UNIVERSITY OF NAIROBI, FACULTY OF HEALTH SCIENCES

DEPARTMENT OF CLINICAL MEDICINE AND THERAPEUTICS

IMPACT OF BELIEFS AND SOCIAL DETERMINANTS OF HEALTH ON TREATMENT OUTCOMES IN HIV INFECTED ADULTS AT KENYATTA NATIONAL HOSPITAL OUTPATIENT COMPREHENSIVE CARE CLINIC

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A DISSERTATION SUBMITTED IN PART FULFILLMENT OF THE AWARD OF THE DEGREE OF MASTER OF MEDICINE IN INTERNAL MEDICINE, THE UNIVERSITY OF NAIROBI.

DECLARATION

This dissertation is my original research not previously submitted for an academic certificate in another institution. No part of this work has been plagiarised and I confirm that I checked it via the plagiarism program.

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TABLE OF CONTENTS

Contents

DECLARATION ii
APPROVAL OF SUPERVISORS AND DEPARTMENT CHAIR iii
ACKNOWLEDGEMENT v
TABLE OF CONTENTS vi
LIST OF TABLES x
LIST OF FIGURES xi
ABSTRACT xii
1. INTRODUCTION 1
1.1 Background. 1
2. LITERATURE REVIEW 3
2.1 HIV 4
2.2 Social Determinants of Health 6
2.2.1 Economic stability 6
2.2.2 Education access and quality 8
2.2.3 Health care access and quality 8
2.2.4 Neighbourhood and built environment. 8
2.2.5 Social and community context. 9
2.3 Beliefs about medicine and the BMQ questionnaire 10
3. STUDY RATIONALE AND OBJECTIVES 13
3.1 Study Justification 13
3.2 Research Question 13
3.3 Study Objectives 13
3.3.1 Broad Objective 13
3.3.2 Specific Objectives 13
4. METHODOLOGY 14
4.1 Study Design 14
4.2 Study Site 14
4.3 Study Population 14
4.3.1 Case Definition: 14
4.3.2 Control Definition: 14

4.3.3 Inclusion Criteria: 14
4.3.4 Exclusion Criteria 15
4.3.5 Sample Size Calculation. 15
4.3.6 Patient Recruitment and Sampling Procedure 16
4.3.7 Data Collection and Methods 17
4.3.8 Development of Study Instruments 17
4.3.9 Definition of Variables 18
4.4 Quality Assurance 20
4.5 Data Management 20
4.6 Data Analysis 20
4.7 Ethical Considerations 21
5. RESULTS 22
5.1 Participant recruitment 22
5.2 Socio-demographic and clinical baseline characteristics 23
5.3 Social Determinants of Health 25
5.4 Beliefs in medicine 31
5.5 Logistic regression analysis 33
6. DISCUSSION 36
7. CONCLUSION AND RECOMMENDATIONS 40
7.1 Conclusion 40
7.2 Recommendations 40
7.3 Study strengths 40
7.4 Study limitations 40
REFERENCES 41
APPENDIX I: STUDY DESCRIPTION FORM. 49
APPENDIX 2: INFORMED CONSENT FORM. 50
APPENDIX 3: GENERAL INFORMATION TOOL 50
APPENDIX 4: SOCIAL DETERMINANTS OF HEALTH IN HIV-INFECTED ADULTS QUESTIONNAIRE 53
APPENDIX 5: BELIEFS ABOUT MEDICINES QUESTIONNAIRE (BMQ) 59
NUKUU YA 4: MASWALI KUHUSU HALI YA MAISHA INAYOHUSIANA NA AFYA KATIKA WAATHIRIWA WA UGONJWA WA HIV, ... 64

ABBREVIATIONS

AIDS – Acquired Immune Deficiency Syndrome

AOR – Adjusted Odds Ratio

ART – Anti Retroviral Therapy

BMQ – Beliefs in Medicine Questionnaire

CD4 – Cluster of Differentiation 4

CDC – Centre for Disease Control

CMV – Cytomegalovirus

CNS – Central Nervous System

DALYs – Disability Adjusted Life Years

EMR – Electronic Medical Register

GAD 2 – Generalised Anxiety Disorder two-item

HFIAS – Household Food Insecurity Access Score

HIC – High Income Countries

HIV – Human Immunodeficiency Virus

HPV – Human Papilloma Virus

HSV – Herpes Simplex Virus

KAIS – Kenya AIDS Indicator Survey

KS – Kaposi sarcoma

LGBT – Lesbian, Gay, Bisexual, and Transgender

LMIC – Low-Middle Income Countries

OR – Odds Ratio

PCP – Pneumocystis pneumonia

PHQ-2 – Patient Health Questionnaire 2

PLHIV – Persons Living with HIV

SDH – Social Determinants of Health

STIs – Sexually Transmitted Infections

TB – tuberculosis

UNAIDS – Joint United Nations Program on HIV and AIDS

USA – United States of America

VL – Viral Load

WHO – World Health Organisation

LIST OF TABLES

Table 1. 1Sociodemographic and clinical characteristics of cases and controls.....23

Table 2. 1 Social Determinants of Health: Housing characteristics, food security and level of education univariate analysis 26
Table 2. 2 Social Determinants of Health: Employment and income, access to health care, personal safety, mental health and substance use screen univariate analysis 29

Table 3. 1Beliefs in Medicine scores for each item for cases and controls. 31

Table 4. 1 Logistic regression analysis of SDH and beliefs in medicine against viral suppression.....33

LIST OF FIGURES

Figure 1. 1. The Dahlgren-Whitehead ‘rainbow-model’. 1

Figure 2. 1. CDC, SDH framework. 6
Figure 2. 2. The BMQ Subscales Flow Chart. 11

Figure 4. 1. Study Flow Chart.....17

Figure 5.1 1 Participant recruitment flow chart 22

Figure 5.3. 1 Suppression outcome by HFIAS scale 27

ABSTRACT

BACKGROUND

HIV remains a global epidemic affecting an estimated 37.7 million with 460,000 mortalities attributable to HIV-associated causes in 2020. Kenya has the third largest burden with 1.6 million persons living with HIV in 2019. The SDH (Social Determinants of Health) and beliefs in medicine determine 30-55% of disease outcomes. In the campaign to end the HIV epidemic it is imperative we define these factors and their role in determining health outcomes for HIV infected adults.

METHODS: This study assessed SDH, beliefs in medicine and their effect on viral suppression in HIV-infected adults at KNH CCC clinic. This was a matched case-control study with matching on age (+/- 5 years) and gender. Cases had last viral load >/=1000 copies/ml, while controls had <1000 copies/ml. A ratio of 1:3 for cases:controls was used. We randomly recruited ambulatory HIV-infected adults (>/= 18 years at time of diagnosis) on anti-retroviral therapy for at least 6 months between August and September 2022.

DATA MANAGEMENT: Data was collected using a structured checklist and self-administered questionnaires (SDH Questionnaire and Beliefs in Medicine Questionnaire). Sociodemographic and SDH variables were analysed and compared for cases and controls using univariate analysis and logistic resgression. Beliefs were analysed using Wilcoxon Signed rank test and regression analysis. Variables with p value </=0.05 from the regression analysis were deemed statistically significant. Comparative analysis was conducted using Chi square test for SDH and HIV suppression and odds ratios with 95% confidence interval were interpreted as measures of effect size.

RESULTS: 340 participants were recruited (85 cases, 255 controls). 50.6% were female. Significant SDH in univariate analysis included housing stability (p-value 0.011), food security (p-value <0.001), current employment status (p-value 0.003), income meeting needs (p-value <0.001), access to health care (p-value 0.004) and personal safety (p-value 0.001). Cases had higher mean rank scores for beliefs in all subscales, however, only addiction and poison potential of medicines were not statistically significant. Significant variables following regression were poor access to health care with AOR 0.305 [0.106, 0.873], high school education with AOR 5.924[1.234, 28.446], self-employment with AOR 0.351[0.142, 0.868], severe food insecurity with AOR 5.578[1.173, 26.527] and lack of personal safety 6.678[1.174, 38.001]. Specific necessity AOR 2.52[1.51, 4.20] and specific concerns AOR 1.35[1.02, 1.85] subscales were significant.

CONCLUSION: SDH and beliefs in medicine impact treatment outcomes in HIV-infected adults with increased risk of being unsuppressed in those with high school education, severe food insecurity, lack of personal safety and negative specific necessity-concerns beliefs.

1. INTRODUCTION

1.1 Background.

The treatment of HIV has evolved from single drug regimens to the now more complex multidrug regimens in Highly Active Antiretroviral Therapy (HAART) which have resulted in improved treatment outcomes and life expectancy in the population with HIV. Their life span parallels that of the population at large for those on treatment and achieving viral suppression(1). Treatment outcomes in HIV therapy rely on medical intervention as well as health equity. Inequalities in health have been demonstrated in all countries, regardless of their level of income, and are evident when assessing factors such as Social Determinants of Health (SDH) in a population(2).

SDH are now understood to be critical elements in determining outcomes of health of different patient groups. These outcomes include: morbidity, life expectancy and mortality, health status, functional limitation and health care expenditure(3).The individual is at the centre of this, surrounded by different layers of factors that are key in influencing health. This is the Dahlgren-Whitehead model that has been widely used to describe these determinants and to describe their relative influence on health outcomes by researchers (Figure 1) (4).

The theory of SDH is recognised worldwide as being critical in affecting the health of individuals in addition to traditional medical interventions that target disease process. Medical care by itself is not sufficient in the overall improvement of healthcare(5). Biological factors at the very bottom cannot be controlled, e.g. age and constitutional factors. Factors in the other layers above this form the social determinants of health which intersect in different ways thereby influencing and affecting health inequities. These social determinants can be looked at as both upstream and downstream factors that are closely interlinked. Upstream factors would include level of education and economic resources, and these shape downstream factors such as health-seeking behaviour (6).

Figure 1. 1. The Dahlgren-Whitehead 'rainbow-model'.

Health inequities in individuals with HIV/AIDS have been attributed to various factors such as SDH as seen in different communities(7). Understanding their role is important as it provides an opportunity for communities to gain new insights on the war against this

epidemic. Since the beginning of this epidemic, the focus of prevention of HIV and other sexually transmitted infections has largely been directed towards those interventions that explore factors with significant impact on knowledge, perspectives, individual behaviours, as well as social norms(8). These included individual level counselling, testing, screening and treatment interventions. Even with the success of this approach there has been a failure of the measures in public health to effectively secure consistent reductions in the incidence of HIV, attain disease eradication and attendant health inequities(9).

There is no validated way to collect data on SDH, considered as an evolving field in research, which sheds light on the possibility of finding gaps in health care that can be addressed towards our target of eradicating AIDS by 2030. There is a growing global focus on the social context of an individual and how these factors lead to health inequities between and even within countries(10).

Interventions targeting the individual and addressing SDH in the prevention of HIV have led to a decrease in high risk behaviour. More comprehensive approaches in the management of HIV include formulation of a plan of action/program aiming to transform peoples' living environment, legislative actions including bringing amendments to discriminative practices, changes that positively impact service delivery, contingent funding, as well as policies targeting the system of education and the economy (11).

2. LITERATURE REVIEW

The World Health Organisation (WHO) defined health during its establishment in 1948 to include social well-being as an essential aspect of an individual's health(12). Health ought to be considered as not merely the lack of disease rather it incorporates the mental, physical and social dimensions of an individual(12). This definition highlights the importance of social welfare in health and closely links health to the social environment, living and working conditions(13). These non-medical factors have been described as SDH(10).

The Alma Ata Declaration of 1978 highlighted the important role of obstacles to health care while striving towards Health for All attainable through primary healthcare. It advocated for the formation of a health system model that would provide essential services at the basic care level as well as addressing social, political and economic obstacles causing poor health in order to realise the Health for All goal (14).

The goal of primary health care can only be achieved by considering the SDH in addition to beliefs in medicine as these influence the individuals' and communities' health as a whole.

The prevention of communicable diseases has traditionally targeted the epidemiological triad model that looks at an infectious disease as arising when an agent exits from its reservoir/host via an outlet; transmission takes place to a new host and through an inlet gains entry into the new host. This is the chain of infection that has provided a basis for control measures geared towards management of communicable diseases(15).

We now understand that health is not only influenced my medical factors, it is also influenced by non-medical factors in the environment of an individual that are not fully in their control. These social determinants such as level of education, unemployment and health literacy are upstream factors that shape downstream factors such as health seeking behaviour which then directly affect the health of an individual.

2.1 HIV

HIV is a communicable disease of global public health concern. Currently, combined antiretroviral therapy (ART) is the cornerstone for treatment to suppress viral replication in HIV as a cure remains elusive.

As of 2020, there were roughly 37.7 million persons living with HIV (PLHIV) with 68% of HIV-infected adults and 53% of HIV-infected children on lifelong (ART) globally(16). The African region accounted for majority with 25.4 million persons making up 70% of the proportion living with this infection in the globe, with 460,000 people losing their lives to causes linked to HIV despite roll out of ART (17) .

Many African countries have failed to achieve the 73% target of population level viral suppression set for 2020(17). In 2020 in the African region, 86% of individuals living with HIV knew their status, 76% were on ART with 68% found to be virally suppressed (18).

Kenya accounts for a substantial share of the burden of HIV globally being third largest with a population of 1.6 million found to be HIV-infected in 2018, a prevalence of 4.5%. As per the Kenya AIDS Indicator Survey (KAIS), the prevalence of HIV was at 7.2 % in 2007 and this reduced to 5.6% in 2012 (19). As of 2021, the current data on the 90-90-90 WHO targets in Kenya stands at 96-89-94 for all individuals living with HIV (20).

To end the AIDS pandemic and reduce new transmissions, HIV treatment is vital (21). Treatment prevents AIDS-associated mortalities and in industrialized countries individuals with HIV have improved outcomes with a life span comparable to the general population by using lifelong uninterrupted ART(1). Comparable results can be achieved in places where resources are constrained.

Despite this evidence, one of the most common reasons associated with poor treatment outcomes or failure to achieve continuous treatment benefits continues to be inadequate adherence. There are gaps in the response and treatment of HIV that have led to poor treatment outcomes. A positive gradient has been demonstrated between income disparity and HIV prevalence. In addition, women and girls continue to face social issues of discrimination limiting their access to education and economic resources as well as limited civic participation(22). Women and girls are disproportionately affected by violence, poverty and injustice. Those who are HIV infected face unique challenges of HIV-related stigma, intimate partner violence and unplanned pregnancy, all of which negatively impact their overall health(22). Men have been found to have less ART coverage in most areas worldwide compared to women and this has been attributed to improved health-seeking behaviour, increased availability of services related to HIV that particularly focus on women and these include prevention of mother to child transmission.

Non-adherence to ART therapy in HIV is of worldwide interest due to the significant burden of treatment failure leading to opportunistic infections, AIDS-defining illnesses, high morbidity and mortality(23). This translates to a growing pressure towards the health care systems in addition to increased economic burden on governments and communities with poor productivity(23).

The 2025 UNAIDS targets are the current goals in ending AIDS by 2030(24). This will significantly reduce its public health threat and limit the spread of HIV resulting in a significant reduction in related morbidity, mortality, stigma and number of orphans left behind after parents' deaths. These targets aim at eliminating all new infections, all AIDS related mortality and discrimination of PLHIV. By 2030 UNAIDS targets having at least 95% of HIV positive people knowing their status, 95% enrolled into treatment and 95% to achieve viral suppression (25).

SDH have a substantial influence on treatment adherence and health outcomes. Broad health determinants have a significant role in care as there are diverse potential risk factors and there is a growing number of people exposed to these risk factors meaning that understanding them is vital (26).

2.2 Social Determinants of Health

Based on the concept of social production of health, the differences in social position that determine the social context and stratification have been found to be responsible for health inequities. Finn Diderichsen in his model "the mechanisms of health inequality" described the social context and social stratification as mechanisms that lead to differences in health outcomes(27).

SDH are outlined as "the conditions in the environment where people are born, live, learn, work, play, worship and age that affect a wide range of health, functioning, and quality of life outcomes and risks"(10). Understanding SDH is vital. SDH are non-medical factors that shape health inequalities which are systematic, bias and preventable difference in state of health observed across nations. Health equity is outlined as "the absence of systematic disparities in health (or in the major SDH) between groups with different levels of underlying social advantage/disadvantage"(28). Between 30%-55% of health outcomes are influenced by SDH indicating that they may play a bigger role compared to healthcare and lifestyle choices in determining health status (29).

