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ABSTRACT

Correlates of Self Rated Health Among Youth in Kampala Slums, Uganda

By

Annabel Q. Patterson

April 17, 2020

INTRODUCTION: Self-rated physical health is a valuable measure that has been utilized to determine a person's perception of health, which is dependent on their biological, emotional, physical, cognitive, and social context. This measure has been used throughout the world but has not been utilized as a marker for health and well-being among adolescent youth living in the slums of Kampala, Uganda.

AIM: This thesis aims to determine how youth in Kampala slums rate their physical health and determine the associations between self-rated health and a range of risk behaviors across domains such as demographic characteristics, mental health, violence, substance use, and sexual risk behaviors.

METHODS: Data from the 2014 Kampala Youth Survey (N=1134) of youth ages 12 to 18 years was used to analyze associations between "self-rated physical health" and independent variables ranging from demographics, housing characteristics, alcohol use behavior, experience of injury and abuse, HIV/STI diagnosis, and mental health characteristics.

RESULTS: Overall, the majority of youth participants rated their health as "excellent" or "good." Self-rated physical health was associated with many of the variables examined, such as education, parental status, housing status and experiencing homelessness, alcohol consumption, and drunkenness, HIV/STI diagnosis, ever experiencing injury and violence, and mental health characteristics.

DISCUSSION: Given the strong associations between a range of health risk behaviors and poor self-rated health, a simple self-rated health question may be used as a marker for other high-risk behaviors and health disparities, even among youth. The findings underscore severe health disparities among youth as young as 12 to 18 years that need to be targeted to improve overall health and well-being.

Correlates of Self Rated Health Among Youth in Kampala Slums, Uganda

by

Annabel Q. Patterson

B.S., Mercer University

A Thesis Submitted to the Graduate Faculty
of Georgia State University in Partial Fulfillment
of the
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MASTER OF PUBLIC HEALTH

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30303

APPROVAL PAGE

CORRELATES OF SELF RATED HEALTH AMONG YOUTH IN KAMPALA SLUMS,
UGANDA

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Author's Statement Page

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A handwritten signature in black ink, appearing to be 'A. D.', written in a cursive style. The signature is positioned above a horizontal line.

Signature of Author

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- Figure 1.** Correlates of self-rated physical health among youth living in slums of Kampala, Uganda (N=1,132)

INTRODUCTION

1.1 BACKGROUND

Self-rated health (SRH) is an accepted subjective measure that has been utilized all over the world to determine a person's self-assessment of their health. Many utilize many variations of the question "How would you rate your overall health?" to find out how a person observes their health and wellbeing. SRH is also essential because, in order to answer the question, an individual must consider their perception and understanding of "health" and how it applies to them in a social, cultural, physical, mental, and biological context. These components add a multidimensional aspect to a simple question that, when combined with other measures, can provide valuable information to the researcher.

Developing countries are nations that have been associated with having a high disease burden, poor health outcomes, and high mortality rates from several diseases. As these countries continue to grow economically, they have experienced a period of rapid urbanization that has brought the creation of new opportunities for its citizens. Despite the arrival of much-needed progress to cities, the influx of citizens looking for better positions and life circumstances has caused the creation and sustainment of slums. These developments are the product of government planning being outpaced by urbanization. They are characterized by impoverished inhabitants, destitute housing, poor access to water, sanitation, and healthcare, which exacerbates poor health outcomes, especially in children and adolescents.

The self-rated physical health measure has been thoroughly utilized in many countries and in many contexts. However, limited research exists for developing countries such as Uganda and 3 for slums like the one that exists in the city of Kampala. Even fewer studies exist that analyze self-rated physical health among youth in these conditions and how they rate their

health. This thesis aims to add more insight into this area of study and determine how youth in Kampala slums rate their physical health. In addition to the self-rated physical health measure, physical, mental, social, and other health-related characteristics will be analyzed to determine other associations with their ratings using the Kampala Youth Survey conducted in 2014.

1.2: RESEARCH QUESTIONS

This study aims to determine: 1) What is the prevalence of self-reported fair/poor health and the demographic characteristics among youth ages 12 to 18 in the slums of Kampala? 2) Which psychosocial risk factors are associated with self-reported fair/poor health among youth ages 12 to 18 in the slums of Kampala?

It is hypothesized that youth who do not exhibit risk factors or health behaviors that are traditionally linked to poor health outcomes will rate their physical health as *excellent* or *good*. Furthermore, youth that exhibit these risk factors or health behaviors will rate their physical health as *fair* or *poor*. The results of this research can help provide insight into the health of youth in Kampala and how culture and their environment play a role in their responses. Identified trends can help determine potential areas for interventions that educate and alleviate health concerns that are highlighted by the youth. The results can also provide understanding into which risk factors or health behaviors that youth consider as poor contributors to their physical health.

REVIEW OF LITERATURE

2.1 SLUMS

2.1.1 Overview

A slum is defined by the United Nations Scientific and Cultural Organization as "a contiguous settlement where the inhabitants are characterized as having inadequate housing and basic services." The United Nations Human Settlements Program further defines it as "a group of individuals that live under the same roof that lack one or more of the following conditions: access to improved water, access to improved sanitation, sufficient living space, [and] durability of housing and secure tenure" (Ezeh et al., 2017). The World Health Organization estimates that more than 828 million people in the world (one-third of the population) live in an urban slum and face these conditions (2016). This number is expected to grow to 5 billion by 2030, with 2 billion of these individuals living in Africa and Asia (The Lancet, 2017). Currently, some of the areas that have the highest population of urban slum residents are Sub-Saharan Africa (where 56% of the urban population lives in slums) and the Southern and Southeast parts of Asia (Ezeh et al., 2017).

In North America and Europe, urbanization began in the late 18th century with the dawn of the Industrial Revolution. Innovations brought new ideas, technologies, and jobs in these areas that fueled the growth of urban centers. However, this rapid growth also led to the formation of slums and the marginalization of vulnerable populations (Ezeh et al., 2017).

In the last 50 years, slums have persisted in other areas of the world, especially in developing countries that are now experiencing rapid urbanization that is outpacing planning, infrastructure, and the economy. The construction of new cities attracts people who want to find jobs to take care of their family back home, can migrate, are optimistic about new opportunities,

and are willing to take a risk. At the same time, some are displaced from their home due to famine, violence, or discrimination and seek a better life in other areas. Unable to afford to live in the urban area, they end up in the slums. These inhabitants often have just enough money to live on and buy the essentials that they need, but when they become ill, they can succumb to extreme poverty (Ezeh et al., 2017).

Slums continue to persist because of "national economic stagnation, failure of redistribution, market distortion in favor of extractive elites, colonial legacies, lack of planning, corruption, clientelism, and anti-urban biases by national governments and international agencies" making the problem difficult to alleviate (Ezeh et al., 2017). They are often built close to cities and use land such as flood plains, hillsides, and ravines (Ezeh et al., 2017; Unger, 2013; World Health Organization, 2016). Besides being non-ideal, these areas add to the increased risk of landslides and quickly fill with water during inclement weather, causing floods (Ezeh et al., 2017; Rumin, 2009). Many slums often develop near humanmade hazards such as busy roadways and factories, which cause injury and death from accidents and road incidents (Rumin, 2009). Over time, these hazards also contribute to the increase of pollutants in the air that inhabitants breathe and lead to the development of chronic respiratory conditions such as asthma and chronic obstructive pulmonary disease ("Housing Related Health," n.d.; Rumin, 2009). With increasing numbers of individuals looking for housing, more structures are built that are often on top of one another when there is no more land to extend outward, causing overcrowded and obstructed neighborhoods (Ezeh et al., 2017).

The construction of these homes becomes a huge risk factor for illnesses and poor health conditions among inhabitants. Not only are slums assembled in suboptimal areas, but they are also poorly constructed with cheap and readily available materials such as corrugated iron and

wood. These dwellings do not provide adequate warmth during cold seasons or retain fresh air during heatwaves (World Health Organization, 2016). Also, they do not provide sufficient shelter during extreme weather due to climate change (Ezeh et al., 2017). Lack of indoor plumbing, toilets, or running water does not provide clean water for proper hygiene and tasks such as cooking, cleaning, bathing, and washing hands. In 2000, an estimated that 30 to 50 percent of African inhabitants of slum dwellings lacked a supply of safe water. Some individuals may keep water in jugs or tanks, but usually, this water is not covered or protected and become reservoirs for diseases such as malaria, dengue, and yellow fever (Rumin, 2009). Poor ventilation in these dwellings also contributes to respiratory infections and illnesses (Ezeh et al., 2017; World Health Organization, 2016). Many of the families who live in slums use smoke-producing stoves for cooking meals for their families, which release toxic pollutants that affect the lungs and are a risk factor for illnesses such as asthma, emphysema, and bronchitis especially among children (Ezeh et al., 2017).

