UTILISATION OF COMMUNICATION TECHNOLOGIES, HIV STIGMA AND ENGAGEMENT IN CARE AMONG YOUNG ADULTS: A CASE OF MILDMAY HOSPITAL UGANDA

BY

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DECLARATION

I, Masaba Jackline, do declare that this dissertation is my own original work, prepared and developed through my personal effort and it has never been presented to any other university or academic institution for any award.

SIGNATURE: …… DATE: …….

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APPROVAL

We affirm that Masaba Jackline completed this dissertation underneath our supervision on behalf of Kyambogo University and has submitted it with our consent.

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DR. BAGUWEMU ALI

DEDICATION

I dedicated this dissertation to my family.

ACKNOWLEDGEMENT

I first and foremost give appreciation to the Highest for the benefits of life, family, compassion, and supportive friends.

I also want to express my profound gratitude to my mentors, Dr. Mayengo Nathanael and Dr. Baguwemu Ali, for their unwavering academic counsel, inspiration, and support in getting this research project completed: I'll always be grateful!

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LIST OF ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immunodeficiency Syndrome
ART	Antiretroviral Therapy
HBM	Health Belief Model
HIV	Human Immunodeficiency Virus
IMB	Information-Motivation-Behaviour
NCD	Non-Communicable Diseases
PLHIV	People Living with HIV
SAT	Social Action Theory
SCT	Social Cognitive Theory
YALWHA	Young Adults Living With HIV and AIDS
STI	Sexually Transmitted Infection
UNAIDS	The Joint United Nations Programme on HIV/AIDS
WHO	World Health Organization
YLWHA	Youth Living with HIV and Aids

ABSTRACT

The study examined the relationship between Utilisation of communication technologies and engagement in HIV care and how the relationship was moderated by HIV stigma. The study was guided by positivism and a correlational survey design, and data was collected using a structure questionnaire from a stratified random sample of 322 in and out of school young adults receiving HIV care at Mildmay Hospital. Data was analysed using descriptive statistics, Pearson correlation test and regression analysis. Significant findings included; the use of communication technologies by young adults in receiving HIV care was low (mean=3.00, SD=1.34), while engagement in care was high (mean=3.75, SD=.99); Young adults who were in school had, significantly higher intentions to continue utilizing HIV care services (M = 28.32, t(219.5) = 2.48, p = .014) ; utilisation communication technologies was positively and significantly related to Engagement in HIV care(r =*.14, P<0.05*); and HIV stigma moderated the relationship between utilisation of communication technologies and engagement in HIV care (b =- .014, 95% CI [0.003, 0.026], t = 2,42, p < .05). Communication technologies can help reduce HIV stigma among young adults living with HIV and AIDS. However, the current methods used in Uganda are not effectively reaching these youths, as many are dependents and unemployed, making it difficult for them to afford smartphones or data for internet access. Despite these challenges, HIV-positive young adults have been able to regularly access their HIV care. The study recommends that while the use of communication technologies continues to expand, it is equally important to maintain and improve the existing non-digital communication systems used by HIV care programs to meet the needs of those who cannot access communication technology devices.

CHAPTER ONE: INTRODUCTION

1.0 Introduction

Person who are HIV-positive and living with AIDS (PLWHA), need effective care so as to have meaningful lives (Johnson & Peretz, et al., 2022). This study looked at how stigma associated with HIV and communication technologies effect PLWHA's decision to stay in care, given that treating HIV is still the only proven method for extending this population's life expectancy and improving its quality of life. The part that provides the backdrop, statement of the problem, primary aim or purpose, specific objectives, relevance, the scope, as well as illustration and explanation by the conceptual framework is offered next in order to provide a clear understanding of the situation.

1.1 Background of the Study

This section describes the theory on which the study is based, previous viewpoints on the study variables, what is on the ground and the key issues that were studied.

1.1.1 Historical Perspective

HIV care became a strategy for promoting the wellbeing of PLWHA in 1985, when HIV antiretroviral therapy was discovered (Boeke, et al, 2018). By 1996, it had been confirmed in the USA that remaining on HIV care program was important in enhancing the effectiveness of therapy among PLWHA (Kose et al, 2022). At the beginning of the year 2000, more advances in HIV care were registered in Europe and Asia, and it was confirmed that being in a HIV care program sustained HIV viral suppression and reduced risks of drug resistance (Johnson-Peretz, 2022). At the same time in UK, it was revealed that engagement in a HIV care program improved the overall health, life, and survival of PLWHA (Kose et al, 2022). In Africa, engagement in care has been part and parcel of National HIV/AIDS Care and Support programs since the 1990s (Muwanguzi et al, 2021). Most African countries have

Initiatives within their HIV prevention programs to make it easy for PLWHA to remain in care programs (Ajuna et al, 2021).

In Uganda, interest in engagement in care among PLWHA has been increasing since 1986 (Izudi, 2018). However, in 2016, The Ministry of Health (MOH) invigorated engagement programs after realising surges in HIV transmission, especially among married persons and at-risk populations, especially lakeshore communities and poor adherence being the main cause of ART failure (Muwanguzi et al, 2021). The MOH (2016) then started implementing standard guidelines for enhancing engagement in HIV care. Some engagement practices were innovated such as, Peer counsellors, phone calls, text messages and reminder diaries (Boeke et al, 2018). After all this has been done, HIV prevention programs in Uganda are still concerned with increasing engagement, due to indications that the number of people who regular attend HIV care programs is dropping (Boeke, et al, 2018).

1.1.2 Theoretical perspective

This study drew theoretical guidance from Fisher and Fisher (2000)'s Information-Motivation-Behaviour model **(**IMB). This model assumes that accurate information and personal motivation are important in deciding how well health-related behaviours are performed (A'Naja, 2021). According to the model, personal motivation and support from others affect how well people carry out behaviours connected to their health.

Therefore, when youths living with HIV and AIDS get appropriate communication on the perceived benefits of HIV care services, and they have self- motivation and efficacy to be involved in such behaviours, they are more likely to sustain the health-promoting behaviour (Khani Jeihooni et al., 2018). Hence communication technologies that meet the needs of HIV- positive young adults enhances their self-confidence and ability to over challenges such as "HIV stigma" and seek for and remain in HIV care.

1.1.3 Conceptual perspective

Communication technology was the independent variable; "HIV stigma", the moderating variable and " Engagement in HIV care" the dependent variable. Current viewpoints about these variables are examined next.

Communication technologies

Communication technologies is perceived as the use of electronic information and telecommunication technology such as phones, smartphones, and tablets to support access to services (Arayasirikul, et al., 2019). It often involves providing users with access to digital platforms and internet connected applications, such as smartphones, PCs, and tablets (Jatileni & Jatileni, 2018). In addition to hardware and software, Communication technologies include the use of structured skills and knowledge information technology tools to seek for and utilise Healthcare services (Leonardi & Treem, 2020). In HIV care, Communication technologies encompasses applying electronic information and telecommunication technology in the entire ecosystem of HIV care, ranging from access to treatment, care information and counselling (Alotaibi & Federico, 2017).

Use of communication technologies tools has been recognised to be essential in promoting HIV testing, reducing HIV-related stigma, and increasing the possibility that people with HIV will continue receiving care (Golub et al., 2019). This type of communication has been especially useful among young people and adolescents, since about 95% own a cell phone and are adept at using the internet (Arayasirikul, et al., 2019). In this study, Communication technologies was perceived as using Email, WhatsApp, Snap chat, Phone calls and SMS appointment reminders to enable young people and adolescents effectively participate in their HIV healthcare needs.

HIV stigma

"HIV stigma" occurs when someone internalizes the negative beliefs and presumptions about people with the virus and proceeds to apply them to themselves. These sentiments include embarrassment, disclosure anxiety, social isolation, and despair (Kay et al., 2018). Stigma among PLHIV is thought to be influenced by the linkages across social identities, mostly through communication.

HIV stigma has been affirmed to as a great contributor to poor health among individuals surviving with HIV/AIDS virus (Algarin et al., 2019). Depending on how communication is conveyed to them, people with HIV feel disclosure anxiety, internalized shame, loneliness, and despair at varying rates. HIV stigma is connected to social support, doctor trust and depression (Kay et al., 2018). Thus, HIV stigma was perceived in terms of; Feelings of shame, Fear of disclosure, Isolation and Despair due to negative communication faced by a PLHIV.

Engagement in HIV care

After first entering the system, engagement in HIV medical treatment is the patient's continued regular participation in medical care at a health institution, as indicated by either missed appointments or timely attendance at medical visits at regularly spaced intervals (Ramachandran et al., 2020). Engagement can also be; a patient continuing to participate in treatment, support, and care services after diagnosis (Boeke et al., 2018).

Engagement in care includes everything from initial involvement in caring to the eligibility assessment, ART introduction, and persistence in lifelong ART therapy (Babatunde, 2015). Measures of engagement in care include the number of appointments kept or missed, the number of medical visits made at regularly scheduled intervals, and the rate of involvement with services for diagnosis, prevention, treatment, support, and care (Ramachandran et al., 2020). Keeping patients in HIV care has been said to contribute to compliance with antiretroviral medication (Muwanguzi et al., 2021). According to this study,

maintaining frequent engagement in “preventive, treatment, support, and care services” after diagnosis was considered engagement in care among PLHIV.

Therefore, by easing access to resources, information, and support, communication technologies play a critical role in addressing the relationship of HIV stigma and young adult engagement in care. With the help of these technologies, people may connect with others going through similar experiences, seek information anonymously, and access telemedicine services and online support groups—all of which help to lessen stigma and give people the confidence to seek care. Online platforms facilitate the establishment of support networks, correct information access, and advocacy participation for young adults, thereby promoting a sense of empowerment and community. Additionally, by offering reminders and educational materials, mobile health applications support treatment adherence. Effective use of communication technologies can help us fight HIV stigma, increase patient participation in care, and eventually try to lessen the impact.