These determinants have been classified into five spheres: economic stability, health care access and quality, social and community context, education access and quality, and neighbourhood and built environment (10). SDH are influenced by external factors that include social environment, economic policies and political currents, all of which are not controlled by an individual.

Figure 2. 1. CDC, SDH framework.

2.2.1 Economic stability.

This sphere focuses on poverty, employment, food insecurity and housing instability. As of 2017, the World Bank estimated that 9.2% of the global population still lived below the poverty line of $1.90 per day, amounting to about 689 million people worldwide. This is the standard for extreme poverty. Poverty line for lower middle income countries (LMIC) is

$3.20. Kenya has been classified as a LMIC country with a Gross National Income between $1,046-$4,095(30).

For food security to exist, everyone needs access to enough, secure and balanced nutrition at all times that fulfils nutrition requirements with choices to achieve a vibrant life (31). Food insecurity results from inadequate access, including physical, social or economical, to food brought on by poverty or lack of other resources, leading to hunger and malnutrition(32). Poverty as well as food insecurity negatively impact health outcomes and contribute significantly to health inequities. Globally, Sub-Saharan Africa accounts for a significant proportion of individuals facing food insecurity and malnutrition and is now dealing with an increasing burden of individuals who are obese with diet-related chronic diseases. A study by Nagata et al in Lake Victoria, Kenya among PLHIV showed widespread moderate and severe food insecurity in the study population which was attributed to factors such as increasing age, more children in the family, and being unmarried. Food insecurity was linked to increased appetite and hunger, with more abdominal side effects particularly following introduction of therapy (33). For PLHIV, food insecurity has been linked to poor ART adherence and missed clinic appointments, leading to poor viral suppression, higher risk of overall poor health and increased risk of opportunistic infections and mortality(34).

Housing instability lacks a conventional description however, it covers a diverse range of challenges associated with housing such as overcrowding, frequent relocation, difficulties paying rent, spending a significant amount of the household income on rent or living with relative. The cost-burdened households (those spending 30% and above of their earnings on shelter) have insufficient income available for distribution to cater for other needs including health care(35). Prior research has mostly focused on homeless individuals. Studies in the US and Europe have assessed the link between housing status and treatment adherence in PLHIV and found that unstable housing as well as stable but poor housing were strong predictors of non-adherence. These were linked to virological failure with individuals affected having higher viral loads and lower CD4 counts (35).

Poverty has been assumed to be a driver of HIV infections in Sub-Saharan Africa as these countries have a high burden of HIV infection and are considered the poorest in the world. A study by Fox et al demonstrated reverse connection linking poverty with getting infected with HIV in which wealthier countries and people in Sub-Saharan Africa were found to have a higher likelihood of HIV infection. This has been referred to as the “positive wealth gradient in HIV infection”. Higher prevalence rates have been linked to inequality as measured by the Gini coefficient where countries with higher coefficients had a higher prevalence(36).

A study by Wieser et al demonstrated that income-generating assistance positively influenced ART adherence and clinic attendance improving the health of PLHIV in Kenya who were moderately or severely food insecure. The study showed promising results with participants demonstrating higher CD4 count and energy, weight gain, enhanced viral suppression with less HIV-related symptoms. This livelihood intervention was linked to the improved health outcomes through a reduction in food insecurity, improved income, improved productivity

which boosted social support in the family and community. Individuals reported better control over economic activities and, they were able to give priority to their health(37).

2.2.2 Education access and quality

Education access and quality focuses on high school graduation, enrolment in higher education, language and literacy, and early childhood development and education. Globally, a study assessing health literacy and HIV/AIDS revealed that there was better ART adherence in individuals who had higher levels of health literacy having discussed treatment adherence with their health care providers and understood that suboptimal adherence was linked to drug resistance and treatment failure (38).

High school graduation has been shown to be impacted by the home and school environments. Students with lower academic achievements and higher dropout rates, seen mostly in low income households, have higher risk of poor health as well as early mortality (39), and will more often have at least one chronic health condition than graduates(10).

Higher education has been described as any type of education after high school. Enrolment into higher education and graduation has been shown to have a positive impact in improving employment options and securing better-paying jobs, with less hazards(10). This has been postulated to lead to improved health outcomes by improving access to quality housing as well as other resources(40). Individuals with lower level of education have been shown to have poorer outcomes, in contrast to those with higher level of education achieving virological suppression and reduced rates of mortality (41).

2.2.3 Health care access and quality

Health care access and quality focuses on accessibility to health care and health literacy. Defined as “the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and community”(10).

Access involves utilisation of available facilities for the purpose of attaining best health outcomes (42). People use these services for various reasons including: to identify, treat or reduce the effect of disease or injury, sustain or enhance their functioning, or to acquire vital knowledge concerning their health status or projected outcome. The health delivery structure has improved over the years with combination therapy being more effective than individual therapies in treatment of HIV. The usage of healthcare is determined by various factors such as need for care, realisation on need for care, accessibility of care and willingness to obtain care. Barriers to health-care utilisation include: inadequate health insurance coverage, unreliable or inconvenient transportation and limited availability of health care resources(10).

2.2.4 Neighbourhood and built environment.

Surrounding environmental settings, quality and choice of housing, crime and violence, and access to healthy food encouraging healthy diets are highlighted in the neighbourhood and built environments.

The environmental determinants are affected by the adverse effects of urban relocation, climate change, unrestricted fast population expansion and haphazard urban expansion(26).

Housing quality describes the actual physical state of an individual's home including the surrounding built and cultural environment that the home is situated in. Important features include home safety, quality of the air, existence or absence of mould, and room occupied by each individual. The design and structure significantly affect housing quality and have been shown to have negative effects on health, both mental and physical. Increased exposure to environmental hazards in poorly maintained houses also has a detrimental effect to overall health(10).

Unstable housing has been shown to be a root-cause of constant pressure with the needs for daily survival present and a higher priority than the need to reduce HIV infections. In the urban setting, limited access to a secure home and connection to the society is associated with sex trade, numerous intimate partners, casual relations and low percentages of marriage or steady partner relations(43). A study looking at the housing status, medical care and health outcomes among PLHIV has indicated a significant relationship between homelessness and HIV. Homeless or individuals in unstable housing had 3-9 times greater incidence of HIV/AIDS in comparison with individuals with stable and suitable housing (44).

Crime and violence have been shown to negatively impact health outcomes over both short and long periods of time. In the short run, violence can cause serious injuries or premature death in extreme cases. The function of the residential neighbourhood environment is significant in influencing intimate partner violence, in addition to individual level factors(45). Intimate partner violence has negative impact on health seeking behaviour, uptake of ART and treatment adherence (46).

2.2.5 Social and community context.

This sphere focuses on social connection, discrimination and imprisonment. Discrimination is treatment or consideration that is socially structured to favour or show prejudice against certain individuals or groups. Mental and physical health of individuals can be negatively affected by perceived discrimination leading to elevated stress reactions as a result of unhealthy involvements or non-involvement in healthy activities (47).Discrimination can occur in different forms affecting different groups such as LGBTQ individuals (lesbian, gay, bisexual, and transgender), women, elderly adults and people with disabilities (10).

Social cohesion/social connection can be described as the belief that citizens share a moral community with a certain nation-state allowing them to share trust(48). Measures of social capital include; perceived fairness, perceived helpfulness, group membership, and trust. These have been linked to mortality. Health outcomes can be positively impacted by greater extent of social connection leading to direct benefits to people and indirectly protecting them from health risk factors. Social isolation has also been found to be detrimental to health and significantly increasing risk of death for the elderly population(10).

2.3 Beliefs about medicine and the BMQ questionnaire.

Medicines are important for improving and maintaining health but different perceptions held by patients may lead to non-adherence. This is a global concern with 50% non-adherence noted in the developed countries (49). Data in developing countries is lacking. Failure to take medicine adversely affects outcomes and places a huge burden on the individual and society.

Adherence is the degree to which an individual's conduct, use of treatment that includes medicines, dietary plans and modifications of daily living, are in keeping with advice given by a health care worker(50). In adherence, a patient has an important role in maintaining their health and is not being compelled to accept particular treatment. This highlights the patient-clinician relationship that is paramount to ensure treatment success.

Factors that predict patient adherence to treatment are related to medicine, the patient, and the patient's environment. Patient factors comprise of lack of disease knowledge, beliefs about medicines, affective factors such as mood disorders, motivation to adhere, forgetfulness, alcohol and substance abuse, social support and patient-doctor relationship. Medicine factors include side effects of drugs, pill burden and complexity of regimen(51).

Adherence to treatment in HIV is a key patient-related factor in achieving treatment outcomes such as viral suppression (52). Individual's beliefs about their medication, having positive or negative perceptions, have been shown to influence treatment uptake and adherence in multiple chronic conditions. This cognitive variable analyses an individual's perception regarding the potential benefit or cost linked with taking medication as these beliefs have been shown to impact their judgement and subsequent involvement in treatment as well as adherence(53).

This Necessity-Concern Framework is found in the Beliefs about Medicine Questionnaire (BMQ) and has shown that adherence is linked to stronger necessity beliefs and lesser concerns across different countries(53).

The BMQ is a tool that is used for evaluation of people's perceptions of available treatment with a structure for highlighting treatment-associated behaviours with special consideration of adherence to medication. It was created by Professor Robert Horne and colleagues in 1999 in London as a way for evaluating cognitive illustrations of medication. The questions in the tool were sourced from topics identified from published data as well as feedback from patients on follow up for chronic illnesses(54). This tool is approved for use in individuals having long-term conditions such as asthma, diabetes and cardiac patients on follow up in outpatient settings, and has been noted to forecast adherence to treatment (54).

The BMQ comprises of an 18-item questionnaire that evaluates an individual's beliefs regarding medication as a whole as well as in certain situations to allow for the examination of their general thoughts on medicine. It also allows for the investigation of thoughts regarding medicine in more specific conditions like chronic illness (55).

The BMQ has been divided into two sections: BMQ General and BMQ Specific. The BMQ General has 2 subscales, Overuse and Harm, each consisting of 4 items per subscale. The

BMQ Specific has 2 subscales, Necessity and Concerns, with 5 items per subscale. In the BMQ-General the General-Harm subscale assesses the individual's beliefs regarding how damaging medicines are, while the General-Overuse subscale looks at concerns regarding excess prescription by clinicians. The items are then scored on a 5-point Likert scale from 4-20.

The BMQ-Specific has a total of 10 items, divided into 2 subscales. It addresses the individual's beliefs about taking medication for a particular illness. The Specific-Concerns scale evaluates the thoughts of possibility of unwanted reactions associated with use of the given treatment. The Specific-Necessity scale assesses a patient's beliefs on the requirement to adhere to the given treatment.

A summary of the sections of the BMQ is in the below flow chart:

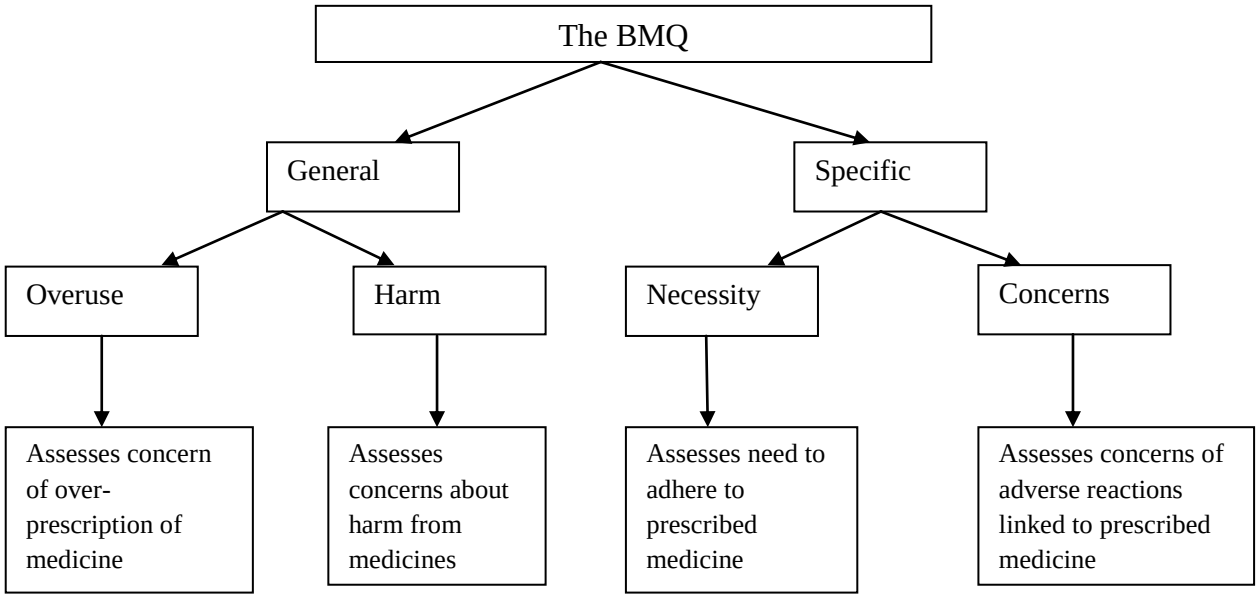

Figure 2. 2. The BMQ Subscales Flow Chart.

Higher counts from the General-Harm and Overuse subscales indicate a general adverse belief regarding the prescribed treatment. Those with higher counts in the Specific-Concerns scale indicate beliefs in possibility of harmful effects when they take the prescribed treatment.

Patients with greater levels of worry regarding medication use plus harmful effects have a higher possibility of lower levels of adherence, while those with firm beliefs regarding the necessity of taking remedies have a higher possibility of being adherent.

Utility of the BMQ

A meta analysis carried out by Horne et al in 2013 showed that the BMQ has had consistent results in individuals with various chronic illnesses such as type 2 diabetes, depression, HIV,

schizophrenia and asthma on follow up in outpatient clinics. Higher scores on necessity of medication and lower scores on concerns were linked with better adherence(53).

A meta analysis carried out in China by Bo Nie et al in 2019 also yielded similar results. Adherence to treatment was strongly linked to higher necessity beliefs and lower concerns beliefs(56).

A meta analysis by Langebeek et al in 2014 assessing adherence to ART in HIV-infected adults showed necessity beliefs and treatment concerns, among other factors, were strongly correlated with adherence(57).

A study by Abongomera et al in 2017 done as a sub-study to the CHAPAS-3 trial in Uganda and Zambia assessed the beliefs of caregivers and the association with treatment adherence in HIV-infected children. This showed higher adherence and viral suppression in patients whose caregivers had higher necessity beliefs, and less concerns about treamtment(58).

A cross-sectional study in Ethiopia by Niriayo et al in 2019 in patients with epilepsy showed that those with higher concerns beliefs and lower necessity beliefs had higher rates of non-adherence(59).

The BMQ has also been used in a study in South Africa by Bondarchuk et al in 2022 in HIV-infected adults. It showed a strong correlation between non-adherence and lower scores on the necessity scale(60).

Limitations of the BMQ

The tool has been used widely in various outpatient clinical settings with success however, there is a risk of misinterpretation of the questions by respondents. It is also not designed to assess the beliefs of medicine underuse or assess condition specific treatment complexities and various outcomes. Thus, it would be ideal to have a condition-specific BMQ that addresses the complexities of each condition(61).

3. STUDY RATIONALE AND OBJECTIVES

3.1 Study Justification

Control of HIV relies primarily on lifelong ART to achieve viral suppression. In Sub-Saharan Africa, viral load suppression rate ranges between 40.2-77.4%. Kenya has the third largest global burden of PLHIV and the current suppression rate is at 94% in adults.

Treatment adherence is vital in achieving favourable outcomes such as viral suppression and it is influenced by factors that include patient beliefs and their SDH that shape an individual and determine their health-related behaviour. These factors and how they relate to viral suppression are yet to be explored in this population.

Kenya has taken up the treatment for all goal and comprehensive care clinics providing HIV testing and treatment services remain free and accessible to all with wide coverage across the country. Despite this, we have not yet managed to eradicate HIV and it still remains a significant cause of morbidity and mortality. This study enabled us to determine the SDH and beliefs in medicine affecting our HIV population and in particular their impact on treatment outcomes.

We had an opportunity to assess possible barriers to achieving viral suppression affecting the proportion of about 6% of adults living with HIV as we work towards its eradication by 2030. This enabled us to assess the gaps in the continuum of care that could be targeted in order to improve integrated service delivery that would directly impact on treatment outcomes improving morbidity and mortality rates in adults living with HIV.

3.2 Research Question

What is the role of social factors and patient beliefs on treatment outcomes in HIV-infected adults seen at KNH?