The neighborhoods of slums contribute to the dissatisfactory conditions of the dwellings. Roads are often unpaved with open sewers with poor drainage, and garbage and fecal matter commonly line the sides (Ezeh et al., 2017). Dwellings are small and built close together, leading to congestion of buildings and for large families, overcrowding in the home. Due to the packed nature of the area, open spaces where children can play, and communities can gather, are scarce (Ezeh et al., 2017). With no room for physical activity combined with the pressure of these living and work conditions, obesity and related chronic diseases are common among individuals due to physical inactivity. Without treatment and monitoring, these conditions can develop to become more severe cardiovascular diseases (Ezeh et al., 2017).

Women and mothers are one of the most vulnerable groups in slums. Women in slums are more likely to experience sexual violence and have a higher risk of contracting HIV or another sexually transmitted infection. Due to the stressors that they may face from living in the slums, the mental and emotional health of women can be significantly affected. Pregnant mothers and infants in slums face high mortality rates despite having more usage and access to health services than those in rural areas (Ezeh et al., 2017).

Children are the most vulnerable group that lives in slums and are found to have poorer health than those in rural areas. A lack of access to clean and nutritious food leads to a high incidence of diarrheal diseases, malnutrition, and under-nourishment (Ezeh et al., 2017; Rumin, 2009;). Children experience stunting of growth and other development problems that can affect their mental and physical wellbeing as they grow or can result in mortality. One 2019 study done in the Devarjeevanahalli slum in India, found that about half of the children under five had stunted development (George et al., 2019).

2.1.2 Uganda

Bordered by South Sudan, Kenya, the Democratic Republic of Congo, Tanzania, and Rwanda, Uganda is a beautiful country in Sub-Saharan Africa teeming with beautiful landscapes, exotic animals, and exuberant culture ("VisitUganda," n.d.). After winning its independence from Britain in 1962, Uganda has experienced massive growth in its population but has had a tumultuous history (Uganda Tourism Board, n.d.). Political conflicts under leaders, Idi Amin and Milton Obote, have made it difficult for the country to prosper economically and socially (Kokole et al., 2019).

Despite all the past conflicts, Uganda has grown immensely as a nation. The country has many ethnicities that are interwoven into its rich culture. The largest is the Ganda ethnicity, which is part of the Bantu south in addition to the Soga, Gwere, Gisu, Nyoe, Samia, Toro, Nyoro, Kiga, Nyankole, Amba, and Konjo ethnicities. Uganda's primary source of income comes from agriculture, but it has many resources at its disposal, such as copper, tungsten, cobalt, and gold (Kokole et al., 2019). Bwindi Impenetrable National Park, Murchison Falls National Park, Lake Bunyonyi, and Kidepo Valley National Park are some of the biggest attractions that showcase the rich flora and fauna that exists in Uganda (Lonely Planet, n.d.).

Despite the beauty that Uganda has, there are still many health problems that cause illness among its citizens. According to the World Health Organization, 54 percent of all deaths are due to communicable, maternal, perinatal, and nutritional diseases, and 33 percent of deaths are due to non-communicable conditions (World Health Organization, 2018). As a result of high fertility rates (5.8 children per woman), more than half of its population of 41, 488, 000 are under the age of 25 (Central Intelligence Agency, 2018). Recent data shows that about 67% of Uganda's population is underemployed or unemployed (Kamara et al., 2019).

Additionally, heavy alcohol use is very prevalent throughout the country. According to the World Health Organization, Ugandan individuals fifteen years and older consume 9.5 liters of pure alcohol per capita, with 86 percent being non-traditional forms of alcohol, 11 percent being beer, and 4 percent being spirits (2016). Alcohol consumption also contributed to high rates of liver cirrhosis, road traffic injuries, and cancer in both men and women in Uganda (World Health Organization, 2016).

As a result of racialized residential areas during the periods of 1912 and 1919, Uganda also has some slums that exist near one of its largest cities, Kampala. (Byerley, 2013; Kamara et

al., 2019). As the capital, Kampala has a total of 1.7 million inhabitants, which has increased 350 percent from 1980 (United States Agency of International Development, 2017; Van Leeuwen et al., 2017). From 2010 to 2016, the city of Kampala has seen an increase in urban residents (from 14 to 16 percent) and an estimated 53.6 percent of its population live in one of 57 slums in 5 divisions: Kampala Central, Kawempe, Nakawa, Lubaga, and Makindye (Kamara et al., 2019; USAID, 2017; Ssemugabo, 2019). Furthermore, an estimated 25 percent live below the national poverty line (Van Leeuwen et al., 2017). According to the United States Agency of International Development, there has been an increase of "slum-like conditions" in the past decade in Uganda, with 70 percent of residents living in overcrowded conditions, 47 percent in rented tenements, and 31 percent in detached dwellings (2017).

2.2 YOUTH

2.2.1 Development

Adolescent development is a fascinating and equally confusing time for any child around the world. It is usually marked with many physical and hormonal changes, while independence and autonomy are being developed at the same time.

Among different sources, the debut age for adolescent development differs. Some state that development occurs around age ten, while others state that it starts at age twelve (Allen & Waterman, 2019; Morelli & Zupanick, n.d.; Kaneshiro & Zieve, 2019). Regardless of the age, this period in the life of an adolescent is marked by changes physically, emotionally, and cognitively as the need for independence and autonomy grows (Morelli & Zupanick, n.d.).

Physically, many changes occur in the body of a growing child. Up to the age of 24, they experience changes to their hormones that result in growth spurts, changes in their body to fat ratios, changes in their sexual characteristics, and improvement in their motor skills (Morelli & Zupanick, n.d.; Allen & Waterman, 2019; HHS, 2019). These changes are accompanied by increased perspiration, acne, and oily skin (Morelli & Zupanick, n.d.).

Physical changes are often followed by cognitive ones as the decision-making prefrontal cortex of the brain continues to develop (World Health Organization, 2017). Many scientists, such as Jean Piaget, Lawrence Kohlberg, and Erik Erikson, have tried to analyze and study cognitive development in adolescence (Morelli & Zupanick, n.d.). Theories exist about the progression of the mind from child to adult, but many characteristics remain constant in every culture.

Children move away from concrete thinking and become more capable of experiencing abstract thoughts that are not observable. Also, they become contemplative about values, beliefs,

feelings, and motivations (Morelli & Zupanick, n.d.; Allen & Waterman, 2019). They start to think more critically and use their minds in more complicated ways to organize information and commit things to memory (Morelli & Zupanick; United States Department of Health and Human Services: Office of Adolescent Health, 2019). As they grow, youth start to develop self-efficacy, defined as “confidence in one’s ability to identify and express emotions in a positive and effective manner” (Morelli & Zupanick, n.d.). They also experience “egocentrism” and become self-conscious about the world and how they are perceived (Allen & Waterman, 2019). This phenomenon leads to the development and exploration of “identity,” which many theorists believe continues to evolve into adulthood (Morelli & Zupanick, n.d.).

During the development period, adolescents start to pull away from parents and focus on relationships that are outside their family network as they continue to struggle for more 12 independence (Morelli & Zupanick, n.d.; Allen & Waterman, 2019). Relationships deepen and become more involved with friends, coworkers, and romantic partners as they begin to foster a stronger sense of their individuality (Morelli & Zupanick; Allen & Waterman, 2019; Kaneshiro & Zieve, 2019).

2.2.2 Youth Health in Developing Countries

According to the United States Agency for International Development, approximately 90 percent of all youth live in developing countries (2018). About 65 percent of the world’s population is under the age of 35, and in 25 countries of Sub Saharan Africa, half of the population is under the age of 18 (UNFPA, 2014; USAID, 2018). Despite the large population, about 20 percent are not in any type of education or training nor have any type of employment (USAID, 2018). Youth in developing countries have the potential to make a positive impact but face some of the worst health risks in the world. According to the World Health Organization,

1.2 million adolescents died in 2015, and most were from preventable or treatable causes (WHO).

Youth in developing countries face many health risks that affect their health outcomes such as poor nutrition, alcohol and tobacco use, and substance abuse. These risks contribute to several communicable and non-communicable diseases. According to the UNFPA, more than half of children in Sub Saharan Africa are living in extreme poverty with no access to care, and many live in urban slum developments (UNFPA, 2014; Unger, 2013). In these conditions, social problems such as fragmented families, sexual exploitation, alcohol, and drug abuse cause physical and emotional problems for youth (Unger, 2013). These lead to conditions such as malnutrition from lack of food or lack of nutrients and injuries from natural disasters, physical hazards, and accidents. In 2015, 115,000 adolescents in Africa died due to road accidents (World Health Organization, n.d.).

Mental illness is also growing among youth from the stress of living conditions and their environment, which causes behavioral and emotional problems (Unger 2013). Depression has been found to be the third leading cause of illness and disability among youth. Untreated mental health problems can lead to violence and feelings of worthlessness (World Health Organization, n.d.).

Young adolescent girls are especially vulnerable to adverse health outcomes. Globally, early childbearing is the top cause of mortality among adolescent girls aged 15 to 19 (UNICEF, 2019). In 2018, the global birth rate was 44 births per 1,000 from ages 15 to 19, and in Uganda, it was 132 births per 1000 adolescents (UNICEF, 2019). In addition to high birth rates, of the 2 million adolescents living with HIV, young girls in this age group also have a disproportionately high burden among their population as compared to boys in Sub Saharan Africa (WHO;

UNFPA, 2014). This fact sustains the rate of vertical transmission to children born, especially among adolescents who do not receive antiretroviral treatment. Other issues that young adolescent girls face include female genital mutilation, sexual violence, and exploitation (UNFPA, 2014).

