Efectiveness of information, education and communication strategy in improving HIV testing and treatment among adolescents aged 15-24 years in Singida municipal council

Edith Gabriel Masuki, BSc.IT

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EFFECTIVENESS OF INFORMATION, EDUCATION AND COMMUNICATION STRATEGY IN IMPROVING HIV TESTING AND TREATMENT AMONG ADOLESCENTS AGED 15-24 YEARS IN SINGIDA MUNICIPAL COUNCIL

By

Edith Gabriel Masuki

A Dissertation Submitted in (Partial) Fulfillment of the Requirements for the Degree of Master of Science (Project Management Monitoring and Evaluation in health) of

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CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by Muhimbili University of Health and Allied Sciences a dissertation titled**: "Effectiveness of information, education and communication strategy in improving HIV testing and treatment among adolescents aged 15-24 years in Singida Municipal Council",** in (partial) fulfillment of the requirements for the degree of Master of Science (Project Management Monitoring and Evaluation in Health) of Muhimbili University of Health and Allied Sciences.

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Dr. Nathanael Sirili

(Supervisor)

_____

Date

DECLARATION AND COPYRIGHT

I, **Edith Gabriel Masuki**, declare that this **dissertation** is my original work and that it has not been presented and will not be presented to any other university for a similar or any other degree award.

Signature: ……. **Date: ……**

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DEDICATION

This dissertation is dedicated to my late father, Dr G. E. Y. Masuki, my late mother Siliana Raphael Olotu, My husband Kanti Noel Masanjala as well as my daughter, Natalie Kanti Masanjala. Also my brothers (Eric, Julian and Joel) and sister (Judith) for their love, support, understanding and prayers during my studies.

ABSTRACT

Background: HIV/AIDS has been one among the major cause of morbidity and mortality among adolescents and young women in Tanzania. This is partly contributed by poor linkage to and retention in HIV care, high loss to follow-up between testing and initiation of antiretroviral treatment and poor treatment adherence. To combat this problem Tanzania has been one among sub-Saharan countries to adopt Determined, Resilient, Empowered, AIDS-free, Mentored and Safe (DREAMS) ambitious goal to reduce HIV among AGYWs aged 15-24 years by 10% in 2022 form 12% in 2016. One among the strategies used to achieve this goal is through Information, education and Communication (IEC) strategy.

Aim of the study: is to assess the effectiveness of IEC strategy in improving HIV testing and treatment initiation (first and second -90) among AGYW aged 15-24 years in Singida Municipal Council.

Methodology: A cross-sectional design adopting post-test evaluation design whereby both quantitative and qualitative approaches were used for gathering data was employed. Data were collected among AGYWs aged 15-24 years, AGYW project manager, Project Officer, Health facility in-charge, Council HIV and AIDS Control Coordinator (CHACC) and District AIDS Control Coordinator (DACC). Structured questions in questionnaires were used to collect quantitative data while a semi-structured interview guide was used to conduct in-depth interviews with the key informants.

Results: Quantitative results showed that AGYW in Singida were more aware of HIV, HIV testing and treatment as compared to Manyoni. Proportion difference of awareness on HIV, HIV testing and treatment was high in Singida as compared to Manyoni by a difference of 0.9%, 3.5%, and 14.9% respectively. The proportion difference for those reported to have a high level of knowledge on HIV, HIV testing and treatment was high in Singida as compared to Manyoni by a difference 11.7%, 2.5% and 9%. The proportion difference of seeking HIV testing was high in Singida as compared to Manyoni by a difference of 32.3%. Paired sample

t-test revealed significant difference in awareness proportion. It also showed significant difference in proportion in the level of knowledge between the intervention area (Singida) and the control group (Manyoni).

Qualitative results revealed several factors affecting HIV testing and treatment among AGYW which were; misconceptions, HIV - related Stigma, availability and allocation of testing resources

Conclusion: IEC strategy was effective in improving HIV testing and treatment initiation (first and second -90) among AGYW aged 15-24 years in Singida Municipal Council.

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LIST OF ABBREVIATIONS

AGYW	Adolescents Girls and Young Women
AIDS	Acquired Immunodeficiency Syndrome
ALHIV	Adolescents Living with HIV
ART	Antiretroviral Therapy
CHACC	Council HIV and AIDS Control Coordinator
DACC	District AIDS Control Coordinator
DREAMS	Determined, Resilient, Empowered, AIDS-free, Mentored and Safe
HIV	Human Immunodeficiency Virus
IEC	Information, Education and Communication
PEPFAR	President's Emergency Plan for AIDS Relief
SBCC	Social and Behavioral Change Communication
SMAC	Social Mobilization, Advocacy and Communication
UNAIDS	United Nations Programme on HIV/AIDS
WHO	World Health Organization

DEFINITION OF TERMS

Effectiveness	Is the degree to which IEC has been successful in producing the desired result
Awareness of HIV	Is perceiving, knowing or being conscious of HIV
Awareness of HIV testing	Is knowing and being conscious that HIV can be diagnosed
Knowledge on HIV, HIV testing and treatment	Is a deep understanding and familiarity with HIV disease, how can it be diagnosed and medication when a person tested positive
Information, Education and Communication	Is a strategy that combines approaches and method that enable individuals, families, groups, organizations, and communities to play an active role in achieving, protecting and sustaining their own health

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background Information

Globally, nearly one-third of all new HIV infections occur among Adolescent girls and young women (AGYW) aged 15–24 (Phelps et al., 2017); the situation being worse in southern and eastern Africa. Gender inequality-related, structural and social inequities, social, cultural, economic, and human rights barriers are among the main contributors to HIV infection among AGYW (Birdthistle et al, 2018)

In 2014, the Joint United Nations Programme on HIV/AIDS (UNAIDS) and partners launched the 90–90–90 targets; the aim was 90% of people living with HIV know their status, 90% of all people diagnosed with HIV are enrolled and receive ART and 90% of those receiving ART attain sustainable viral suppression by 2020 (Bain, Nkoke and Noubiap, 2017).