3.3 Study Objectives

3.3.1 Broad Objective

To assess the impact of SDH and Beliefs in Medicine on treatment outcomes in HIV infected adults seen at KNH.

3.3.2 Specific Objectives

1. To determine the Social Determinants of Health and Beliefs in Medicine in the viral suppressed and non-suppressed HIV infected adults.
2. To compare the Social Determinants of Health between viral suppressed and non-suppressed HIV infected adults.
3. To assess and compare the Beliefs in Medicine between viral suppressed and non-suppressed HIV infected adults.

4. METHODOLOGY

4.1 Study Design

This was a matched case control study. Cases were those who had unsuppressed viral load, while controls had suppressed viral load.

Viral suppression was defined as being on combined ART for at least 6 months with last viral load undetectable or <1000 copies/ml. Unsuppressed viral load was defined as being on combined ART for at least 6 months with last viral load >1000 copies/ml.

4.2 Study Site

The study was conducted in the outpatient HIV clinic at KNH.

KNH is a national teaching and referral hospital situated in Nairobi, Kenya. The hospital has speciality clinics that are run Monday to Friday including the CCC clinic. The CCC clinic had a patient base of about 9,500 individuals enrolled in care followed up between Monday-Friday with an average of about 120 patients per day. The clinic had a wide catchment area serving patients from the Nairobi metropolitan area, as well as those who presented as referrals for advanced HIV disease managament. Those individuals had different socioeconomic backgrounds and likely faced different challenges in seeking health care. Patients' data was captured at enrolment and recorded in an Electronic Medical Record. Clinical, laboratory and physical examinations were done at enrolment including the CD4 count. Viral load was assessed at 6 months after initiating treatment, then annually, and whenever treatment failure was suspected. In addition to ART therapy, patients also received additional comprehensive care that included screening and treatment for opportunistic infections, nutritional support, counselling support, screening for alcohol and substance use, assessment for exposure to violence, and defaulter tracing.

4.3 Study Population

The study population were adults with HIV on ART enrolled at the CCC clinic at KNH.

4.3.1 Case Definition:

HIV-infected adults >/= 18 years at the time of diagnosis, enrolled at the clinic on at least 6 months of ART with last viral load >/=1000 copies/ml (at least the second confirmatory test) within the last one year.

4.3.2 Control Definition:

HIV-infected adults >/= 18 years at the time of diagnosis, enrolled at the clinic on at least 6 months of ART with last viral load measuring <1000copies/ml (at least the second confirmatory test) within the last one year.

4.3.3 Inclusion Criteria:

Those who consented to the study.

Those who understood written/spoken English/Kiswahili.

4.3.4 Exclusion Criteria

Pregnant and breastfeeding.

Those with incomplete electronic medical records.

Those with severe neurocognitive impairment with decline in memory, reasoning and intellectual ability such as dementia.

4.3.5 Sample Size Calculation.

Sample size determination

Dupont formula for matched case control studies was used to calculate individual sample sizes for patients with non-suppressed viral load (cases) and suppressed viral load (controls). Data from a previous study by Nakazea et al(62) assessing correlates of viral suppression showed that a low level of income of </=5,000 shillings, living 5km or more from the health facility and poor perceptions of the role of nutrition on HIV were correlated with non-suppression. We selected the low level of income in order to get our sample size estimate. A proportion of 62.7% of non-suppressed individuals earned </=5,000 shillings compared to 41.6% of suppressed individuals. We used this proportion of 62.7% for cases and 41.6% for controls. In order to achieve an adequate sample size we used a ratio of cases to control of 1:3. We set power at 90%.

Statistical formula (Dupont, 1990)

$$n = \frac{\left[\left(1/\sigma_\psi\right) Z_{\alpha/2} + Z_\beta\right]^2}{\delta^2}$$

$$\delta = \frac{\left[\sum_{k=1}^{m} \frac{k t_k \psi}{k\psi + m - k + 1}\right] - 1}{\sigma(\psi)}$$

$$\sigma^2\left(\psi\right) = \sum_{k=1}^{m} \frac{k t_k \psi (m-k+1)}{(k\psi + m - k + 1)^2}$$

$$t_k = p_1 \binom{m}{k-1} p_{0+}^{k-1} q_{0+}^{m-k+1} + q_1 \binom{m}{k} p_{0-}^{k} q_{0-}^{m-k} : k = 1, \ldots m$$

$$q_1 = 1 - p_1$$

$$q_0 = 1 = p_0$$

$$p_{11} = p_1 p_0 + \phi\sqrt{p_1 q_1 p_0 q_0}$$

$$p_{01} = q_1 p_0 - \phi\sqrt{p_1 q_1 p_0 q_0}$$

$$p_{0+} = \frac{p_{11}}{p_1}$$

$$p_{0-} = \frac{p_{01}}{q_1}$$

$$q_{0+} = 1 - p_{0+}$$

$$q_{0-} = 1 - p_{0-}$$

Where,

- (ψ)odds ratio to detect = 2.4
- P_0 Percent of controls exposed = 41.6%
- P_1 Percent of cases exposed = 62.7%
- M=Ratio of controls to cases = 3
- α =Alpha = 5%
- ϕCorrelation = 0.2 and Power = 90%

$$n=\frac{\left[(1/\sigma\varphi)Z_{\frac{\alpha}{2}}+Z_{\beta}\right]^2}{\delta^2}$$

$$n=\frac{[(1/(0.5052915\ X\ 2.3598)1.96+0.842]^2}{-0.068632^2}$$

$$n = 340$$

The number of cases required was 85 while the number of controls was 255. The total sample size was 340 participants.

4.3.6 Patient Recruitment and Sampling Procedure

The principal investigator recruited and trained two research assistants, a counsellor and a clinical officer. They were trained on the definition of cases and controls, inclusion and exclusion criteria of participants and data collection using the questionnaires. We reviewed records of patients' viral loads selecting those with unsuppressed viral loads as cases. Cases were then randomly selected from those unsuppressed individuals using simple random sampling with Microsoft Excel.The records were given unique sequence values which were then entered into excel. A new column within the excel spreadsheet was added and named Random_number. In the first cell underneath the heading row, "RAND()" was typed and random numbers generated by dragging to the last row matching the unique sequence numbers. The samples were selected by sorting the randomly generated numbers and those meeting inclusion criteria were recruited after giving their consent until we achieved a total of 85 cases.

Individuals with suppressed viral load were recruited as controls. Controls were purposely selected from the patients attending their scheduled clinic. We consecutively recruited 3 controls for each case that matched for age and gender and consented to be a part of the study. Those who met inclusion criteria were recruited until the required sample size was obtained.

4.3.7 Data Collection and Methods

Matched interview and medical abstraction data was collected from HIV-infected individuals enrolled at the CCC clinic at KNH. Secondary data on age, sex, marital status, baseline WHO clinical stage, year of ART initiation, current ART regimen, changes to ART regimen, baseline CD4 count, last viral load and opportunistic infections was abstracted from patients' medical records using a structured checklist for all patients enrolled at the clinic.

Primary data was collected using two questionnaires provided to the patients: SDH Questionnaire and the Beliefs about Medicine Questionnaire (BMQ). They were filled by the patients in English. No respondent had difficulty understanding English/Kiswahili and the tool was self administered by all.

This was carried out as shown below:

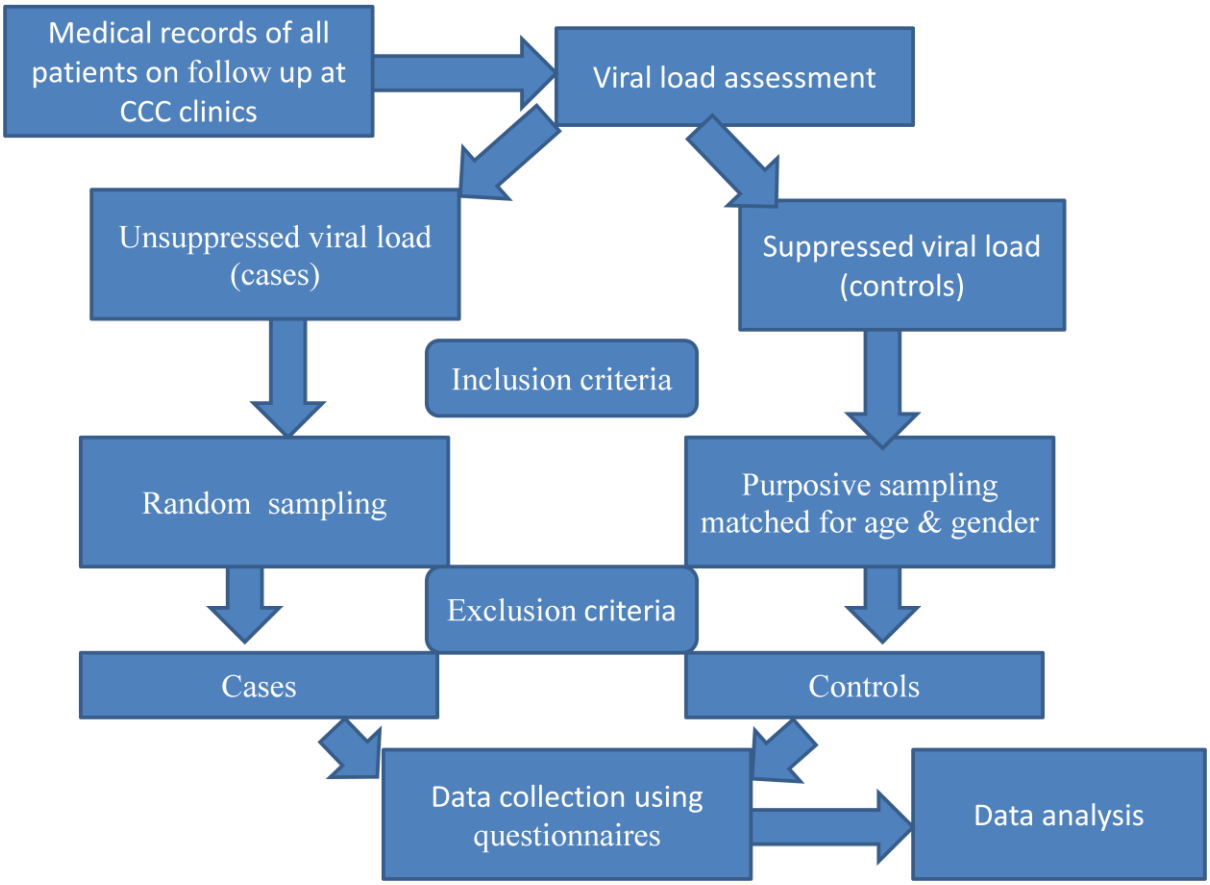

Figure 4. 1. Study Flow Chart

4.3.8 Development of Study Instruments

The BMQ tool is a validated tool that has been used in patients on follow up for long-term conditions such as asthma, diabetes and cardiac disease in outpatient settings, and has been noted to forecast adherence to treatment.

The SDH Questionnaire was designed for this study population in order to meet the objectives of this study. It is not validated elsewhere. There are no currently available validated tools for this data collection. We sought to analyse selected determinants including: housing stability, food security, educational attainment, employment status, income, health care access and safety, with the addition of substance use, depression and anxiety as important covariates. We looked at data collection methods from the Kenya Demographic and Health Survey (63) that fit our study population for determinants of housing stability, education level, employment status and income. We used a surrogate of time taken to preferred facility for distance to preferred facility in assessing health care access. We also added open source tools from the Food and Agriculture Organisation (FAO) Food Insecurity Tool, PHQ2 and GAD-2 for food security, depression screening and anxiety screening respectively. These have produced consistent results across multiple studies.

The primary investigator assessed the face validity of the tool on a sample of 5 respondents, ensuring that it had a reasonable number of pages, in addition to being easy to understand and fill.

Pilot Testing of Study Instruments

A small proportion of 8 respondents were randomly selected from the target population and the pre-test tool was administered to 5 individuals who gave their consent. Time taken to fill out the tool ranged 12-25 minutes. This was done in order to revise the tool and make necessary changes before the start of the actual study. After pre-testing, we sought verbal feedback from the selected respondents and made necessary modifications to the study tool. We made changes to the income section and included responses for those who did not have a partner and did not have an income which were missing.

4.3.9 Definition of Variables

Dependent variable

The dependent variable in this study was HIV-related treatment outcome that is: viral suppression.

Viral suppression – viral load that is undetectable, or </=1000 copies/ml at the most recent viral load testing.

Independent variables

The independent variables were SDH and beliefs in medicine.

Social determinants of health – these included housing instability, food security, education, employment status, level of income, access to health care, personal safety and substance abuse.

- Housing characteristics: housing structure, access to amenities, housing instability

- Housing structure: we classified housing materials as permanent if the walls were made of stone, and as semi-permanent for any other housing material used.

- Access to amenities: household access to toilet facilities, running water and electricity to classify households into those having good access and poor access.
- Housing instability: threatened disconnection from utilities, eviction and change of house due to financial constraints classifying households as stable or unstable.

- Overcrowding: having more than 3 persons per habitable room in each household as per United Nations Habitat definition (64).

- Food security: access to enough, secure and balanced nutrition at all times

    - Food secure households were determined as those with responses of none to the questions.

    - Mildly food insecure households had responses about having enough food, inability to eat their preferred meals or having a more monotonous diet.

    - Those with moderate food insecurity would be cutting back on the quantity or number of meals as well as sacrificing quality by having a monotonous diet.

    - Households with severe food insecurity frequently cut back on meals, run out of food, go to bed hungry or go for a whole day or night without a meal.

- Education: highest level of education achieved.

- Employment: activities that generate income.

- Income: revenue from employment activities.

- Healthcare access: utilisation of available facilities for the purpose of attaining best health outcomes. Defined by time taken for travel from their home to the preferred health facility estimated average, whether reliable transportation hindered their access and the decision maker for the respondent's health care

- Safety: being free from harm or risk of injury. We defined safety based on perceived safety in their area of residence, frequency of experiencing physical harm and verbal insults/threats into safe and unsafe categories.

- Substance abuse: excessive use of drugs, or use of drugs without following medical guidelines.

- Depression and Anxiety: a score of >/=3 on the PHQ-2 or GAD-2 respectively.

- Beliefs in medicine: people's perceptions of available treatment of HIV using ART.

4.4 Quality Assurance

The study used questionnaires that were translated to Kiswahili for those who did not understand English. The primary investigator trained research assistants in the content of the questionnaires and how to collect data appropriately. Research assistants were clinical officers and counsellors trained on data collection. There was daily on-site supervision by the primary investigator during the period of data collection. After each data collection day, review of the questionnaires for accuracy, completeness and consistency was carried out. A statistician was contracted during data analysis to ensure data integrity.

4.5 Data Management

Data Entry

A template was generated in the Microsoft Access application. It defined the name (field name), the type (character or numeric) as well as the length (the maximum number of characters in the field) for each variable and the number of decimal places for numeric variables. Data was abstracted and uploaded into STATA version 13SE for analysis.

Data Cleaning

Completeness of questionnaires was assessed at the end of each data collection day by the primary investigator and correction of missing data was addressed by sourcing data from the electronic medical records using the patient identifier number. Data was entered on Microsoft Excel at the end of data collection. This was to achieve a clean dataset that was exported into STATA version 13SE for data analysis.

The data was screened for typing errors, incomplete records and outliers. Once any errors were detected, they were corrected so that the data could be analysed without losing its integrity and robustness. Duplicate and irrelevant observations were removed from the data set, grammatical and typographical errors were corrected, outliers were filtered out and missing data were included as a missing category if categorical, or flagged with 'O' if numerical. A clean dataset was stored in a computer hard disk ready for analysis. All the questionnaires were filed and stored in lockable drawers for confidentiality.

4.6 Data Analysis

Data was analysed using STATA version 13SE. Descriptive statistics were computed for all variables.

The respondents' demographic and clinical variables abstracted from EMR were analysed and presented as proportions for both cases and controls.

We described categorical SDH such as housing characteristics, food security, education level, employment status, income and personal safety using descriptive statistics including frequencies and percentages. Univariate analysis was carried out and variables with a p value </=0.05 were considered significant and used in multivariate logistic regression model.

Analysis of access to health care for both cases and controls included the time duration for travelling to the preferred facility, availability of transport as well as health care decisions made in the household. We assigned a score on the three questions to achieve a minimum score of 3 and maximum score of 9. Good access was defined as those scoring 3-5, while poor access respondents had a score above 5 Univariate analysis was carried out and variables with a p value </=0.05 were considered significant and used in multivariate logistic regression model.