1.1.4 Contextual Background

Uganda is ranked among countries with the best HIV care programs (Johnson & Peretz, 2022). In fact, it has been a model in Africa in having successful HIV care and counselling programs (Boeke et al., 2018). In 2016 MOH developed standard engagement practices such as; treatment buddies and Peer dialogues to reduce challenges and enhance engagement in HIV care programs (Ajuna et al., 2021).

Despite the above interventions, new HIV infections due to low engagement in care are quite high Nabaggala et al., 2018). In connection to young adults, only about 65 % are retained in care (Izudi et al., 2018), far below the recommended 95% by WHO. Little empirical information existed on how increasing engagement in care behaviours across the

continuum in Uganda through integrated, communication strategies (Babalola et al., 2017, Muwanguzi et al., 2021).

The study was done at Mildmay hospital HIV care unit. Mildmay hospital started as an HIV care centre offering comprehensive HIV care services in 1998 (Mildmay AIDS Centre, Uganda). Over the years the institution has built reputable HIV care practices for a wide range of population groups, from urban and rural areas, so it was possible to get a cross-section of YALWHA getting care from the institution (Mildmay Uganda, 2019). In addition, being a well establish HIV care facility, the hospital could readily understand the importance of the research problem and provide a favourable research environment. Further, the hospital is an important platform for research into HIV care services. It trains health care workers as certificate, diploma, undergraduate and postgraduate training hence it is used to handling research students.

The Hospital also operates the largest outpatient department for HIV care and counselling in the Kampala metropolitan area so many HIV/AIDS patients are being admitted to the facility, so provided opportunity for accessing a large sample of respondents from all walks of life (Mildmay Uganda, 2019). This study therefore examined how Utilisation of Communication technologies and engagement in HIV care are related and how HIV stigma modifies this relationship among YALWHA at Mild hospital.

1.2 Statement of the Problem

High engagement rates close to 95%, as advised by the WHO, help patients stick to antiretroviral therapy, enhance their treatment results, and avoid the development of drug resistance (Muwanguzi et al., 2021). In 2016, MOH developed and started implementing standard engagement practices such as peer support, positive living counselling and nutritional therapy (Muwanguzi et al, 2021). Despite various interventions, Uganda's engagement rates

in HIV care remain suboptimal, with only 43.4% of male adolescents and 68% of female adolescents engaged in care (Kusemererwa et al., 2021). While communication technologies are increasingly used in healthcare, there is limited understanding of how these technologies, alongside HIV-related stigma, impact care engagement among Young Adults Living with HIV/AIDS (YALWHA). Specifically, there is a knowledge gap regarding how communication technologies and stigma either facilitate or impede engagement in care within this group (Kimera et al., 2019). Addressing this gap requires examining the correlation between the use of communication technologies, HIV stigma, and engagement in care among YALWHA receiving services at Mildmay Hospital, Uganda. Henceforth, identifying the specific aspects of communication technologies and stigma that influence care engagement is crucial for developing targeted strategies to improve support and enhance care engagement for this vulnerable population.

However, information on Mutilation of communication technologies and stigma that were involved in enhancing or curtailing was not clear. Communication technologies best suited to addressing engagement in care needs of YALWHA had to be based on practices that were relevant to this group (Kimera et al, 2019). Therefore, it was imperative to examine the correlation between Utilization of Communication technologies, HIV stigma and Engagement in care among YAWHA receiving HIV services in Mildmay hospital, Uganda so as to identify aspects of Communication technologies and HIV stigma that were involved in Engagement in HIV Care among this group.

1.3 Purpose of the Study

The study explored the relationship between utilisation of communication technologies and HIV stigma and engagement in HIV care among YALWHA in Mildmay hospital.

1.4 Objectives of the Study

1. Investigate level of utilisation of communication technologies, HIV stigma and engagement in HIV care.
2. Compare engagement in HIV care between school going and out of school young adults.
3. Examine the relationship between use of communication technologies and engagement in HIV care.
4. Establish the moderating effect of HIV stigma on the relationship between communication technologies and engagement in HIV care.

1.5 Hypotheses

a) Using Communication technologies is significantly related to engagement in HIV care.
b) HIV stigma moderates the relationship between use of Communication technologies and engagement in HIV care.

1.6 Significance of the Study

The findings reveal the aspects of communication technologies that promote utilization of HIV care. This will form a basis for future research on how communication technologies can be used to reduce, HIV stigma and promote engagement in care among PLWHA,

The findings show what is needed to streamline strategies for connecting with individuals living with HIV and how those strategies affect engagement. This will help PLWHIV to freely access care and improve their welling.

Study findings may be utilized by policymakers in the HIV care and management in Uganda to provide relevant guidelines to effective communication strategies by health care workers aimed at retaining more young adults in HIV care.

Health care institutions providing HIV care may utilize and enhance the current communication strategies used thus improve HIV care services.

1.7 Scope of the Study

1.7.1 Content Scope

The study analysed the level of utilisation of Communication technologies, HIV stigma and engagement in care, determined the linkage among these three variables and examined the moderating impact of "HIV stigma" on the relationship between utilisation of Communication technologies and "engagement in HIV care" among "young adults living with HIV". The use of electronic information and telecommunication technology including phones, smartphones, and tablets to support access to HIV care services was considered a measure of communication technologies. HIV stigma was measured as fear to access "HIV care services" due to feelings of shame, isolation, and despair as result of negative communication about HIV status. Engagement in care was measured as degree of engagement in diagnosis, prevention, treatment, support and care services.

1.7.2 Geographical scope

This study was conduct at Mildmay Uganda. This is a multidisciplinary general hospital, found at Naziba Hill, Plot 127 Entebbe Road, Lweza, Uganda, that has been offering HIV care services to people living with HIV since 1998. This geographical scope was selected because the hospital has rich experience in providing free comprehensive HIV care services to youths and thus would be a source of more credible information on the issues being investigated.

1.7.3 Time Scope

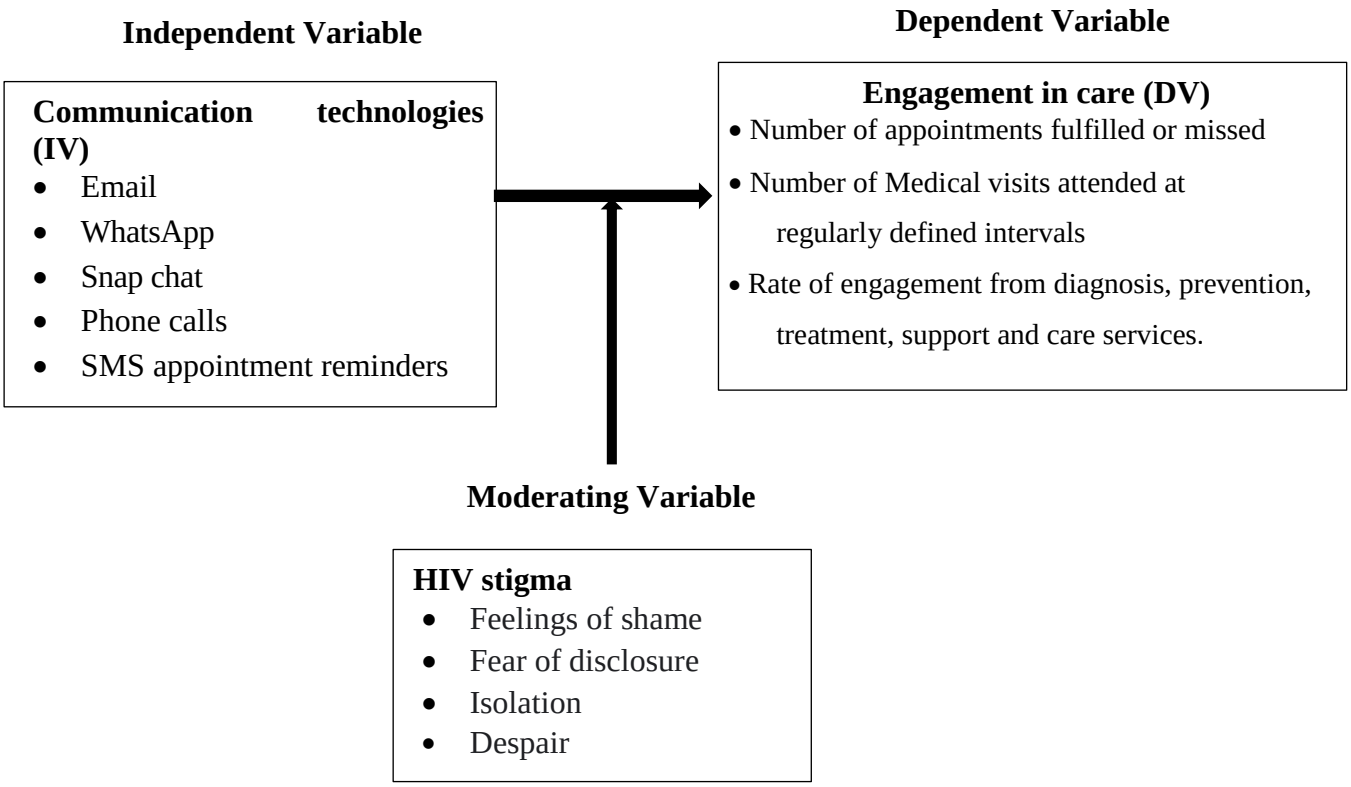
The study period was from January 2022 to September 2022 because it is in this time that more attention had been placed on retaining PLWHIV in care and medication adherence in Uganda (Ajuna et al., 2021; Zakumumpa et al., 2021).

1.8 Conceptual Framework

The theoretical and conceptual perspectives of this study indicated that Utilisation of Communication technologies, Engagement in care and HIV stigma among persons living with HIV are related as described in Figure 1.1.