In 2015, the United States President's Emergency Plan for AIDS Relief (PEPFAR) with private-sector partners launched the DREAMS Partnership, an ambitious package of interventions in 10 sub-Saharan countries (Pepfar, 2016). DREAMS aimed to reduce HIV incidence by 40% among AGYW by 2017 by addressing multiple causes of AGYW vulnerability.

In Tanzania, HIV and AIDS is among the major cause of death and morbidity among adolescents and young adults (Avert, 2018b). Like for other places, poor linkage to and retention in HIV care, high loss to follow-up between testing and initiation of antiretroviral treatment and poor treatment adherence contribute to the situation in Tanzania. In an effort to address this situation, Tanzania is among the sub-Saharan countries that adopted the DREAMS ambitious goals by setting the target to reduce HIV among AGYW aged 15-24 by 10% in 2022 from 12% in 2016 (Fhapco, 2018). The DREAMS Partnership targets vulnerable adolescent girls and young women aged 10-24, with a special focus on 15-24 year-olds. These target populations are 2.5 times more likely to contract HIV/AIDs than their male counterparts are. DREAMS aimed to reduce this vulnerability of AGYW by decreasing new HIV infections

among 15-24 year-olds through a core package of evidence-based interventions targeted at 4 overlapping populations: young women, their caregivers, their sexual partners, and their community members. What DREAMS do is focusing on promoting adolescent-friendly sexual and reproductive health services that address the stumbling-blocks to care faced by women and girls. It aims to train providers in the provision of care that is adolescent-friendly across a spectrum of services, from HIV testing to violence screening and contraceptive counselling (CHANGE, 2015). These interventions have been proven to mitigate HIV risk behaviours, HIV transmission, and gender-based violence (GBV) (DLi, 2017).

Through DREAMS, structural interventions, social asset building, and economic strengthening, interventions are layered to ensure that AGYW are reached with multiple and appropriate interventions to reduce their HIV risk (COP, 2017). This highlights the need to improve prevention and treatment among AGYW populations for the health of the future adult productive population to reach triple 90-90-90 targets.

To ensure that these targets are met one of the approaches used is Social and Behavioral Change Communication (SBCC). This approach has several strategies including Information, Education and Communication(IEC) strategy which focuses on Social Mobilization, Advocacy and Communication(SMAC) (AMREF, 2018)

1.2 Statement of the Problem

To achieve 90 90 90 target DREAMS introduced several interventions in the AGYW project. One of the interventions was Social and Behavioral Change Communication (SBCC) which is done through the use of Information, Education and Communication (IEC) strategy. The IEC component is complemented by interpersonal communication approaches such as peer education, motivational counselling, one-on-one counselling, group sessions and training on key thematic areas such as condom use, HTC, STIs prevention and treatment.

Despite the implementation of DREAMS' IEC strategy, high HIV/AIDS and low performance of HIV testing and treatment initiation (90-90) among AGYW ages 15–24 years continue to present a significant challenge to control HIV in Africa and Tanzania (Phelps et al., 2017). In Sub-Saharan Africa, where most young people and adolescents living with HIV (ALHIV) reside, only one in five HIV-positive adolescent girls know her HIV status (Phelps et al., 2017). It was reported by PEPFAR-DREAMS partnership that in Tanzania the progress towards 90-90-90 among AGYWs aged 15-24 years was 39-87-82 per cent (PEPFAR, 2017).

Since the introduction of DREAMs in Tanzania, there has not been documented evaluation on IEC strategy implementation in improving HIV testing and treatment initiation among AGYW aged 15-24 years. With this background, this study in Singida Municipal Council aimed at assessing the effectiveness of Information, Education and Communication (IEC) strategy in improving HIV testing and treatment initiation (first and second -90) among AGYW aged 15-24 years.

1.3 Research Questions

1.3.1 Main research question

How effective is IEC strategy in improving HIV testing and treatment initiation (first and second -90) among AGYW aged 15-24 years in Singida Municipal Council?

1.3.2 Specific research questions

1. What is the difference in proportions of AGYW aged 15-24 years that are aware of HIV testing and treatment between Singida Municipal council and Manyoni district council following the implementation of IEC?
2. What is the difference in the percentage of AGYW aged 15-24 years who know HIV, HIV testing and treatment between Singida Municipal council and Manyoni district council Manyoni district council following the implementation of IEC?
3. What is the difference in the percentage of AGYW aged 15–24 years who seek for HIV tests and treatment between Singida Municipal council and Manyoni district council Manyoni district council following the implementation of IEC?
4. What are the factors affecting HIV testing and treatment initiation among AGYW aged 15-24 years in Singida Municipal Council?

1.4 Research Objectives

1.4.1 Main Objective

To assess the effectiveness of IEC strategy in improving HIV testing and treatment initiation (first and second -90) among AGYW aged 15-24 years in Singida Municipal Council

1.4.2 Specific Objective

1. To determine the difference in proportions of AGYW aged 15-24 years that are aware of HIV testing and treatment between Singida Municipal council and Manyoni district council following the implementation of IEC
2. To determine the difference in the percentage of AGYW aged 15-24 years who know HIV, HIV testing and treatment between Singida Municipal council and Manyoni district council Manyoni district council following the implementation of IEC
3. To determine the difference in the percentage of AGYW aged 15–24 years who seek HIV tests between Singida Municipal council and Manyoni district council Manyoni district council following the implementation of IEC?
4. To explore factors affecting HIV testing and treatment initiation among AGYW aged 15-24 years in Singida Municipal Council following the implementation of IEC.