Substance and drug use history for both cases and controls was analysed and indicated as significant for those answering yes to any of the questions. The responses in the substance use category were scored individually for each question for alcohol use, tobacco use, prescription medicine use and illicit drug use from 1-5. We calculated the risk for each question based on the scores used for each question giving a total score of 5 for each drug category. The scores were then classified into risk profiles of low risk (score 1), problem use (score2-3) and moderate to severe use (score 4-5) for alcohol and tobacoo use. Use of prescription and illicit drug use was categorized into low risk (score 1) and moderate to severe risk (score 2-5)(65) Univariate analysis was carried out and variables with a p value </=0.05 were considered significant and used in multivariate logistic regression model.

Mental health screening responses for both cases and controls were analysed from the GAD-2 and PHQ-2 responses and used in logistic regression (66).

In the analysis of patients' beliefs in medicine, the questions were grouped in the respective scales and subscales. The specific concerns framework had Q2, 5, 6, 8 and 9. The specific necessity framework had Q1, 3, 4, 7 and 10. The general harm framework had Q12, 13, 15 and 16. The general overuse framework had Q11, 14, 17 and 18. Wilcoxon Signed rank test was used to analyse responses to agree/strongly agree.

Comparative analysis was conducted using Chi square test for SDH of HIV suppression and Odds ratios with 95% confidence interval were interpreted as measures of effect size. Level of significance was set at p-Value <0.05 in the multivariate analysis.

We addressed the effects of confounding by matching cases and controls for age (+/- 5 years) and gender at the time of patient recruitment prior to data collection. After data collection logistic regression was used to control the effect of covariates such as mental health and substance use in order to calculate adjusted odds ratios.

4.7 Ethical Considerations

Authorisation was requested from the Department of Clinical Medicine and Therapeutics, University of Nairobi as well as KNH/UON Ethics and Research Committee and the study was conducted thereafter. Eligible patients were included in the study after obtaining informed consent. Participants were informed that they could withdraw from the study or decline to participate without any consequences. Enrolmentment was optional and unforced and patient privacy was maintained for the whole study period.

5. RESULTS

5.1 Participant recruitment

Recruitement of participants was done from August to September 2022. We found 9,402 clients currently enrolled in the patient database, with 2,980 having a recent viral load done within the last 12 months. We excluded 6,422 clients who did not have recent viral load in their electronic records. From the recent viral load record we found 142 clients were unsuppressed while 2,838 were suppressed. In the unsuppressed group, we excluded those who did not meet inclusion criteria and those who declined to take part in the study recruiting a total of 85 individuals.

In the suppressed group, we matched them with controls (based on age and gender) and recruited a total of 340 participants. Sampling was done consecutively until the desired sample size was achieved.

The study flow chart was as follows:

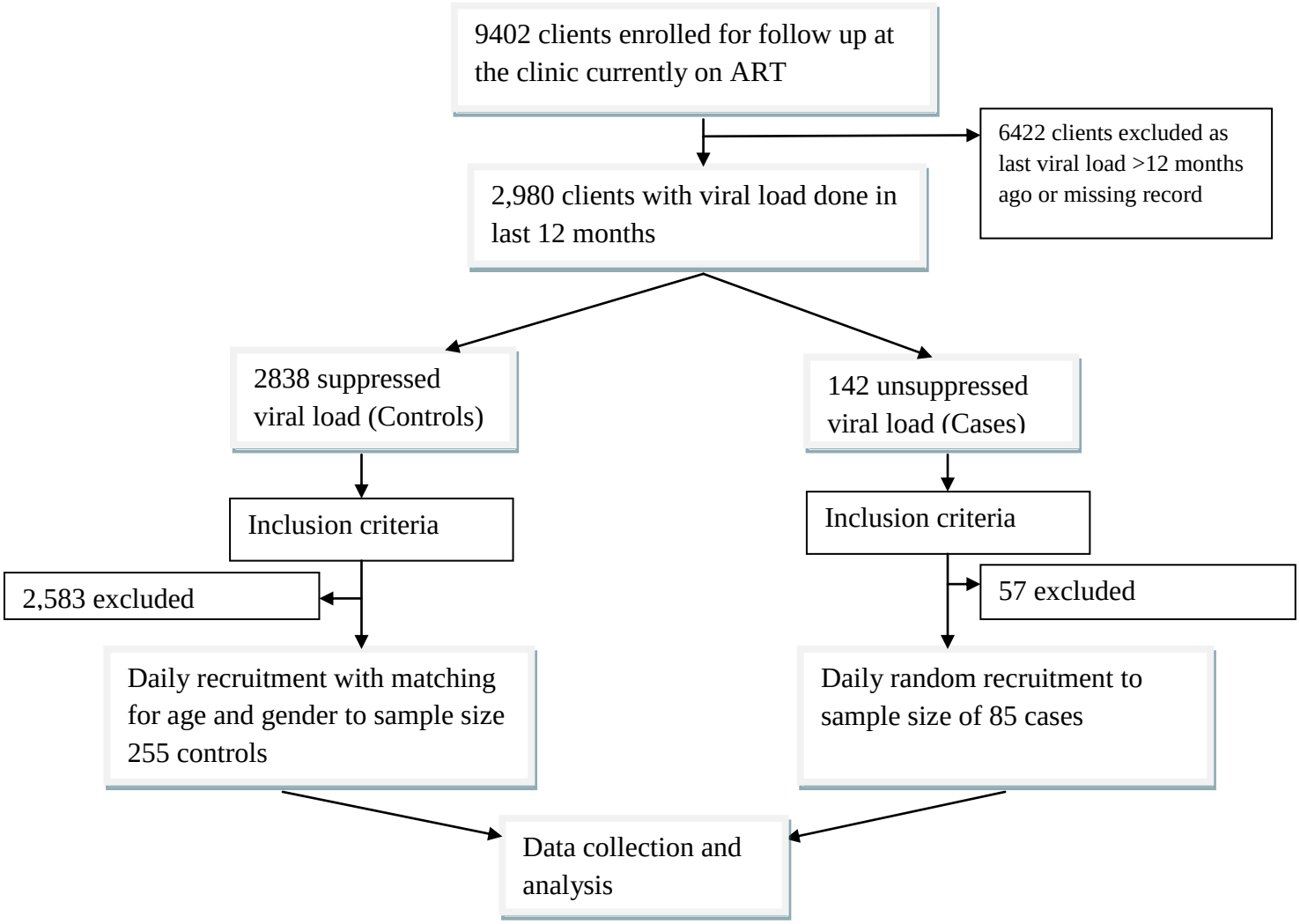

Figure 5.1 1 Participant Recruitment Flow Chart

5.2 Socio-demographic and clinical baseline characteristics

The 340 recruited study participants accounted for 3.62% of the 9,402 client-base on follow-up and on ART at the clinic.

From the study we saw a similar trend for marital status between cases and controls with majority being either single or married. We found that in the unsuppressed group 40% were single and 34.1% were married in comparison to 38.4% single and 42% married in the suppressed group.

Current antiretroviral therapy showed majority of respondents in both groups being on first line therapy at 63.5% for cases and 87.7% for controls however, a larger proportion of cases at 35.3% were on second line therapy compared to 11.8% of controls.

A significant proportion of cases at 36.5% had change of ARV due to treatment failure/resistance compared to 11% of controls. Other indications for change of treatement were mostly for optimization to newer therapy for both groups.

A large proportion of 77.6% of cases reported having missed appointments and were referred for adherence counselling in the last one year in contrast to only 20% of controls.

A summary of the sociodemographic and clinical characteristics is shown in table 5.1 below:

Table 5. 1 Sociodemographic and clinical characteristics of cases and controls

Characteristic	Control (N=255) n(%)	Cases (N=85) n(%)	All (N=340) n(%)
Age			
Below 30 yrs.	72(28.2)	25(29.4)	97(28.5)
30-39 yrs.	73(28.6)	22(25.9)	95(27.9)
40-49 yrs.	62(24.3)	21(24.7)	83(24.4)
50 yrs. and above	48(18.8)	17(20.0)	65(19.1)

Gender			
Female	129(50.6)	43(50.6)	194(50.6)
Male	126(49.4)	42(49.4)	217(49.4)
Marital status			
Single	98(38.4)	34(40.0)	132(38.8)
Widow	37(14.5)	7(8.2)	44(12.9)
Married	107(42.0)	29(34.1)	136(40.0)
Separated	9(3.5)	14(16.5)	23(6.8)
Divorced	4(1.6)	1(1.2)	5(1.5)
ARV change indication			
Optimisation	187(73.3)	39(45.9)	226(65.5)
Treatment failure/resistance	28(11.0)	31(36.5)	59(17.4)
No changes made	37(14.5)	14(16.5)	51(15)
Drug toxicity	3(1.2)	1(1.2)	4(1.2)
Current ART treatment line			
First line	224(87.7%)	54(63.5%)	278(81.8%)
Second line	30(11.8%)	30(35.3%)	60(17.6%)
Third line	1(0.4%)	1(1.2%)	2(0.6%)
WHO stage at initiation			
Stage 1	135(52.9%)	56(22.0%)	183(53.8%)
Stage 2	37(14.5%)	12(14.1%)	49(14.4%)
Stage 3	56(22.0%)	17(20.0%)	73(21.5%)
Stage 4	27(10.6%)	8(9.4%)	35(10.3%)
Baseline CD4 count			
Above 200	154(60.4%)	53(62.4%)	207(60.9%)

0-200	101(39.6%)	32(37.6%)	133(39.1%)
History of missed appointment			
No	204(80.0)	19(22.4%)	223(65.6%)
Yes	51(20.0%)	66(77.6%)	117(34.4%)
Referral for adherence counseling			
No	190(74.5)	3(3.5)	193(56.8)
Yes	65(25.5%)	82(96.5)	147(43.2%)
Hospitalisation history			
No	189(74.1%)	66(77.6%)	255(75.0%)
Yes	66(25.9%)	19(22.4%)	85(25.0%)
Prophylaxis received			
TB and PCP	221(86.7%)	70(82.4%)	291(85.9%)
TB	13(5.1%)	4(4.7%)	17(5.0%)
PCP	21(8.2%)	11(12.9%)	32(9.4%)

5.3 Social Determinants of Health

From the study we noted that majority of respondents lived in urban areas, in houses with walls constructed using permament materials, did not have challenges of overcrowding and had good access to amenities for both cases and controls and these were not statistically significant.

There was a significant statistical difference in housing stability between cases and controls, with a larger proportion of cases (50.6%) having unstable housing compared to controls (28.2%).

Majority of respondents achieved either high school or college/university level of education, with similar proportions achieving vocational training for both cases and controls. This was not found to be statistically significant.

A summary of the housing characteristics, food security and level of education is shown below in table 5.2:

Table 5. 2 Social Determinants of Health: Housing characteristics, food security and level of education univariate analysis

Characteristic	**Control (N=255) n(%)**	**Cases (N=85) n(%)**	**All (N=340) n(%)**	**P-value**
Housing				
Residence type				
Urban	169(66.3%)	52(61.2%)	221(65.0%)	0.431
Rural	86(33.7%)	33(38.8%)	119(35.0%)	
House structure				
Permanent	202(79.2%)	58(68.2%)	260(76.5%)	0.054
Semi-permanent	53(20.8%)	27(31.8%)	80(23.5%)	
Home ownership				
Own	75(29.4%)	18(21.2%)	93(27.4%)	0.161
Rent	180(70.6%	67(78.8%)	247(72.6%)	
Overcrowding				
No overcrowding	247(96.9%)	84(98.8%)	331(97.4%)	0.460
Overcrowding	8(3.1%)	1(1.2%)	9(2.6%)	
Access to amenities				
Good access	187(73.3%)	60(70.6%)	247(72.6%)	0.674
Poor access	68(26.7%)	25(29.4%)	93(27.4%)	
Housing stability				
Stable housing	183(71.8)	42(49.4)	225(66.2)	<0.001
Unstable housing	72(28.2)	43(50.6)	115(33.8)	
Food security				
Food secure	115(45.1)	27(31.8)	142(41.8)	<0.001

Mildy food insecure	80(31.4)	23(27.1)	103(30.3)	
Moderately food insecure	51(20.0)	19(22.4)	70(20.6)	
Severely food insecure	9(3.5)	16(18.8)	25(7.4)	
Education				
Highest level of education achieved				
Primary school	42(16.5)	8(9.5)	50(14.5)	0.121
High school	90(35.3)	41(48.2)	131(38.5)	
Vocational training	34(13.3)	12(14.1)	46(13.5)	
College/University	89(34.9)	24(28.2)	113(33.2)	

In the analysis of food security, less than 50% of cases and controls were food secure. The study showed that the case group had a bigger proportion of respondents at 18.8% with severe food insecurity as compared to the control group at 3.5%. The distribution of food security is shown below:

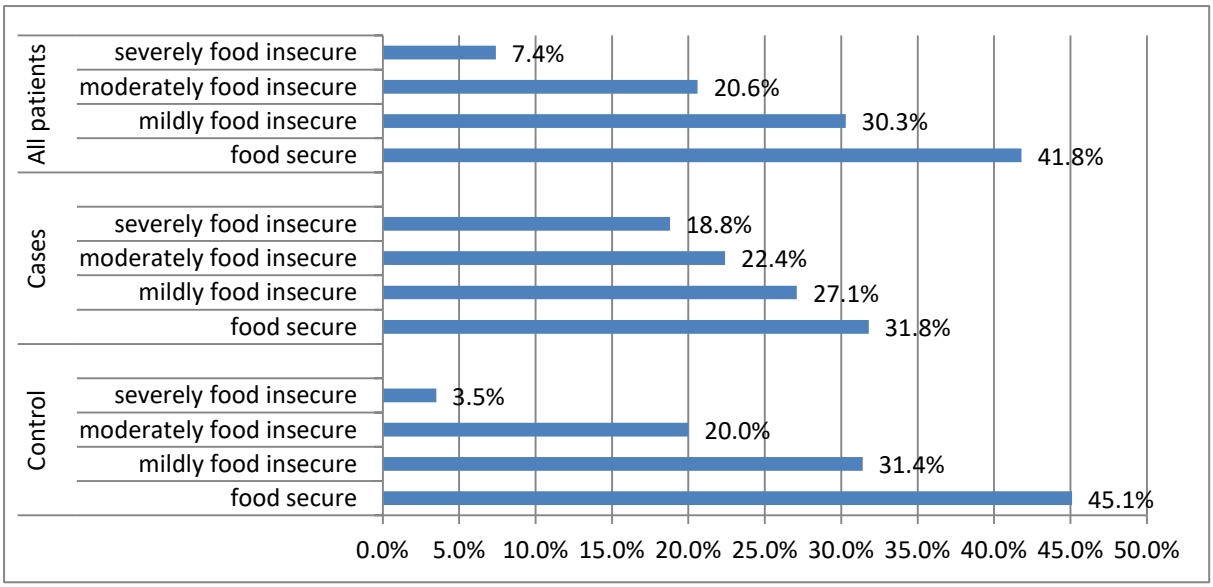

Figure 5.3. 1 Suppression outcome by HFIAS scale

Majority of respondents in both groups were either employed or self employed, however, a larger proportion of cases (30.6%) were unemployed as compared to controls (16.9%) and this was found to be statistically significant.

In the average monthly income for the two groups it was noted that majority of cases (42.4%) earned between 10,000-50,000 Kshs while majority of controls (52.6%) earned between 5,000-20,000 Kshs. There was double the proportion of cases (28.2%) with no income as compared to controls (14.5%) however, this was not statistically significant.

In analysis of adequacy of income we found that in the unsuppressed group majority of respondents' needs were not met by their income at 38.8%, while more than half of controls (60%) reported adequate income and this was statistically significant.

We asked respondents to compare their income to that of their partner to find out who earned more and we found that for those who had an income and a partner, most earned a similar amount compared to their partner for both cases and controls and this was not statistically significant.

Regarding who makes the decision on personal income utilization we found that majority of respondents in both groups made the decision. It was also noted that a higher proportion of controls (31.8%) shared the decision on income utilization with their partner jointly as compared to cases (21.2%) and this was statistically significant.

Assessment of health care access showed that in the suppressed group majority of respondents had good access similar to those in the unsuppressed group, however, more cases (87.1%) had good access than controls (71.4%) and this was statistically significant.

In the personal safety category the study showed a larger proportion of cases (14.1%) reported feeling unsafe as compared to controls (3.5%) which was statistically significant.