2.3: Youth and Self Rated Health

2.3.1 What is Self-Rated Health?

Self-rated health (SRH) is a subjective measure used to determine how a person defines or assesses their health. Since the 1950s, a question measuring SRH has been a part of surveys in the United States and around the world such as the World Value Survey, the European Value Survey, the National Health and Nutrition Examination Survey (NHANES), and the SHARE survey in Europe (Jylhä 2009). The question has been posed several ways but follows the format of “How would you rate your health?” and answers are usually given on a scale in different formats such as ranging from “very good” to “poor” (Jylhä 2009).

SRH is widely utilized because it gives an insight into an individual’s assessment of their health and how it affects their perception of their wellbeing (Inuzuka et al., 2018). It is unique because answering the measure requires the individual to translate their understanding of their health and represent it with a score independent of input from a doctor or health professional. This decision is mostly influenced by several factors, such as the biological and functional aspects, in addition to their emotional, mental, and social experiences (Falk et al., 2017). These factors differ based on behaviors that the individual chooses to partake in daily, which may be further affected by the culture they connect to (Subramanian et al., 1982; Falk et al., 2017).

SRH is criticized in some circles as not being translational across cultures or does not serve as a valid measure of a person’s health because it is contingent on a person’s understanding of health based on their social experiences (Subramanian et al., 1982). It is believed that someone in a country with better resources and access to care would have more education and improved knowledge of their health status than a person in a nation where diseases are common and seen as a part of life (Sen, 2002). This belief could potentially lead to a bias called “reporting

heterogeneity,” where disadvantaged groups may give misleading answers for SRH (Subramanian, 2010). For this reason, SRH results are believed to be better understood in the context of the education, culture, and society that the person answering the question lives in (Sen 2002).

Despite criticism, SRH can be a valuable tool for a researcher that is trying to understand health in a community and has several advantages. One advantage is that many studies have found that self-reported health is strongly associated with mortality. When assessing the effect of SRH and illiteracy on mortality in a small city in Brazil, Inuzuka et al. found that after a 13 year follow up of a study group, the mortality rate is higher for those who indicated a poorer SRH when compared to those who indicated a better one (2018). They also found that negative SRH was a negative predictor of death, including those from cardiovascular death (Inuzuka et al., 2018). Falk et al. found that when controlling all covariates in a study of 16,940 adults in China, India, Cuba, Dominican Republic, Peru, Venezuela, Mexico, and Puerto Rico, those who reported poor SRH had a 43% increased risk of death in 4 years (2017). Lastly, in a study of 66,820 adults in China, compared to better SRH, worse reported SRH was positively associated with death from several diseases such as cardiovascular disease, stroke, and respiratory disease (Shen et al., 2014).

Another one of the most significant advantages is that it can give insight into what an individual or community perceives as “healthy.” It is particularly advantageous when looking at disadvantaged groups in developing countries as compared to the advantaged in developed countries. Researchers can determine how much their culture and environment play a role in understanding individual biological health. In conjunction with additional health measures, personal barriers to healthcare can be identified to aid in the development of effective

interventions or understanding the extent of the utilization of healthcare services. Many studies have looked at SRH and how communities in low-income areas would rate their health. According to the Gallup World Poll, Sub Saharan Africa, where the disease burden is extremely high, has lower SRH ratings than other regions in the world (Deaton & Tortora et al., 2015). In the Maputo area of Mozambique, a study of 1768 adults 18 years and older found that 54 percent rated their health status as poor (Cau et al., 2016). Those who reported poor SRH tended to be female and single who are widowed, separated, or divorced. Interestingly, these also tended to be individuals who believed that significant community issues included heart problems such as hypertension. When looking at those with better SRH ratings, individuals who were between the ages of 40 and 59 had physically demanding jobs and had access to treated water in their homes had lower odds of reporting poor SRH (Cau et al., 2016).

2.3.2 How do Youth Rate Their Health?

As previously stated, self-rated health is an individual's assessment of many factors of their health. A person first has to understand health, what it means, how it compares to others, and how it applies to them. All of these steps are incredibly dependent on several contexts, such as the current and previous health and emotional experiences, the social environment that the person engages in, and the culture that they are surrounded by (Jylhä, 2009). Development and the surroundings of youth play a significant role as they explore their identity and their environment. As they grow, youth become more aware of their own health experiences and can meaningfully communicate their health status (Riley, 2004). Their understanding progresses and improves through stages and by late childhood can acknowledge health as an “experienced state” and can “define health in terms of food and behavior” (Riley, 2004).

Among youth, studies looking at developed nations have shown that self-rated health (SRH) is associated with several determinants. In a global study of 32 European countries evaluating health, females always reported their health as “poorer” than males, and ratings decreased with increasing age (Cavallo et al., 2015). Another Swedish study found that the social status that students considered themselves as was positively associated with SRH and those that had a higher SRH had a higher social subjective status. (Joffer et al., 2019).

Some have looked at third world countries and how determinants affect self-rated health among youth. One Brazil study found that 7.15 percent of surveyed participants reported poor health status (Malta et al., 2018). They tended to be 15 years old and older and had an indigenous race or skin color. They also reported alcohol consumption and drug experimentation (Malta et al., 2018). Another 2009 study looked at psychosocial and related health-related behavior among 2,519 adolescents in Thailand (Page et al., 2009). Of the students studied, 5.1 percent of males and 4.6 percent of females considered themselves as not healthy. These adolescents were also more likely to be overweight and score lower on loneliness, shyness, hopelessness, and self-rated happiness. The researchers also noted that SRH seemed to be affected by the financial situation of the family, school achievement, and reports of tobacco usage (Page et al., 2009).

METHODOLOGY

3.1: CONTEXT OF STUDY

The purpose of this study is to analyze self-rated physical health among youth living in slums in Kampala, Uganda, and to determine which factors are associated with their ratings.

3.2: RATIONALE

Limited literature exists regarding the youth of Kampala, and this study aims to add more insight into understanding health among its youth. Self-rated health is an important measure that highlights the status of health among a population and can be valuable to researchers and community leaders who are trying to reduce the incidence of risky behaviors such as excessive alcohol consumption, HIV, and poor mental health.

3.3: DATASET

This study utilized the results from the Kampala Youth Survey conducted in 2014 in the slums of Kampala, Uganda, which was designed with a focus on reporting risk behaviors, alcohol use, and HIV/STIs among urban youth. The survey was administered via face to face interviews and electronic tablets by trained peer educators and social workers to youth who participated in one of six Uganda Youth Development Link (UYDEL) drop-in centers. These participants either lived in the urban slums or on the streets of Kampala and ranged in age from 12 years old to 18 years old. A total of 1,628 youth were approached and informed about the survey, but only 1,497 consented. Due to a technical issue, only 1,134 surveys were obtained. Original IRB approval was given by Georgia State University and the Uganda National Council for Science and Technology (Swahn et al., 2018).

3.4: VARIABLES

Dependent Variable. The dependent variable in this study, “self-rated physical health,” is defined by question 19 of the 2014 Kampala Youth Survey: “How would you rate your physical health?” The possible responses included *excellent*, *good*, *fair*, and *poor*. These were dichotomized into two measures: *excellent/good* (representative of a ‘better’ health rating) and *fair/poor* (representative of a ‘poorer’ health rating) for analysis.

Independent Variables. There were many independent variables in this study that were grouped in domains for data analysis. These domains included: demographics, housing, alcohol use, HIV/STI status, injury/abuse, and mental health. Demographics included the descriptive variables of gender, age, education, religion, and parental status (“Are one of both of your parents alive?”). Responses for education were re-grouped for analysis to include “never completed primary,” “completed primary,” “secondary or higher.” Responses for parental status were regrouped for analysis to include “at least 1 parent alive” and “both parents dead.”

Characteristics relating to housing status were defined by the questions: “How many rooms does your household use for sleeping?,” “What is the roof of your home made of?,” “Have you ever lived on the streets with no other place to go?,” and “Do you have any of the following in your home?”.

Characteristics relating to alcohol use were defined by “How old were you when you had your first full drink of alcohol?,” “How many full drinks containing alcohol do you have in a typical day when you are drinking?,” “Have you ever sought help for your drinking?” and “In the past month: How many days did you drink so much that you were really drunk?..”

Characteristics regarding HIV/STI status were defined by “Have you been told by a doctor/nurse or HIV counselor that you have a sexually transmitted infection such as syphilis,

herpes, bola bola, or gonorrhoea?”, “Have you been told by a doctor/nurse or HIV counselor that you have HIV?”).

Characteristics regarding injury and abuse were defined by “Have you been seriously injured or hurt due to your drinking?” and “In the past year, did your boyfriend/girlfriend hit, slap, or hurt you?”.