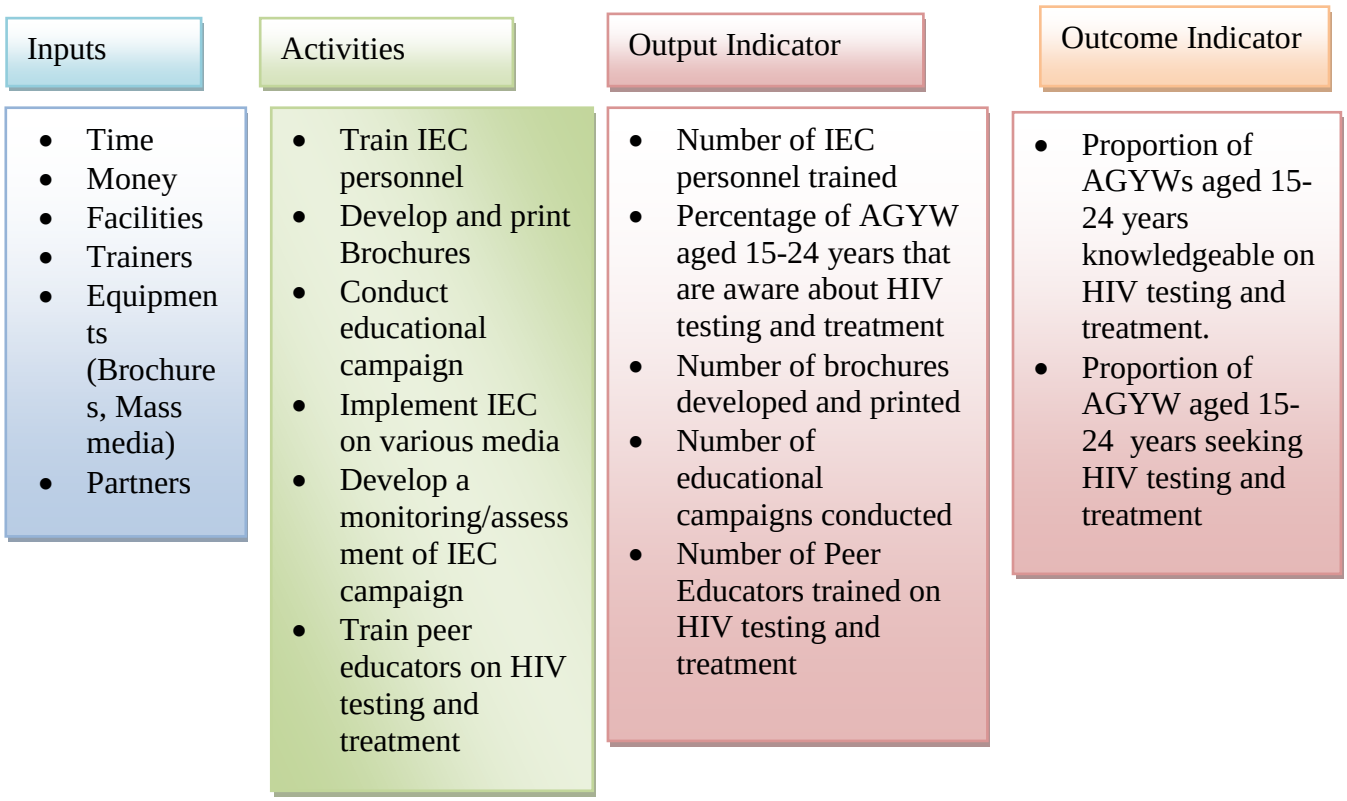
1.5 Rationale of the Study

The study tends to uncover the effectiveness of Information, Education and Communication (IEC) strategy in improving HIV testing and treatment initiation among adolescents. The study finding may be used by AMREF to make future decisions and look on which areas of HIV interventions especially for AGYWs to be improved. Also, they may act as a source of literature for scholars who wish to do further studies about IEC strategy or in any other fields related to Social and Behavior Change Communication (SBCC).

1.6 IEC Logic Model

The logic model presented, maps out how the intervention inputs and activities are expected to influence the outputs and eventual outcome of increased knowledge and number of AGYW aged 15-24 years attending HIV testing and treatment. It can help to specify the theoretical assumptions under which the intervention is intended to influence outcomes. It can help identify gaps in programming, and as data are gathered, it can help identify areas for programmatic strengthening. The logic model in Fig. 1 acts as a roadmap for how an intervention can affect adherence to HIV testing and treatment among AGYWs aged 15-24 years.