Figure 1.1

Conceptual frame work of the relationship between Communication technologies, Engagement in care and HIV stigma among persons living with HIV



Source: Developed by the researcher from literature review

According to Figure 1.1, effective use of communication technologies in terms of knowledge and skills to use information technology tools such as SMS, WhatsApp, Snap Chart and Email reminders as to receive and send feedback on HIV care services, could affect the rate of engagement in HIV care services. How the effect would depend on the feelings of Shame,

Isolation, Despair and fear of disclosure that result from negative communication about HIV status.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

The gaps in the views of others about the issues were investigated are examined and evaluated in this chapter.

2.1. Theoretical Review

The Information-Motivation-Behaviour **(**IMB) model by Fisher and Fisher (2000) on which this study is based, provides important assumptions that will guide the study. The model highlights psychological principles that influence how behaviours that may hurt or help health status are carried out. This model was first applied (Fisher & Fisher, 1993) to describe psychological influences on HIV risk and prevention behaviour (Fisher and Fisher, 1992;). The IMB is a comprehensive theory based on the social and health psychology ideas of Bandura (1989), Fishbein and Ajzen's (1975) and Hochbaum's (1958).

According to the IMB model, people engage in healthy activities if they have health-related information, motivation, and behavioural skills to do so (Ge et al., 2022). Hence, according to the model, a key factor influencing the performance of health behaviour is information on appropriate health behaviour that is simple to apply increases adherence (Fisher & Fisher, 2000). Information may consist of pertinent facts about health promotion as basic rules that enable cognitively uncomplicated, judgements regarding whether or not to engage in a health promotion practice (Asadi et al., 2021).

The IMB model supports the idea that motivation is important in deciding how well health-related behaviours are performed and whether even the well-informed will be keen to participate in health promotion activities (A'Naja, 2021). According to the model, societal and personal motivation—attitudes toward engaging in behaviours that promote health as well

as support from others are important factors that affect how well people carry out behaviours connected to their health.

This model will apply to this study in that when youths living with HIV and AIDS get appropriate communication on the perceived benefits and barriers to HIV care services, and they have positive attitudes and self-efficacy to be involved in such behaviours, they are more likely to sustain the health-promoting behaviour (Khani Jeihooni et al., 2018). According to Schwarzer and Hamilton (2020), communication that meets the needs HIV-positive young adults enhances their confidence in taking and sustaining action despite challenges.

Therefore, when HIV care professionals intentionally attempt to increase patients' self-efficacy by utilizing communication technologies for monitoring and reinforcing health seeking behaviours, they are likely to have better compliance (Schwarzer & Hamilton, 2020). Activities like demonstrations, problem-solving dialogues, and self-monitoring in digitalized methods based on social cognitive theory are simple to implement into group HIV treatment programs. Good utilisation of communication technologies that addresses the origins of stigma already existent is likely to encourage intention towards remaining in HIV care even when facing stigma among YLWHA.

The major weakness of the IMB is assuming that the dynamics that are important in providing information, motivation to youths living with HIV such as relations, structure, and collaboration are available in all health care systems and environments. Therefore, this study sought to highlight the extent to which the current health care system allowed communication technologies to effectively function to increase self –motivation, reduce stigma and promote engagement in HIV care among YLWHA.

2.2. Empirical review

2.2.1 Utilisation of Communication Technologies and Engagement in HIV Care

Pro-active utilisation of communication technologies and surveillance has been discovered to be important in Engagement in HIV care (Jacob et al., 2020). Digital, ICT based interventions are being used to increase the efficacy of HIV care services (McGuire et al., 2021). For example, McGuire et al. (2021) undertook a comprehensive review on the effects of digitally enabled HIV care services. The recommendations were made in the UK, an environment that is slightly different from Uganda.

Labhardt et al. (2018), also did a related study among adults in rural Lesotho. The findings revealed patients who received SMS reminders, emails and phone calls were able to effectively utilise therapy and suppressed the virus by 68.6%. Trends of cellular phone use among PLWH were studied in Durban, South Africa, to ascertain whether clinic communication via patients' cell phones was a practical and agreeable approach for increasing adherence (Crankshaw et al., 2010). It was revealed that communication technologies fostered better patient engagement in care and especially mobile phone calls played a big role in reminding patients of their clinic appointments and fostering adherence (Crankshaw et al., 2010).

Studies done in East African show that high level of stigma reduce the likelihood of PLWH to remain in HIV. A recent study done among adolescents in Kenya, revealed that this group had the lowest levels of care engagement, due to the shame associated with health treatment and fear of being judged Abdalla (2021). He further explained that negative communication HIV status based established values and concepts served as a disincentive to HIV-positive adolescent youth remaining in care. Abdalla (2021) suggested an appropriate exchange of information using digitalized platforms for adolescents, to increase their anonymity and reduce their fear of stigma.

When it comes to utilizing the benefits of widely used communication technologies technology, the field of HIV research and care services is not an exception. For instance, electronic medical records and other digital recordings of health-related information have supported billing and administrative data and are essential for enhancing the engagement of HIV- positive patients in care (Qiao et al., 2021). However, given that Qiao et al. (2021) only examined the digitalized element without considering engagement in care, this presented a gap in the knowledge gap which the current study sought to fill.

Communication technologies is recognized for removing obstacles like HIV stigma and access to care that can promote inequality at both the individual and institutional levels. Using SMS has been seen as practical strategy for lowering HIV/ and AIDS, even though technology has its own issues (Duthely et al., 2020). Besides that, digitization of the HIV care services provides actionable and accurate for management of HIV and AIDS (Jacob et al., 2019).

The digitalized HIV management methods have been tested in Uganda's Rakai district. These methods start with registering of ART patients in tracking systems to assist case managers to digitally manage relevant HIV care services (Karajeanes et al., 2022). A multitude of empirical evidence have put much emphasis on South African nations like South Africa and Lisoto while in East Africa, similar studies are in Kenya with a limited scope but not in Uganda. After scanning and reviewing the current related literature, a number of gaps have been found. Besides, majority of these studies focus on the role of digitalized technologies and less on communication technologies and a few that look at communication technologies correlate it with adherence to ART but not engagement in care. Theretofore, such findings don’t show whether the adoption of digitalized technologies have translated into

increased rates of engagement in care in Rakai district. There was need to ascertain the relevant communication technologies for YLWHA and the extent to which the Ugandan context can allow in engagement in HIV care services.

2.2.2 HIV Stigma and Engagement in HIV Care

HIV stigma among PLWHA is said to be a key factor in the increasing prevalence of HIV and Aids in this group (Kimera et al, 2020). Several perspectives exist to explain how HIV stigma may affect access and utilization of care services. Leary and Baumeister (2017) argue that stigma is a socially and contextually constructed attribute that discredits an individual, making him feel devalued in the eyes of society. The negative perception of their condition by relatives and mental health workers reduces the likelihood of PLWHA to seek for and to adhere to treatment. The feelings of low self-esteem created in a person makes them reluctant to fulfil appointments with healthcare workers, attended medical visits regularly, regularly take their medicine as prescribed by health service workers (Singh & Lata, 2018). The patients develop low resolve to attend health care facility and follow recommended directions for positive living.

HIV stigma involves negative things people believe about HIV/AIDS and PLWHA HIV/AIDS as being socially devalued persons (Kimera et al, 2020). These feelings sustain feelings of low self-esteem and lack of motivation for change, for they think that significant others perceive them negatively (Kimera et al, 2017). So, PLWHA subsequently have accumulated low motivation to correctly follow the treatment protocol and to use it to achieve optimal benefits from care services.

Experts such as Helms, et al (2017) argue that the perception PLWHA build that they are social deviants who may have violated social morals and are subject to other peoples' negative treatment, develops negative views about the treatment they get even from healthcare workers and so did not want to listen to them and follow even well-intentioned guidance.

Stigma arising from uninformed and negative responses from members of the family and health care workers can lower the self-esteem and self-efficacy of a PLWHA leading to loss of motivation to engage in treatment.

Studies (Singh & Lata, 2018; Kimera et al, 2020) affirm that Youth's vulnerability to HIV stigma is on the increase and has been exacerbated by and lack of youth-friendly programmes to enable youth to navigate through HIV-related challenges. Helms, et al (2017) argue that stigma arising from uninformed and negative responses from members of the family and health care workers has been found to lower the self-esteem and self-efficacy of Youths living with HIV leading to loss of motivation to strive to engage in HIV care programs.

Due to the fact that the youth are in initial stages of cognitive, physical, and social development, their vulnerability to stigma has been found to be high needing more support (Leary & Baumeister, 2017). The Youth also usually have less control over their living situations due to their high dependence on adults/caregivers and are often less aware of their rights compared to adults (Helms, et al, 2017). Adding to the age-group-specific construction of stigma, It has been documented that variations in the extent, effect and nature of HIV-related stigma occur across social ecological contexts (Kimera et al, 2017). Given their vulnerability and limited studies examining how communication technologies can enable youths to fight HIV stigma, this study was crucial for collecting information for sustaining the engagement of YALWHA in HIV care programs.

2.2.3 Comparison of School Going and Non-School going Young adults on Engagement in HIV Care

Studies (Zanoni et al, 2019; Busza et al., 2014) show that the characteristics of persons in care programs play a significant role in level of their engagement in care. For example, Zanoni et al. (2019) did a study among teens living with HIV in "KwaZulu-Natal, South Africa and they

discovered that visiting clinic during the school day was challenging for those who were attending school. On the other hand, for individuals who did not go to school, they found it easier to attend care. The study results further showed that Teenagers at school tended to prefer using clinic services after school hours due to peer support and ties with the clinical team.

The researchers also found that the most significant barriers for both school-going and non-school-going adolescents with HIV, were institutional, involving like stock-out of drugs, absenteeism of healthcare workers and hostile school environments. A number of inherently difficult situations including the distance to medical facilities, the cost of transportation, the parent's anxiety of telling the kid their HIV diagnosis and the family's structural instability. However, both of them have seen factors that encourage people to remain in care, family members' sincerity, practical support on top of psychosocial care by the neighbours (Busza et al., 2014).

