

Prevalence of Selected Risky Health Behaviours and Their Determinants among Lusaka Residents, Zambia

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Abstract

Risky health behaviour can be described as action or deliberate inaction by an individual that affect his or her own health or the health of others. The prevalence of risky health behaviours remains high in Lusaka, Zambia and globally. These behaviours are most likely to cause unwanted health related states. The selected risky health behaviours in this study include: Risky sexual behaviour that lead to unintended pregnancies or STIs, harmful alcohol and other drugs usage, behaviours that lead to violence and unintended injuries, unhealthy dietary behaviours and physical inactivity. In this study, the prevalence of risky health behaviours and their determinants will be determined.

Methods: A cross-sectional survey was conducted in Lusaka province, Zambia to collect data from a sample of 422 Lusaka residents using a structured questionnaire. Descriptive statistics were used to analyse the data. Cross tabs using a *Chi-square* and expressed with p-value for statistical significances was done to determine the association.

Results: The prevalence of risky dietary behaviours, physical inactivity, harmful use of alcohol and other drugs, risky sexual behaviour, and behaviour leading to unintentional injuries and violence were 100%, 56.5%, 40.2%, 78.7%, and 77.1%, respectively. Gender was found to be the only significant determinant of harmful use of alcohol and other drugs and behaviour leading to unintentional injuries and violence. No significant associations were found between the other risky behaviours and age, income, or education level.

Conclusion: The study highlights the high prevalence of risky health behaviours in Lusaka province, Zambia, and the need for targeted interventions and policies to reduce the risk of these behaviours. The findings also suggest that gender based cultural norms and expectations may play a role in shaping harmful use of alcohol and other drugs and behaviour leading to unintentional injuries and violence.

Keywords: Central Statistical Office (CSO) • Deliberate • Alcohol • HIV infection • Malaria

Abbreviations: CSO: Central Statistical Office; CVS: Cardio Vascular Disease; HIV and AIDS: Human Immune Virus/Acquired Immune Deficiency Syndrome; NCD: Non Communicable Disease; STI: Sexually Transmitted Diseases; UPND: United Party for National Development

Introduction

Risky health behaviour can be described as action or deliberate inaction by an individual that affect his or her own health or the health of others. The selected and yet common risky behaviours are: Behaviour that contributes to unintentional injuries and violence, sexual behaviour that lead to unwanted pregnancies or sexually transmitted disease, alcohol or drug abuse, unhealthy dietary behaviour and inadequate physical activity. This study aims to understand the several factors that influence the risky behaviours of Lusaka residents.

The prevalence of NCDs and STIs globally is growing, mostly due to lack of practice of healthy behaviours. In Asia, according to Thorne the HIV epidemic in Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan) has accelerated since 2000 and this growth has been attributed to escalating drug use, reflecting Central Asia's geographic position along major drug trafficking routes. HIV infections are also increasing in other populations including female sex workers, their clients, immigrants and prisoners.

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In America, the estimated prevalence of sitting watching television or videos at least 2 h/d was high in 2015–2016 (ranging from 59% to 65%); the estimated prevalence of computer use outside school or work for at least 1 h/d increased from 2001 to 2016 (from 43% to 56% for children, from 53% to 57% among adolescents, and from 29% to 50% for adults); and estimated total sitting time increased from 2007 to 2016 (from 7.0 to 8.2 h/d among adolescents and from 5.5 to 6.4 h/d among adults). Some evidence suggests that in recent years the prevalence of heavy drinking has increased among Russian adolescents [1].

Coming closer to the area of study, the SADC region also experiences an expanding rate of prevalence of risky health behaviour. Alcohol and Other Drug use (AOD) and risky sexual behaviours remain high among adolescents in South Africa and globally. Other studies show that in 2015, alcohol was the fifth leading cause of death and disability in South Africa, which is likely attributable to alcohol's role in causing sexually transmitted infections and interpersonal violence, the two leading causes of death in South Africa [2].

On the other hand, Lusaka is rapidly growing into a modern society and thus picking up some of the behaviours accompanied with modern societies. The city's residents exhibit some common risky health behaviours that in most cases have led to compromise of their health status. Risky health behaviours have a huge effect on health because these behaviours jeopardise the health of people. Amongst the top ten causes of death in Zambia are HIV/AIDS 20% (making it number one on the list, followed by stroke 4%, ischemic heart diseases 4%, syphilis 2% and road injuries% [3]. The listed health conditions may have other causing factors but they are mostly caused by an individual's health behaviour like sedentary life style. A significant percentage of our health is determined by our own behaviour. The prevalence of risk behaviours in individuals may differ due to different associated factors, which are; socio-economic factors (modifiable), sex or age modifiable. Sedentary life style diseases like obesity, lung cancer and cardiovascular diseases are on the rise in Zambia as most people are engaging themselves in life threatening life styles [4]. Non-communicable disease is an emerging global concern and reports show that this includes Zambia. As indicated above, risky healthy behaviour maybe the main cause of some non-communicable diseases. This presents a huge problem in developing countries like Zambia because of the already existing high rates of communicable diseases where almost all attention has been taken leaving non-communicable disease hardly attended too. NCDs were not prioritised and supported, as much of the attention was placed on the communicable diseases, particularly HIV and AIDS, malaria, tuberculosis and TB (MOH government of the republic of Zambia).

Risky health behaviours are known to have associated factors like age, sex, social economic factors etc. These factors seem to have a strong influence on which risky behaviour or behaviours an individual is likely to portray. The problem behaviour theory and the social cognitive theory may provide a conceptual framework in understanding risky behaviour [5]. The problem behaviour theory suggests that there are environmental, personality and behavioural factors that can influence or protect an adolescent from problem behaviour. These factors can help to determine whether an individual will engage in problem behaviour or not. Whilst the social cognitive theory suggests that learners can acquire new behaviours and

knowledge by simply observation a model (social-cognition) learning theory; definition and examples, 2012. Therefore, successful role models who take drugs are likely to influence adolescents.