Figure 1: IEC Logic Framework

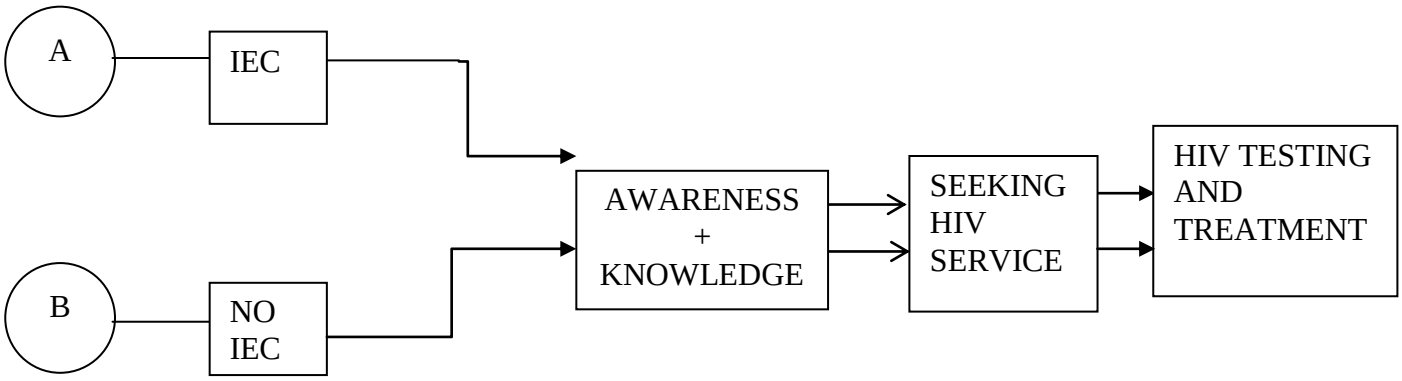


Source: Modified from (Saul *et al.*, 2018)

1.7 Theory of change

As illustrated in the theory of change (figure2), decision for seeking HIV testing and treatment among AGYWs aged 15-24 years exposed in the IEC intervention (A) are more likely to be aware and have knowledge on HIV testing and treatment as compared to group (B) which has not been introduced to IEC intervention. So from the theory of change, it is expected that AGYWs who have been introduced in IEC intervention will be more likely to seek HIV testing and treatment services as compared to those who have never been introduced to it. This will enable to trace the effectiveness of IEC strategy between the two groups.

Figure 2: Theory of change



Source: Researchers own construction, 2019

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Information Education and Communication (IEC) strategy

In an IEC, messages, practices and ideas (information) are disseminated to individual or target groups by utilizing appropriate media of dissemination (communication) with the aims of creating awareness as well as motivating and guiding them (education) to adopt better health and family welfare measures. In other words, it is a pre-planned, concentrated educational endeavour with a specific objective focused towards specific programme goals in order to reach an audience either in individual or group setting through skillful use of proper methods and media to bring about change in knowledge, belief, attitude and behaviour (Sandeep Sachdeva, Hemant K Kar, Suchi Sachdeva, Bharti, 2015).

IEC involves a number of roles and activities for it to be done effectively. These include to inform people about health, illness, disability, and ways in which they can improve and protect their own health including more efficient use of the health care delivery system Stimulate community dialogue, remove myths, misconceptions, and taboos, reduce stigma and discrimination, create demand for information and services and help people cope with difficult situation (ICDS, 2017).

The study by (FMoH, 2009) shows that the development of Information Education and Communication IEC materials in Ethiopia is characterized by poor planning and ineffective methods with no audience segmentation. Lack of thorough planning and vague objectives did not allow for the execution of effective monitoring and evaluation of IEC/BCC activities. Most of the health education materials produced at the central level are considered of little use and could not be applied to the situation at the regional level.

2.2 Social / Community mobilization

The participation and leadership of people living with, vulnerable to, and affected by HIV has been a hallmark feature of the response since the start of the epidemic. Beginning with the earliest report of AIDS, community leaders demanded that the voices of people living with the disease and their communities be heard by decision-makers and fully considered in all areas of funding, research, public policy, and prevention and care service delivery. Indeed, community members most of whom lack formal medical, legal, public health, or health care systems training have continually proved to be critical partners in all efforts to sensitively and effectively address disparities, improve outcomes, and control the spread of HIV (Kirk Grisham, Tim Horn, 2017).

What makes community mobilization and empowerment different from other interventions in the list is the aim to detect a source of health problems in the social, economic and political environments and empower their members to detect health issues of importance to the whole community, and generate a wider social change in order to change a context in which health is shaped (Handanagic et al., 2014).

The additional value of this approach is that by changing harmful social and cultural norms, addressing policy and economic issues and empowering communities to conduct changes by themselves it endorses sustainability of changes over time (Adimora and Auerbach, 2010).
In health care settings these interventions promote collaboration among health workers and communities with the aim to empower community members in social participation around health issues important for that community (Campbell, 2014). It is important to mention that community mobilization is often used in different domains of health and there is still no clear consensus about its uniform definition and strategies for its utilization (Tedrow et al., 2012).

2.3 Advocacy

In general, advocacy targets decision-makers and people with influence, such as national and local politicians, government ministers, and department managers. Advocacy can be policy advocacy lobbies national or local political leaders to increase funding and institute policy changes to support the implementation environment or program advocacy reaches out to decision-makers and community partners to boost their participation in local actions and program decisions to support services or Media advocacy puts issues on the public agenda. It prompts the media to cover related topics regularly and responsibly to raise awareness of problems and solutions (USAID, 2013).

Advocacy has emerged as one of the major strategies for promoting leadership commitment to the goals of enhancing human life and development. For HIV/AIDS, generally considered the greatest development challenge facing mankind, the role of advocacy is fundamental in securing the continued interest and support of political, cultural and economic leaders (Unfpa, 2001).

Advocacy strategies are rarely ever straightforward or linear in their design and implementation. What works as a message today may need to be reworked tomorrow, and what seems like an effective partnership with a decision-maker one day could be very different the next. It is suggested that a person has to be flexible in his or her approach and should not be afraid to revisit certain modules over time (ACT, 2015).

Based on situation analysis conducted by (UNAIDS, 2016) among the areas for advocacy identified for UN to focus on its efforts were; contributing to the scale-up of HIV services to prevent mother to child transmission (MTCT), contribute to the extension of the delegation of tasks in all health facilities and official community structures, support the increased involvement of civil society in the national AIDS responses and supporting the implementation of AIDS programmes among youth and adolescents.