Both school-going and non-school-going adolescents have struggled to maintain their treatment in all environments, including family, school, and the clinic, due to HIV-related stigma (Johnson-Peretz et al., 2022). However, their ability to understand and pursue alternatives available to them as teenagers is mainly limited by stigma in school settings (Zanoni et al., 2019). Adolescents with HIV, often those between the ages of 10 and 19, face complex challenges to care, such as HIV status disclosure or nondisclosure, which can cause disengagement from HIV treatment or no adherence to antiretroviral therapy (ART) (Toromo et al., 2022). In Kenya, characteristics like as attending school, receiving assistance with disclosure, and receiving care at a top-notch medical institution were linked to increased engagement in care (Kose et al., 2022). However, the challenge was that much of the existing literature did not make comparisons between school going and non-school going adolescents' engagement in care, the knowledge gap that this study sought to bridge.

2.2.4 The relationship between Utilisation of Communication Technologies and Engagement in HIV care

Around the world, digital technology is becoming increasingly common in clinical settings, changing the underlying principles of how healthcare is delivered (Marent et al., 2021). It has been proven in Taiwan that social network application software's visual culture has improved interactions between PLHIV and healthcare professionals (Huang, 2022). However, their inadequate management had also promoted HIV/AIDS stigma.

In the United Kingdom, it was established that the use of a WhatsApp application has supported mentors to coordinate with Mothers with HIV and render psychosocial support that reduces HIV stigma (Hay et al., 2020). Paper flyers were printed and disseminated in Ghana to encourage education on HIV prevention, stigma, and digitization Villanueva Baselga, 2020. Beyond these venues, digitalized ones were also employed, such as HIV prevention on radio and TV. As parents and healthcare professionals were able to engage with children with HIV/AIDS as a strategy of reducing AIDS-related stigma, digitalization and the reliance on social media during Covid-19 in South Africa were obscured (Sahay, 2022).

Despite the fact that many countries acknowledge the importance of utilisation of communication technologies in effective HIV care, less is written about the connection between digital technology and HIV-related stigma. Besides, even those that have tried to do so, they are in European countries like the United Kingdom and a few African countries like South Africa, Ghana and others but not in Uganda. This created a need to establish the connection between communication technologies and HIV stigma in a local context.

2.2.5 Role of HIV stigma in the Relationship between Utilisation of Communication Technologies and Engagement in HIV Care

The use of mobile apps for social networking, productivity, education, and fun has significantly increased among youths. However, Muessig et al (2013) affirms that there is scanty information on quantify patterns and preferences of mobile device use among YLWHA (Muessig et al, 2013). Yet, a higher level of internalized stigma is linked to reduced visit compliance due to depressive symptoms, and gender-specific effects among YLWHA (Rice et al., 2017). Additionally, it was discovered that there is a link between internalized HIV stigma and numerous and consecutive outcomes of a range of HIV care initiatives. Inquiries establish that some intervention goals, such as reducing depressed symptoms and explicitly addressing internalized stigma, can encourage regular participation in HIV care (Rice et al., 2017).

HIV/AIDS stigmatization affects people's mental health on a social level since it is founded on assumptions about transmission and behaviours that go hand in hand with it, especially for women in historically conservative regions (Darlington & Hutson, 2017). Conservative stigmatization of HIV-positive people has been systematic and has a lack of knowledge about the causes, effects, and strategies for eradicating stigma in this group (Lawrence & Willis, 2021). According to a study by Stockton et al. (2018), internalized shame and embarrassment, apprehension about sharing personal information, and undesirable previous interfaces with or insights of healthcare professionals combined hold adverse effect on people's willingness to participate in None Communicable Diseases (NCD) care. In light of the fact that some NCDs are stigmatized in and of itself or as a result of being connected to HIV it has been hypothesized that HIV stigma can have adverse effect beyond individuals surviving with HIV and require care for NCD to actual patients of NCD (Stockton et al., 2018). Therefore, it is suggested against mixing NCD and HIV care because doing so could reduce the stigma attached to HIV infection while also making it harder for people to get NCD care. There is a lack of data and uneven early results; therefore, more research is necessary to

determine the influence of stigma related to HIV on the gamut of NCD care PLWHIV (Stockton et al., 2018).

The processes underlying this association are poorly understood, although there is a strong correlation among "HIV-related stigma" and decreased "ART adherence". Despite the fact that "HIV-related stigma" and its links to care engagement, particularly the start of ART, have gotten less attention, these issues still exist (Logie et al., 2018). An examination of the connections between "HIV-related stigma" and ART beginning, usage, and medicine compliance among women from Canada living with HIV revealed that stigma-related HIV is connected to reduced odds of beginning, usage, and less-than-ideal ART adherence.

2.2.6 Literature Gaps

Generally, available research on stigma connected to HIV has focused more on general causes and effects and paid less attention to stay in care. Most of the examined studies were done outside Uganda and on adults and scanty information was available on youths. The limited extensive studies on how HIV-related stigma influences links between utilisation of communication technologies and engagement in care among YLWHA makes this study even more pertinent in bridging this contextual and knowledge gap.

CHAPTER THREE: METHODOLOGY

3.0 Introduction

This chapter provides descriptions of the study strategy, population, sample, and data collecting tools, technique, and methods that will be utilized to analyze the results.

3.2 Philosophical Stance

The Positivist paradigm served as the foundation for this investigation. The researcher made the assumption that reality about utilisation of communication technologies, HIV-related stigma, and engagement in care existed and could be altered using numbered data in an exact, objective, and mathematically rigorous manner. According to Bisel & Adame (2017), this frame of view made it possible for the researcher to inductively look for an explanation, a cause, and a connection between the difficulties that were looked at.

3.3 Research Design

The study employed a correlational design (Abutabenjeh & Jaradat, 2018). This design was appropriate for the sturdy due to the relational nature of the study hypotheses and the requirement to measure and analyze the strength and direction of correlations among the study variables (Bloomfield & Fisher, 2019). As a result, correlations among the particular variables that were researched were identified, understood, and presented using descriptive and inferential statistics.

3.4 Target Population

The study focused on 2000 “young adults aged 18 and 24 years” who were getting HIV care at Mildmay Uganda Hospital (Mildmay HIV care clinic records, 2021). This group was targeted because information (Nabaggala et al., 2018; Muwanguzi et al., 2021) presented low rates of care engagement for young adults in Uganda.

3.5 Sampling

3.5.1 Sampling Techniques

The study sample was 322 youths (Krejce and Morgan, 1970). The number of youngsters from each of the two groupings who were selected for targeting was determined using proportionate sampling (see *table 3.1*). Participants were selected from each group using simple random sampling so as to give every person in the subgroup an equal chance to participate (Mania et al., 2018).

3.5.2 Sample Size Determination

Table 3.1: Sample and Sampling Procedure

Population	**N**	**S**	**Sampling Procedure**
Young adults (18-24) years receiving HIV care from Mildmay	2000	322	Krejce and Morgan) 1970)
In-school youths	1230	*1230=198	Proportionate Simple Random
Out of school youths	770	*770=124	Proportionate Simple Random
Total		**322**	

According to table 3.1, the target sample was 322 youths aged 18-24 years and 198 of them were in school and 124 were out of school. However, 305 returned fully completed questionnaires, making the actual sample to be 305. This resulted into a 94.7% response rate which according to Abutabenjeh and Jaradat (2018) was acceptable for making credible generalisations.

3.6 Data collection Methods

A Survey method was used to collect data. A survey was adopted because it enables one to collect information from a large number of respondents, who were targeted as individuals (Creswell, 2013). Data was collected from primary sources and Structured, self-administered questionnaires (SAQs) were used. The SAQ was written in English the official language of the country. The questionnaire was used to ensure greater assurance of

anonymity, encourage on the spot collection of data and produce large amount of information. Structured questions were used because they enable the researcher to gather specific data and also to avoid hasty responses which will increase on the level of correctness in collected data.

3.6.1 Sources of Data

The study used primary data sources; Primary sources are original materials on which research was based. They are first hand testimony or direct evidence concerning a topic under consideration. They present information in its original form; neither interpreted nor condensed nor evaluated by other writers (Leedy & Ormrod, 2015). Respondents completed a structured questionnaire which was the source of primary data.

3.6.2 Data collection Instrument

A structured questionnaire was used to gather data. The test was modified based on past research. Utilisation of Communication technologies was measured using 8 constructs/items adapted from (Leonardi & Treem, 2020). A total of 8 constructs/items from Kay et al. (2018) and Ramachandran et al. (2020) were used to evaluate HIV-related stigma and engagement in care, respectively.

A five-point scale with 1 being strongly disagree to 5 being strongly agree was used to measure the constructs. In the questionnaire, Section A measured the "Demographic characteristics of respondents; gender, age, marital and school status". Communication technologies was measured in section B, HIV-related stigma in section C, section D measured engagement in care. The questionnaire was used given its fast nature in collecting data from volatile and fragile populations like the youths thus making it easy for them to respond to questions.

3.7 Quality Control of Instruments

3.7.1. Validity

Validity is referred to as proof that the interpretation of findings on constructs that the test expected to measure match with presupposed interpretation for the proposed purpose (Mohajan, 2017). Content Validity Index (CVI) was tested using a proven formula,

$$CVI = \left(\frac{Total\ no.of\ items\ \ Judged\ Right}{Total\ no.of\ Judges} \right) X\ 100$$

The items were validated on a scale of "4 being highly relevant, 3 being relevant, 2 being somewhat relevant, and 1 being not relevant", by the two university supervisors using the "content validity index (CVI)". The index was then calculated by dividing the total number of things by the number of items that were deemed authentic. The findings are shown in table 3.2.

Table 3.2: Content Validity Index of the Questionnaire

Evaluator	**CVI**
1	0.74
2	0.83
Average	**0.79**

Source: supervisors' ratings (2022)

Table 3.2 Shows that the validity index of the questionnaire was 0.79 and this value was considered appropriate for this study since it was above 0.7 a minimum value recommended by Majid (2018).