Finally, characteristics regarding mental health were defined by “In the past year, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing your usual activities?,” “In the past year, did you ever think of hurting yourself?,” “In the past month, how often... Have you felt lonely?,” “In the past month, how often... Have you been so worried about something that you wanted to use drugs or alcohol to feel better?,” “In the past month, how often... Did you feel hopeful about the future?,” “Overall what do you think about the following statement? I will probably die before I am thirty,” “Overall what do you think about the following statement? There are people I can count on in this neighborhood,” and “Overall, what do you think about the following statement? I feel safe in this neighborhood.”

3.5: DATA ANALYSIS

Correlations between the aforementioned independent variables and the dependent variable “self-rated physical health” were determined using statistical analysis conducted with SAS 9.4 software. Out of a total sample of 1,134 youth participants, two were excluded due to missing responses to the “self-rated physical health” variable. Therefore, only a sample of 1,132 participants was used for this study. Furthermore, missing responses for variables in the “alcohol use” domain were assumed to be non-drinkers. They were re-coded as “never,” “no drinks,” “no,” and “0 days”. Missing responses for variables in the “injury/abuse” domain were re-coded as “no.” For all other variables, missing responses were excluded from the analysis. P values for

most of the variables were determined using chi-square analysis. The variable defined by the question, “What is the roof of your home made of?,” was determined using Fisher’s exact test because some of the response categories were fewer than five. Age was not normally distributed, so the p-value was calculated using the Wilcoxon Two-Sample test. All p-values were assessed using a significance level of 0.05. Odds ratios and corresponding confidence intervals for bivariate and multivariate analysis were calculated using logistic regression. Odds ratios with 95 percent confidence intervals containing the value of “1” between the upper and lower bounds were considered as not statistically significant.

RESULTS

4.1: Dependent Variable

Self-Rated Physical Health. Out of 1,134 participants, 1,132 responded to the self-rated physical health question on the survey. The majority rated their physical health as better or *excellent/good*, with 815 respondents representing 72 percent of the survey population. In contrast, 317 respondents rated their health as poorer or *fair/poor* and represented 28 percent of the survey population (Table 1).

4.2: Independent Variables

Demographics. The average age of the entire sample was 16.15 years old. Among those that rated their health as *excellent/good*, the average age was 16.27 years old, and among those that rated their health as *fair/poor*, the average age is 15.83 years old. Among the participants, those that rated their health as *excellent/good* tended to be male (44.96%), had education at a level of secondary school or higher (44.55%), and of Christian/Muslim religion (93.92%). Those that rated their health as *fair/poor* tended to be female (58.68%) and never completed primary school (45.81%). Those that answered that both parents were dead had a higher percentage of participants who rated their health as *fair/poor* than the percentage among those that answered that they had either one or both parents alive (39.84% of n=881 vs. 24.63% of n=251).

When measuring associations of these variables with SRH, only education ($p < 0.0001$) and parental status ($p < 0.0001$) were statistically significantly associated. Participants that had a secondary school education level or higher had the lowest odds of rating their health as poorer than those who had never completed primary school (0.50; 95% CI: 0.36, 0.67). Those whose parents were both dead had higher odds of rating their health as *fair/poor* than those that had at least one parent alive (2.03; 95% CI: 1.51, 2.72). When controlling for age, gender, education

level, and religion, the association of parental status and self-rated physical health became weaker with a value of 1.91 (Table 2, 95% CI: 1.41, 2.59). Both gender and religion variables were statistically insignificant.

Housing. Among the participants, those that rated their health as *excellent/good* tended to have one room in their house for sleeping (38.53%), a roof made of iron sheets (96.69%), never lived on the street (83.91%), and electricity in the home (84.21%). Among those that had a thatch or straw roof, a higher percentage of participants rated their health as poorer (58.33% of N=24). Those who experienced homelessness had a higher proportion of participants who rated their health as poorer (47.39% of N=249) than the proportion among those who had never experienced homelessness (22.56% of N=882). Those who had no electricity in their homes had a higher proportion of participants who rated their health as poorer (45.42% of N=262) than the proportion among those that did have electricity in their homes (22.72% of N=867).

When measuring associations of these variables with SRH, all four were statistically significant. Those that had a tile roof had 0.08 times the odds of reporting their health as *fair/poor* than those who had a thatch or straw roof (95% CI: 0.01, 0.73) and those that had ever experienced homelessness had 3.09 times the odds of rating better health than those that did not (95% CI: 2.30, 4.15). This association was made slightly stronger when inputted into Model 2 (Table 2) controlling for age, gender, education, and religion. Those that had more than two rooms or more for sleeping had 0.68 and 0.54 times the odds of reporting poorer health than those with one room (95% CI: 0.50, 0.93, 95% CI: 0.27, 0.08) and those that did not have electricity had 2.83 times the odds of reporting poorer health than those with electricity (95% CI: 2.12, 3.78). When controlling for age, gender, education, and religion, the association was made

slightly stronger for those that had experienced homelessness and slightly weaker for those that did not have electricity in the home (Table 2).

Alcohol Use. Among the participants, those that rated their health as *excellent/good* tended not to have ever had alcohol either in their life, on a typical day, or in the past month (66.99%, 72.27%, 78.40%). Among those that have had a full drink of alcohol ever in their life (N=405), those who had their first drink between the ages of 1 and 14 years old (N=174) had a higher proportion of youth who rated their health as *fair/poor* (40.80%) as compared to the proportion among those who had their first drink between the ages of 15-18 (28.14% of N=231). Participants who had their first full alcoholic drink under the age of 14 years old had 2.08 times the odds of rating their health as *fair/poor* compared to those that never had their first drink (95% CI: 1.47, 2.94)

Those that had 1-2 full drinks of alcohol on a typical day when drinking had a higher proportion of youth who rated their health as *fair/poor* (35.9% of N=195) than the proportion among those who had three or more drinks (32.67% of N=150). Participants who have three or more drinks on a typical day when drinking had 1.44 times the odds of rating their health as *fair/poor* compared to those that never had any drinks.

Those that have sought help for drinking had a higher proportion of those who rated their health as poorer than those who had not (42.37% of N=59 vs. 27.21% of N=1073). Those that did had 1.97 times the odds of rating their health as poorer compared to those that did not seek help (95% CI: 1.15, 3.35). Among those who had experienced drunkenness in the past month, those who reported being drunk for six or more days in the past month had a higher proportion of participants who rated their health as *fair/poor* (34.62%) as compared to those who were drunk for 3 to 5 days (34.62%) or 1 to 2 days (32.14%). All results in this domain were found to be

statistically significant. Those who reported six or more drunk days in the past month had 5.67 times the odds of reporting their health as *fair/poor* compared to those who were never had drunk days in the past month (95% CI: 2.69, 11.96). When all four variables were inputted into the model controlling for age, gender, education level, and religion, the association with self-rated physical health was stronger, and odds ratios increased in each level (Table 2).

HIV/STI. Among those that had an STI diagnosis, the majority of participants rated their health as *excellent/good* (67.30%). However, a higher proportion of those who had an STI reported poorer health than those who did not have an STI (32.72% of n=419 vs. 25.21% of n=710). Among those that had an HIV/AIDS diagnosis, the majority of the participants rated their health as *excellent/good* (56.03%). However, a higher proportion of those who have HIV reported poorer health than the proportion among those who did not have HIV (43.67% of 116 vs. 26.47% of n=986). All findings were statistically significant. Those who were diagnosed with HIV or another STI had higher odds of reporting their health as *fair/poor* than those that were not (2.18, 95% CI: 1.47, 3.23 and 1.44, 95% CI: 1.11, 1.88). When controlling for age, gender, education, and religion, these associations with self-physical health were made slightly stronger (Table 2).

Injury/Abuse. Among those who were seriously injured due to drinking, the majority of participants rated their health as *excellent/good* (57.58%). However, a higher proportion of those who noted an injury due to drinking reported poorer health than those who did not (42.42% of n=132 vs. 26.10% of n=1000). Among those that had experienced abuse from a boyfriend/girlfriend, the majority of the participants rated their health as *excellent/good* (64.74%). However, a higher proportion of those who experienced abuse reported poorer health than the proportion among those who did not (35.26% of n= 156 vs. 26.84% of n= 976). Those

who did experience injury from alcohol or interpersonal abuse had higher odds of reporting their health as *fair/poor* than those that did not (1.484, 95% CI: 1.038, 2.122 and 2.087, 95% CI: 1.437, 3.030). When controlling for age, gender, education, and religion, these associations with self-physical health were made stronger (Table 2).

Mental Health. Among participants who rated their physical health as “excellent/good,” the majority of participants responded that they have been sad or hopeless for two weeks or more (55.05%) and a majority of the participants responded that they have not thought of hurting themselves in the past year (69.79%). A higher proportion of participants rated their health as *fair/poor* among those who stated that they have been sad or hopeless (42.42% of n= 652) and among those who have ever thought of hurting themselves (37.82% of n= 394).

Both variables have a statistically significant association with self-rated physical health (question 80: p value= 0.0022; question 81: p value=<.0001). Participants who answered “yes” to both questions had 1.52 and 2.09 times the odds of rating their health as *fair/poor* as compared to those who answered “no” (95% CI: 1.16, 1.99; 95% CI: 1.60, 2.73).