2.4 Communication

Communication is the key to generating awareness on prevention as well as motivating access to treatment, care and support (NACP, 2017). Several principles have emerged that should form the basis of an effective prevention communication campaign; which includes using accurate, complete, and current information. Public health professionals, policymakers and HIV prevention practitioners designing communication strategies must recognize information needs by providing scientifically accurate and current messages (Dinca et al., 2016).

One of the major challenges of health communication is to provide enough information to enable the audience to follow the logic of the recommendations, while at the same time not losing those members of the audience that have a lower level of health literacy; Also building trust between the recipient and the sender, taking a participatory approach, and using acceptable language and imagery (Dinca et al., 2016).

Social behaviour and communication assessment can ensure that communication effectively influences community discussions and social norms and plays an important role in services and individual and community behaviour, once services and commodities are in place. To develop communication, it is important to identify the target population clearly as possible. Target populations are defined as primary or secondary. Primary populations are the main group who's HIV/AIDS-related behaviour the program is intended to influence. Secondary populations are those groups that influence the ability of the primary populations to adopt or maintain appropriate behaviour (Family Health International, 2002).

2.5 Factors affecting seeking HIV testing and treatment

Sub-Saharan Africa accounts for approximately 64% of all new HIV diagnoses worldwide. Of the 630,000 children being administered antiretroviral therapy in countries designated as low- and middle-income, 544,000 live in Africa according to the World Health Organization. This population faces many challenges associated with health services, including stigma, lack of prevention education, and lack of support services and treatment options (Nall et al., 2019).

2.5.1 HIV Knowledge

Behavioural intentions related to HIV testing may be affected by misconceptions about HIV and how the virus is transmitted (Rueda et al., 2016). Understanding an individual's HIV knowledge-level is tantamount to understanding how much they perceive risk when engaging in behaviours that could lead to transmission of the virus, such as unprotected sex (Glick & Sahn, 2007). (Glick & Sahn, 2007) reported a positive relationship between education and HIV testing in nine African countries. Other research indicates a positive relationship between HIV knowledge and testing (Okumu, 2017). Findings from a meta-analysis of 60 studies revealed that HIV knowledge ranked among the most common factors selected by researchers when studying HIV testing behaviours and that HIV knowledge was positively correlated with HIV testing (Evangeli, Pady and Wroe, 2016).

2.5.2 Stigma

HIV-related stigma has been established as a key barrier to HIV testing and treatment (Rueda et al., 2016). HIV-related stigma can manifest in various forms and be either perceived, anticipated or believed to be true by an individual or group, notwithstanding HIV status **(**Turan, et al., 2017). Simply put, regardless of whether or not an individual has been tested and is aware of their HIV status, one may hold certain beliefs or preconceptions about individuals with HIV. These beliefs often serve as a barrier to both HIV testing and treatment.
In a re-analysis of a 2009 study from South Africa, Maughan-Brown and Nyblade (Maughan-Brown, and Nyblade, 2014) found that women (but not men) were influenced by stigma when it came to HIV testing. Further analysis of this dataset showed that women were more likely to have been tested for HIV if they had stigmatizing attitudes toward others (e.g., believed that those with HIV were being punished for having multiple sexual partners and had themselves to blame). Conversely, women who reported more perceived stigma, or had personally observed someone with HIV being treated poorly, were less likely to seek testing for HIV. This research highlights the importance of better understanding the influence of stigma on HIV testing behaviours.

2.5.3 Social Support

Social support has also been identified as a key factor in HIV test-seeking and treatment adherence (Rueda et al., 2016). Social support can be conceptualized as the notion of having other individuals to provide reinforcement and emotional support (Smith, Rossetto and Peterson, 2008). Among nearly 5000 adults in South Africa voluntarily seeking HIV testing and counselling, low social support and poor mental health were associated with testing positive for HIV. When examining the correlates of social support, researchers found that low social support was most strongly correlated with having no prior HIV testing (Smith, Rossetto and Peterson, 2008).

2.6 Summary of literature review

The existing literature has not conclusively established the extent of effectiveness of IEC strategy on improving testing and treatment among youth. However, the literature revealed components of IEC that could influence testing and adherence to treatment which includes social mobilization, advocacy and communication.

It has also revealed that effective communication involves using accurate, complete, and current information. Public health professionals, policymakers and HIV prevention practitioners designing communication strategies must recognize information needs by providing scientifically accurate and current messages. Also for the case of advocacy showed that strategies are never straightforward or linear in their design and implementation. What works as a message today may need to be reworked tomorrow. Last but not least the literature reviled some of the factors affecting HIV testing and treatment-seeking behaviour among AGYWs which include but not limited to knowledge, stigma, and social support.

CHAPTER THREE

3.0 MATERIALS AND METHODS

3.1 Study area

The study was conducted in two districts, Singida Municipal Council and Manyoni District councils. Manyoni District Council acted as a counterfactual (control group in absence of intervention) since it has similar characteristics compared to Singida Municipal Council. Singida was prioritized due to its high vulnerabilities in terms of Teenage pregnancy, Gender-Based Violence, Low contraceptive use, Early marriage, School dropout, Risky behaviour for HIV infection, multiple sexual partners, and long-distance from home to schools (Unicef-Tanzania, 2011).

3.2 Study design

The study was a comparative cross-sectional design adopting post-test evaluation design whereby both quantitative and qualitative approaches were used for gathering data. Descriptive study was used for quantitative data while the exploratory research design was adopted to collect qualitative data. This exploratory design allows a researcher to gain an in-depth understanding of the research problem and probe into a possible solution to the problem (Leedy and Ormrod, 2014). Leedy and Ormrod argue that the mixed method design enables the researcher to explore both quantitative and qualitative data in the field. It also enables the study to combine the qualitative and quantitative results of the research into meaningful conclusions.