3.7.2 Reliability

Questionnaire reliability was verified by Cronbach Alpha method. The pre-test sample included 18 (9 males and 9 female) youths attending HIV care from Mildmay Uganda. Table 3.3 provides the pre-test results.

Table 3.3 Reliability Coefficients for the Questionnaire

Variable	No. of items	Alpha (α)
Utilisation of Communication technologies	15	.72
HIV stigma	14	.74
Engagement in HIV care	12	.82
Average		**0.76**

Source: Pilot data from the field 2022

The findings in Table 3.3 reveal that Communication technologies had an Alpha coefficient of .72, "HIV stigma" had .74 and "Engagement in HIV Care", .82. The instrument was appropriate for this study because the Alpha coefficients for all the sub scales were above 0.7, the recommended minimum by for surveys by Bisel and Adame (2017).

3.8 Data Collection Procedure

Following approval of the proposal, the next step was acquisition of a letter from KYU to allow her to go and collect data. The letter was used to seek for permission from the Chief administrative officer of Mildmay Uganda to select respondents. When the researcher first met with the respondents, she asked them to read the letter that came with it, which explained the purpose of the study, the methodology used to carry it out, and asked for their agreement to participate in the study. Only consented respondents were allowed to proceed and complete the questionnaire.

3.9 Data Analysis and Presentation

Data was analysed using, descriptive statistics, the t independent samples test, Pearson correlation and regression analysis. The data on general information was analysed by frequencies and percentages (Sarantakos, 2005). Data on the level of utilisation of communication technologies, HIV stigma and Engagement in HIV care was analysed using means and standard deviations while relationship and effect between variables was analysed using correlation and regression analysis respectively. Correlations analysis determined the degree of linear dependence between the variables in the study. At bivariate levels, a t- test was use to compare difference among variable in the two groups of YA (Kim, 2015).

Correlations were also computed to establish the relationship between the independent variable (IV) components and dependent variable (DV) components. Specifically, correlations helped to establish associations between variables. The level of significance was set at 5%, and $p<0.05$. For the p-value less than 5%, null hypothesis was rejected and the alternative hypothesis accepted.

3.10 Ethical Considerations

The respondents gave their informed agreement in exchange for anonymity and secrecy, as well as the protection of their privacy. The study purpose and its significance were explained to respondents so that they could participate in the study willingly and with good understanding of the procedure for collecting data. The identity of the respondents was not revealed and they were allowed to give and withhold information as they wish.

CHAPTER FOUR: PRESENTATION, ANALYSIS AND INTERPRETATION OF FINDINGS

4.0 Introduction

This chapter is concerned with the presentation, analysis, and interpretation of data from the study that looked at the connection between Utilisation of communication technologies, “engagements in HIV care”, and “HIV-related stigma”. The study specifically looked at the relationship between communication technologies and “engagement in HIV care”, compared the engagement rates for school-going and non-school-going youths, and examined the relationship between the two. It also established the moderating effect of “HIV-related stigma” in the relationship between Utilisation of communication technologies and “engagement in HIV care”. The results are based on survey responses from 305 young adults, both in and out of school. The results on the respondents' demographic traits are provided first, and then the descriptive results. Last but not least, inferential evaluations of the study's goals are offered.

4.1 Demographic Characteristics of the Respondents

This section includes information about the respondents' gender, age group, educational status, and marital status. Table 4.1 provides information about the respondents' background traits.

Table 4.1 Socio-Demographic Information of Respondents (N=305)

Variable	Category	Percentages	
Gender		F	%
	Male	141	46.2
	Female	164	53.8
Age Category	18-19	72	23.6
	20-21	111	36.4
	22-24	122	40.0
Attend school	Yes	185	60.7
	No	120	39.3
Marital Status	Married	54	17.7
	Single/unmarried	224	73.4
	Separated/divorced	25	8.2
	widow/widower	2	.7

Source: Primary data from the field (2022)

4.1.1 Gender of respondents

The data in Table 4.1 indicate that women made up the majority of respondents (53.8%) and that women made up 46.2% of the total respondents. As a result, all genders were represented in the material.

4.1.2 Age category of respondents

The respondents were asked to indicate their age. The results in Table 4.1 show that the majority (40.0%) were aged 22-24 years, followed by those (36.4 %) aged 20 – 21 years and 23.6% were aged 18-19 years. Therefore, most of the respondents were in the age range that had started assuming adult life roles, were concerned about having good health and so were able to provide sincere responses.

4.1.3 Attending school

Respondents indicated whether they were attending school. The results in table 4.1 show that the majority (60.7%) were attending school mainly tertiary institutions and A -level and 39.3% were out of school. This implies that respondents were in a situation (educational institution) where they would face significant stigma and challenges in attending HIV care services. Hence, they were in a position to provide genuine responses on the issues that were being investigated.

4.1.4 Marital status

Respondents indicated their marital status. The results in table 3 show that most of them (73.4%) were unmarried. This meant that they had limited support from loved ones in attending HIV care services and so needed communication technologies for constant reminders.

4.2 Objective one: Utilisation of Communication Technologies and Engagement in HIV care among Young Adults in Mildmay Hospital

The study's primary goal was to determine the extent of utilisation of communication technologies and engagement among young adults receiving HIV treatment at Mildmay Hospital. The researcher had hypothesized that Young Adults significantly use communication technologies and their engagement in HIV care was sufficient. The level of communication technologies received, HIV stigma and Engagement in HIV care were analysed using descriptive statistics, the findings are presented in the tables below.

4.2.1 Utilisation of Communication Technologies among Young Adults in Mildmay Hospital

In this study, Utilisation of communication technologies**,** the first independent variable was perceived as Persons with HIV employing mobile-based communication to meet HIV care needs. Table 4.2 provides a summary of the findings.

Table 4. 2: Mean response, SD and ratings on Utilisation of Communication technologies

Aspects	Mean	SD	Rating
I am able to use communication technologies knowledge and skills to regularly meet my HIV care needs	3.12	1.41	Not sure
I have access to a telephone which simplifies communication with HIV health service providers	3.13	1.42	Not sure
I often receive Phone calls reminders about medical appointments	3.19	1.36	Not sure
I often do search for additional information about engagement in HIV care.	2.97	1.28	Not sure
I always receive SMS reminders about taking the medicine	3.08	1.30	Not sure
I normally receive email reminders about taking my drugs	3.12	1.24	Not sure
I often participate in video conferencing mainly zoom meetings during health workshops	2.58	1.34	Not sure
I regularly visit Mildmay website to check for medical updates	2.80	1.37	Not sure
Overall score	3.00	1.34	Not sure

Key: 1=strongly disagree, 2=disagree, 3= not sure, 4= agree, 5=strongly agree

According to the findings in table 4.2, most respondents (mean=3.00, SD=1.34) were unsure of whether they used communication technologies to address their HIV care needs. They were not sure that they are able to use communication technologies knowledge and skills to regularly meet their HIV care needs (mean=3.12, SD=1.41), have access to a telephone which simplifies communication with HIV health service providers (mean=3.13, SD=1.42), they often receive Phone calls reminders about medical appointments (mean=3.19, SD=1.36) and often do search for additional information about engagement in HIV care (mean=2.97, SD=1.28).

Respondents were further not sure whether they always receive SMS reminders about taking their medicine (mean=3 .08, SD=1.30), normally receive email reminders about taking their drugs (mean=3 .12, SD=1.24), often participate in video conferencing mainly zoom meetings during health workshops (mean= 2.58, SD=1.34) and regularly visit Mildmay website to check for medical updates (mean= 2.80, SD=1.37). The results show that young adults receiving HIV care at Mildmay could not state affirmatively the use of communication technologies to meet/ receive HIV care needs. There is some probability of agreement or disagreement. Needed more time to judge the extent to which communication technologies assisted them to stay on the HIV care program.

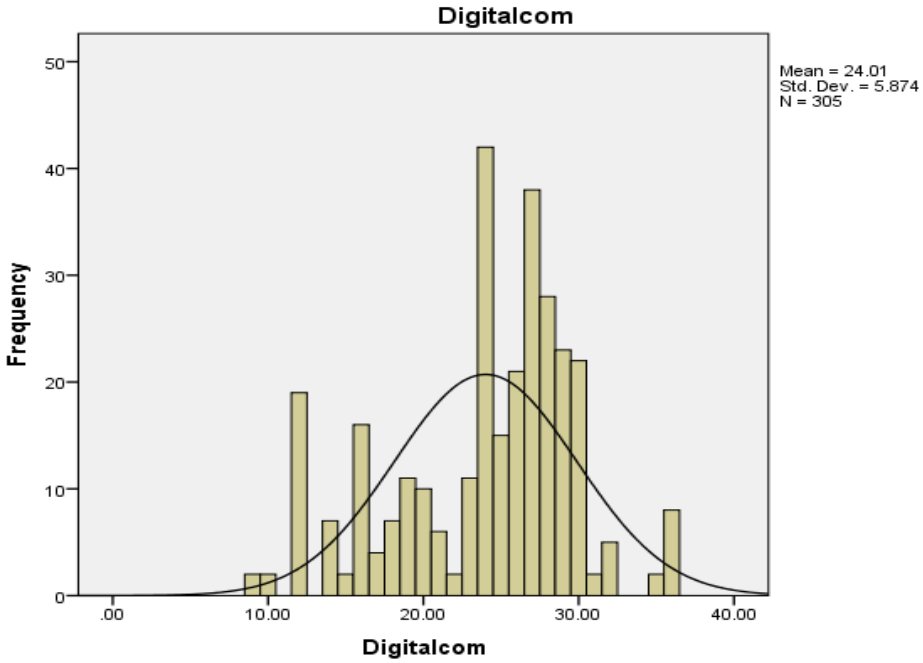
The researcher then examined the general distribution of results on Utilisation of communication technologies. The results are summarised in table 4.3.