Statement of the problem

Risky health behaviours are indulgence in actions that would result in potential harm of an individual's health. In the past years, there has been an increase in the prevalence of some risky health behaviours in Lusaka yet their associated factors are still unclear as research has not been done to fully understand them. There is a rise in the prevalence rate of diseases, infections or deaths that are caused by risky health behaviour. Avert recorded the number of newly HIV infected adults at 40000 in Zambia. About 200000 cases of STDs are treated annually in the formal health sector and young people are the most affected. High risk sexual behaviour has been identified as the major risk factor for the STDs among young people [6]. NCDs is another ever rising health challenge that Lusaka is currently facing that may also be as a result of high prevalence rate of risky behaviours (lifestyle to be precise). Current estimates indicate that Zambia may be one of the countries with a high prevalence of NCDs. Lusaka is quickly picking up a modern society which is accompanied by changes in eating habits and lifestyle. A common wealth report on health states that NCDs in Zambia accounted for about 27% of all deaths in 2008 and the most prevalent NCDs that year was CVDs which accounted for 12% of deaths across all age groups. A recent WHO report adds that NCDs are also driven by forces which include rapid unplanned urbanisation and are the outcomes of unhealthy lifestyles. Alcohol intoxication is a well-known risky behaviour in Zambia more especially among youths. Swahn, et al. highlights that in Africa, alcohol use has been found to be associated with road traffic crashes, unprotected sex, and mental disorders. In Zambia specifically, 40.8% of adolescents (36.7% of boys and 45.2% of girls) have ever drunk alcohol [7].

By identifying the prevalence of these risky behaviors and their determinants, the survey can provide valuable information for designing effective public health interventions aimed at reducing the burden of unintentional injuries and violence in Lusaka. For example, previous research has shown that physical inactivity is associated with an increased risk of non-communicable diseases, such as diabetes, hypertension, and cardiovascular disease [8]. Similarly, harmful use of alcohol and other drugs has been linked to increased risk of injury and mortality. By identifying specific age groups, gender, income levels, or educational levels that are more likely to engage in these risky behaviors, the survey can help target interventions to those at highest risk and tailor messages to specific populations.

The current statistics related to risky health behaviours are too alarming and are cause for further research on the topic. A focus on the factors that affect the prevalence of risky health behaviours in Lusaka may give information that may help to control this prevalence rate.

Rationale of justification

Risky health behaviours may cause diseases that terrorise the world. And among them, some cannot be treated but only managed like CVDs, HIV etc. Therefore, such diseases are better off prevented. Primary prevention based on comprehensive population-wide programmes

is key to prevent risky behaviour induced diseases. As stated earlier, Lusaka city is experiencing a growth in risky behaviour diseases like STIs and CVDs. A research on the prevalence and determinants of risky health behaviour would significantly help to raise awareness of the consequences of the actions of the target population. Understanding the correlates of risky health behaviour is necessary to prevent and avoid some unnecessary deaths that are due STIs, careless driving and other diseases that have terrorised Lusaka and later Zambia as a whole.

By identifying the prevalence of these risky behaviours and their determinants, the survey can provide valuable information for designing effective public health interventions aimed at reducing the burden of unintentional injuries and violence in Lusaka. For example, previous research has shown that physical inactivity is associated with an increased risk of non-communicable diseases, such as diabetes, hypertension, and cardiovascular disease [9]. Similarly, harmful use of alcohol and other drugs has been linked to increased risk of injury and mortality. By identifying specific age groups, gender, income levels, or educational levels that are more likely to engage in these risky behaviours, the survey can help target interventions to those at highest risk and tailor messages to specific populations.

Furthermore, the survey can identify cultural beliefs and norms that contribute to risky behaviours, providing insight into the social and cultural contexts that shape individual behaviour. This information can be used to develop culturally appropriate interventions that address the underlying cultural factors that contribute to risky. For example, previous research has shown that traditional gender norms and beliefs about masculinity can contribute to risky sexual behaviour and violence. By identifying these underlying cultural factors, interventions can be designed to challenge and change harmful cultural norms.

Harmful alcohol use

Alcohol is a psychoactive substance with dependence producing properties and whose harmful use causes a large burden disease, social and economic burden in societies.

WHO defines hazardous consumption of alcohol by quality, quantity and pattern of drinking? Despite possessing the robust legal discourse surrounding alcohol, there is lack of enforcement of these policies in Zambia such as the age of drinking, the prohibition of unlicensed facilities or the hours at which bars must be closed/open-contributes to the availability of these spaces for consumption [10]. In Zambia 45.1% of students' grades 7-10 exhibit problematic drinking and 42.4% report drunkenness [11]. About 40/188 (21.2%) pregnant women were identified by the T-ACE as at risk for problem drinking during pregnancy. A small proportional of women at both clinics reported binge drinking during the periconceptional period (12.7% vs. 3.2%) and beyond periconceptional period.

Findings by WHO published in Washington post indicated that there is no nation that has harder drinking women in the world than Zambia, although this finding requires extra research. About 30% to 50% of all women drinkers in Zambia, South Africa and Chad are binge drinkers [12].

In 2016 the leading contributors to the burden of alcohol attributable deaths among men included injuries, digestive diseases and alcohol use disorders.

In Zambia, alcohol and marijuana are the most abused drugs followed by volatile solvents and hard drugs such as heroin and cocaine [13].

Physical inactivity and unhealthy diets

Physical activity is defined as any bodily movement produced by the skeletal muscles that require energy expenditure. It comprises of all activities, at any intensity and time (day or night). Examples may include running, walking, dancing, swimming, playing soccer etc. Physical inactivity is a major public health concern worldwide, and is associated with numerous chronic health conditions such as obesity, cardiovascular disease, and diabetes. In Zambia, physical inactivity is a growing problem, with recent studies showing that up to 58% of adults in Lusaka are physically inactive.