Majority of those who rated their physical health as *excellent/good* reported “sometimes” feeling lonely (65.35%), “never” wanting to use drugs or alcohol to feel better from worry (66.54%), and “often” feeling hopeful about the future (48.46%) in the past month. When looking at *fair/poor* health ratings, the proportions were highest among those that “often” felt lonely (37.57%), among those that “often” want to use drugs or alcohol to feel better from worry (37.74%), and among those that “never” feel hopeful about the future (34.81%) in the past month.

Feeling lonely (p=0.0003), wanting to use drugs or alcohol to feel better from worry (p=0.0003), and feeling hopeful (p=0.0010) about the future had a statistically significant

association with self-rated physical health. Those that “often” felt lonely had 2.54 times the odds of rating their health as *fair/poor* compared to participants who “never” feel lonely (95% CI: 1.61, 4.02). Also, those that “often” want to use drugs or alcohol to feel better from worry had 1.91 times the odds of participants that “never” want to (95% CI: 1.33, 2.75). Those that “often” felt hopeful about the future had 0.55 times the odds of rating their health as *fair/poor* than those that “never” feel hopeful (95% CI: 0.36, 0.83).

Among participants who rated their physical health as “excellent/good,” the majority of participants answered, “no” to the statement “I will probably die before I am thirty”(89.18%). They also answered “yes” to the statement “There are people I can count on in this neighborhood” (83.13%), and “yes” to the statement “I feel safe in this neighborhood” (79.19%).

Among those who responded “yes” to the statement, “I will probably die before I am thirty,” the majority rated their health as *fair/poor* (39.73%) compared to the proportion among those who responded “no” (26.25%). Those who responded “yes” had 1.85 times the odds of reporting *fair/poor* health than those that responded “no” (95% CI: 1.29, 2.65).

Among those who responded “no” to the statement, “There are people I can count on in this neighborhood,” the majority rated their health as *fair/poor* (35.98%) compared to the proportion among those who responded, “yes” (26.15%). Those who responded “yes” had 1.59 times the odds of reporting *fair/poor* health than those that responded “no” (95% CI: 1.16, 2.18).

Among those who responded “no” to the statement, “I feel safe in this neighborhood” majority rated their health as *fair/poor* (33.20 %) compared to the proportion among those who responded, “yes” (26.51%). Those who responded “no” had 1.38 times the odds of reporting *fair/poor* health than those that responded “no” (95% CI: 1.02, 1.86). Each of these variables is a statistically significant association with “self-rated physical health” (p=0.0007; p=0.0039;

p=0.0370). When controlling for age, gender, education, and religion, many of the associations of these variables with self-physical health were made slightly stronger (Table 2).

Model 2. Model 2 consisted of controlling for all variables in the study to determine the strength of the association between the individual variable without possible confounding or interaction of any other variables. Table 2 shows the varying effect that the model had on each variable. Many of the variables became no longer statistically significant, with 95% confidence intervals containing the null value of 1. This effect on the data indicates that there may be some mediating variables along the pathway that affect self-rated health that affect the association. As shown in the table, some of the variables became weaker and moved towards the null value of one but remained significant.

DISCUSSION

5.1: Research Questions

This study aimed to determine how physically healthy youth living in the slums of Kampala, Uganda believe themselves to be and answer the research questions of: 1) What is the prevalence of self-reported fair/poor health and the demographic characteristics among youth ages 12 to 18 in the slums of Kampala? 2) Which psychosocial risk factors are associated with self-reported fair/poor health among youth ages 12 to 18 in the slums of Kampala?.

Consistent with existing literature, the main finding was that majority of the youth participants rate their health as better or *excellent/good*. Participants who were more likely to rate their health as *fair* or *poor* also indicated that they participated in or had poor health behaviors or risk factors that are typically linked to adverse health outcomes. The most surprising finding was that even though participants with these risk factors had higher odds of selecting *fair* or *poor* and were more likely to rate their health as poorer, a large proportion of them considered their health to be better.

5.2: Implications of Findings

Though not statistically significant, females were more likely to rate their health as either *fair* or *poor* similar to results in other literature (Darviri et al., 2011; Todorova et al., 2013; Vingilis et al., 2002). Older participants and those with higher levels of education were found to be more likely to rate their health as better (Darviri et al., 2011; Lau & Ataguba, 2013; Mechanic & Hansell, 1987; Todorova et al., 2013; Vingilis et al., 2002). Alternatively, youth who lost both parents were more likely to rate their health as poorer.

These findings may be more consistent with the current conditions that affect slum youth today. Many female adolescents are subject to violence and poor health conditions that males

may not experience, such as gender-based violence and sexual exploitation (Decker et al., 2014; Sundaram et al., 2004). They may also be less educated due to not being able to attend school. Studies have shown that increased education can lead to an increased understanding of health (Todorova et al., 2013). Furthermore, children who experience the death of a parent can have adverse effects on their health and mental development and are have a high risk of experiencing poverty (Ssewamala et al., 2009).

One of the common characteristics of slums is the large population of dwellers who live in poverty and have low socioeconomic status. These individuals often live on just enough to keep themselves and their families alive. This is reflected in the results of this study, where participants who stated that they live in housing that would typically cost more money to attain were less likely to rate their health as better. This included variables such as not having electricity in the home or having experienced homelessness. Those that had more than one room to sleep in or a roof made of iron sheets or tiles were less likely to have poorer self-rated health.

Poorer SRH was also associated with alcohol use. Alcohol consumption is linked to many adverse health conditions, such as cirrhosis, fatty liver, and pancreatic damage (Rocco et al., 2014). Furthermore, excessive prolonged drinking can increase the risk of other chronic conditions such as diabetes, hypertension, and many types of cardiovascular diseases (Mostofsky et al., 2016; Polsky & Akturk, 2017). Youth in Kampala slums are at risk of having these conditions as they age. Participants who participated in binge drinking, drinking alcohol at a younger age, and repeated drunkenness were more likely to rate their health as poorer, especially when controlling for variables in Model 2 (Table 2). Those that have sought help were also more likely to rate their health as poorer, and the association was made stronger even after controlling

for age, gender, education level, and religion. This may be indicative of having more knowledge of the effect that alcohol can have on health.

Alcohol consumption not only leads to adverse health outcomes but also leads to other risky behaviors such as low condom use and violence. Also, alcohol consumption and related behaviors have been found to be associated with an increased prevalence of HIV and STDs in Uganda (Brick et al., 2018; Swahn et al., 2019). Furthermore, previous studies have found that compared to other youth surveyed globally, youth in Uganda are more likely to have engaged in sexual intercourse and according to national survey, youth between the ages of 13 and 17 were significantly less likely to know where to get tested for HIV than older youth over 18 (Swahn et al., 2014; Ministry of Gender, Labor, and Social Development, 2018). HIV and other sexually transmitted infections commonly affect individuals with an immunocompromising disease such as AIDs, gonorrhea, and chlamydia (Fuchs & Brockmeyer, 2014; Ghosn et al., 2018). Without treatment, these can lead to the introduction of many comorbidities that are often chronic such as cardiovascular diseases, cancer, and renal dysfunction (Ghosn et al., 2018). In this study, participants who state that they had been diagnosed with HIV or another sexually transmitted infection were more likely to rate their health as poorer. Also, participants who responded that they experienced any kind of injury (from drinking or intimate partner violence) were more likely to rate their health as poorer.

Mental health is an emerging problem among the youth of Kampala slums, and the burden may be demonstrated with the results of this study. Studies have found that there is a linkage between mental symptoms and physical health and that psychosocial wellbeing can affect self-rated health even among youth (Balázs et al., 2018; Mechanic & Hansell, 1987). Many of the variables in the mental health category looked at different aspects of the mental

condition of participants, such as feelings of hopelessness and loneliness. Participants who indicated that they had experienced these feelings were more likely to have a poorer health rating. This was also seen among those who use drugs and alcohol to feel better, those who have tried to hurt themselves, and those that feel that they will die by age thirty.

This study also gives insight into how social cohesion on the personal and neighborhood level affects the self-rated health of youth in Kampala slums. Participants that did not feel social support from their neighborhood and did not feel safe were also more likely to rate their health as *fair/poor*. In contrast, youth that felt hopeful about the future were less likely to give their health a poor rating. These findings are consistent with current studies where social cohesion was found to be associated with self-rated health among youth (Dageid & Grønlie, 2013; Lau & Ataguba; 2015; Olamijuwon et al., 2018; Stafford et al., 2011).

5.3: Recommendations and Prevention Strategies

The results of this study are significant because not only do they highlight the status of self-rated health among youth living in slums in Kampala, Uganda, but they help determine areas where health education to help reduce risk factors and increase health. These findings show that, generally, youth in Kampala consider themselves to be physically healthy, and some are aware of how different behaviors affect their health. Adolescents are at a critical point in their life developmentally, and the behaviors that they develop can affect the trajectory of their adult life. These findings show that more work can be done to reduce the likelihood that an individual will rate their health as poorer and help those who consider themselves as unhealthy.