Table 4.3 Summary Statistics for Utilisation of Communication Technologies

Descriptive	Statistic	Standard error
Mean	24.00	.34
Median	25.00	
Std. Deviation	5.87	
Variance	34.50	
Skewness	-.59	.14
Kurtosis	-.14	.28
Range	27.00	
Minimum	9.00	
Maximum	36.00	

Despite the views being wide spread (SD =5.87), the results in Table 4.3 demonstrate that the mean = 24.00 was near to the median = 25.00, indicating that the responses were normal. The distribution of data on Communication technologies was also examined using a histogram. The findings are shown in Figure 4.1.

Figure 4. 1 Histogram for Utilisation of Communication technologies



The curve in Figure 4.1 also confirms that data on Utilisation of Communication technologies was normally distributed and appropriate results could be obtained when data is subjected to linear correlation and regression.

4.2.2 Engagement in care among Young Adults in Mildmay Hospital

Engagement in Care, the dependent variable of the study was perceived as continued regular participation in prevention, treatment, support, and care services after diagnosis. Table 4.4 provides a summary of the results.

Table 4.4 Mean response, SD and ratings on of Engagement in care

Aspects	Mean	SD	Rating
I have missed less than 05 appointments with my HIV health service worker	2.47	1.31	Not sure
I have missed less than 05 health workshops organized by HIV health service worker	2.85	1.21	Not sure
I regularly attend medical visits at defined intervals	3.5	1.28	Agree
I regularly engage in prevention, treatment, support and care services organized	3.8	1.24	Agree
I have fulfilled all of the appointments with my HIV healthy service workers	3.75	1.02	Agree
I regularly take my medicine as prescribed my HIV health service workers	4.01	1.09	Agree
My viral load is regularly monitored by my ART facility	3.75	.99	Agree
My CD4 cell counts tests are regularly conducted and documented at least twice a year	3.54	.96	Agree
Overall score	3.56	1.14	Agree

Key: 1=strongly disagree, 2=disagree, 3= not sure, 4= agree, 5=strongly agree

Table 4.4's findings demonstrate that most respondents (mean=3.56, SD=1.14) agreed that they intended to continue getting HIV care services. They agreed (mean=3.5, SD=1.28) to regularly attending medical visits at defined intervals, to regularly engaging in prevention, treatment, support and care services organized (mean=3.8, SD=1.24) and to having fulfilled all of the appointments with their HIV healthy service workers (mean=3.75, SD=1.02)

Respondents also agreed to and regularly taking their medicine as prescribed by their HIV health service workers (mean=4.01, SD=1.09), to their viral load being regularly monitored by their ART facility (mean=3.75, SD=.99),

Respondents were not sure (mean=2.47, SD=1.31), whether they have missed less than 05 appointments with their HIV health service worker and have missed less than 05 health workshops organized by HIV health service worker (mean=2.85, SD=1.21).

Because respondents actively participate in preventive, treatment, support, and care services and work to keep appointments with healthcare professionals, the results indicate that the degree of engagement in care is relatively high. The researcher then examined the general distribution of results on Engagement in care. The findings are presented in table 4.5.

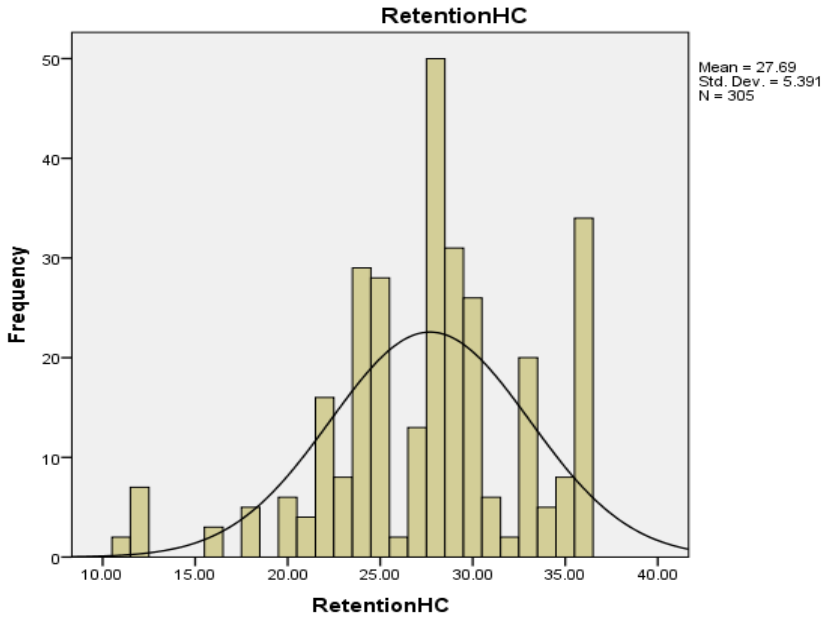
Table 4.5 Summary Statistics for Engagement in Care

Descriptive	Statistic	Standard error
Mean	27.69	.31
Median	28.00	
Std. Deviation	5.39	
Variance	29.06	
Skewness	-.59	.14
Kurtosis	.73	.29
Range	25.00	
Minimum	11.00	
Maximum	36.00	

The results in Table 4.5 show that the mean = 27.69 was close to the median = 28.00 indicating normality in the responses, despite the higher dispersion in responses (SD =5.39).

The distribution of data on Engagement in care was also examined using a histogram. The results are displayed in Figure 4.2.

Figure 4.2 Histogram for Engagement in HIV care



The curve in Figure 4.2 Confirms that data on "Engagement in HIV care" was normally distributed and appropriate results could be obtained when data is subjected to linear correlation and regression.

4.2.3 Status of HIV stigma Adults in Mildmay Hospital

HIV stigma, the moderating variable was conceptualised as feelings of humiliation that lead to disclosure anxiety, internalized shame and low self-esteem due to negative communication faced by a PLHIV. Table 4.6 presents a summary of the findings.

Table 4. 6 Mean response, SD and ratings on HIV stigma

Aspects	Mean	SD	Rating
I feel ashamed to pick my HIV medicine from the health centre and this affects my engagement levels	2.75	1.33	Not sure
I feel ashamed in case anyone knew that I am attending to ART	2.98	1.49	Not sure
I fear to disclose my status to the people who would have supported me to remain in care	3.73	1.27	Agree
I normally feel isolated from my peers because of taking ARVs	3.29	1.41	Not sure
I normally lose hope whenever I think about being HIV positive and tend to withdraw from treatment	3.38	1.17	Not sure
I sometimes suffer from self-denial of having been diagnosed with HIV/AIDs	3.58	1.47	Agree
I normally experience relational discrimination since I was diagnosed with HIV	3.14	1.19	Not sure
I sometimes encounter mistreatment by health care workers	2.84	1.27	Not sure
Overall score	3.21	1.33	Not sure

Key: 1=strongly disagree, 2=disagree, 3= not sure, 4= agree, 5=strongly agree

According to the findings in table 4.6, most respondents were unsure (mean=3.21, SD=1.33) about their HIV-related stigma. They were not sure they feel ashamed to pick their HIV medicine from the health centre and it affects their engagement levels (mean=2.75, SD=1.33), feel ashamed in case anyone knew that I am attending to ART (mean=2.98, SD=1.49), normally feel isolated from peers because of taking ARVs (Mean=3.29, SD=1.41).

Respondents were further not sure whether they normally lose hope whenever they think about being HIV positive and tend to withdraw from treatment (Mean=3.38, SD=1.17), normally experience relational discrimination since they were diagnosed with HIV

(mean=3.14, SD=1.19) and sometimes encounter mistreatment by health care workers (mean=3.84, SD=1.27).

Respondents agreed to fearing to disclose my status to the people who would have supported me to remain in care (mean=3.73, SD=1.27) and sometimes suffer from self-denial of having been diagnosed with HIV/AIDs (mean=3.58, SD=1.47). Therefore, the findings show that the level of "HIV stigma" among respondents was not so high to affect their engagement in HIV care services.

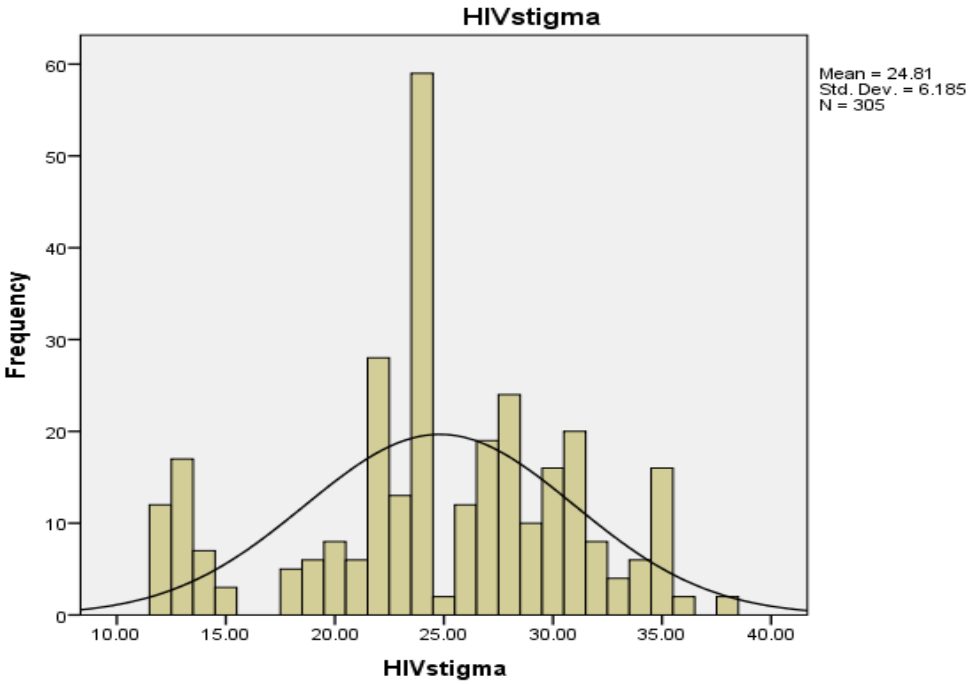
The researcher then examined the general distribution of results on HIV stigma. The findings are summarised in table 4.7.