Physical activities are performed by everyone, only the intensity differs from one person to another. Variables that generate motivation to physically exercise point to free time, maintaining physical fitness and appearance, health and an enjoyment of sports in that exact order as to why people exercise [14]. Prevalence of competition, social recognition and challenge are shown as factors whilst fatigue and laziness as barriers to physical exercise among adolescent, however with respect to gender, boys show a greater presence of motivations towards doing physical exercise, whilst girls show more barriers. The press release: Protect spaces for sports and promote physical activity wrote that physical inactivity causes more than three million deaths per year globally, and accounts for between 1-4 percent of all healthcare cost. But despite the benefits of adopting an active lifestyle, a fifth of men and a quarter of women do not meet health organisation minimum guidelines for physical activity. WHO makes a number of recommendations as a way to improve cardiorespiratory and muscular fitness, bone and functional health? The first recommendation is that older adults should at least do 150 minutes of moderate intensive aerobic physical activity throughout the week or do at least 75 minutes of vigorous intensity activity. The second recommendation by WHO is that aerobic physical activity must be performed in bouts of at least 10 minutes duration with the third one being that of addition health benefits, older adults should increase their moderate intensity aerobic physical activity to 300 minutes per week or engage 150 minutes of vigorous intensity aerobic physical activity weekly or a an equivalent combination of both vigorous and moderate intensity activities. The fourth recommendation by who is that older adults with poor mobility should perform physical activities to enhance balance and prevent falls on 3 or more days per week, while those involving major muscle groups should be done 2 or more days a week. The fifth recommendation by WHO is that, when older adults cannot do recommended amounts of physical exercises due to health conditions, they should be as physically active as their abilities and conditions allow.

There are several determinants of physical inactivity, including age, gender, income, and education level. Research has shown that physical activity levels decrease with increasing age, with older adults being less likely to meet the recommended levels of physical activity. Additionally, women are often found to be less

physically active than men, with cultural and social factors playing a role in this disparity. Socio economic status, as measured by income and education level, has also been found to be a determinant of physical inactivity, with individuals with lower income and education levels being less likely to engage in regular physical activity [15].

Unhealthy dietary behaviour

Unhealthy diets includes overeating of fatty and greasy food, milk products, sweet foods, highly flavored food, too pungent, leading to damp heat. Having excess or deficient nutrients to a point of costing the body its health.

Unhealthy dietary behaviours are a significant public health concern as they can contribute to the development of chronic diseases such as obesity, diabetes, and cardiovascular disease. In this literature review, we will explore unhealthy dietary behaviours among Lusaka residents and their determinants.

Several studies have identified unhealthy dietary behaviours among Lusaka residents. A study conducted by Zulu and Kalesha found that the consumption of high fat and high sugar foods was prevalent among adults in Lusaka, particularly those with low levels of education and income. Another study found that the consumption of fast foods and sugary drinks was also high, with 75% of participants reporting consuming fast food at least once a week [16].

Inadequate consumption of fruits and vegetables was also a common dietary behaviour among Lusaka residents. One study found that only 22% of adults in Lusaka consumed the recommended five servings of fruits and vegetables per day. This behaviour was more prevalent among those with lower levels of income and education.

Determinants: Several determinants of unhealthy dietary behaviours among Lusaka residents have been identified, including age, gender, income, and education level. Younger individuals were found to consume more fast foods and sugary drinks, while older individuals consumed more fruits and vegetables. Females were found to consume more fruits and vegetables than males, while males consumed more meat and meat products.

Income and education level were also found to be significant determinants of unhealthy dietary behaviours. Individuals with lower levels of income and education were more likely to consume unhealthy foods such as fast foods and high fat and high sugar foods.

Risky sexual behaviours

These behaviours can be described as actions that increase the probability of unintended pregnancies and STIs in a person engaging in sexual activities.

Unprotected sex is one of the examples of a risky sexual behaviour. This simply means having sex without a condom, an activity making it more likely for an individual to contract STIs through bodily fluids. Having multiple sexual partners also increases the probability of one contracting STIs because the more the partners, the more chances of one having an infection. Child sexual abuse is another problem prevalent in Lusaka and most parts of Zambia and it is recognised as a public health concern. However, a lot of cases remain unreported; this is because communities regarded child abuse to be necessary for

report only if the abused child was less than 5 years old, a female, and if the trauma the child was subjected to was severe. This was because older girls were seen to be able to have consensual sex, and boys were traditionally viewed as being strong and thus, not report most cases. Parents were also seen to be losing control over their children as most of them were involved in excessive beer drinking leading to failure in managing their children [17].

The youths in Zambia have limited access to information concerning sexual reproductive health which puts them at a higher risk of unwanted pregnancies, however, talking about other methods of preventing pregnancy or sexually transmitted infections than abstinence is considered culturally unacceptable. According to 2013-14 ZHDS, 28.5% of girls aged 15-19 have ever been pregnant or had live birth. In Zambia, there are regional differences in adolescent pregnancy. The copper belt has the lowest portion of girls aged 15-19 ever pregnant (16-19%), while the Western Province (41%) and North Western Province (41%) have the highest proportions. In addition, annually 250,000 young people aged 15-19 years are newly infected with HIV according to 2015 data. The infertility rate in Zambia is 5 births per woman and adult HIV prevalence is about 11.5% with heterosexual couples being the most affected group. Joint counselling and testing couples for HIV has reduced up to 58% of new HIV infections in Zambian clinics.

Behaviours that lead to unintentional injuries and violence

Unintentional injuries and violence are major public health issues that affect individuals and communities worldwide. According to the World Health Organization (WHO), unintentional injuries account for approximately 5 million deaths each year, while violence results in an estimated 1.3 million deaths globally. In this literature review, we will explore the behaviours that lead to unintentional injuries and violence among Lusaka residents, with a focus on determinants such as age, gender, income, and education level.