In the suppressed group, the study found that majority of respondents had low risk for all drug use categories. Respondents in the case group had higher proportions having alcohol problem use (34.1%), problem use for tobacco (16.5%), moderate to severe prescription drug use (14.1%) and moderate to severe illicit drug use (16.5%). From the study we found that alcohol use, tobacco use and illicit drug use were statistically significant.

Depression and anxiety screening for both groups showed that majority of respondents were found to have a negative screen and this was not statistically significant.

A summary of employement and income, access to health care personal safety, mental health and substance use is shown below in table 5.3:

Table 5. 3 Social Determinants of Health: Employment and income, access to health care, personal safety, mental health and substance use screen univariate analysis

Characteristic	Control (N=255) n(%)	Cases (N=85) n(%)	All (N=340) n(%)	P-value
Income and employment				
Employment status				
Employed	92(36.1)	35(41.2)	127(37.4)	0.003*
Self employed	120(47.1)	24(28.2)	144(42.4)	
Unemployed	43(16.9)	26(30.6)	69(20.3)	
Income meets needs				
Yes	153(60.0%)	27(31.8%)	180(52.9%)	<0.001
No	59(23.1%)	33(38.8%)	92(27.1%)	
No income	43(16.9%)	25(29.4%)	68(20.0%)	
Average monthly income				
No income	37(14.5%)	24(28.2%)	61(17.9%)	0.077
1000-5000	8(3.1%)	3(3.5%)	11(3.2%)	
5000-10000	65(25.5%)	16(18.8%)	81(23.8%)	
10000-20000	69(27.1%)	19(22.4%)	88(25.9%)	
20000-50000	46(18.0%)	17(20.0%)	63(18.5%)	
>50000	30(11.8%)	6(7.1%)	36(10.6%)	
Income compared to partner				
More than partner	23(9.0%)	5(5.9%)	28(8.2%)	0.194
Less than partner	15(5.9%)	4(4.7%)	19(5.6%)	
About the same	49(19.2%)	13(15.3%)	62(18.2%)	
My partner has no income	21(8.2%)	5(5.9%)	26(7.6%)	

I have no partner	142(55.7%)	52(61.2%)	194(57.1%)	
I have no income	5(2.0%)	6(7.1%)	11(3.2%)	
Personal income utilization				
You	138(54.1%)	42(49.4%)	180(52.9%)	0.011
Your partner	2(0.8%)	1(1.2%)	3(0.9%)	
You and your partner jointly	81(31.8%)	18(21.2%)	99(29.1%)	
Either I or My partner have no income	34(13.3%)	24(28.2%)	58(17.1%)	
Access to healthcare				
Good access	182(71.4%)	74(87.1%)	256(75.3)	0.004
Poor access	73(28.6%)	11(12.9%)	84(24.7%)	
Personal safety				
Safe	246(96.5%)	73(85.9%)	319(93.8%)	0.001
Unsafe	9(3.5%)	12(14.1%)	21(6.2%)	
Mental health screen				
Depression				
No	214(83.9%)	69(81.2%)	283(83.2%)	0.615
Yes	41(16.1%)	16(18.8%)	57(16.8%)	
Anxiety				
No	241(94.5%)	75(88.2%)	316(92.9%)	0.083
Yes	14(5.5%)	10(11.8%)	24(7.1%)	
Substance use				
Alcohol use				
Low risk use	191(74.9)	52(61.2)	243(71.5)	0.039
Problem use	59(23.1)	29(34.1)	88(25.9)	
Moderate-severe use	5(2.0)	4(4.7)	9(2.6)	

Tobacco use				
Low risk use	241(94.5)	70(82.4)	311(91.5)	<0.001
Problem use	10(3.9)	14(16.5)	24(7.1)	
Moderate-severe use	4(1.6)	1(1.2)	5(1.5)	
Prescription use				
Low risk use	236(92.5)	73(85.9)	309(90.9)	0.081
Moderate-severe use	19(7.5)	12(14.1)	31(9.1)	
Illicit drug use				
Low risk use	244(95.7)	71(83.5)	315(92.6)	0.001
Moderate-severe use	11(4.3)	14(16.5)	25(7.4)	

5.4 Beliefs in medicine

From the study we found that cases scored higher in all the four subscales on analysis of agree and strongly agree responses. In the specific necessity subscale cases had a higher mean rank score (208.38-221.62) as compared to controls (153.26-157.87) and the difference was statistically significant. There were similar findings of higher mean rank scores in the specific concerns subscale as well with cases having scores between (227.11-252.28) while controls had scores between (143.24-151.63). General overuse mean rank scores also had similar findings with higher scores for cases compared to controls. In the general harm subscale however, there was no statistically significant difference for questions on whether medicines are addictive (H3) or poisonous (H4) as shown in the table below:

Table 5. 4 Beliefs in Medicine Wilcoxon Z scores for each item for cases and controls.

Statement	**Code**	**Agree/Strongly Agree n(%)**	**Mean rank for the groups**		**Wilcoxon Z scores**	**P-value**
			Control	**Cases**		
Specific-necessity						
My life would be impossible without my HIV medication	N1	32(9.4)	156.90	211.29	-4.963	<0.001

Without my HIV medication I would be very ill	N2	11(3.2)	156.91	211.28	-5.146	<0.001
My health at present depends on my HIV medicines	N3	8(2.4)	157.19	210.44	-5.013	<0.001
My HIV medication protects me from becoming worse	N4	61(17.9)	153.26	221.62	-6.528	<0.001
My health in the future will depend on my HIV medication	N5	6(1.8)	157.87	208.38	-4.711	<0.001
Specific-concerns						<0.001
I sometimes worry about the long-term effects of my medicines	C1	199(58.5)	151.63	227.11	-6.534	<0.001
Having to take medicines worries me	C2	131(38.5)	144.40	246.51	-8.889	<0.001
I sometimes worry about becoming too dependent on my medicines	C3	127(37.4)	143.50	251.50	-9.605	<0.001
My medicines disrupt my life	C4	81(23.8)	143.24	252.28	-10.177	<0.001
My medicines are a mystery to me	C5	61(17.9)	151.36	227.91	-7.075	<0.001
General-overuse						<0.001
If doctors had more time with patients, they would prescribe fewer medicines	O1	79(23.2)	158.52	206.43	-4.228	<0.001
Doctors use too many medicine	O2	108(31.8)	154.62	218.13	-5.783	<0.001
Doctors place too much trust in medicines	O3	156(45.9)	156.43	212.72	-4.868	<0.001
Natural remedies are	O4	39(11.5)	159.71	202.88	-3.698	<0.001

safer than medicines						
General-harm						
Medicines do more harm than good	H1	11(3.2)	164.53	188.41	-2.356	0.018
People who take medicines should stop their treatment for a while every now and again	H2	40(11.8)	146.11	241.38	-8.330	<0.001
Most medicines are addictive	H3	59(17.4)	169.76	172.71	-0.264	0.792
All medicines are poisons	H4	36(10.6)	168.67	175.98	-0.709	0.479

5.5 Logistic regression analysis

Table 5.5 Logistic regression analysis of SDH and beliefs in medicine against viral suppression

Characteristics	Unadjusted OR [95% CI]	p-value	Adjusted OR [95% CI]	p-value
Marital status				
Single	1.00		1.00	
Widow	1.28 [0.727, 2.255]	0.393	0.838 [0.351, 2 .002]	0.692
Married	0.698 [0.282, 1.727]	0.437	0.817 [0.230, 2.905]	0.755
Separated	5.739 [2.259, 14.583]	0.000	4.671 [1.080, 20.212]	0.039
Divorced	0.922 [0.099, 8.573]	0.943	.0573 [0.014, 24.134]	0.770
Missed appointments				
No	1.00		1.00	
Yes	13.895 [7.661, 25.202]	<0.001	21.225 [9.343, 48.218]	<0.001
Amenities access category				

Good access	1.00		1.00	
Poor access	1.15 [0.67, 1.97]	0.623	0.447 [0. 641, 1.219]	0.116
House stability				
Stable housing	1.00		1.00	
Unstable housing	2.60 [1.57, 4.31]	<0.001	1.863 [0.632, 4.90]	0. 592
Highest level of education				
Primary school	1.00		1.00	
High school	2.39 [1.03, 5.55]	0.042	5.924 [1.234, 28.446]	0.026
Vocational training	1.85 [0.68, 5.05]	0.228	5.380 [0.797, 36.295]	0.084
College/University	1.42 [0.59, 3.41]	0.439	3.422 [0.631, 18.564]	0.154
Employment status				
Employed	1.00		1.00	
Self employed	0.53 [0.29, 0.94]	0.032	0.351[0.142, 0.868]	0.023
Unemployed	1.59 [0.85, 2.96]	0.145	1.020 [0.296, 3.521]	0.975
Does income meet needs				
No	1.00		1.00	
yes	0.31 [0.18, 0.52]	<0.001	0.801 [0.243, 2.639]	0.715
Access to healthcare				
Good access	1.00		1.00	
Poor access	0.37 [0.19, 0.74]	0.005	0.305 [0.106, 0.873]	0.027
HFIAS category				
Food secure	1.00		1.00	
Mildly food insecure	1.22 [0.66, 2.29]	0.525	0.537[0.179, 1.606]	0.266
Moderately food insecure	1.59 [0.81, 3.11]	0.179	1.221 [0.325, 4.591]	0. 767
Severely food insecure	7.57 [3.02, 18.96]	<0.001	5.578 [1.173, 26.527]	0.031
Personal Safety category				

Safe	1.00			
Unsafe	4.493 [1.822,11.083]	0.001	6.678 [1.174, 38.001]	0.032
Beleifs in medicine				
Specific Concerns subscale	10.495[6.331, 17.399]	<0.001	9.114[5.185, 16.019]	<0.001
Specific Necessity subscale	2.961[1.913, 4.581]	<0.001	2.435[1.263, 4.695]	0.008
General Harm subscale	3.949[2.324, 6.708]	<0.001	0.565[0.256, 1.249]	0.159
General Overuse subscale	4.786[3.037, 7.542]	<0.001	1.636[0.868, 3.084]	0.128

The study variables were used in bivariate and multivariate analysis to determine those that were statistically significant. In bivariate analysis we found that the significant risk factors for viral suppression included being separated, having a history of missed appointments in the last one year, unstable housing, a high school education, being self-employed, having personal income meeting needs, poor access to health care, severe food insecurity and lack of personal safety.

In the multivariate analysis social determinants of health that were found to be significant included high school education, being self-employed, poor access to health care, severe food insecurity and lack of personal safety.

Beliefs in medicine that were significant for viral suppression included the Specific Concerns and Necessity subscales. The General Harm and Overuse subscales were not statistically significant.

6. DISCUSSION

In the study females accounted for 50.6% of the respondents and the ages were between 20-73 years. Most respondents were below the age of 50 and this is similar to the global picture where the prevalence of HIV is high below age of 50 years as per the UNAIDS data 2021 global report (67).

Marital status was found to be statistically significant at univariate analysis. Following logistic regression we found that being separated was statistically significant increasing the odds of being unsuppressed. Marital status has been shown to play a significant role in increasing incidence of HIV infection particularly in Africa as shown by a study done on longitudinal data between 2000-2017 in South Africa by Tlou that showed marital status contributing to HIV infection (68), as well as data from national surveys in 13 African countries showing that separation was linked with higher prevalence of HIV infection (69). The link between being married and getting HIV infected from a partner is significant and there are numerous factors that are thought to increase the likelihood of partnership dissolution in the setting of HIV that include social and economic factors thereby leading to higher prevalence of HIV in separated or divorced individuals(70) and these can be postulated to lead to reduced rates of viral suppression and a poor outcome.

History of having missed appointments in the last one year was found to be statistically significant. A larger proportion of cases reported having missed appointments compared to controls with various reasons cited including concurrent illness at the time of their scheduled clinic visit, financial constraints, pre-occupation with income generating activities and political tension due to the ongoing political campaigns for the national general elections. Missed appointments have been shown to have an impact on treatment adherence and thus viral suppression rates as shown in a study carried out in 6 university affiliated HIV outpatient clinics in USA that showed missed clinic visits contributed to poorer viral suppression outcomes in HIV infected black individuals (71). History of being referred for adherence counselling in the last one year was found to be statistically significant at univariate analysis. Cases had history of being referred for adherence counselling and it was noted that as part of enhanced surveillance these individuals were enrolled into enhanced adherence counselling to address their barriers to achieving viral suppression. Such efforts were geared towards improving treatment outcomes and it has been shown that enhanced adherence counselling leads to improvement in viral suppression rates for previously unsuppressed individuals as shown by a cohort study in Zimbabwe by Bvchora et al in which at least 3 enhanced adherence counselling sessions increased rates of viral suppression in HIV infected adults(72).

We noted similar trends in history of having severe illness requiring hospitalisation for both cases and controls, which was not statistically significant. Some of the reported illnesses included infectious causes such as covid 19, pneumonia, tuberculosis, meningitis and diarrhoea. Non-infectious causes included anemia and stroke. A cohort study done in North America by Davy-Mendez et all showed that there was a decline in rates of hospitalisation with improved median CD4 count and viral suppression in persons living with HIV (73).

Housing stability was found to be statistically significant in univariate analysis. A higher proportion of controls had stable housing as compared to the cases. In the bivariate analysis housing stability was significant for those who had unstable housing however, not statistically significant in multivariate analysis. Stable housing has been shown to be linked to adequate income and those who face unstable housing situations have had utilities disconnected and/or faced eviction threats or had to change housing due to inability to pay rent. From the study we found that those facing unstable housing had faced difficult economic times since the start of the Covid-19 pandemic with significant change or loss of income generating acitivities as well as change of residence due to reduced household income. Others had changed living arrangements with their families and relocated them to their rural residence to cut on housing costs, while they remained in urban centres. The effects on treatment outcomes following the covid pandemic have been shown to be multifactorial, working synergistically with other factors as well as shown in a global report by Kalichman et al (74). Unstable housing has been linked with treatment outcomes particularly suppression rates as shown by Clemenzi-Allen et al(75), however, we did not find statistical significance in this study at multivariate analysis.

Food security was found to be statistically significant and we found that in the case group a higher proportion had moderate (22.4%) and severe food insecurity (18.8%) as compared to controls. It is noteworthy that more than 50% of the respondents faced food insecurity at different levels. Severe food insecurity was statistically significant at bivariate and multivariate analyses with increased risk of being unsuppressed for those with severe food insecurity. From the study we found that those with severe food insecurity faced other treatment related challenges such as adverse drug reactions with poor oral tolerance, they had significantly less income and were less likely to adhere to treatment at home. Food security has been linked to viral suppression and it had been shown that those facing food insecurity have challenges with malnutrition, have an increase in side effects particularly involving the gastrointestinal tract and are less likely to adhere to treatment as seen in a cross sectional study in Kenya by Nagata et al (33). As a region, Sub-Saharan Africa faces a significant challenge with food insecurity leading to malnutrition, adverse health outcomes and increased risk of mortality, not only limited to the HIV-infected population but also affecting those with other comorbidities(76). Poor access to food is as a result of multiple factors and we found that loss of income generating activities, reduced income and a higher cost of living for this study population possibly contributed significantly to higher levels of food insecurity.

Highest level of education achieved was statistically significant at both bivariate and multivariate analysis for those with a high school diploma. Lower levels of education have been linked to being in lower socio-economic status with poorer health outcomes due to lower rates of treatment adherence that have been observed to improve with higher level of education as shown by a collaboration study in Europe of HIV infected cohorts(77) and those with higher levels of education have been shown to have better adherence and treatment outcomes. This study demonstrated that higher education for this population was linked with higher risk of unsuppressed viral load and this is similar to the positive education gradient

that has been demonstrated from countries in East and West Africa in a study on secondary analysis of demographic and health survey data in these countries by Magadi (78).

Current employment status was statistically significant and overall there was a higher proportion of unsuppressed that faced unemployment. In the bivariate and multivariate analysis we found that being self employed was statistically significant with a reduced risk of being unsuppressed. For those who reported having an income, majority of respondents in the control group had their needs met, while those in the case group had a higher proportion of 38.8% reporting their needs were not met. This was statistically significant in bivariate analysis but not in multivariate analysis. Similar factors were found to be significant in affecting income and employement including the unstable political climate surrounding the general elections that were being carried out that have been shown to significantly interrupt care as seen in a study by Pyne-Mercier et al in Kenya following the post election violence in 2008(79), as well as the aftermath effects from the Covid-19 pandemic on the economy(80) and clients reported having lost income generating activities and were also grappling with an increased cost of living. Income and employment have been demonstrated to be significant contributors to viral suppression and treatment outcomes in HIV as seen by a cross sectional study in Nigeria by Abdullahi et al that linked being unemployed to reduced viral suppression (81).