Prevention methods could include improving the housing of many of the youth by providing roof installment with sturdier materials or providing shelters for youth who are currently homeless. Methods could also include offering additional services for those that have

lost parents where additional counseling and guidance can be given to prevent participation in risky behaviors. To help reduce the prevalence of excessive alcohol consumption, delivering educational and rehabilitation services that help youth can assist in reducing commonly associated outcomes such as increases in HIV and sexually transmitted infections, injury, and intimate partner violence. Additionally, the continuance of availability of antiretroviral therapy and counseling can be of great help to youth in Uganda, especially adolescent females, who may not have access to these services. Furthermore, mental health services for youth could aid in improving the wellbeing of Ugandan youth by providing them with advising, counseling, and ways to deal with stress and worry safely. These services can go a long way in helping youth become healthier inside and out.

5.4 Study Strengths and Limitations

This study had several strengths. Thanks to the persistence of the data collectors and the willingness of the youth, this study had a large sample size of 1,134 participants. The large sample size helps provide insight into what ratings may look like for the entire slum of Kampala, Uganda. Another strength is that all of the participants came from one area, and there were no problems with outside participants that may affect the validity of the study.

Despite the strengths of the study, there were some limitations. First, the data is based on responses from the youth at the UYDEL drop-in centers in Kampala. There is a possibility of social desirability or response bias where participants may not have wanted to answer because they did not want to admit to behaviors that are considered as “bad,” or they may not have been truthful in their answer. Second, the self-rated physical health variable is a very subjective measure and varies from person to person. For each person, the definition of “health” and “healthy” is affected by their culture, social experiences, education, and many other factors. This

discrepancy introduces bias into the measure because “excellent” physical health for one person could mean something else for another person. The participants all come from the slums of Kampala, Uganda, but come from varying socioeconomic statuses and education levels. Third, this study is based on a cross-sectional survey, and the findings may vary if the survey is repeated. Adolescence is a period of development and change, so many of the participants who answered questions at the time of the survey may have very different answers when re-surveyed.

5.5: Further Research

This study adds essential research to the field of public health and gives insight into the under-researched city of Kampala and its youth who live in slums. Subsequent research stemming from this study could look into the effect that the recommendations and interventions introduced have on the future self-rated health of youth and may be done in a longitudinal study. Further research on this topic could look into differences between urban and rural settings or between inner city and slum settings in Uganda or another developing country. These findings can provide insight into the differences in ratings and give more contexts to how health is perceived. Another study could look deeper into how youth in slums rate their health and different cultural determinants that can affect the rating. Culture plays a significant role in the identity of an individual, and developmentally, adolescents are in a crucial period where they are trying to define who they are. Finally, another area of research could be to look into how the ratings can be used to create more targeted interventions for youth.

5.6: Conclusions

As the future of our world, youth have come to the forefront of global health research, especially in developing countries. Due to their environments, there are many health risk

factors that affect the trajectory of children as they develop into adolescents and later into adults. As countries in the developing world start to grow and become more innovative, rapid urbanization has also bolstered the creation and growth of slum developments.

Despite some possible criticisms, the use of self-rated health can be useful and a valid measure of determining the health of adolescents in slums and as an indicator of health disparities. It can also be fruitful when compared to other health measures such as mental health and other health-related characteristics.

Table 1. Correlates of self-rated physical health among youth living in slums of Kampala, Uganda (N=1,132)

	Self-Rated Physical Health		Total	P
	EXCELLENT/GOOD N= 815 (72%)	FAIR/POOR N= 317 (28%)		
Gender				
Male	366 (44.96)	131 (41.32)	497	0.2682
Female	448 (55.04)	186 (58.68)	634	
Age				
Mean (IQR)	16.27 (3)	15.83 (4)	1132	0.0008 ²
Education				
Never Completed Primary	254 (31.44)	142 (45.81)	396	<0.001
Completed Primary	194 (24.01)	69 (22.26)	263	
Secondary or Higher	360 (44.55)	99 (31.94)	459	
Religion				
Christian/Muslim	763 (93.62)	294 (92.74)	1057	0.5950
African Trad/Other	52 (6.38)	23 (7.26)	75	
Parents				
At least 1 parent alive	664 (81.47)	217 (68.45)	881	<0.001
Both parents are dead	151 (18.53)	100 (31.55)	251	
How many rooms does your household use for sleeping?				
One	314 (38.53)	155 (49.05)	469	0.0011
Two	273 (33.50)	92 (29.11)	365	
More than two	209 (25.64)	56 (17.72)	265	
Other	19 (2.33)	13 (4.11)	32	
What is the roof of your home made of?				
Thatch/straw	10 (1.23)	14 (4.42)	24	<.0001 ⁴
Iron sheets	788 (96.69)	294 (92.74)	1082	
Tiles	9 (1.10)	1 (0.32)	10	
Other	8 (0.98)	8 (2.52)	16	
Have you ever lived on the streets with no other place to go?				
Yes	131 (16.09)	118 (37.22)	249	<.0001
No	683 (83.91)	199 (62.78)	882	
Do you have any of the following in your home? Electricity				
Yes	670 (82.41)	197 (62.34)	867	<.0001
No	143 (17.59)	119 (37.66)	262	
How old were you when you had your first full drink of alcohol?				
1-14 yo	103 (12.64)	71 (22.40)	174	0.0001
15-18 yo	166 (20.37)	65 (20.50)	231	
Never	546 (66.99)	181 (57.10)	727	
How many full drinks containing alcohol do you have in a typical day when you are drinking?				
No drinks	589 (72.27)	198 (62.46)	787	0.0045
1-2 drinks	125 (15.34)	70 (22.08)	195	
3 or more drinks	101 (12.39)	49 (15.46)	150	
Have you ever sought help for your drinking?				
Yes	34 (4.17)	25 (7.89)	59	0.0116
No	781 (95.83)	292 (92.11)	1073	
In the past month: How many days did you drink so much that you were really drunk?				
0 days	639 (78.40)	215 (67.82)	854	<.0001
1 or 2 days	114 (13.99)	54 (17.03)	168	
3 to 5 days	51 (6.26)	27 (8.52)	78	

6+ days	11 (1.35)	21 (6.62)	32	
Have you been told by a doctor/nurse or HIV counselor that you have a sexually transmitted infection such as syphilis, herpes, bola, or gonorrhea?				
Yes	282 (34.69)	137 (43.35)	419	0.0068
No	531 (65.31)	179 (56.65)	710	
Have you been told by doctor/nurse or HIV counselor that you have HIV?				
Yes	65 (8.23)	51 (16.35)	116	<.0001
No	725 (91.77)	261 (83.65)	986	
Have you been seriously injured or hurt due to your drinking?				
Yes	76 (9.33)	56 (17.67)	132	<.0001
No	739 (90.67)	261 (82.33)	1000	
In the past year, did your boyfriend/girlfriend hit, slap, or hurt you?				
Yes	101 (12.39)	55 (17.35)	156	0.0298
No	714 (87.61)	262 (82.65)	976	
In the past year, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing your usual activities?				
Yes	447 (55.05)	205 (65.08)	652	0.0022
No	365 (44.95)	110 (34.92)	475	
In the past year, did you ever think of hurting yourself?				
Yes	245 (30.21)	149 (47.45)	394	<.0001
No	566 (69.79)	165 (52.55)	731	
In the past month, how often... Have you felt lonely?				
Never	173 (21.33)	41 (12.97)	214	0.0003
Sometimes	530 (65.35)	210 (66.46)	740	
Often	108 (13.32)	65 (20.57)	173	
In the past month, how often... Have you been so worried about something that you wanted to use drugs or alcohol to feel better?				
Never	539 (66.54)	171 (54.11)	710	0.0003
Sometimes	172 (21.23)	85 (26.90)	257	
Often	99 (12.22)	60 (18.99)	159	
In the past month, how often... Did you feel hopeful about the future?				
Never	88 (10.85)	47 (14.87)	135	0.0010
Sometimes	330 (40.69)	154 (48.73)	484	
Often	393 (48.46)	115 (36.39)	508	
Overall what do you think about the following statement? I will probably die before I am thirty.				
Yes	88 (10.82)	58 (18.35)	146	0.0007
No	725 (89.18)	258 (81.65)	983	
Overall what do you think about the following statement? There are people I can count on in this neighborhood				
Yes	675 (83.13)	239 (75.63)	914	0.0039
No	137 (16.87)	77 (24.37)	214	
Overall what do you think about the following statement? I feel safe in this neighborhood.				
Yes	643 (79.19)	232 (73.42)	875	0.0370
No	169 (20.81)	84 (26.58)	253	

Note. P-values were calculated from chi-square tests unless otherwise noted. P-values were assessed based on a significance level of 0.05. This tables uses column percentages.