Unintentional injuries: Unintentional injuries refer to injuries that occur without intent, such as accidents or falls. One of the leading causes of unintentional injuries in Lusaka is road traffic accidents. Studies have shown that younger individuals, particularly males, are at higher risk of being involved in road traffic accidents [18]. Another study found that low-income individuals are at higher risk of experiencing unintentional injuries due to poor living conditions and inadequate safety measures in their homes.

In addition to road traffic accidents, other forms of unintentional injuries among Lusaka residents include burns, drowning, and fall. One study found that children under the age of five are at higher risk of experiencing burns due to inadequate supervision and exposure to open fires. Falls are also a significant cause of unintentional injuries among the elderly, who may have reduced mobility and balance.

Violence: Violence is a major public health concern, with both physical and psychological consequences for individuals who experience it. In Lusaka, interpersonal violence, including domestic violence, is a prevalent form of violence. Studies have shown that women are at higher risk of experiencing domestic violence than men, and low-income individuals are more likely to experience violence in their communities.

Apart from domestic violence, other forms of violence among Lusaka residents include robbery, assault, and sexual violence. One study found that young males are more likely to be victims of robbery, while females are more likely to experience sexual violence.

Materials and Methods

Objectives

General objective: To determine the prevalence of selected risky health behaviour in Lusaka and to determine their associated factors.

Specific objectives

- To determine the prevalence of selected risky behaviour among residents of Lusaka city, Zambia.
- To assess the correlation between the prevalent risky health behaviours and their determinants among Lusaka residents.

Research questions

- What is the prevalence rate of risky behaviour health behaviour in Zambia?

- What determine the prevalence of the risky health behaviour are Lusaka residents?
- Which risky health behaviour is more prevalent in the given population and why?
- Does the prevalence of some risky behaviour affect the availability of the other risky behaviour?

Measurements

Definition of key terms

Health: State of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity.

Risky health behaviours: Those behaviours that potentially expose people to harm, or significant risk of harm, which prevent them from reaching their potential in life and which can cause significant morbidity or mortality (Table 1).

Variables	Variable type	Indicator	Scale
Harmful alcohol use	Dependent	Number of bottles consumed/week	<ol style="list-style-type: none"> 1. Harmful (more than three bottle for women or more than four bottles for men per week). 2. Otherwise, not harmful.
Risky sexual behaviour	Dependent		<ol style="list-style-type: none"> 1. Risky (having more than one sexual partners, having unprotected sex, engaging in sex at ages below 18 years, taking alcohol or drugs before or during sexual intercourse). 2. Otherwise, not risky sexual behaviour.
Physical inactivity	Dependent	Intensity and duration of physical activities	<p>5 to 17 years engaging in moderate intensity physical activities throughout the week for 60 minutes or engaging in vigorous intensity physical activity throughout the week for 60 min. Or 18 to 64 years engaging in moderate intensity physical activities throughout the week for 150 minutes or engaging in vigorous intensity physical activity throughout the week for 75 minutes. Or 65 years plus engaging in moderate intensity physical activities throughout the week for 150 minutes or not engaging in vigorous intensity physical activity throughout the week for 75 minutes.</p> <ol style="list-style-type: none"> 1. All of the above means adequate physical activities. 2. Otherwise, it would be physical inactivity.
Unhealthy dietary behaviours	Dependent	Frequency of foods high in sugar and fats.	<p>Having meals rich in sugars e.g., sugar coated serial regularly or adding sugar to your breakfast, adding sugar to drinks, cakes, chocolate, sweets or taking fizzy drinks or regularly eating pre-prepared meals e.g., sandwich. Canned beef. Or eating savoury snacks regularly or having main meals that have little or no vegetables or having main meals rich in fatty foods e.g., 3 or more pieces of chicken or large pieces or pork etc.</p> <ol style="list-style-type: none"> 1. All of the above means unhealthy diet otherwise means healthy diet. 2. Otherwise, the diet is healthy.

Behaviours that lead to unintentional injuries or violence.	Dependent	Presence of behaviours that lead to unintended injuries	Engaging in fights of all sorts. Or not wearing a seat belt whenever driving. Or driving whilst drunk/being driven whilst drunk/being on phone whilst driving. 1. The above is behaviour that leads to unintentional injuries or violence. 2. Otherwise, means behaviour that doesn't lead to unintentional injuries or violence.
Age	Independent	14 years	14 years and above
Gender	Independent	Gender	1. Male 2. Female
Average monthly income	Independent	Low income earning. Low Mid income earning. Middle income earning. Higher income earning.	1. Lower class <k 3000 per household/month. 2. Lower-middle class-k 3000<=/ <=/ k 5000 per household/ month. 3. Middle class k 5000<=/ <=/ k 10000 per household per month. 4. Higher class >k 10000 per household/month.
Education level	Independent	Illiterate, moderately educated, highly educated	1. No education 2. Primary education 3. Secondary education 4. Tertiary education

Table 1. Measurements.

Conceptual framework

The conceptual framework presented below outlines (as a process) how various factors influence an individual, leading to increase risky health behaviours, and non-communicable diseases, and STIs/HIV (Figure 1).

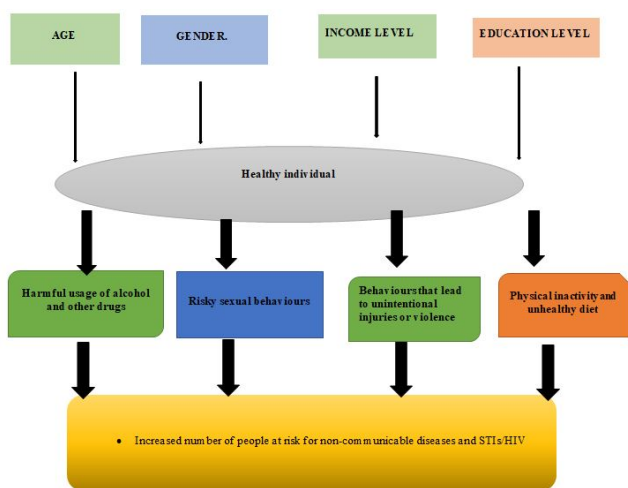


Figure 1. Conceptual framework.