3.3 Study population

The study involved 706 respondents; whereby 357 respondents were from Singida Municipal Council and 349 from Manyoni District Council. The study was conducted among AGWYs aged 15-24 years and AGYW project manager, Project Officer, Health facility in-charge, Council HIV and AIDS Control Coordinator (CHACC) and District AIDS Control Coordinator (DACC). Furthermore, the researcher also consulted CTC nurses to obtain HIV testing and treatment records for AGYW aged 15-24 years in Singida Municipal Councils and Manyoni District Councils.

3.4 Sampling technique and sample size

3.4.1 Sampling technique

Multi-stage clustered random sampling was employed as a sampling technique. In the first stage, divisions were randomly selected. Secondly, from each selected division, local wards were randomly selected, and from each selected ward streets were randomly selected. On the data collection days, clients at the HIV clinic (AGYW) were informed about the study and those who showed interest received more information and were asked to consent to participate. For the qualitative approach, purposive sampling was deployed to obtain participants for Key informants' interviews based on their knowledge in the study of interest.

3.4.2 Sample size

The sample size (n) was calculated using Fisher's et al, 2003. The formula was used to estimate the smallest possible categorical sample size

$$n = \frac{(Z^2 \times pq)}{e^2} * \text{DEFF}*2$$

Where: n = desired sample size, z = standard normal deviate, usually set at 1.96 which corresponds to 95% confidence level,

P = proportion of the target population estimated to have a particular characteristic, to be measured which is 19.86% if the proportion is unknown. q = 1 – p and

e = permitted error (5%, if the confidence level is 95%) = 0.05

Design effect (DEFF) =1.5 (account for the heterogeneity between clusters)

Applying the formula, the required sample size was $n=1.96^2$ (0.1986) (0.8014)/0.05^2*1.5*2 =734

For the case of qualitative AGYW project managers, Project officer, Health facility in-charge, Council HIV and AIDS Control Coordinator (CHACC) and District AIDS Control Coordinator (DACC) were interviewed and two CTC nurse

3.5 Variables and measurements

Table 1: Variables and measurements

Variables	**Measurement**	**Scale**
Socio-demographic characteristics		
Age	Interval	Years
Education	Ordinal	1. No class education 2. Primary education 3. Secondary education 4. Higher-level
Living status	Nominal	1. Living with parents 2. Living with other relatives 3. Living with friends 4. Living alone
Awareness		
HIV/AIDS	Nominal	1 = Yes 2= No
HIV testing	Nominal	1 = Yes 2= No
HIV treatment	Nominal	1 = Yes 2= No
Source of information	Nominal	1= Peer groups 2= Youth clubs 3=Radio sessions 4=Posters
Level of knowledge		
HIV/AIDS		1 = Low 2= Moderate 3= High
HIV testing	Nominal	1 = Blood 2= Saliva 3=Don't remember
HIV treatment	Nominal	1 = Yes 2= No
Medication	Nominal	a) ARV b) I don't know
Test for HIV/AIDS	Nominal	1 = Yes 2= No

Thematic areas for qualitative

The qualitative study had the following thematic areas drawn from inductive content analysis; misconceptions, HIV - related Stigma, availability and allocation of testing resources.

Independent variables: Awareness on HIV/AIDS, HIV testing and treatment were assessed using dichotomy variables (1 = Yes 2= No) which measured whether or not respondents are aware of HIV/AIDS, HIV testing and treatment for both intervention (Singida) and control group (Manyoni). Then paired sample t-test was used to determine the significant difference in awareness between the two groups.

Knowledge on HIV/AIDS was assessed by a scale of 1 = Low 2= Moderate 3= High. For the case of knowledge on HIV, testing participants were asked which sample is used to diagnose HIV. Depending with the answer from respondents they were categorized to whether they know or they don't know. Also, HIV treatment was assessed using a dichotomy variable of Yes (1) if they know the treatment or No (2) if they do not know the treatment. If they know they were asked which one.

Dependent variable: This was assessed by using dichotomy variables (1 = Yes 2= No) if respondents ever sought HIV testing and treatment.

3.6 Inclusion criteria

AGWYs aged 15-24 years, Project managers, Project Officer, Health facility in-charge, Council HIV and AIDS Control Coordinator (CHACC) and District AIDS Control Coordinator (DACC). Additionally, the study extracted information about numbers of AGYW aged 15-24 years attending HIV testing and treatment from CTC records.

3.7 Exclusion criteria

AGWYs aged 15-24 years who are insane as the quantitative study will need participants to read and fill the questionnaire on their own.

3.8 Data collection procedure

Five research assistants were trained on the questionnaire and on the interview guides. They were also introduced to research ethics for one day to avoid poor data collection. The review of data collection tools was done so as to report any complexity of data collection and was discussed on a daily basis. Qualitative was used to explain quantitative data collected on awareness, level of knowledge and seeking HIV services.

Table 2: Summary of data collection approaches and tools

OBJECTIVE	APPROACH	DATA COLLECTION TOOL
1.	Both qualitative and quantitative	Both IDI guide and structured questionnaire
2.	Both qualitative and quantitative	Both IDI guide and structured questionnaire
3.	Quantitative	Structured questionnaire
4.	Qualitative	IDI guide

3.9 Investigation instruments

Semi-structured questions were administered to collect quantitative data on awareness, knowledge, and decision to seek HIV testing and treatment initiation services among adolescent girls and young women aged 15-24 years. For the case of qualitative data on the factors influencing the implementation of IEC strategy with regard to HIV testing and treatment among AGYW aged 15-24 years in Singida Municipal Council, the interview guide using open-ended questions was used to collect data from AGYW Project manager, Project Officer, Health Facility in-charge, Council HIV and AIDS Control Coordinator (CHACC) and District AIDS Control Coordinator (DACC) as they were believed to have reach information. To obtain data on the number of AGYW aged 15-24 years attending HIV testing and treatment, the researcher requested CTC nurses records on HIV testing and treatment for the age group 15-24 or general records for people going for HIV testing and treatment and extracted information for the age group 15-24 years.

