 no significance was found when assessing alcohol use and GBV ($\chi 2$ (2) = 0.437, p = .804) further stating alcohol and other substance use did not predict condom use.

Assessing Confounding Variables

Table A4 looked at GBV and perpetrator type while assessing demographic variables (employment and marital status) as potential confounders. Table A5 includes the same in addition to alcohol and substance use.

Table A4

Demographic Factors and the Relationship Between GBV and Condom Use Given Perpetrator Types

Variable	B	S.E.	Wald	df	p	AOR	95% CI	
							Lower	Upper
GBV	0.1	0.3	0.1	1	0.80	1.08	0.57	2.02
Casual non-paying partners	0.6	0.1	12.6	1	0.00	1.96	1.35	2.83
Regular non-paying partners	0.6	0.4	2.5	1	0.11	1.75	0.88	3.51
Unemployed			0.1	2	0.94	REF		
Employed	-0.1	0.2	0.1	1	0.73	0.94	0.64	1.38
Casual labor	-0.01	0.2	0.0	1	0.97	0.99	0.63	1.55
Married			21.3	2	0.00	REF		
Single	-0.3	0.4	0.4	1	0.52	0.75	0.32	1.77

Variable	B	S.E.	Wald	df	p	AOR	95% CI	
							Lower	Upper
Divorced/Separated/ Widowed	-1.1	0.5	6.3	1	0.01	0.32	0.13	0.78

Table A4 showed significant predictive power of the number of casual non-paying partners (*AOR*= 1.96) and marital status (*AOR*= .32) on the relationship between GBV and condom use. The model was statistically significant ($\chi 2$ (7) = 42.973, p = <.001) and had a Cox & Snell R^2 of .043 and Nagelkerke R^2 of .071.

Table A5

Role of Demographic Factors on the Relationship Between GBV and Condom Use Given Perpetrator Types and Use of Alcohol/Drugs

Variable	B	S.E.	Wald	df	p	AOR	95% CI	
							Lower	Upper
GBV	0.1	0.3	0.04	1	0.83	1.07	0.57	2.02
Casual non-paying partners	0.7	0.2	12.6	1	0.00	1.96	1.35	2.83
Regular non-paying partners	0.6	0.4	2.5	1	0.12	1.75	0.87	3.50
Drugs and/or alcohol use during sex	-0.04	0.2	0.1	1	0.82	0.96	0.68	1.35
Unemployed			0.1	2	REF			
Employed	-0.1	0.2	0.1	1	0.74	0.94	0.64	1.38

Variable	B	S.E.	Wald	df	p	AOR	95% CI	
							Lower	Upper
Casual labor	-0.0	0.2	0.0	1	0.97	0.99	0.63	1.55
Married			21.2	2	REF			
Single	-0.280	0.4	0.4	1	0.52	0.76	0.32	1.77
Divorced/Separated/Widowed	-1.1	0.5	6.3	1	0.01	0.32	0.13	0.78

Table A5 added alcohol and substance use into the equation. The model was statistically significant (χ^2 (10) = 50.990, p = <.001) and had a Cox & Snell R^2 of .051 and Nagelkerke R^2 of .084. The statistically significant variables were casual non-paying partners and marital status, the same as Table A4.