Study site

The study was conducted in Lusaka which is the capital city of the republic of Zambia with the population of 1.7 million. It was founded by the British government in 1914. It serves as Zambia’s capital and the country’s commercial centre with eight districts, namely; Lusaka,

Chongwe, Luangwa, Kafue, Chirundu, Chilanga, Shibuyunji and Rufunsa.

Study design

A cross sectional study was conducted to determine the prevalence of risky health behaviours and their determinants among Lusaka residents.

Target population

This study targeted Lusaka residents.

Sampling methods

Simple random sampling method was used in this research study. This was a necessary method for selecting a probability sample. This method was used because a representative sample of a larger population was going to be used to make generalizations to the whole population. The inclusion and exclusion criteria acted as a guide on the kind of participants we considered.

Sample size

The sample size will be large enough to obtain the required data. As it is a cross sectional study: Information needed to determine the minimum required sample size is: An estimate of Prevalence (P), desired confidence level (alpha) and desired width of confidence interval (d).

For large population sizes, the sample size is given by the

$$n = Z^2 P Q / d^2$$

Where,

$z=1.96$ at $(\alpha)=0.05$ and $Q=100-P$

From the study done by Baily, et al. $P=66.6$.

$n=1.96^2 (66.6) (100-66.6)/5^2$

$n=341$

We initially considered taking 450 participants. However, the study only involved a total of 422 participants.

Inclusion and exclusion criteria

Inclusion criteria

- The study involved all male and female residents of Lusaka who were 16 years and above.
- Males and females who have given consent or consent obtained from their guardians or parents.
- These participants were picked from random places in Lusaka.

Exclusion criteria: This study excluded all non-Lusaka residents, and non-responsive Lusaka residents.

Data collection

A questionnaire was used to collect data in person as well as via google platforms.

Data analysis

Qualitative analysis was done. Data was collected and coded. The data collected from the study was analysed using SPSS software 26, and the obtained results were tabulated in tables of frequencies and percentages (%). Cross Tabs using a *Chi-square* and expressed with p-value for statistical significances was done to determine the association between the risky health factors and their determinants.

Study limitation

- Inability to generalize the findings due to a non-random sample.

- Some respondents were giving socially desirable responses.
- Some respondents answered some sections and left out some. This reduced the sample size for some sections.
- Some residents refused to respond to the questionnaire because they found it to be skeptical.
- Knowledge and experience by the participants with regards to this subject.

Results

Sample characteristics

This section provides a detailed description of the results obtained from analysis of the study. Variables are described as simple percentages, means, standard deviations, etc. depending on their nature. It provides a summary of the demographic data, prevalence of risky health behaviours and their association.

Demographics

In a study with 422 participants, 37.4% identified as female, 62.1% as male and 5% preferred not to disclose their sex. Out of the total participants, only 99.1% provided their age, with the youngest are 16 years old and oldest being 57 years old. The mean age was 26.76, with a standard deviation of 7.457, indicating a dispersed population. The most common age among participants was 24 years old, accounting for 13.8% respondents.

Regarding education, 63% of the participants indicated they were currently attending or had completed tertiary education, indicating a highly educated sample.

In terms of income, 49.8% earned a monthly income of less than k 3000, 26.5% earned between k 3000 and k 5000, 17.5% earned between k 5000 and k 10000 and 6.2% earned above k 10000 per month (Table 2).

Variables	Frequency	Percentages
Gender		
Female	158	37.4
Male	262	62.1
Age		
24 and less	194	46
25-34	176	41.7
35-44	28	6.6
Above 45	20	4.7
Level of education		
Junior secondary	6	1.4
Primary level	14	3.3
Senior secondary	136	32.2
Tertiary education	266	63

Monthly average income		
Above k 10000	26	6.2
Below k 3000	210	49.8
K 3000 to k 5000	112	26.5
K 5000 to k 10000	74	17.5

Table 2. Demographics with frequencies and percentages.

Prevalence

The results of the survey show that unhealthy dietary behaviours were the most prevalent risky behaviour with 100% prevalence rate. Followed by risky sexual behaviour with 78.7% then behaviours that lead to unintentional injuries and violence with 77.1%. Physical inactivity and harmful use of alcohol and other drugs were the lowest with a prevalence of 56.6% and 40.2% respectively. Some respondents provided invalid responses or were uncomfortable to answer some questions for certain behaviours hence were

considered as invalid. This may impact the accuracy of the prevalence rates reported for these behaviours.

The table shows the frequency and percentage of respondents who reported engaging in each of the five behaviours, as well as the number of invalid responses for each behavior (Figure 2). The information is also depicted by the bar chart below the Table 3.

Risky behaviour	Frequency	Percentage	Invalid
Unhealthy dietary behaviours	414	100%	8
Physical inactivity	234	56.60%	8
Harmful use of alcohol and other drugs	170	40.20%	0
Risky sexual behaviour	272	78.70%	150
Behaviours that lead to unintentional injuries and violence	310	77.10%	20

Table 3. Prevalence of risky health behaviors.

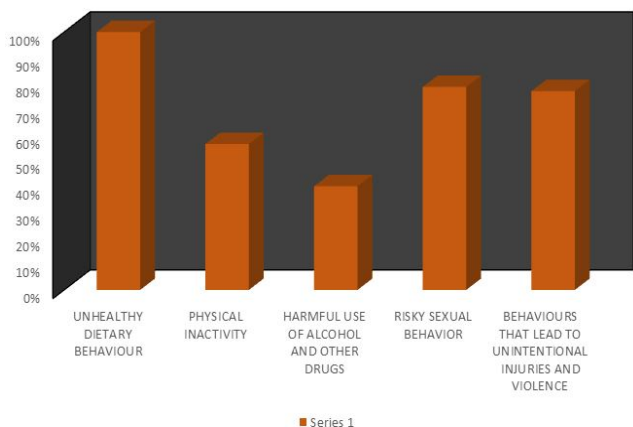


Figure 2. Prevalence of risky sexual behaviour.