3.10 Validity and Reliability

To ensure that data collected measured what it was intended; pre-testing of the tools was done by the Principle investigator among AGYWs aged 15-24 in one ward in Singida Municipal council to identify any ambiguous questions. Data double entry, outliers and errors were cross-checked to ensure data cleanliness. Multi-stage random sampling was used to avoid bias. Supervisor's opinions were put into an account in developing tools for data collection to ensure validity.

Reliability refers to the consistency of a measure. To achieve reliability test-retest was used. 20 AGYWs (not included in the sample) were interviewed twice within one week with the same questionnaire.

3.11 Data analysis

Quantitative data on awareness, knowledge and seeking services were analyzed using SPSS and presented in terms of, graphs, tables and frequencies and proportional differences. Awareness was determined by running frequencies which gave proportions. Knowledge was assessed through scaling levels (low, moderate and high) based on how respondents answered the questions. Proportional differences were obtained using the formula;

$P_D\,(\%) = P_A\,(\%) - P_B\,(\%)$

Where

P_D = Proportional difference between Singida and Manyoni

P_A = Proportion of Singida

P_B = Proportion of Manyoni

Qualitative data were used to explain and support the quantitative data**.** Inductive content analysis was used to analyze qualitative data. Qualitative data were re-read in order to identify the sense of the whole interviews. Texts were divided into meaning units and the later were condensed while keeping the core meaning. The next step was to label condensed meaning units by formulating codes and then codes were grouped into categories. From the categories, themes were identified.

Analysis of qualitative data was done using QSR international NVivo11 into themes so as to identify emerging trends between and within variables.

3.12 Ethical consideration

Ethical approval from the Muhimbili University of Health and Allied Sciences (MUHAS), Senate Research and Ethics Committee (REC) was granted for this study (reference number are; DA.287/298/01A). Permission to carry out the study in Singida Municipal Councils and Manyoni District Councils was obtained from the Executive Director of Singida Municipal Council and Manyoni District Council. The purpose of the study was explained to participants and written informed consent sought before commencing the interview. Privacy and confidentiality were highly considered whereby each interviewee was interviewed alone in the room and no names were required. Information provided from the respondents was disclosed only for research purposes. Participants were informed that their participation was purely voluntary and they had the right to withdraw from the study any time.

3.13 Study limitation and mitigation

One among the limitations of the study was the absence of baseline which makes hard to determine the actual proportional change in awareness and level of knowledge. Another limitation is the study was neither an experimental nor quasi-experimental due nature of the campaign, timing and limited fund for the study. Also, it was difficult to determine the extent of change contributed by IEC from DREAMS project due to the presence of other HIV interventions (spillover effect).

3.14 Dissemination plan

The results of this study were submitted and presented to the examination panel of the School of Public Health and Social Sciences in Partial/Fulfillment of the Academic Requirements for the Award of the Master of Science in Project Management Monitoring and Evaluation in Health.

Also, the results be published in the review journal and presented in scientific conferences.

CHAPTER FOUR

4.0 RESULTS

4.1 Introduction

This study aimed to assess the effectiveness of IEC strategy in improving HIV testing and treatment initiation (first and second -90) among AGYW aged 15-24 years in Singida Municipal Council. This section presents the findings.

4.2 Socio-demographic characteristics

In Singida a large proportion of respondents were adolescence girls and young women above 18 years which is equivalent to 52.7% while in Manyoni District Council respondent above 18 years were only 4%. In education-wise, the respondents from both Singida Municipal Council and Manyoni District Council had equal proportion of primary education 22.4% and 24.6% respectively. In Singida Municipal Council 71.7% of the respondents live with their parent while in Manyoni District Council most of the respondents live with their parents 88% (Table 2).

Table 3: Socio-demographic characteristics

	Singida Municipal Council (n = 357)		**Manyoni District Council (n = 349)**		**Total**
Age	Frequency (n)	Percentage	Frequency (n)	Percentage	
≤18	169	47.3%	335	96%	504
≥18	188	52.7%	14	4%	202
Education level					
No class education	7	2%	18	5.2%	25
Primary education	80	22.4%	86	24.6%	166
Secondary education	188	52.9%	199	57%	387
Higher level (College and University)	82	23%	46	13.2%	128
Living status					
Living with parents	256	71.7%	307	88%	563
Living with other relatives	44	12.3%	26	7.4%	70
Living with friends	26	7.3%	11	3.2%	37
Living alone	31	8.7%	5	1.4%	36

4.3 Awareness on HIV, HIV testing and treatment

4.3.1 Awareness on HIV/AIDS and HIV Testing

Awareness on HIV and AIDS among adolescents girls and young women in Singida Municipal Council had a proportion of 1% higher compared to Manyoni District Council while in HIV testing awareness in Singida Municipal Council was 3.5% higher compared to Manyoni District Council (Figure 3). This implies that IEC strategy has an impact on awareness.

These results are supported by the qualitative findings as pointed out by one of the key informants that:

"....the strategy helps to improve awareness on HIV and HIV testing among AGYWs...they also becomes motivated to go for testing" (Key informant 1).