Table 4.7 Summary Statistics for HIV stigma

Descriptive	Statistic	Standard error
Mean	24.80	.35
Median	24.00	
Std. Deviation	6.18	
Variance	38.25	
Skewness	-.37	.14
Kurtosis	-.29	-.29
Range	26.00	
Minimum	12.00	
Maximum	38.00	

Despite the greater level of dispersion (SD =6.18), the findings in Table 4.7 demonstrate that the mean = 24.08 was near to the median = 24.00, indicating that the responses were normal. The distribution of data on HIV stigma was also examined using a histogram. Figure 4.3 displays the results.

Figure 4.3 Histogram for HIV stigma



The curve in Figure 4.3 also confirms that data on HIV stigma was normally distributed and appropriate results could be obtained when data is subjected to linear correlation and regression.

4.3 Objective two: Comparison of Engagement in care among school going And non-School Going Young Adults

Finding out if there were any differences in young adults who were attending school vs those who were not was the study's second goal. The researcher had hypothesised that no differences existed in engagement in care. The independents samples T-test was used to analyse this objective. The findings are summarised in table 4.8.

Table 4.8 Differences in Utilisation of Communication Technologies, HIV stigma and Engagement in HIV care among Young Adults in Mildmay Hospital

Variable	Total (*M, SD*)	In school (*M, SD*)	Out of school (*M, SD*)	T-test
Utilisation of Communication technologies	24.00 (5.87)	24.48(6.16)	23.27 (5.33)	*t*=1.81; df=279.8; *p* =.071*
HIV stigma	24.80 (6.18)	24.40 (6.29)	25.42 (5.98)	*t*=-1.42; df=303;*p* =.16*
Engagement in HIV care	27.69 (5.39)	28.32 (4.91)	26.71 (5.96)	*t*=2.486; df=219.5;*p* =.014*

Key M= mean, SD= standard deviation, p < .01**, p < .05*

The study findings in Table 4.8 show that in connection to utilisation of Communication technologies, in school young adults used more of it (M= 24.48, Sd= 6.16) than out of school (M=23.27, Sd=5.33) , though the difference was insignificant t (279.8) =1.81; p=.07). This finding implied that there was no difference in the use of Communication technologies in accessing HIV care by both in and out of school across education attainment.

As far as HIV stigma is concerned, out of school young adults reported higher values (M=25.42, 5.98) than the in school (M=24.40, Sd=6.29), but the difference was not significant, t (303) =-1.14; p =.16. This meant that certainly, the feelings of HIV stigma do not differ according to educational status. With regard to engagement in care, in school young adults reported higher scores (M=28.32, Sd=4.91) than the out of school (M=26.71, SD=5.96) and the difference was significant, *t (219.5) = 2.48, p = .014.* This was likely because, in school young adults are exposed to more awareness information, especially through school counselling on the role of HIV care in positive living. It is also likely that in school young adults have fewer life roles and so find more time to attend HIV care services. Therefore, in school young adults were more likely to continue utilizing HIV care services than those out of

school due to being exposed to regular information on the value of HIV care services and having more time to access these services.

4.4 Objective 3: Relationship between Utilisation of Communication Technologies and Engagement in HIV care among Young Adults in Mildmay Hospital

Examining the connection between utilisation of communication technologies, Engagement in HIV care, and HIV was the third objective of the study. The researcher's hypothesis was that engagement in HIV care is strongly correlated with communication technologies. Pearson correlation coefficient was used to establish the relationship among the variables. Table 4.9 provides a summary of the results.

Table 4.9 Correlations between variables in the study

Variables	1	2	3
1-Engagement in HIV care	1		
2- Utilisation of Communication technologies	.138*	1	
3-HIV stigma	.049	.277**	1

Key; p<.01**, p<.05*

Table 4.9's data revealed a strong and positive correlation between utilisation of communication technologies and patient engagement (r (303) =.14, P 0.05). This suggests that utilisation of communication technologies makes it more likely for young individuals to visit and use HIV care services.

4.7 Objective Four: Moderating of HIV stigma in the relationship between Utilisation of Communication Technologies and Engagement in HIV care

The study's final goal was to investigate how “HIV-related stigma” affected the link between utilisation of communication technologies and “HIV care engagement”. The researcher had hypothesized that “HIV stigma” moderates the “relationship between communication

technologies and engagement in HIV care". To determine the moderating impact of HIV-related stigma on the association between communication technologies and engagement in HIV care, regression analysis was used. Table 4.10 presents the findings.

Table 4.10 Moderation Estimates of Effect of HIV stigma on relationship between Utilisation of Communication Technologies and Engagement in HIV care

Variable /Effect	b	seb	t	95% CI		P
Constant	33.277	3.23	9.67	24.91	37.63	0.00
HIV stigma (Centered)	-.31	.14	-2.17	-.59	-.03	.03
Digitalized com (Centered)	-.19	.142	-1.36	-.47	.09	.17
HIV stigma * Digitalized com	.014	.006	2.42	.003	.026	.016

R=.194, R^2=.038

Table 4.10's findings demonstrate that there was a significant interaction effect, b = -.014, 95% CI [0.003, 0.026], t = 2.42, p .05, demonstrating that HIV-related stigma considerably and favourably moderated the connection between utilisation of communication technologies and engagement in care by nearly 4%. It was decided to stick with the theory that HIV-related stigma moderates the link between utilisation of communication technologies and continued HIV care.

CHAPTER FIVE

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The study on the connection between utilisation of communication technologies, engagement in HIV care, and HIV-related stigma is discussed in this chapter along with its findings and suggestions. Following a review of the findings based on the research's goals and hypotheses, the study's limitations, findings, and recommendations for additional study are discussed.

5.2 Discussion

5.2 .1 Objective one: Level of Utilisation of Communication Technologies and Engagement in HIV care among Young Adults in Mildmay Hospital

In the first objective, Mildmay Hospital's young adults' engagement in HIV care and the extent to which they use communication technologies to meet their care need was examined. It was shown that young adults getting HIV care in Mildmay utilization of communication technologies is minimal (mean=3.00, SD=1.34). On whether they employed communication technologies, the respondents weren't sure. This could have been brought on by young folks' poor digital transformation and literacy rates. According to Kraus et al. (2021), access to appropriate devices, information, communication, and technology, as well as a conscious effort to increase literacy, are crucial for individuals to embrace and use technology. Additionally, Kuek et al. (2020) note that when access to appropriate utilisation of communication technologies devices like smartphones and tablets is scarce, and generally low use of communication technologies is increased. These two conclusions applied to the young adults with HIV in Uganda. Thus, in agreement with Crankshaw et al (2010), young adults in the study sample found it difficult to use utilisation of communication technologies knowledge and skills to regularly meet their HIV care needs.

Thus, without appropriate devices, respondents may have found it difficult to receive Phone calls reminders about medical appointments or do search for additional information about engagement in HIV care. According to Abdalla (2021), in such a situation, respondents are not able to receive reminders about taking their medicine through SMS, emails or WhatsApp. Also as alluded to by Qiao et al (2021) it was not possible for respondents to participate in ICT based health workshops through video conferencing such as zoom or Microsoft teams and checking at Mildmay website for medical updates was definitely a challenge. This finding confirms challenges in organisation and implementation that are available in health care systems that prevent even very good health care interventions from achieving positive outcomes. This confirms what Khani Jeihooni et al (2018) had recently observed that the ability to browse search, evaluating and manage digital information usually preventing health care systems from using good interventions such as communication technologies to increase self –motivation, reduce stigma and promote engagement in HIV care programs.

In connection to engagement in care, it was found out that the level of engagement in care was higher (mean=3.75, SD=.99). The majority of respondents agreed to regularly using HIV care services. This was unexpected finding, given that utilisation of communication technologies was low. For example, respondents fulfilled appointments with healthcare workers, attended medical visits regularly, regularly took their medicine as prescribed by their HIV health service workers and checked their viral load at the ART facility. This is surprising and contradicts what Khani Jeihooni et al (2018) had indicated that structural challenges in using communication technologies reduce engagement in care. It was likely that respondents used other avenues that supported engagement in care such as Peer counsellors and reminder diaries as indicated by Nabunya et al (2020). Muiyuro (2020) also explains that when respondents already have good knowledge on how to manage their illness, they usually have

accumulated motivation to correctly follow the treatment protocol and they use it to achieve optimal benefits from care services.

5.2.2 Objective two: Comparison of Engagement in Care among school going and non-school going Young adults

In connection to the second objective; ascertaining differences in Engagement in care among school going and non-school going Young adults. It was found out that in school young adults had higher intentions (M=28.32, SD=4.91) of continuing to utilize HIV care services than the out of school (M=26.71, SD=5.96) and the difference was significant, $t\ (219.5) = 2.48$, $p = .014$. This was contrary to what had been anticipated that out of school young adults would have more time to access HIV care services, so were more likely to have higher engagement. This finding disagreed with Zanoni et al (2019) who had said that in school youths prefer using HIV care services after school hours due apprehension about giving information to others and social isolation. It likely those in school young adults were still dependent and had people, such as relatives to encouraging them to remain in care. This conclusion is in agreement with Nabunya, et al (2020) who discovered that youths who are still with their families benefit from openness within the family and get the needed practical assistance, and neighbourly psychosocial support to remain in HIV care services.

In line with Zanoni et al (2019), non –school going young adults were more likely to be on their own, with many competing other life roles. According Muiyuro (2020), Young adults living with HIV usually have to work or may be cohabiting which prevents regular use of care services. Moosa et al (2019), also say that this group is usually exposed to other alternatives such as herbal medicine which may be more accessible and cost effective. Alternatively, they also have high levels of stigma that prevents them from attending HIV care services.