Determinants of selected risky behaviours

After data analysis, it was discovered that of the risk factors analysed, 'gender' against the dependent variables 'behaviours that

lead to unintentional injuries and violence' and 'harmful use of alcohol and other drugs' had p-values of 0.002 and 0.036 respectively, which were less than 0.05. Signifying or indicating a statistical relationship between the variable 'gender' and the occurrence of named risky behaviours.

The p values of the 4 determinants against unhealthy dietary behaviour were not determined because the prevalence of this unhealthy dietary behaviour was 100%.

The p values of the four (4) determinants against 'physical inactivity' and 'risky sexual behaviour' were all greater than 0.05 suggesting that there was no statistical relationship between the four (4) independent variables and the named two (2) dependent variables. The same outcome held true for the three (3) independent variables 'age', 'monthly income' and 'education level' against the dependent variables 'harmful use of alcohol' and 'behaviours that lead to unintentional injuries and violence'. The Tables 4-8 below show the relationship between the independent variables and the dependent variable.

Unhealthy dietary behaviour		Present	Absent	Total
Age (years)	24 and less	192	0	192

	25-34	172	0	172
	35-44	28	0	28
	Above 45	18	0	18
Total		410	0	410
Gender	Female	156	0	156
	Male	256	0	256
	Prefer not to say	2	0	2
Total		414	0	414
Average monthly income	Above k 10000	26	0	26
	Below k 3000	205	0	205
	K 3000–K 5000	109	0	109
	K 5000–K 10000	74	0	74
Total		414	0	414
Highest level of education	Junior secondary	6	0	6
	Primary level	14	0	14
	Senior secondary	134	0	134
	Tertiary education	260	0	260
Total		414	0	414

Table 4. Unhealthy dietary behaviour with determinants age, gender, income and education level.

Physical inactivity		Absent	Present	Total
Age (years)	24 and less	78	116	194
	25-34	82	90	172
	35-44	14	12	26
	Above 45	4	14	18
Total		178	232	410
P-value				0.089
Gender	Female	74	82	156
	Male	104	152	256
	Prefer not to say	2	0	2
Total		180	234	414
P-value				0.108
Average monthly salary	Above k 10000	14	10	24
	Below k 3000	85	121	206
	K 3000-K 5000	52	58	110
	K 5000-K 10000	29	45	74
Total		180	234	414
P-value				0.288

Educational level	Junior secondary	4	2	6
	Primary level	6	8	14
	Senior secondary	60	74	134
	Tertiary education	110	150	260
Total		180	234	414
P-value				0.67

Table 5. Physical inactivity with determinants age, gender, income and education level.

Harmful use of alcohol and other drugs		Absent	Present	Total
Age (years)	24 and below	100	94	194
	25-34	98	78	176
	35-44	20	8	28
	Above 45	8	12	20
Total	226	192	418	
P-value				0.129
gender	Female	96	62	158
	Male	132	130	262
	Prefer not to say	0	2	2
Total	228	194	422	
P-value				0.036
Average monthly income	Above k 10000	16	10	26
	Below k 3000	117	93	210
	K 3000 to K 5000	57	55	112
	K 5000 to K 10000	38	36	74
Total	228	194	422	
P-value				0.685
Education level	Junior secondary	6	0	6
	Primary level	6	8	14
	Senior secondary	76	60	136
	Tertiary education	140	126	266
Total	228	194	422	
P-value				0.102

Table 6. Harmful use of alcohol and other drugs with determinants age, gender, income and education level.

Risky sexual behaviour		Absent	Present	Total
Age	24 and less	20	96	116

	25-34	30	84	114
	35-44	4	16	20
	Above 45	4	14	18
Total		58	210	268
P-value				0.419
Gender	Female	24	64	88
	Male	34	148	182
	Prefer not to say	0	2	2
Total		58	214	272
P-value				0.206
Average monthly income	Above k 10000	4	15	19
	Below k 3000	27	102	129
	K 3000 to K 5000	16	58	74
	K 5000 to K 10000	11	39	50
Total		58	214	272
P-value				0.999
Education level	Primary level	0	6	6
	Senior secondary	18	66	84
	Tertiary education	40	142	182
Total		58	214	272
P-value				0.433

Table 7. Risky sexual behaviour with determinants age, gender, income and level of education.

Behaviours that lead to physical injury		Absent	Present	total
Age (years)	24 and less	36	154	190
	25-34	46	118	164
	35-44	6	18	24
	Above 45	2	18	20
Total	90	308	398	
P-value				0.106
Gender	Female	48	100	148
	Male	44	208	252
	Prefer not to say	0	2	2
Total	92	310	402	
P-value				0.002
Average monthly income	Above k 10000	5	21	26
	Below k 3000	46	155	201
	K 3000 to K 5000	23	83	106

	K 5000 to K 10000	18	51	69
Total		92	310	402
P-value				0.877
Education level	Junior secondary	0	4	4
	Primary level	2	10	12
	Senior secondary	22	110	132
	Tertiary education	68	186	254
Total		92	310	402
P-value				0.089

Table 8. Behaviours that lead to unintentional injuries and violence with determinants age, gender, income and level of education.

Discussion

Unhealthy dietary behaviours

The results of this survey indicate that the prevalence of unhealthy dietary behaviour in Lusaka was 100%, despite accounting for potential variations in age, sex, income, and education level. This high prevalence was consistent with other researches done in Zambia. Hapunda G, et al. reported that the prevalence of unhealthy dietary behaviours among their study population was high, with 71% of respondents consuming insufficient fruits and vegetables, 41% consuming excessive fats and oils, and 36% consuming excessive sugar. Banda C, et al. also found that the dietary pattern of the Zambian population they studied was characterized by low intake of fruits and vegetables and high intake of refined carbohydrates and saturated fats. These finding is concerning, as unhealthy dietary behaviour is a significant risk factor for a range of health problems, including obesity, diabetes, and cardiovascular disease. A Commonwealth report on health states that NCDs in Zambia accounted for about 27% of all deaths in 2008 and the most prevalent NCDs that year was CVDs which accounted for 12% of deaths across all age groups (Common Wealth Zambia).