1. Descriptive statistics for full sample
2. Wilcoxon Two Sample Test
3. Fischer's Exact Test

Table 2. Multivariable analysis between self-rated physical health and independent variables

	Crude OR	aOR ¹	aOR ²
Gender			
Male	1.00	--	1.00
Female	1.16 (0.89, 1.51)	--	0.75 (0.54, 1.02)
Education			
Never Completed Primary	1.00	--	1.00
Completed Primary	0.64 (0.45, 0.90)	--	1.64 (1.11, 2.42)
Secondary or Higher	0.50 (0.36, 0.67)	--	1.24 (0.92, 1.89)
Religion			
Christian/Muslim	1.00	--	1.00
African Trad/Other	1.15 (0.69, 1.91)	--	1.30 (0.68, 2.51)
Parents			
At least 1 parent alive	1.00	1.00	1.00
Both parents are dead	2.03 (1.51, 2.72)	1.91 (1.41, 2.59)	1.53 (1.07, 2.18)
How many rooms does your household use for sleeping?			
One	1.00	1.00	1.00
Two	0.68 (0.50, 0.93)	0.69 (0.51, 0.95)	0.89 (0.63, 1.27)
More than two	0.54 (0.38, 0.77)	0.60 (0.41, 0.86)	0.80 (0.53, 1.21)
Other	1.39 (0.50, 0.93)	1.23 (0.57, 2.63)	0.74 (0.27, 2.05)
What is the roof of your home made of?			
Thatch/straw	1.00	1.00	1.00
Iron sheets	0.27 (0.12, 0.61)	0.23 (0.09, 0.54)	0.35 (0.12, 1)
Tiles	0.08 (0.01, 0.73)	0.06 (0.01, 0.61)	0.10 (0.01, 1.13)
Other	0.71 (0.20, 2.55)	0.55 (0.15, 2.06)	0.49 (0.09, 2.65)
Have you ever lived on the streets with no other place to go?			
Yes	3.09 (2.30, 4.15)	3.41 (2.60, 4.67)	2.05 (1.41, 2.99)
No	1.00	1.00	1.00
Do you have any of the following in your home? Electricity			
Yes	1.00	1.00	1.00
No	2.83 (2.12, 3.78)	2.68 (1.99, 3.62)	2.53 (1.79, 3.57)
How old were you when you had your first full drink of alcohol?			
1-14 yo	2.08 (1.47, 2.94)	2.41 (1.68, 3.46)	1.42 (0.71, 2.81)
15-18 yo	1.18 (0.85, 1.65)	1.55 (1.07, 2.25)	1.17 (0.57, 2.40)
Never	1.00	1.00	1.00
How many full drinks containing alcohol do you have in a typical day when you are drinking?			
No drinks	1.00	1.00	1.00
1-2 drinks	1.67 (1.19, 2.33)	1.98 (1.39, 2.83)	0.95 (0.40, 2.25)

3 or more drinks	1.44 (0.99, 2.11)	1.83 (1.22, 2.75)	0.49 (0.17, 1.38)
Have you ever sought help for your drinking?			
Yes	1.97 (1.15, 3.35)	2.30 (1.32, 4.02)	1.36 (0.64, 2.90)
No	1.00	1.00	1.00
In the past month: How many days did you drink so much that you were really drunk?			
0 days	1.00	1.00	1.00
1 or 2 days	1.41 (0.98, 2.02)	1.69 (1.16, 2.47)	1.22 (0.59, 2.54)
3 to 5 days	1.57 (0.96, 2.57)	1.96 (1.17, 3.27)	1.57 (0.63, 3.90)
6+ days	5.67 (2.69, 11.96)	6.79 (3.14, 14.69)	6.00 (1.87, 19.32)
Have you been told by a doctor/nurse or HIV counselor that you have a sexually transmitted infection such as syphilis, herpes, bola bola, or gonorrhea?			
Yes	1.44 (1.11, 1.88)	1.49 (1.12, 1.97)	1.10 (0.78, 1.55)
No	1.00	1.00	1.00
Have you been told by doctor/nurse or HIV counselor that you have HIV?			
Yes	2.18 (1.47, 3.23)	2.25 (1.49, 3.40)	1.77 (1.09, 2.87)
No	1.00	1.00	1.00
Have you been seriously injured or hurt due to your drinking?			
Yes	2.09 (1.44, 3.03)	2.42 (1.63, 3.58)	1.07 (0.56, 2.01)
No	1.00	1.00	1.00
In the past year, did your boyfriend/girlfriend hit, slap, or hurt you?			
Yes	1.48 (1.04, 2.12)	1.71 (1.18, 2.48)	1.07 (0.68, 1.69)
No	1.00	1.00	1.00
In the past year, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing your usual activities?			
Yes	1.52 (1.16, 1.99)	1.66 (1.25, 2.20)	0.85 (0.59, 1.24)
No	1.00	1.00	1.00
In the past year, did you ever think of hurting yourself?			
Yes	2.09 (1.60, 2.73)	2.26 (1.71, 2.99)	1.56 (1.07, 2.28)
No	1.00	1.00	1.00
In the past month, how often... Have you felt lonely?			
Never	1.00	1.00	1.00
Sometimes	1.67 (1.15, 2.44)	1.70 (1.16, 2.49)	1.47 (0.94, 2.31)
Often	2.54 (1.61, 4.02)	2.51 (1.55, 4.05)	1.51 (0.82, 2.78)
In the past month, how often... Have you been so worried about something that you wanted to use drugs or alcohol to feel better?			
Never	1.00	1.00	1.00
Sometimes	1.56 (1.14, 2.13)	1.68 (1.22, 2.33)	0.99 (0.65, 1.53)

Often	1.91 (1.33, 2.75)	2.08 (1.41, 3.06)	0.77 (0.44, 1.36)
In the past month, how often... Did you feel hopeful about the future?			
Never	1.00	1.00	1.00
Sometimes	0.87 (0.58, 1.31)	0.89 (0.59, 1.34)	0.85 (0.52, 1.38)
Often	0.55 (0.36, 0.83)	0.57 (0.38, 0.88)	0.73 (0.45, 1.19)
Overall what do you think about the following statement? I will probably die before I am thirty.			
Yes	1.85 (1.29, 2.66)	1.97 (1.36, 2.85)	1.24 (0.79, 1.95)
No	1.00	1.00	1.00
Overall what do you think about the following statement? There are people I can count on in this neighborhood			
Yes	1.00	1.00	1.00
No	1.59 (1.16, 2.18)	1.55 (1.12, 2.14)	1.20 (0.73, 1.98)
Overall what do you think about the following statement? I feel safe in this neighborhood.			
Yes	1.00	1.00	1.00
No	1.38 (1.02, 1.86)	1.43 (1.05, 1.94)	0.99 (0.63, 1.58)

Note. aOR= “adjusted odds ratio”;