5.2.3 Objective three: Relationship between Utilisation of Communication Technologies and Engagement in HIV care among Young Adults in Mildmay Hospital

Examining the connection between Utilisation of communication technologies, engagement in HIV care, and HIV was the third objective. A small positive and significant relationship, r =*.14, P<0.05*, existed between Communication technologies and engagement in care. This suggests that, to a very little level, utilisation of communication technologies enhanced young individuals' propensity to visit and use HIV care services. The relationship was low, probably because according to Marent et al (2021) Digital technology was not yet commonly used in HIV care services in Uganda. Also, according to Huang (2022) the ability of healthcare professionals in applying communication technologies while dealing with patients affects the level at which patients adopt these technologies. Also, Kraus et al (2021) say that the low utilisation rates by young adults, points to limited application of utilisation of communication technologies in HIV care.

It was however comforting to note that despite the apparent challenges in using communication technologies in HIV care services in Uganda, the few aspects that were used such as sending positive living SMS to patients positively affected HIV engagement. This actually shows according to Nabunya et al (2021), that by Interacting digital technologies in HIV care through adopting, increasing access and competence in collaborating and doing services dispensation through digital technologies can increase significantly the role communication technologies can play in increasing engagement in HIV care services in Uganda.

5.2.4 Objective Four: Moderating of HIV stigma in the relationship between utilisation of Communication Technologies and Engagement in HIV care

In connection to the last objective, examining the moderating role played by HIV stigma in the relationship between utilisation of communication technologies and engagement in HIV care, a significant interaction effect, b =- .014, 95% CI [0.003, 0.026], t = 2,42, p < .05 was found. HIV stigma moderated the relationship between utilisation of communication technologies and engagement in HIV care. The negative b value meant that HIV stigma actually reduced the contribution of communication technologies to engagement in care. This finding concurs with Khani Jeihooni et al (2018) who discovered that, stigma among youths living with HIV and AIDS may prevent them from using even the appropriate communication on the perceived benefits of HIV care services that they have, lose self- motivation and efficacy to sustain health-promoting behaviours. Hence even when communication technologies is available and used can meet the needs HIV-positive young adults, they need self-confidence and ability to over challenges s HIV stigmas as to seek for and remain in HIV care.

Therefore, the health belief model was confirmed that HIV-positive young adults need positive attitudes and self-efficacy to perform behaviours that sustain their health (Khani Jeihooni et al., 2018). In this case as indicates by Schwarzer and Hamilton (2020), even communication that meets the needs enhances their confidence in taking and sustaining engagement in HIV care services would not be very effective due to the challenge of stigma.

5.3 Limitations of the Study

The usefulness of these discoveries may be constrained by a variety of problems. First, the results' generalizability was constrained by the convenience sample's association with the desegregation efforts of the Kampala metropolitan area's hospital. This study's objective was to produce pertinent local information, not to draw conclusions that applied to other

endeavours. Second, rather than being longitudinal, the study per grade group level was cross-sectional, thus these patterns might not correctly reflect true longitudinal trends if they had been observed over time.

5.4 Conclusions

This study has revealed that;

Utilization of communication technologies to meet HIV care needs is low among young adults receiving HIV care. This related to limited digital transformation and literacy among this population. Increasing access to relevant devices and training to improve literacy will enhance acceptance and adoption of communication technologies.

In school young adults were more likely to be retained in HIV care services than their out of school counter parts due to the seeming good family support they get. Out of school young adults were more likely to be on their own and so with many competing other life roles, which prevent regular use of care services.

Incorporating digital technologies in HIV care services dispensation through active adoption, increasing access and competence can increase the positive role communication technologies plays in increasing engagement in HIV care services in Uganda.

Young adults need positive attitudes and good self-efficacy to utilize communication technologies to meet their needs and sustaining engagement in HIV care services.

5.5 Recommendations for Action

1. The study recommends for communication technologies that meet the needs of young adults more fully so that they are more inclined to using them in their care, these may include provision of smart phones and internet data, or recorded HIV care services that can be played and listened to without internet or smart phones.

2. There is need for focused utilisation of communication technologies empowerment programs targeting HIV positive young adults by government and NGOs. This will make it more affordable for patients and will increase adoption, literacy and transformation.
3. Special education programs for HIV positive Young adults should be initiated so that they are equipped with skills of managing and coping with stigma this will increase utilisation of communication technologies services by especially out of school young adults.
4. There is need for initiatives to increase the involvement of significant others and close friends as a buffer in providing the needed social support that has a significant influence in the utilisation of communication technologies and engagement in HIV care programs.
5. The current communication model being used by HIV care services that had low use of communication technologies and yet sustained good engagement in HIV care, should be enhanced so it can meet more fully the needs of young adults without smart phones.

5.6 Recommendations for Further Research

Further research work is needed in these key areas:

1. A study is needed to establish the relationship between life roles and engagement in care among out of school young adults with HIV.

2. Further research should be done on the appropriate model of communication technologies for HIV positive young adults on HIV care programs in Uganda.

3. Studies on a non- digitalised model of communication appropriate for HIV positive young adults in Uganda are needed.

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APPENDICES

APPENDIX 1: CONSENT FORM

I fully understand that I am free to accept or decline to take part in the study; terminate participation in this study anytime without any penalties. I have granted the researcher permission to include me as a respondent to a questionnaire. The permission to participate in this study is granted on the strict condition that the researcher will without exception protect my integrity and identity. I understand that the researcher will retain all rights to the publication of any data collected in the process. In case of any questions, compliments or complaints prior to, during or after this study, I am free to contact the researcher on: ……. My dated signature below confirms my consent for me to be part of the study.

Name……

Phone:……

Sign:…….

Date:…….

APPENDIX 2: STRUCTURED QUESTIONNAIRE

Introduction

My name is Masaba Jackline, a graduate student of Kyambogo University conducting a study entitled, "**Utilisation of Communication technologies, HIV stigma and Engagement in HIV care among Young Adults of 18-24 Years: A Case of Mildmay Hospital Uganda**". This study is purely academic and all the data collected will be used only for academic purposes. Although the study may contain some sensitive questions, they have not targeted at creating any harm to you, but rather to help the researcher get the real picture of the problem under the study. You have the right to withdraw from this survey at any time you wish and in case you find it hard to respond to certain questions, you have a right to refrain. The researcher will not link any of your identity to your responses and high levels of confidentiality will be practiced. Your responses will be treated as you give them that no distortions and manipulations will be done.

Consented:

Signature: ……Date:……

Section A: Socio-Demographic Information

(*For the following questions, kindly tick the option that best describes you*)

#	Question	Response categories
01	Age bracket	1. 18-19 2. 20-21 3. 22-23 4. 24+
02	Gender	1. Female 2. Male
03	Marital status	1. Married 2. Single/Unmarried 3. Separated/Divorced 4. Widow/Widower
04	School Status	1. School going 2. Non School going

SECTION B: COMMUNICATION TECHNOLOGIES

Instructions: *For the following questions, please rank your opinions on the scale of 5=strongly agree (SA), 4= agree (A), 3= Undecided (U), 2=disagree (D), and 1= strongly disagree (SD).*

SN	Utilisation of Communication technologies	SD	D	NS	A	SA
1	I am able to use utilisation of communication technologies knowledge and skills affects engagement in HIV care.	1	2	3	4	5
2	I have access to a telephone which simplifies communication with HIV health service providers	1	2	3	4	5
3	I often receive Phone calls reminders about medical appointments	1	2	3	4	5
4	I often do search for additional information about engagement in HIV care.	1	2	3	4	5
5	I always receive SMS reminders about taking the medicine	1	2	3	4	5
6	I normally receive email reminders about taking my drugs	1	2	3	4	5
7	I often participate in video conferencing mainly zoom meetings during health workshops	1	2	3	4	5
8	I regularly visit Mildmay website to check for medical updates	1	2	3	4	5

SECTION C: HIV STIGMA

Instructions: *For the following questions, please rank your opinions on the scale of 5=strongly Undecided (U), 2=disagree (D), and 1= strongly disagree (SD).*

SN	Feelings of HIV stigma	SD	D	NS	A	SA
1	I feel ashamed to pick my HIV medicine from the health centre and this affects my engagement levels	1	2	3	4	5
2	I feel ashamed in case anyone knew that I am attending to ART	1	2	3	4	5
3	I fear to disclose my status to the people who would have supported me to remain in care	1	2	3	4	5
4	I normally feel isolated from my peers because of taking ARVs	1	2	3	4	5
5	I normally lose hope whenever I think about being HIV positive and tend to withdraw from treatment	1	2	3	4	5
6	I sometimes suffer from self-denial of having been diagnosed with HIV/AIDs	1	2	3	4	5
7	I normally experience relational discrimination since I was diagnosed with HIV	1	2	3	4	5
8	I sometimes encounter mistreatment by health careworkers	1	2	3	4	5

SECTION D: ENGAGEMENT IN HIV CARE

Instructions: *For the following questions, please rank your opinions on the scale of 5=strongly agree (SA), 4= agree (A), 3= Undecided (U), 2=disagree (D), and 1= strongly disagree (SD).*

SN	Engagement in HIV care	SD	D	NS	A	SA
1	I have missed less than 05 appointments with my HIV health service worker	1	2	3	4	5
2	I have missed less than 05 health workshops organized by HIV health service worker	1	2	3	4	5
3	I regularly attend medical visits at defined intervals	1	2	3	4	5
4	I regularly engage in prevention, treatment, support and care services organized	1	2	3	4	5
5	I have fulfilled all of the appointments with my HIV healthy service workers	1	2	3	4	5
6	I regularly take my medicine as prescribed my HIV health service workers	1	2	3	4	5
7	My viral load is regularly monitored by my ART facility	1	2	3	4	5
8	My CD4 cell counts tests are regularly conducted and documented at least twice a year	1	2	3	4	5

Thank you for your time!

APPENDIX 4: KREJCIE AND MORGAN (1970) SAMPLING TABLE

N	*S*	*N*	*S*	*N*	*S*
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970

APPENDIX 5: LETTER OF INTRODUCTION

APPENDIX 6: PLAGIARISM TEST REPORT