It is possible that the high prevalence of unhealthy dietary behaviour in Lusaka is due to a range of factors, including the availability and affordability of healthy foods, cultural norms around food and eating, and lack of education and awareness around healthy eating habits. Zambia has one of the highest prevalence rates of HIV in the sub-Saharan region and the stigma associated with the disease influences social perceptions of body size, thus, being fat was framed as a symbol of wealth and health, inability to buy quality food, for example, buying fruits on a regular basis due to limited income for people in low income areas. According to another study done in 2019 by Moise, et al. the possible exposure to variety of external tastes and products may also have augmented intake of higher caloric fast foods and sugar sweetened beverages. However, further research is needed to explore these factors in more depth.

The fact that age, sex, income, and education level did not appear to have an impact on the prevalence of unhealthy dietary behaviour is also significant. It suggests that interventions aimed at promoting healthy eating habits in Lusaka may need to target the entire population, rather than specific demographic groups.

Overall, the findings of this survey highlight the urgent need for action to address the high prevalence of unhealthy dietary behaviour in Lusaka. By developing and implementing targeted interventions that address the underlying factors contributing to unhealthy dietary behaviour, it may be possible to improve the health and wellbeing of the population in this city.

Physical inactivity

The findings of this survey indicate a high prevalence of physical inactivity in Lusaka, with 56.5% of the population reporting insufficient levels of physical activity. Surprisingly, we found no significant association between physical inactivity and age, gender, income, and education level. This finding was inconsistent with a study done in 2019 that revealed that boys show a greater presence of motivations towards doing physical exercise, whilst girls show more barriers but a study done in Mringa (South of Brazil) also revealed that there was association between sexes. However these findings are consistent with other research that has documented a high prevalence of physical inactivity in developing countries, where sedentary lifestyles have become more common due to urbanization and changes in work and leisure activities. Furthermore, cultural beliefs and social norms may also play a role in physical inactivity in Lusaka.

The results suggest that physical inactivity is a major public health concern in Lusaka. Physical inactivity is known to increase the risk of various health conditions, such as heart disease, diabetes, and obesity. Therefore, interventions to promote physical activity in Lusaka are urgently needed to improve the health and well-being of the population.

Despite the high prevalence of physical inactivity, our survey did not find significant associations between physical inactivity and age, gender, income, and education level. This suggests that physical inactivity affects all demographic groups equally and highlights the need for interventions that are accessible and inclusive to all members of the population. This study also showed a strong association between physical inactivity and low socioeconomic level, that is, adolescents from a high social economic level exhibited a low prevalence rate. Other studies found a positive association between physical activity and a higher level of education.

The findings in this survey maybe affected by a small sample size and potential selection bias, which may limit the generalizability of our findings. Future research with larger and more representative samples is needed to confirm our results and explore other potential factors associated with physical inactivity in Lusaka.

Harmful use of alcohol and other drugs

The results of this survey indicate a high prevalence of harmful alcohol use and other drug use in Lusaka, with 40.2% of the population reporting engaging in these behaviours. The only significant association we found was with gender, indicating that men were more likely to engage in harmful alcohol and drug use compared to women. 39% of women in Lusaka abuse alcohol and other drugs according to this survey. This prevalence is significantly high compared to studies done around the world. The finding is consistent with the WHO report that revealed Zambian women being the highest heavy drinkers in all of Africa.

Our findings suggest that harmful alcohol and drug use is a major public health concern in Lusaka, with significant implications for the health and well-being of individuals and the wider community. Alcohol was the fifth leading cause of death and disability in South Africa, which is likely attributable to alcohol's role in causing sexually transmitted infections and interpersonal violence, the two leading causes of death in South Africa.

The lack of significant associations between harmful alcohol and drug use and age, income, and education level suggests that these behaviors are prevalent across different demographic groups. However, the significant association with gender suggests that men may be at higher risk for harmful alcohol and drug use in Lusaka. This finding is consistent with previous research that has found that men are more likely to engage in these behaviors compared to women.

There are many factors that contribute to harmful alcohol and drug use, including social and cultural factors, economic factors, and individual factors such as mental health and coping mechanisms. Lack of enforcement of these policies in Zambia such as the age of drinking, the prohibition of unlicensed facilities or the hours at which bars must be closed/open contributes to the availability of these spaces for consumption. Given the high prevalence of harmful alcohol and drug use in Lusaka, interventions are needed to address these factors and reduce the burden of these behaviours on individuals and the wider community.

The limitations of this study include a small sample size and potential selection bias, which may limit the generalizability of our findings. Further research is needed to confirm our results and explore other potential factors associated with harmful alcohol and drug use in Lusaka.

Risky sexual behaviour

The results of this survey indicate a high prevalence of risky sexual behaviour in Lusaka, with 78.7% of participants reporting engaging in these behaviours. However, our analysis did not find any significant associations with age, sex, income, and education level, suggesting that these behaviours are prevalent across different demographic groups in Lusaka. However a study revealed that youths who practiced higher risky sex practice were likely to be from

middle to highest wealth index in majority of the countries studied, that is, Cambodia, Niger, Nigeria and Vietnam but no strong associations were found on similar studies in Guinea, Kenya, Tanzania and Uganda. Berhan, further added that risky sexual behaviour is strongly associated with better educational attainment and that HIV infection is also highly prevalent among educated people.