Access to health care was statistically significant with a higher proportion of the cases having good access as compared to the controls. Poor access included delay in decision making, longer distance to nearest health facility and a lack of reliable transportation and these have all been linked to treatment outcomes in PLHIV as they impact on viral suppression. We found a lower risk of being unsuppressed in those with poor access. This was largely driven by those suppressed individuals who opted to travel long distances to their preferred health facility citing reasons such as perceived stigma from friends and family that contributed to their decision to maintain reviews at distant facilities. Lack of reliable transportation was possibly due to limited household income to cater for all the income needs, and this was a reflection of difficult economic times faced by the respondents. Another barrier to health care access has been shown to be decision making at the household level. Decision making can be affected by income as well socio-cultural factors that limit the capacity of individuals to decide on their own when they can access health care. This is in contrast to findings from a study by Nakazea et al, demonstrating that increased distance to the health facility affected viral suppression by increasing the proportion of individuals who were unsuppressed with increasing distance(62).

Personal safety was statistically significant with majority of respondents reporting personal safety in both groups but controls had a higher proportion of those who felt safe as compared to cases. Those in unsafe environments had a 5.277 times higher risk of being unsuppressed than those in safe environments. Violence can occur in any setting whether at home or at work. From our study some of the factors that likely contributed to perceived lack of safety included loss of income generating activities, food insecurity and unstable housing. Exposure to an unsafe environment with either physical or verbal abuse has been shown to have a negative impact on treatment outcomes as it affects health seeking behaviour as well as

adherence. This has been demonstrated by a meta-analysis that showed HIV infected women in the USA had reduced likelihood of viral suppression for those with history of exposure to violence(82). A secondary analysis of cross-sectional data done in South Africa also showed that young women exposed to violence had lower rates of viral suppression as well(83).

In the analysis of patients' beliefs in medicine we found that cases had higher mean rank scores in all the four subscales indicating that they had more negative perceptions regarding their medication. These negative beliefs reflect a negative perception regarding their treatment in HIV as well as other medicines in general. The negative beliefs in the specific concerns framework showed negative perceptions regarding the need to take their HIV medication, the long term effects of their medication, understanding of how their medicines work, disruption of their life by the medicine and risk of becoming dependent on medicines. Some of the concerns noted during the study included having to take medicine daily as there is no current cure while others reported eargerness to take up less dosing intervals with monthly injectable ART.

In the specific necessity framework, their negative beliefs showed their negative perception that their health at the moment and in future depended on their HIV medicine. A number of clients did not believe that their current good health was a factor of their continued use of ART, or that their future health depended on their continued use. None expressed the desire to outrightly stop, and this was noted to be improved after undergoing enhanced adherence counselling.

Negative general harm perceptions indicate that they believed in the need to interrupt treatment once in a while, addictive potential of medicines and potential harm from all medicines. In the general overuse beliefs, their negative perception was on the role of doctors in giving too many drugs and the option to have natural remedies as safer alternatives. A number of metabolic effects have been reported in those on ART and we found that there were those who complained of increased body fat and waist circumference, elevated blood pressure and sexual dysfunction in males. Such effects have also been found in studies on those on lifelong ART as shown in a review by Brown et al highlighting metabolic complications such as adipose tissue changes and impaired lipid metabolism (84).

The specific concerns and necessity subscales have been shown to be statistically significant in this study. Poor scores in this framework have been linked to poor treatment outcomes in HIV due to its negative effect on treatment adherence and this has been demonstrated by a meta analysis done by Langebeek et al showing that adherence was strongly associated with individual necessity and concerns beliefs regarding their treatment(57). This framework has also been used in other disease settings such as asthma, breast cancer and cardiovascular disease with similar results as shown by a meta analysis by Foot et al(85).

7. CONCLUSION AND RECOMMENDATIONS

7.1 Conclusion

In the study, we found that there is a relationship between SDH and viral suppression with factors such as access to amenities, high school education, self employment, severe food insecurity and lack of personal safety impacting treatment outcome.

Beliefs in medicine are also linked to viral suppression particularly in the necessity and concerns subscales.

7.2 Recommendations

After conducting this study we recommend the following:

1. Data should be collected on social determinants for clients enrolled into care in the HIV outpatient clinic, and have a central registry for this data.
2. Provide interventions with the existing health workforce to address those that are found to be facing negative social determinants.
3. Utilise the current infrastructure to assess and address negative patient beliefs in medicine.

7.3 Study strengths

1. Ability to assess multiple exposures on the study population.
2. Appropriate study design with small sample size of cases.

7.4 Study limitations

Some of the limitations that we faced in conducting this study included:

1. Incomplete electronic health records.
2. Recall bias.
3. Selection bias.
4. Unable to determine causality.
5. Single centre study.

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APPENDIX I: STUDY DESCRIPTION FORM.

STUDY TITLE: IMPACT OF BELIEFS, SOCIAL DETERMINANTS OF HEALTH ON TREATMENT OUTCOMES IN HIV INFECTED ADULTS AT KENYATTA NATIONAL HOSPITAL CCC CLINIC.

I am Dr. Fiona Kahonge, currently pursuing a post-graduate degree in Internal Medicine at the The University of Nairobi. I will be carrying out the above research in the outpatient CCC clinic as part of the school requirements towards completion of my post graduate degree. The study will be undertaken following authorisation from the KNH/University of Nairobi Ethics Committee for a period of 12 months.

What is the goal of this study?

It is to define the SDH and beliefs in medicine that impact on treatment outcomes in HIV-infected adults.

What does it involve?

Informed consent will be obtained from you, then information will be obtained from your medical records as well as history taking, and you will also fill out 3 questionnaires.

Are there any dangers involved with the study?

This study is not associated with any dangers.

Do I stand to gain from the study?

Yes, you will gain from this research. The knowledge we obtain will be essential for future planning and management of HIV and improving care to optimise viral suppression and improve treatment outcomes. There will be no monetary benefits however.

Do I have to take part in the study?

You are not under any compulsion to take part in it. It will be on optional grounds. Once you agree to participate, informed consent will be obtained before starting the study.

Can I withdraw from the research?

Yes, you can leave the study at any point and this will not interrupt your regular care. You will also not be subjected to any discrimination, or face stigma.

Confidentiality

All the data that will be gathered during the study period shall only be available to authorised personnel to mitigate unauthorised persons from access.

APPENDIX 2: INFORMED CONSENT FORM.

Participant's declaration

I certify that I have read/listened to and understood the details provided to me in a language that I understand. I have been given the chance to inquire further and seek clarification and I have been answered clearly in a language that I comprehend. The dangers and advantages linked to my participation have been discussed with me, I thereby decide to take part in this study on optional grounds, and I can pull out at any point during the study period.

I understand my participation is on an anonymous basis, and attempts will be made to make sure that any individual identifiers are kept private.

As I sign this consent form I declare that I have not forsaken my freedoms as an individual taking part in a study.

I consent to taking part in this research	□Yes	□No

Signed	Date(DD/MM/YYYY):__/__/____

Researcher's declaration

As the principal investigator I have comprehensively described the important aspects of this research to the participant designated above, and I presume that they are voluntarily giving their consent having understood the purpose of the research.

Researcher's name: Dr. Fiona Kahonge	Date:
Signed:	Phone Number: 0763180094

APPENDIX 3: GENERAL INFORMATION TOOL

STUDY NUMBER:

OP/IP FILE NUMBER:

Date of birth (DD/MM/YYYY): _ _/_ _/_ _ _ _

Gender (M/F):

Marital status: □Single □Married □Divorced □Widowed/widower □Separated

Date of HIV diagnosis (DD/MM/YYYY): _ _/_ _/_ _ _ _

Date of starting ART (DD/MM/YYYY): _ _/_ _/_ _ _ _

ART regime history:

	REGIMEN	START DATE	STOP DATE	DURATION
1.				
2.				
3.				

Reason for ART change:

	DATE OF CHANGE	REASON FOR CHANGE
1.		
2.		
3.		

Viral load (last 3-4 results):

	VIRAL LOAD	TEST DATE
1.		
2.		
3.		
4.		

WHO clinical stage at initiation:

Baseline CD4 count:

Missed appointments in the last one year: □Yes □No

Referral for adherence counselling in the last one year: □Yes □No

Any history of severe illness requiring hospitalisation? □Yes □No

If yes, what was the diagnosis and month/year of admission?

Diagnosis	Month/Year of admission

Co morbidities:

□None	□Hypertension	□Diabetes	□Others
□Hepatitis B	□Hepatitis C	□Kidney disease	

Please tick all that apply: History of AIDS-defining illnesses:

Candidiasis	□Oesophageal □Lower respiratory tract
Cryptococcosis	□CNS
CMV	□Gastrointestinal □CNS □Retinal
Malignancy	□Lymphoma □Kaposi sarcoma □Cervical cancer
□Tuberculosis	□HSV
□PCP	□Toxoplasmosis
□HIV wasting syndrome	

Prophylaxis received:

□PCP Prophylaxis	□IPT

APPENDIX 4: SOCIAL DETERMINANTS OF HEALTH IN HIV-INFECTED ADULTS QUESTIONNAIRE

The following questions are important in helping us to understand the factors that surround you and the role that they play in determining your health and treatment outcomes. All your answers are confidential and no personal identifying information is contained in this questionnaire. All answers are acceptable. Please answer all questions as honestly as possible.

1. Housing stability

The following questions are about where you live. We are looking to understand your housing status and that of the people you are living with (household). Please fill your answers appropriately.

a) What is the name of the place where you currently reside? _____

b) Do you own or rent your current residence? □Own □Rent
If answer is Rent, also fill out questions (k) and (l).

c) What materials have been used to construct the walls of your current residence?
□Stone □wood □iron sheets □mud

d) How many people do you live with in your current residence/unit?

e) How many rooms does your house contain (do not count kitchen and store)?

f) Do you have access to toilet facilities inside your house? □Yes □No

g) Do you share a common toilet with nearby houses? □Yes □No

h) Do you have running water in your house? □Yes □ No

i) Do you have electricity connection in your house? □Yes □No

j) Please tick all that apply:
What source of heat do you use to cook food?
□Cooking gas □charcoal □firewood □electricity □kerosene

k) In the last 12 months, have you been threatened with disconnection from utilities such as water or electricity due to inability to pay for them?
□Yes □No

l) In the last one month have you been threatened with eviction due to inability to pay your rent? □Yes □No

m) In the last 12 months have you had to change houses due to financial constraints?
□Yes □No

2. Food security

The following section has questions regarding your access to food and food security over the last 4 weeks affecting you and the people you live with (household). Please fill out your answers appropriately.

a)	In the past four weeks, did you worry that your household would not have enough food?	□Yes □No If Yes please fill the question on the right. If No please move to (b)	How often did this happen? □1=Rarely (once or twice in the past four weeks) □2=Sometimes (three to ten times in the past four weeks) □3=Often (more than ten times in the past four weeks)
b)	In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	□Yes □No If Yes please fill the question on the right. If No please move to (c)	How often did this happen? □1 □2 □3
c)	In the past four weeks, did you or any household member have to eat a limited variety of foods due to a lack of resources?	□Yes □No If Yes please fill the question on the right. If No please move to (d)	How often did this happen? □1 □2 □3
d)	In the past four weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	□Yes □No If Yes please fill the question on the right. If No please move to (e)	How often did this happen? □1 □2 □3
e)	In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	□Yes □No If Yes please fill the question on the right. If No please move to (f)	How often did this happen? □1 □2 □3
f)	In the past four weeks, did you or any household member have to eat fewer meals in a day because there was not enough food?	□Yes □No If Yes please fill the question on the right. If No please move to (g)	How often did this happen? □1 □2 □3
g)	In the past four weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food?	□Yes □No If Yes please fill the question on the right.	How often did this happen? □1 □2 □3

		If No please move to (h)	
h)	In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?	□Yes □No If Yes please fill the question on the right. If No please move to (i)	How often did this happen? □1 □2 □3
i)	In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	□Yes □No If Yes please fill the question on the right. If No please move to the next question.	How often did this happen? □1 □2 □3

3. Education

The following questions will help us to find out your educational status. Please fill out your answers appropriately. Tick one answer that best describes your educational status.

a) What is the highest level of education that you have completed?

□None	□Primary school	□High school	□Vocational training	□College/University

b) Are you currently enrolled in an institution of learning?

□No	□Primary school	□High school	□Vocational training	□College/University

4. Employment

The following questions will help us to find out your employment history. Please fill out your answers appropriately.

a) Which best defines your present working situation?
□Employed (full/part time) □ Self employed □Unemployed □ Retired
If employed, move to question (b).
If self employed, move to question (c)
If unemployed, move to Question 5.

b) I). What is your current position? _____
ii). How long have you been in your current job? _____(years)
iii). Does your income from this job meet your daily needs? □Yes □ No

c) I). What business do you do? _____
ii). How long have you been in this business? _____(years)
iii). Does your income from this business meet your daily needs? □Yes □No

5. Income

The following questions will help us to find out the range of monthly income that you get from your current employment/business per month. Please tick the most relevant range.

a) What is your average income per month?

□I have no income	□10,000 to 20,000Kshs
□1,000 to 5,000Kshs	□20,000 to 50,000Kshs
□5,000 to 10,000Kshs	□50,000 and above

b) Would you say that the money that you earn is more than what your partner (husband/wife) earns, less than what they earn, or about the same?
□More than □Less than □About the same □My partner has no income
□I don't know □ have no partner

c) Who determines most of the times how YOUR earnings shall be utilised?
□You □Your partner □You and your partner jointly □My partner has no income □ have no partner

d) Who usually decides how YOUR PARTNER'S earnings shall be utilised?
□You □Your partner □You and your partner jointly □My partner has no income □ have no partner

6. Health care access

The following questions will help us to understand challenges you face in accessing your preferred health care facility. Please pick one best answer for each question.

a) How long does it take you to travel from home to your preferred health facility on average?
□Less than 30 minutes □30 to 60 minutes □More than 60 minutes.

b) Over the last 12 months, has lack of a reliable transportation or money for transportation kept you from accessing your preferred health facility?
□Yes □No

c) Who usually makes decisions about health care for yourself?
□You □Your partner (husband/wife) □You and your partner (husband/wife) jointly
□Someone else □ have no partner

7. Safety.

The following questions will help us to determine if you face threats to your personal safety. Please pick one best answer for each question.

a) Do you feel safe in your current area of residence?
□Yes □No

b) How often do you experience physical abuse from anyone, including family and friends?

□Never	□Rarely	□Sometimes	□Fairly often	□Frequently

c) How often does anyone, including family and friends, scream at you, insult you or threaten you with harm?

□Never	□Rarely	□Sometimes	□Fairly often	□Frequently

8. Substance use

The following questions will help us to understand your experience with alcohol, cigarettes and other drugs including those prescribed to you by a doctor that you have used for reasons beyond their indication. Please fill as honestly as possible.

a) Over the last 3 months, how many times have you taken alcohol?

□Never	□Once or twice	□Weekly	□Monthly	□Daily/Almost daily

b) Over the last 3 months, how many times have you used tobacco products?

□Never	□Once or twice	□Weekly	□Monthly	□Daily/Almost daily

c) Over the last 3 months, how many times have you used prescribed drugs for other reasons?

□Never	□Once or twice	□Weekly	□Monthly	□Daily/Almost daily

d) Over the last 3 months, how many times have you used illegal drugs?

□Never	□Once or twice	□Weekly	□Monthly	□Daily/Almost daily

9. Mental health

The following questions will help us to understand whether you have any mental health needs that we can address. Please pick one best answer and fill out the questions as honestly as possible.

a) Over the last two weeks, how often have you been feeling down, depressed or hopeless?

□Not at all	□Several days	□More than half of the days	□Nearly every day

b) Over the last two weeks how often have you had little interest or pleasure in doing things?

□Not at all	□Several days	□More than half of the days	□Nearly every day

c) Over the last two weeks, how often have you been feeling anxious or on edge?

□Not at all	□Several days	□More than half of the days	□Nearly every day

d) Over the last two weeks how often have you been unable to control or stop worrying?

□Not at all	□Several days	□More than half of the days	□Nearly every day

APPENDIX 5: BELIEFS ABOUT MEDICINES QUESTIONNAIRE (BMQ)

Beliefs about medicines questionnaire (BMQ) Horne, Weinman, Hankins, (1999) *Psychology and Health,* 14, 1-24

BMQ –Specific

Your views about medicines prescribed to you.