1. Adjusted for age, gender, religion, and education
2. Adjusted for all other variables

Figure 1: Self-Rated Physical Health vs Independent Variables

■ excellent/good ■ fair/poor

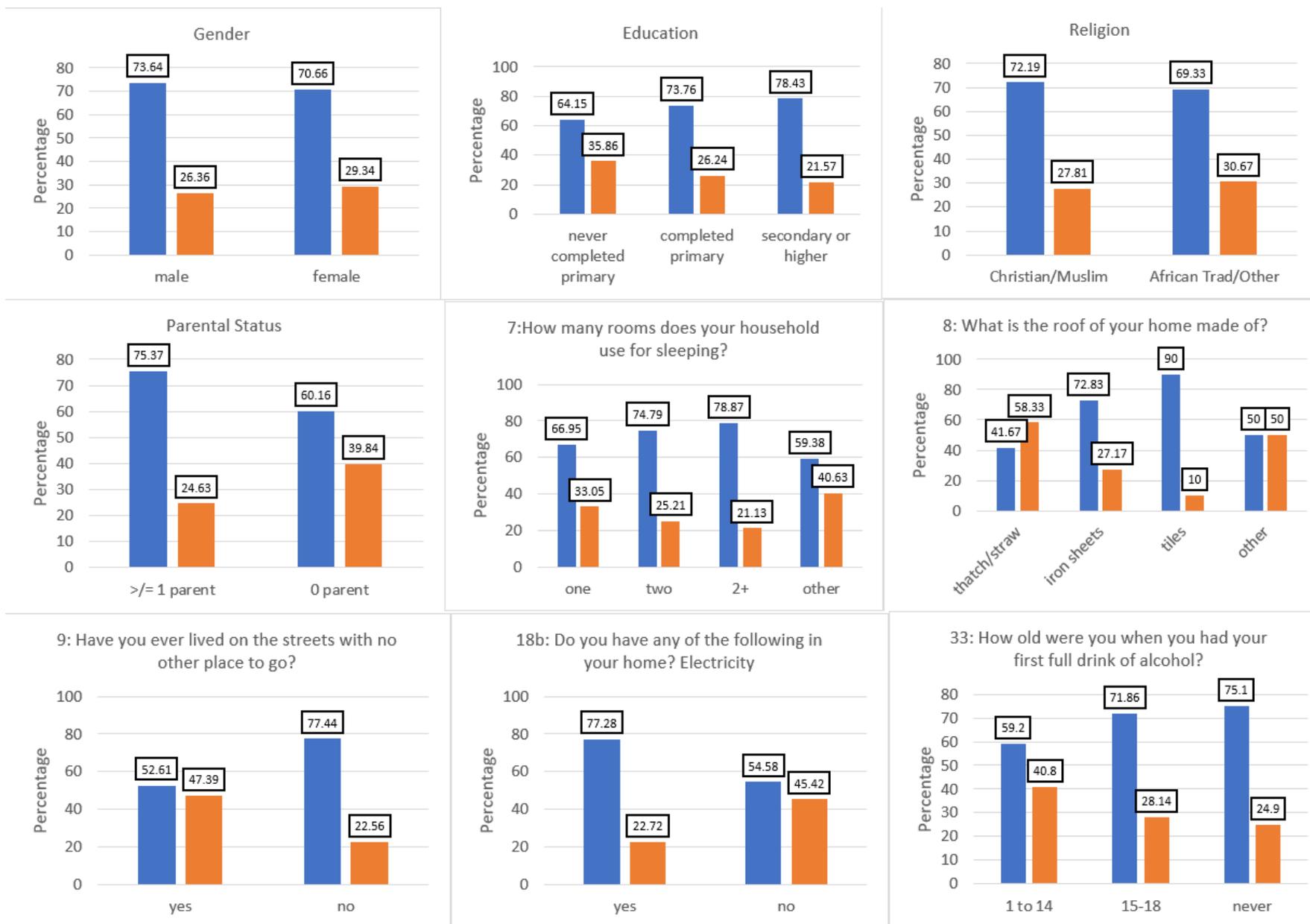


Figure 1: Self-Rated Physical Health vs Independent Variables

■ excellent/good ■ fair/poor

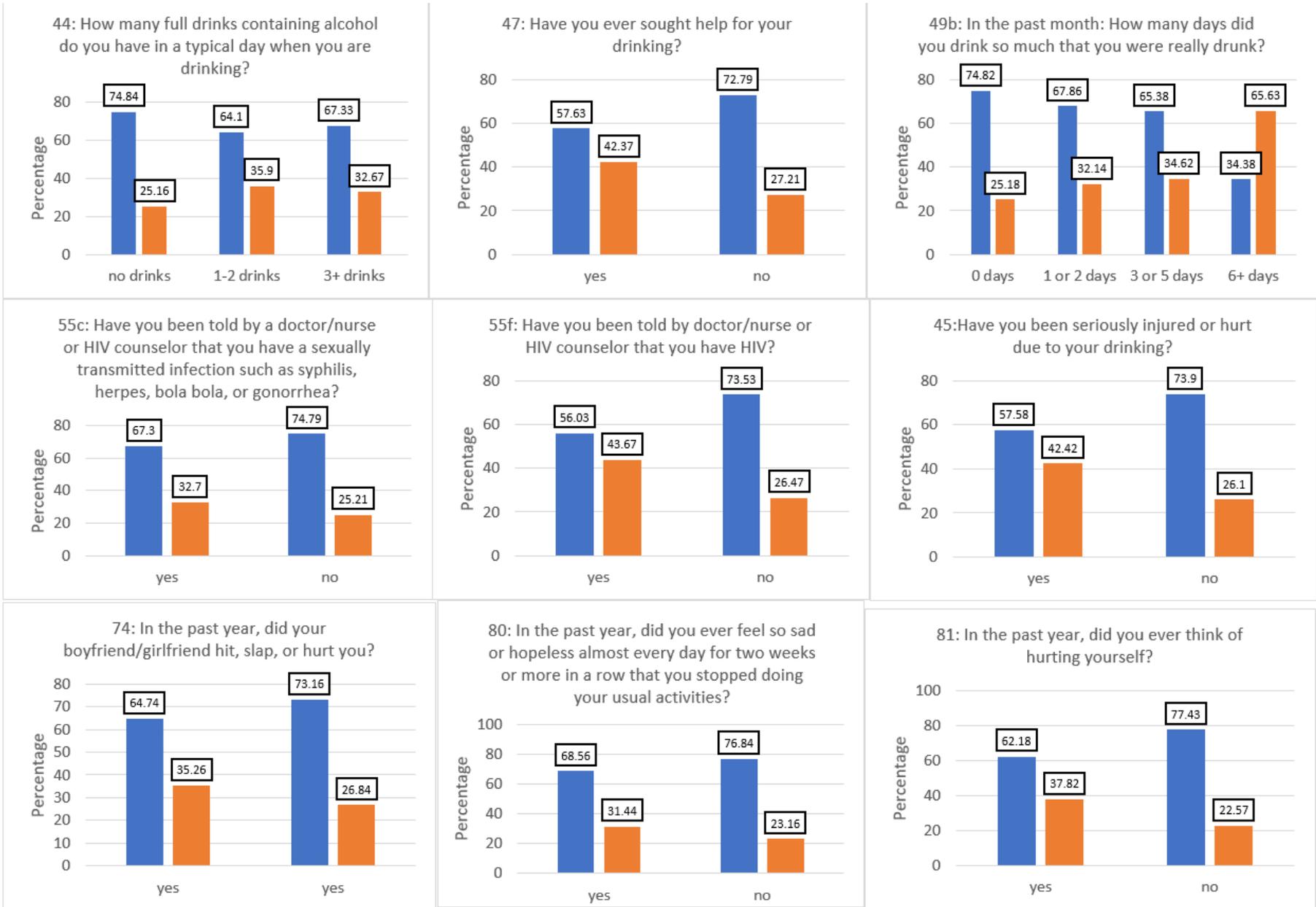
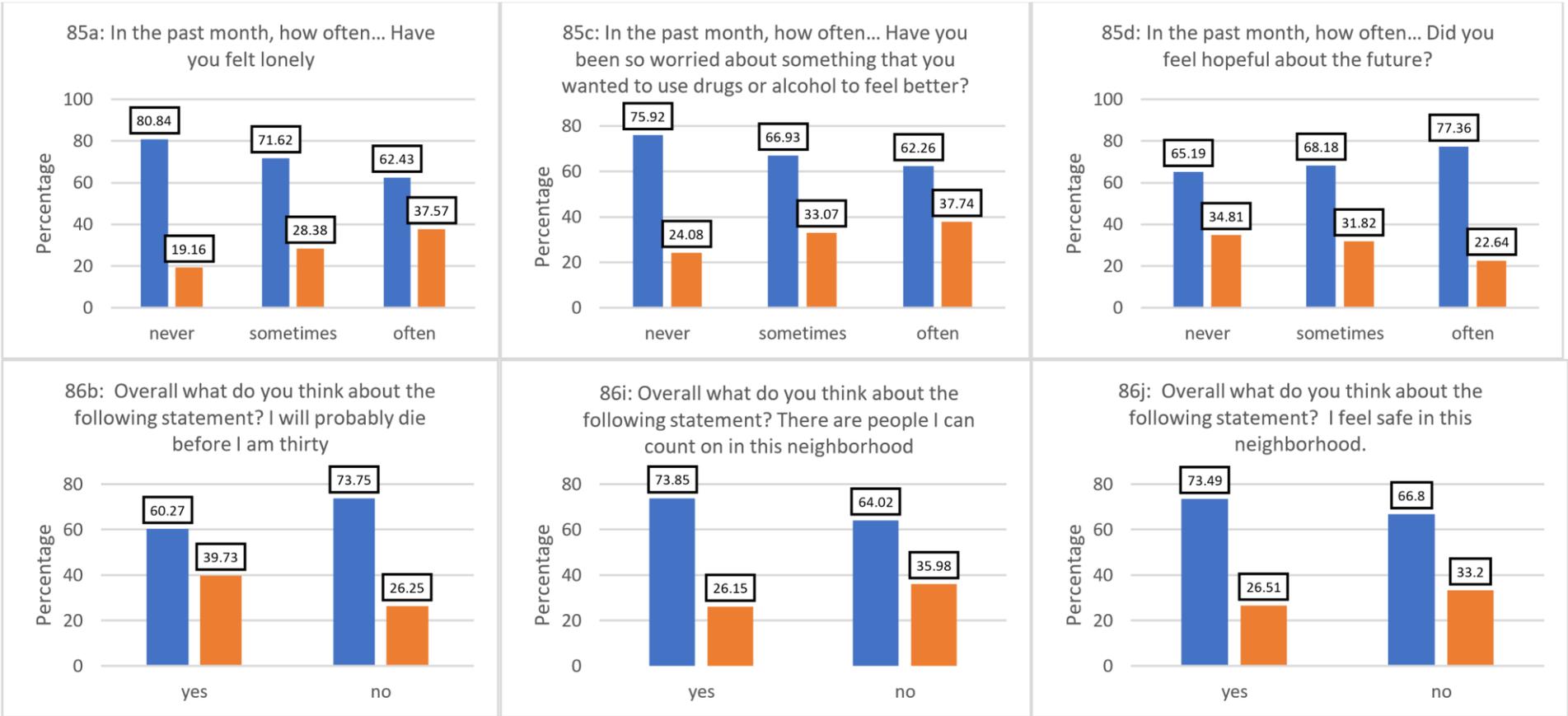


Figure 1: Self-Rated Physical Health vs Independent Variables

■ excellent/good ■ fair/poor



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