The high prevalence of risky sexual behaviour is a major public health concern, as it can lead to the spread of Sexually Transmitted Infections (STIs) and unwanted pregnancies. The practice of unprotected sex is the most prevailing means of transmission of HIV/AIDS in Zambia central statistical office, 2015 and risky sexual behaviour is associated with high HIV/AIDS in Africa. Furthermore, risky sexual behaviour can have negative social and economic consequences for individuals and the wider community (Supplementary file).

The fact that only half of the participants responded to this section of the survey is a limitation of our study. It is possible that those who did not respond to this section of the survey were less likely to engage in risky sexual behaviour or felt uncomfortable disclosing this information. This potential selection bias may limit the generalizability of our findings. Further research is needed to confirm our results and explore other potential factors associated with risky sexual behaviour in Lusaka. This could include larger sample sizes and more comprehensive surveys that examine the social, cultural, and economic factors that contribute to these behaviours. Social and cultural factors that contribute to risky sexual behaviour. By reducing the prevalence of risky sexual behaviour, we can improve the health and well-being of the population and reduce the burden of preventable health conditions.

Behaviours that lead to unintentional injuries and violence

The results of this survey indicate a high prevalence of behaviour that leads to unintentional injuries and violence in Lusaka, with 77.1% of participants reporting engaging in these behaviours. However, our analysis did not find any significant associations with age, income, and education level, suggesting that these behaviours are prevalent across different demographic groups in Lusaka.

Interestingly, our analysis found a significant association between gender and behaviour that leads to unintentional injuries and violence. Specifically, male participants were more likely to report engaging in these behaviours than female participants. This finding is consistent with previous research that has shown a higher prevalence of violence and injury related behaviours among men.

The high prevalence of behaviour that leads to unintentional injuries and violence is a major public health concern, as it can lead to physical harm and negative social and economic consequences for individuals and the wider community.

Further research is needed to confirm our results and explore other potential factors associated with behaviour that leads to unintentional injuries and violence in Lusaka. This could include larger sample sizes and more comprehensive surveys that examine the social, cultural, and economic factors that contribute to these behaviours.

In conclusion, our findings suggest that behaviour that leads to unintentional injuries and violence is prevalent across different demographic groups in Lusaka, with men reporting higher levels of these behaviours than women. Interventions are needed to reduce the prevalence of these behaviours and promote safer communities. These interventions could include addressing social and cultural factors that contribute to violence and injury related behaviours, promoting conflict resolution and violence prevention strategies, and increasing access to healthcare and emergency services. By reducing the prevalence of behaviour that leads to unintentional injuries and violence, we can improve the health and well-being of the population and reduce the burden of preventable health conditions.

Conclusion

In conclusion, the results of this survey provide insight into the prevalence of various health behaviours in Lusaka, including physical inactivity, harmful substance use, risky sexual behaviour, unintentional injuries and violence, and unhealthy dietary behaviour. While some of the findings were expected, such as the high prevalence of physical inactivity and risky sexual behaviour, others were more surprising, such as the reported 100% prevalence of unhealthy dietary behaviour.

While there were no significant associations between these health behaviours and age, gender, income, and education level, there was a significant association between harmful substance use and gender, as well as unintentional injuries and violence and gender. These findings highlight the need for targeted interventions that are tailored to the specific needs of different populations.

Overall, these findings underscore the importance of promoting healthy behaviours and practices in Lusaka. By implementing evidence based interventions that target the major health issues identified in this survey, we can improve the health and well-being of the population and reduce the burden of preventable health conditions. However, further research is needed to confirm the reported prevalence of unhealthy dietary behaviour and to better understand the factors that contribute to the high prevalence of other health behaviours in Lusaka.

Recommendations

Based on the findings of this survey, we recommend the following actions to improve the health and well-being of the population in Lusaka.

Address the high prevalence of physical inactivity

Given the high prevalence of physical inactivity in Lusaka, interventions are needed to promote physical activity and reduce the risk of chronic conditions. This could include increasing access to safe public spaces for exercise, promoting physical activity in schools and workplaces, and offering community based programs that encourage physical activity.

Promote responsible alcohol and drug use

The high prevalence of harmful alcohol usage and other drugs in Lusaka is concerning and requires targeted interventions. Strategies could include increasing access to substance abuse treatment and education, implementing policies that discourage harmful substance use, and promoting community based programs that support responsible substance use.

Address risky sexual behaviour

Given the high prevalence of risky sexual behaviour in Lusaka, interventions are needed to promote safer sexual practices and reduce the risk of sexually transmitted infections. This could include increasing access to sexual health services, promoting comprehensive sex education, and offering community based programs that support healthy sexual practices.

Address behaviour that leads to unintentional injuries and violence

Given the high prevalence of behaviour that leads to unintentional injuries and violence, interventions are needed to promote safer communities and reduce the risk of physical harm. Strategies could include promoting conflict resolution and violence prevention strategies, increasing access to emergency services, and offering community based programs that support non-violent conflict resolution.

Address unhealthy dietary behaviours

While the prevalence of unhealthy dietary behaviour was reported as 100%, further research is needed to confirm this finding. If accurate, interventions are needed to promote healthy eating habits and reduce the risk of preventable chronic conditions. Strategies could include promoting access to healthy foods, providing nutrition education, and offering community based programs that support healthy eating habits.

In conclusion, these recommendations reflect the need to address the major health issues identified in the survey and promote healthier behaviours and practices in Lusaka. By implementing these strategies, we can improve the health and well-being of the population and reduce the burden of preventable health conditions.

Ethical Consideration

The proposal was submitted to the Tropical Disease Research Centre (TDRC) for ethical approval before it was carried out.

Informed consent by either verbal or written was obtained from eligible participants while for those below the age of consent (18 years), informed consent was obtained from their parents or guardians before the questionnaire were administered. Dropping out of participation at any stage of the study and deciding not to respond to some of the questions was allowed. This did not affect the participant in any way. To achieve maximum confidentiality, numbers, instead of names, were recorded to prevent tracing of the respondent in case confidentiality is breached.

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