 I would like to ask you about your personal views about medicines prescribed for your HIV.

 These are statements other people have made about their HIV medication.

 Please indicate the extent to which you agree or disagree with them by placing a cross in the appropriate box.

 There are no right or wrong answers. I am interested in your personal views.

 Please only cross one box per question.

1) My health at present depends on my HIV medicines:
Strongly agree agree uncertain disagree strongly disagree

2) Having to take HIV medication worries me:
Strongly agree agree uncertain disagree strongly disagree

3) My life would be impossible without my HIV medication:
Strongly agree agree uncertain disagree strongly disagree

4) Without my HIV medication I would be very ill:
Strongly agree agree uncertain disagree strongly disagree

5) I sometimes worry about the long-term effects of my HIV medication:
Strongly agree agree uncertain disagree strongly disagree

6) My HIV medication is a mystery to me:
Strongly agree agree uncertain disagree strongly disagree

7) My health in the future will depend on my HIV medication:
Strongly agree agree uncertain disagree strongly disagree

8) My HIV medication disrupts my life:
Strongly agree agree uncertain disagree strongly disagree

9) I sometimes worry about becoming too dependent on my HIV medication:
Strongly agree agree uncertain disagree strongly disagree

10) My HIV medication protects me from becoming worse:
Strongly agree agree uncertain disagree strongly disagree

BMQ-General

 I would like to ask you about your personal views about medicines in general.

 These are statements other people have made about medicines in general.

 Please indicate the extent to which you agree or disagree with them by ticking the appropriate box.

 There are no right or wrong answers. I am interested in your personal views.

 Please only tick one box per question.

11) Doctors use too many medicines:
Strongly agree agree uncertain disagree strongly disagree

12) People who take medicines should stop their treatment for a while every now and again:
Strongly agree agree uncertain disagree strongly disagree

13) Most medicines are addictive:
Strongly agree agree uncertain disagree strongly disagree

14) Natural remedies are safer than medicines:
Strongly agree agree uncertain disagree strongly disagree

15) Medicines do more harm than good:
Strongly agree agree uncertain disagree strongly disagree

16) All medicines are poisons:
Strongly agree agree uncertain disagree strongly disagree

17) Doctors place too much trust on medicines:
Strongly agree agree uncertain disagree strongly disagree

18) If doctors had more time with patients they would prescribe fewer medicines:
Strongly agree agree uncertain disagree strongly disagree

NUKUU YA 1: FOMU YA MAELEZO YA UTAFITI.

MADA: MATOKEO YA IMANI KUHUSU MATIBABU NA HALI YA MAISHA KWENYE MATIBABU YA WAATHIRIWA WA UKIMWI HOSPITALINI MWA RUFAA YA KENYATTA ,KILINIKI YA CCC

Jina langu ni Daktari Fiona Kahonge. Ninasomea shahada ya uzamili/ya juu katika matibabu ya watu wazima na dawa(internal medicine) , katika Chuo kikuu ya Nairobi. Ninafanya utafiti huu katika kiliniki ya CCC (wagonjwa wa ukimwi), ili nitimize matakwa ya Chuo ya kupata shahada yangu. Utafiti huu utafanywa baada ya kupata idhini kutoka kamati ya Uadilifu wa utafiti ya hospitali kuu ya KNH/Chuo Kikuu ya Nairobi, kwa muda wa mwaka mmoja.

Lengo muhimu ni nini?

Lengo ni kubaini jinsi hali ya maisha makaoni na kwinginepo, pamoja na imani ya wagonjwa kuhusu matibabu yao, inahusiana na matokeo ya matibabu ya ukimwi kwa watu wazima.

Utafiti huu unahitaji nini?

Tutakueleza kuhusu utafiti huu na baadaye tupate ruhusa kwako kuendelea nayo. Baada ya kutupa ruhusa, tutakuhoji kuhusu historia ya matibabu yako, na utajaza fomu 3 ya maswali .

Kuna hatari yeyote ya kujiunga na utafiti huu?

Utafiti huu hauna hatari yeyote.

Kuna manufaa yeyote ya kujiunga na utafiti huu?

Ndio. Ujuzi tutakaopata ni muhimu kwetu madakatari kupangia ratiba za matibabu ya ukimwi na kuboresha matibabu haya ili kuhakikisha virusi haviongezeki miilini ya wanaotibiwa. Hakuna manufaa ya kifedha utakayopata kwa kujiunga na utafiti huu.

Utafiti huu ni wa lazima?

La, unajiunga na utafiti huu kwa hiari yako. Ukikubali kujiunga na utafiti huu, tutakuomba ruhusa na utatia sahihi kwenye fomu ya makubaliano kabla ya kujiunga na utafiti huu.

Je, ninaweza kujiondoa kwenye utafiti huu?

Ndio, unaweza kutoka katika kikundi ya wanaofanyiwa utafiti huu , bila athari zozote kwa matibabu yako ya kawaida.Hutabaguliwa au kudhulumiwa kwa njia yeyote kwa kutoka/kutojiunga na utafiti huu.

Habari zote tutakazopata kukuhusu, na wanojiunga na utafiti huu, itawekwa na usiri na ni watu wenye idhini pekee kutoka mtafiti mkuu watakaoweza kusoma habari hizi.

NUKUU YA PILI: FOMU YA MAKUBALIANO

Tamko ya anayejiunga:

Ninakiri kwamba nimesoma/kusikiza maelezo kuhusu utafiti huu katika lugha ninayoelewa. Nimepewa fursa kuuliza maswali zaidi na kupata maelezo zaidi ,na nimejibiwa katika lugha ninayoelewa kabisa.Athari na manufaa za kujiunga na utafiti huu nimeelezewa kabisa. Nimeamua kujiunga na utafiti huu kwa hiari yangu, na ninaweza kuondoka wakati wowote katika muda ambao utafiti unaendelea.

Ninaelewa kwamba vitambulizi vyangu(jina/nambari ya kitambulisho,na kadhalika),zitafichwa kabisa na kila juhudi litafanywa kuweka siri vitambulizi vyangu.

Ninatia sahihi fomu hii ya makubaliano nikikiri kwamba uhuru wangu wa kibinadamu haujakiukwa kwa kujiunga na utafiti huu.

Ninakubali kujiunga na utafiti huu	□ndio	□la

Sahihi :	Tarehe (ss/mm/mwaka):__/__/____

Tamko kutoka mtafiti mkuu:

Mimi, kama mtafiti mkuu nimelezea mtu huyu anayejiunga na utafiti huu mambo yote nyeti kuhusu utafiti huu . Nina imani kwamba amejiunga na utafiti huu kwa hiari yake , kwa sababu ameelewa utafiti huu kabisa ,pamoja na maudhui ya utafiti huu.

Jina la mtafiti mkuu: Daktari Fiona Kahonge	Tarehe:
Sahihi:	Nambari ya simu: 0763180094

NUKUU YA 3:MAELEZO YA JUU

NAMBARI YA UTAFITI:

NAMBARI YA REKODI YA HOSPITALI:

TAREHE YA KUZALIWA(siku/mwezi/mwaka) _ _/_ _/_ _ _ _

Jinsia,(Kike/ kiume)

Tarehe ya kujulikana kuwa na virusi vya ukimwi: _ _/_ _/_ _ _ _

Tarehe uliyoanza dawa za kudhidibiti makali ya HIV(ART) :_ _/_ _/_ _ _ _

Historia ya matumizi ya dawa za HIV ART:

	(Aina ya dawa)	Tarehe ya kuanza	Tarehe ya kubadilishiwa dawa:	Muda dawa zilitumika;
1.				
2.				
3.				

:

Iwapo dawa za ART zilibadilishwa, zilibadilishwa kwa nini?

	Tarehe ya kubadilishwa	Sababu ya kubadilishiwa
1.		

2.		
3.		

Ripoti ya Kipimo/vipimo vya kiwango cha virusi vya HIV mwilini(viral load),mara ya tatu/nne ya mwisho umepimiwa:

	Matokeo ya Kipimo:	Tarehe ya Kipimo
1.		
2.		
3.		
4.		

Hali ya mwili wakati wa kuanza matibabu, kulingana na Shirika la Afya duniani(WHO):

Kipimo cha kwanza cha chembechembe za kinga mwilini(CD4):

Je, umekosa kufika kiliniki kulingana na ratiba ya daktari siku yoyote mwaka huu? □ndio □la

Je, umeelekezwa na mhudumu wa afya kumwona mshauri wa mawaidha ya kumeza dawa kikamilifu? □ndio □la

Je, umewahi kupatwa na maradhi makali yaliyokulazimu kulazwa hospitalini?□ndio □la

Kama umekumbwa na maradhi makali, yalikuwa maradhi yepi, na yalikupata mwezi gani/ mwaka gani?

Maradhi:	Mwezi/ mwaka wa kulazwa:

Je, una maradhi/ magonjwa mengine isipokuwa wa HIV?

□Sina	□Shinikizo la damu	□ Kisukari	□ mengine
□Homa ya ini B	□Homa ya ini C	□maradhi ya figo	

Tia alama karibu na maradhi/ ugonjwa wowote unaohusiana na Ukimwi ambayo imekupata:

Vidonda visababishwavyo na kiini cha candida:	□ Vidonda ya koo □ Vidonda vya mapafu/Nimonia/kisamavu
Kiini cha cryptocococcus,	□ Kiini kiliathiri ubongo

Virusi vya CMV	□Njia ya chakula □Kwenye ubongo □Ya jicho
Saratani	□Saratani ya tezi(lymphoma) □saratani ya mishipa (kaposi's sarcoma) □saratani ya nyungu(cervical cancer)
□Kifua kikuu	□virusi vya HSV-Upele wa mdomo/njia za uzazi)
□ugonjwa wa PCP-(Aina ya nimonia/kisamavu)	□Viini vya toxoplasmosis
□Ugonjwa wa kukonda kupita kiasi	

Je, umepokea dawa ya kuzuia maradhi yeyote yanayohusiana na Ukimwi?

□Kinga dhidi ya kiini cha PCP?	□ Kifua kikuu?

NUKUU YA 4: MASWALI KUHUSU HALI YA MAISHA INAYOHUSIANA NA AFYA KATIKA WAATHIRIWA WA UGONJWA WA HIV,

Maswali yafuatayo ni muhimu kutusaidia kuelewa hali ya mazingira yako na hali hiyo inavyohusiana na ukamilifu wa afya yako na uwezo wako wa kuendelea katika matibabu. Majibu yako yote yatawekwa siri na hakuna vitambulizi vitatumika katika fomu hii ya maswali.Majibu yote yamekubalika. Tafadhali jibu maswali haya kikamilifu iwezekanavyo.

1. **Hali ya makao yako:**

Maswali yafuatayo yanahusu makao yako.Tunataka kuelewa hali ya makao yako na kujua watu wale unaoishi nao. Jibu maswali kikamilifu.

a. Pahali unapokaa panaitwaje?

b. Nyumba unayokaa ni ya kukodesha ama ni yako binafsi? □Ni ya kukodesha □ni kwangu
Kama ni kwa kukodesha, jibu maswali (k) na (l)

c. Kuta za nyumba unoyoishi zimejengwa kwa kutumia nini?
□Mawe □tope. □ Mabati □mbao

d. Je, unaishi na watu wangapi?
e. Nyumba mnayoishi ina vyumba vingapi (usihesabu jikoni/choo)?

f. Una choo cha ndani ya nyumba unapokaa?□ Ndio. □La

g. Unatumia choo pamoja na majirani wako unapoishi?□Ndio. □La

h. Una maji ya mifereji unapoishi? □Ndio. □La

i. Una stima yako ya kibinafsi unapoishi?□Ndio. La

j. Tafadhali tia alama kwa majibu yote ya swali hii. Unapikia nini?
□Gesi □ makaa □ kuni □ stima □ mafuta ya taa

k. Katika muda wa miezi kumi na miwili iliopita, umewahi pata tisho la kukatiwa maji/ stima kwa kukosa pesa ya kulipia? □Ndio. □La

l. Katika mwezi uliopita, umewahitishiwa kufukuzwa unapoishi kwa kukosa kodi ya nyumba? □Ndio. □La

m. Katika miezi kumi na miwili iliyopita, umelazimika kuhama kwa sababu ya kukosa kodi ya nyumba? □Ndio. □La

2. HALI YA CHAKULA YAKO:

Sehemu ifuatayo inahusu uwezo wako kupata chakula na kama ni rahisi/kuna ugumu wa kupata chakula ya kutosha katika mwezi mmoja uliopita.Tafadhali jibu maswali yafuatayo kikamilifu.

	Swali la uwepo wa hali	Jibu	Mara zile hali hii hufanyika
a.	Katika wiki nne zilizopita, umekuwa na wasiwasi mara ngapi kwamba watu wa boma yako hawatapata chakula cha kutosha?	□Ndio □la Kama jibu ni ndio, jibu swali lililoko upande wa kulia Kama jibu ni la, jibu swali la (b)	Je, ni mara ngapi ulipata shida hii (wasiwasi) ? □1=ni nadra sana(mara moja/mbili katika muda wa wiki nne iliopita □2=Mara kwa mara(mara 3-10, kwa wiki nne zilizopita) □2=Mara nyingi sana(zaidi ya mara kumi katika wiki 4 iliopita)
b.	Katika wiki nne zilizopita, kuna mtu katika boma yako au hata wewe mwenyewe aliyekosa kula kile alichokitamani kwa sababu ya kukosa pesa?	□Ndio □la Kama jibu ni ndio, jibu swali upande wa kulia Kama jibu ni la, jibu swali la (c)	Je, ni mara ngapi ulipata shida hii? □1 □2 □3
c.	Katika wiki nne zilizopita, mmelazimika mle chakula au vyakula vya aina kidogo sana kwa sababu ya ukosefu wa rasilmali?	□Ndio □la Kama jibu ni ndio, jibu swali lililoko upande wa kulia Kama jibu ni la, jibu swali la (d)	Je, ni mara ngapi ulipata shida hii? □1 □2 □3
d.	Katika wiki nne zilizopita, kuna wakati mmelazimika kula vyakula ambavyo hamvipendi kwa kukosa rasilmali za kupata aina zingine za vyakula?	□Ndio □la Kama jibu ni ndio, jibu swali upande wa kulia Kama jibu ni la, jibu swali la (e)	Je, ni mara ngapi ulipata shida hii? □1 □2 □3
e.	Katika wiki nne zilizopita, kuna mtu kwa boma yako amelazimika kula chakula kidogo kuliko alichohitaji kwa sababu chakula chenyewe hakitoshi?	□Ndio □la Kama jibu ni ndio, jibu swali upande wa kulia Kama jibu ni la, jibu swali la (f)	Je, ni mara ngapi ulipata shida hii? □1 □2 □3
f.	Katika wiki nne zilizopita, kuna wakati mlikosa kula mara zile mmezoea/zinahitajika kwa kawaida kwa sababu chakula hakitoshi?	□Ndio □la Kama jibu ni ndio, jibu swali upande wa kulia Kama jibu ni la, jibu swali la (g)	Je, ni mara ngapi ulipata shida hii? □1 □2 □3
g.	Katika wiki nne zilizopita,	□Ndio	Je, ni mara ngapi ulipata shida

	kuna wakati mlikosa chakula kabisa kwa sababu ya kukosa rasilmali ya kupata chakula?	□la Kama jibu ni ndio, jibu swali mkono lililoko upande wa kulia Kama jibu ni la, jibu swali la (h)	hii? □1 □2 □3
h	Katika wiki nne zilizopita,kuna mtu yeyote kwa boma yako amelala njaa kwa sababu chakula hakikuwatosha?	□Ndio □la Kama jibu ni ndio, jibu swali mkono wa kulia Kama jibu ni la, jibu swali la (i)	Je, ni mara ngapi ulipata shida hii? □1 □2 □3
i.	Katika wiki nne zilizopita, kuna mtu yeyote wa boma yako alishinda usiku na mchana mzima bila kula kitu chochote kwa sababu chakula hakikutosha?	□Ndio □la Kama jibu ni ndio, jibu swali mkono wa kulia Kama jibu ni la, jibu swali la (i)	Je, ni mara ngapi ulipata shida hii? □1 □2 □3

3. Kiwango ya elimu

Maswali yafuatayo yatusaidia kuelewa kiwango chako cha elimu. Tafadhali jibu maswali vyema. Chagua jibu moja linaloelezea kikamilifu kiwango chako cha elimu.

a. Je, umefikia kiwango kipi cha masomo cha juu zaidi?

□Sijasoma kabisa	□Shule ya msingi	□Shule ya upili	□Shule ya ufundi	□Chuo kikuu/chuo cha taaluma

b. Je , kwa wakati huu umejiunga na shule ya aina yeyote?

□La	□Shule ya msingi	□Shule ya upili	□Shule ya ufundi	□Chuo kikuu/chuo cha taaluma

4. Ajira/ kazi yako:

Maswali yafuatayo yatatusaidia kuelewa kazi/ajira yako kikamilifu. Tafadhali jibu maswali haya ipasavyo.

a. Unawezaje eleza kabisa hali yako ya kazi ya sasa?

□Nimeajiriwa kazi(kimwezi/ kibarua) □Ninajifanyia biashara/kazi yangu mwenyewe

Kama umeajiriwa, jibu swali (b)

Kama unajifanyia biashara yao, jibu swali la (c) kufuatia

b. i. Kazi uliyoajiriwa kwa wakati huu ni gani?.....

ii.Umeajiriwa muda gani katika kazi hiyo unafanya?.....

iii. Ajira/ mshahara ya kazi unayofanya inatosha mahitaji yako ya kila siku?

□Ndio □La

c. i. Biashara yako ni gani?.....
ii.Umefanya hii biashara kwa muda wa miezi/ miaka ngapi?.....
iii. Mapato ya biashara hii yanatimiza mahitaji yako ya kila siku? □ndio □la

5. Mapato:

Maswali yafuatayo yatatusaidia kutambua mapato ya kila mwezi unayopata kutoka biashara/mshahara yako. Tia alama karibu na pato lililokaribia mapato yako ya kawaida.

a. Je, unapata pesa ngapi kutoka kazi /biashara yako kila mwezi?

□Sina mapato yoyote	□Shilingi 10,000-20,000
□Shilingi 1000-5000	□Shilingi 20,000- 50, 000
□Shilingi 5000-10,000	□Zaidi ya shilingi 50, 000

b. Je, mapato yako ni zaidi ya mume/mke wako, yameambatana ama mapato yako ni pungufu kuliko ya mume/ mke wako?

□Mapato yangu yamezidi □Mapato yangu ni pungufu. □Mapato yetu yameambatana. □Mume/mke wangu hana mapato Sijaoa/sijaolewa

c. Ni nani mwamuzi mkuu katika boma yako kuhusu njia ya kutumia mapato yenu kijumla?

□Mimi mwenyewe. □Mume/ mke wangu. □Tunaamua matumizi yetu pamoja □Mwenzangu hana mapato□Sijaoa/sijaolewa

d. Ni nani kati yenu anayeamua jinsi mapato ya mwenzako(mumeo/ mkeo)yatatumika?

□Mimi mwenyewe □Mwenzangu (mume/ mke wangu) □Tunaamua matumizi yetu pamoja. □Mwenzangu hana mapato□Sijaoa/sijaolewa

6. Uwezo wa kupata matibabu:

Maswali yafuatayo yatatusaidia kujua zaidi changamoto zinazokupata unapotaka kwenda kutibiwa katika hospitali unayopenda. Tafadhali chagua jibu moja bora kwa kila swali.

a. Inakuchukua muda upi kusafiri kutoka nyumbani hadi kituo cha afya/ hospitali uipendayo?
□sifikishi nusu saa kabla nifike □Nusu saa hadi saa nzima □Zaidi ya saa moja

b. Katika muda wa miezi kumi na miwili iliopita, kuna wakati wowote ukosefu wa hela au mbinu ya usafiri imekufanya ukakosa kwenda kituo cha afya/ hospitali unayopenda?

□Ndio □La

c. Ni nani mwamuzi mkuu kuhusu matibabu yako kijumla?
□Mimi □Mwenzangu(mume/ mke wangu) □Mimi na mwenzangu tunafanya uamuzi sote □Mtu mwingine□Sijaoa/sijaolewa

7. Hali ya Usalama:

Maswali yafuatayo yatatusaidia kutambua kama kuna vitisho vyovyote kwa usalama wako binafsi. Tafadhali chagua jibu bora kwa kila swali.

a. Je, unahisi kuwa unakoishi ni sehemu yenye hali ya usalama wa kutosha?
□Ndio □la

b. Ni mara ngapi umedhulumiwa mwilini na mtu yeyote, ikiwepo watu wa jamii / boma yako?

□Hakuna wakati nimepitia haya	□Mara moja moja	□Wakati mwingine	□Mara nyingi	□Kila mara

c. Ni mara ngapi mtu yeyote, ikiwepo jamii na marafiki wako, huwa wanakupigia kelele na kukutishia dhuluma za kimwili?

□Hakuna wakati nimepitia haya	□Mara moja moja	□Wakati mwingine	□Mara nyingi	□Kila mara

8. Matumizi ya dawa za kulevya:

Maswali yafuatayo yatatusaidia kuelewa yote umepitia kuhusiana na matumizi ya pombe, sigara na dawa zingine, pamoja na zile uliagizwa na daktari utumie lakini umetumia kwa muda mrefu zaidi kuliko jinsi daktari alikuagiza. Chagua jibu kweli.

a. Katika miezi tatu iliyopita, umekuwa na matumizi ya pombe mara ngapi?

□Sijatumia kabisa	□Mara moja/mbili	□Kila wiki	□Kila mwezi	□Kila siku/karibu kila siku

b. Katika miezi tatu iliyopita , umetumia sigara/vileo vya tumbaku?

□Sijatumia kabisa	□Mara moja/mbili	□Kila wiki	□Kila mwezi	□Kila siku/karibu kila siku

c. Katika miezi tatu iliyopita, ni nyakati ngapi umetumia dawa kutoka daktari kwa shida tofauti na ile dawa iliandikwa?

□Sijatumia kabisa	□Mara moja/mbili	□Kila wiki	□Kila mwezi	□Kila siku/karibu kila siku

d.Katika miezi tatu iliopita , umetumia dawa haramu/mihadarati mara ngapi?

□Sijatumia kabisa	□Mara moja/mbili	□Kila wiki	□Kila mwezi	□Kila siku/karibu kila siku

9. Hali ya afya ya kimawazo:

Maswali yafuatayo yatatusaidia kuelewa kama una shida zozote za kimawazo ambayo tunaweza kutatua. Tafadhali chagua jibu mwafaka na ujibu kila swali kikweli iwezekanavyo.

a. Katika wiki mbili zilizopita, ni mara ngapi umejihisi huna furaha, umekatika roho na huna matumaini kabisa?

□Sijahisi hivi kabisa	□Siku nyingi	□Zaidi ya nusu ya siku hizo	□Karibu kila siku

b. Katika wiki mbili zilizopita, ni mara ngapi umekosa hamu ya kufanya shughuli zako za kawaida?

□Sijahisi hivi kabisa	□Siku nyingi	□Zaidi ya nusu ya siku hizo	□Karibu kila siku

c. Katika wiki mbili zilizopita, ni mara ngapi umekuwa na wasiwasi na kuhisi maisha yako yanaenda mrama?

□Sijahisi hivi kabisa	□Siku nyingi	□Zaidi ya nusu ya siku hizo	□Karibu kila siku

d. Katika wiki mbili zilizopita, ni mara ngapi umeshindwa kudhibiti hali ya wasiwasi ulio nao?

□Sijahisi hivi kabisa	□Siku nyingi	□Zaidi ya nusu ya siku hizo	□Karibu kila siku

NUKUU 4: BELIEFS IN MEDICINE QUESTIONNAIRE

Maswali haya yanahoji maoni yako kuhusu dawa unazotumia (. BMQ) Yalitengenezwa na Horne, Weinman, Hankins, (1999), na kuchapishwa katika jarida la*Psychology and Health*, 14, 1-24

Ninaomba kukuhoji kuhusu maoni na mawazo yako kuhusu dawa zako za ugonjwa wa Ukimwi.

Dhana /maoni yafuatayo ni hisia za wagonjwa wengine kuhusu dawa zao za HIV.

Tafadhali onyesha kukubaliana au kutokubaliana na maoni haya kwa kuweka alama ya msalaba katika kijisanduku kinachoambatana na mawazo yako.

Hakuna jibu sahihi au la makosa, kwa sababu kila mtu ana maoni yake binafsi.

Tafadhali chagua jibu moja tu kwa kila swali.

1. Ubora wa afya yangu inategemea matumizi mema ya dawa zangu za Ukimwi.
□ Nakubali kabisa□ Nakubali kiasi□ sina uhakika□sikubali □sikubali kabisa

2. Kutumia dawa za Ukimwiinanitia wasiwasi
□ Nakubali kabisa □ Nakubali kiasi □ sina uhakika □sikubali □sikubali kabisa

3. Maisha yangu yatashindikana bila kutumia dawa zangu za Ukimwi.
□ Nakubali kabisa □ Nakubali kiasi □ sina uhakika □sikubali □sikubali kabisa

4. Bila dawa zangu za Ukimwi , nitaugua vibaya sana
□ Nakubali kabisa □ Nakubali kiasi □ sina uhakika □sikubali □sikubali kabisa

5. Kuna nyakati ninaingiwa wasiwasi nikifikiria kuhusu makali mwilini ya dawa zangu za ukimwi
□ Nakubali kabisa □ Nakubali kiasi □ sina uhakika □sikubali □sikubali kabisa

6. Sielewi kabisa dawa zangu za ukimwi
□ Nakubali kabisa □ Nakubali kiasi □ sina uhakika □sikubali □sikubali kabisa

7. Afya yangu katika siku za usoni itaimarishwa na matumizi yangu ya dawa zangu za Ukimwi.
□ Nakubali kabisa □ Nakubali kiasi □ sina uhakika □sikubali □sikubali kabisa

8. Dawa zangu za Ukimwi zimevuruga mpangilio wa maisha yangu
□ Nakubali kabisa □ Nakubali kiasi □ sina uhakika □sikubali □sikubali kabisa

9. Ninahofia mwili wangu utazoea sana dawa zangu za ukimwi
□ Nakubali kabisa □ Nakubali kiasi □ sina uhakika □sikubali □sikubali kabisa

10. Dawa zangu za Ukimwi zinanilinga kuugua maradhi kali
□ Nakubali kabisa □ Nakubali kiasi □ sina uhakika □sikubali □sikubali kabisa

BMQ-General

□Ningependa kukuhoji kuhusu maoni yako kuhusu utumizi wa dawa kijumla.

Mawazo haya ni mawazo ya watu wengine kuhusu matibabu.

□ Tafadhali onyesha kukubaliana au kukataa na maoni haya kwa kuweka alama ya msalaba katika kijisanduku kinacholingana na mawazo yako.

□ Hakuna jibu sahihi au la makosa, kwa sababu kila mtu ana maoni yake ya kibinafsi.

□ Tafadhali chagua jibu moja tu kwa kila swali.

11. Madaktari hutumia dawa nyingi sana katika matibabu.

□ Nakubali kabisa □ Nakubali kiasi □ sina uhakika □sikubali □sikubali kabisa

12. Watu wanaotumia dawa kwa muda mrefu wanapaswa wasimamishe matibabu kwa muda mfupi mara kwa mara.
□ Nakubali kabisa □ Nakubali kiasi □ sina uhakika □sikubali □sikubali kabisa

13. Dawa nyingi ni ya kulevya.
□ Nakubali kabisa □ Nakubali kiasi □ sina uhakika □sikubali □sikubali kabisa

14. Matibabu asili/ mitishamba hayana makali mwilini kama dawa za kisasa.
□ Nakubali kabisa □ Nakubali kiasi □ sina uhakika □sikubali □sikubali kabisa

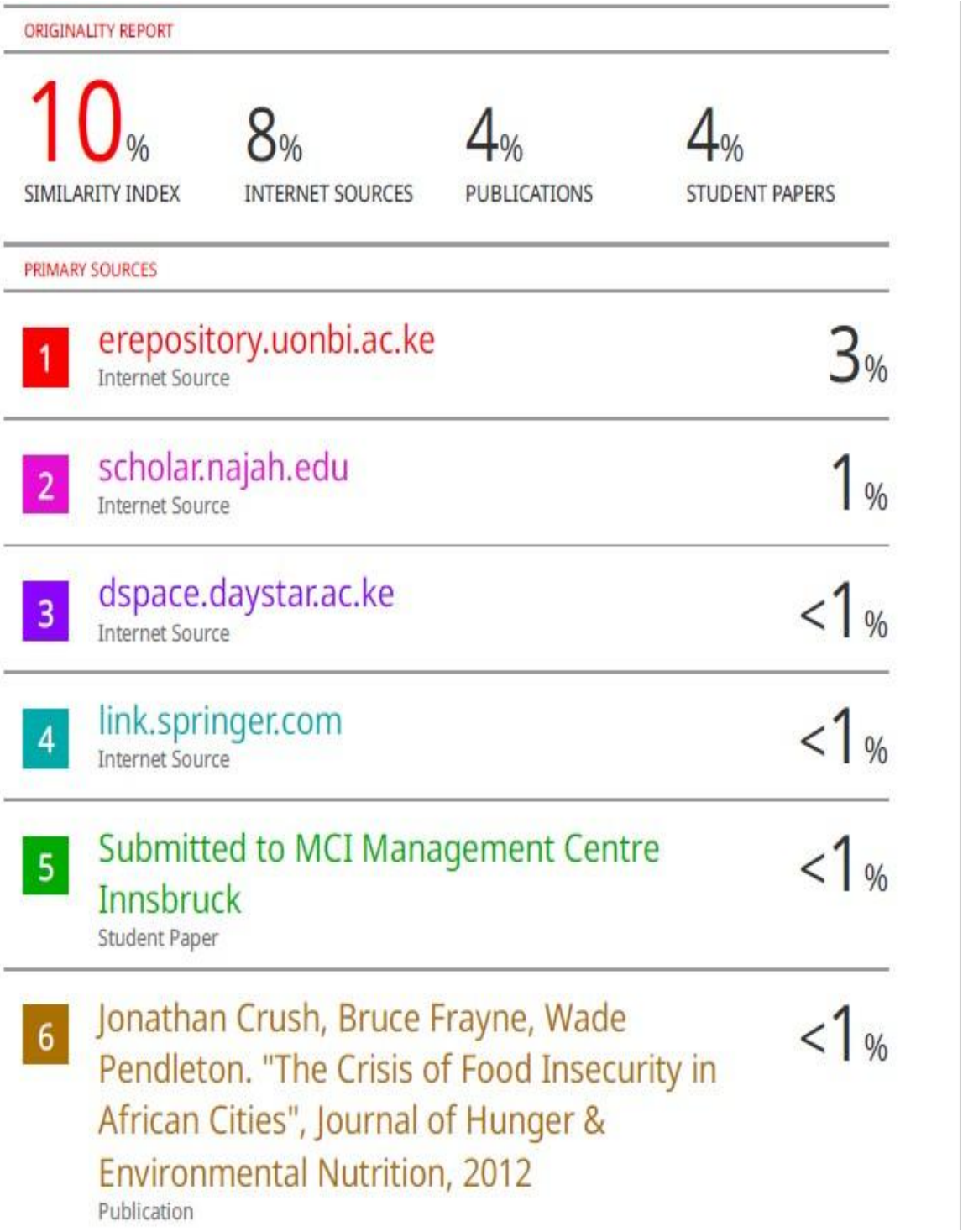
15. Dawa nyingi zina madhara Zaidi kuliko manufaa.
□ Nakubali kabisa □ Nakubali kiasi □ sina uhakika □sikubali □sikubali kabisa

16. Dawa zote ni sumu mwilini
□ Nakubali kabisa □ Nakubali kiasi □ sina uhakika □sikubali □sikubali kabisa

17. Madaktari wana imani nyingi sana katika matumizi ya dawa
□ Nakubali kabisa □ Nakubali kiasi □ sina uhakika □sikubali □sikubali kabisa

18. Kama madaktari wangechukua muda kusikiliza matatizo ya wagonjwa na kupima miili yao bila haraka, ingepunguza kiwango ya dawa zinazoandikiwa wagonjwa
□ Nakubali kabisa □ Nakubali kiasi □ sina uhakika □sikubali □sikubali kabisa

SIMILARITY INDEX



APPROVAL OF LEAD SUPERVISOR AND CHAIRMAN OF DEPARTMENT

This dissertation has been submitted for the Award of Master in Internal Medicine with the approval of my lead supervisor and Chairman of Department.

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