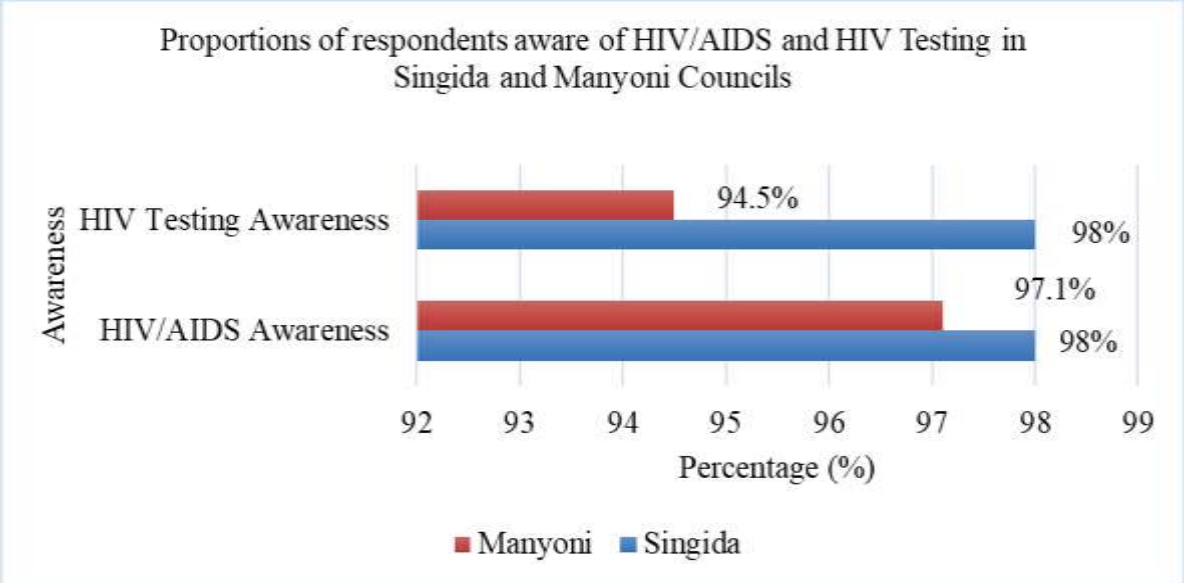


Figure 3: Proportions of respondents aware of HIV/AIDS and HIV Testing in Singida and Manyoni Councils

4.3.2 Awareness on HIV Treatment

Awareness on HIV treatment among adolescent girls and young women in Singida Municipal Council was 14.9% higher on HIV and AIDS treatment compared to Manyoni District Council.

"IEC strategy is important because when a person is exposed to information becomes educated and knowing the benefits hence a person seek services" (Key informant 4).

Table 4: Awareness on HIV treatment

HIV treatment Awareness					**Total**
Singida Municipal			**Manyoni District**		
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)	
Yes	319	89.4	260	74.5	579
No	38	10.6	89	25.5	127

The result shows that the strong sources of information for both HIV/AIDS and HIV testing were found the peers groups that account for 44.1% in Singida Municipal and 41.1% in Manyoni District Council (Figure 4).

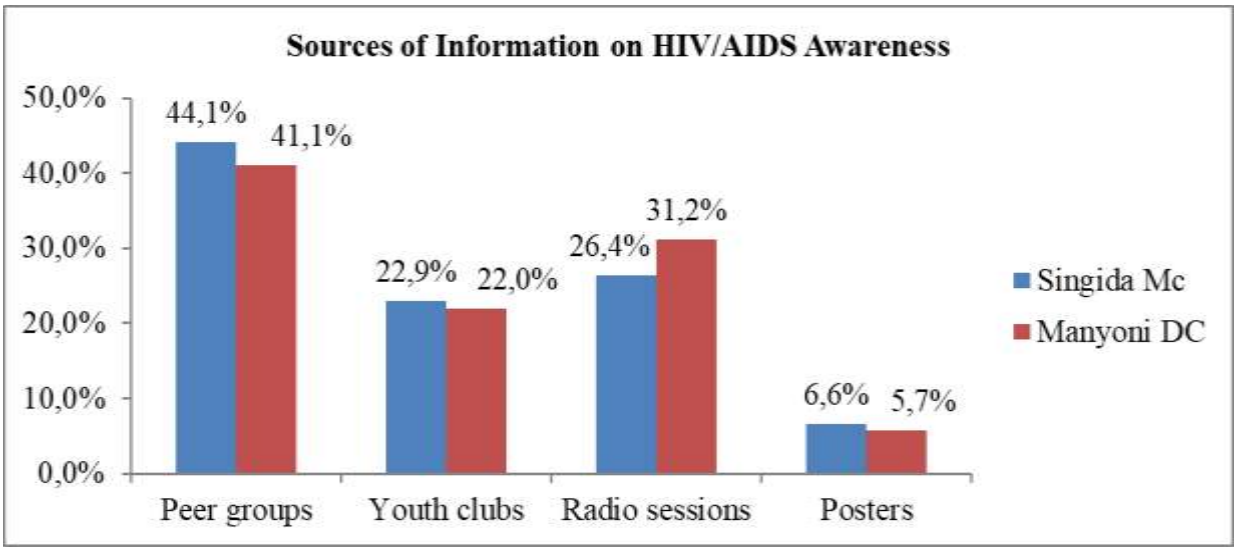


Figure 4: Sources of Information on HIV/AIDS Awareness

4.4 Knowledge on HIV, HIV testing and treatment

In this section the study aimed at finding out if there are differences in the proportion of knowledge level on HIV, HIV testing and treatment between the intervention and the counterfactual group, Singida District Council and Manyoni Municipal Council respectively.

4.4.1 Knowledge of HIV

Singida Municipal Council showed a difference of about 12% higher level of knowledge on HIV as compared to Manyoni District Council (Figure 5). Results were statistically significant for a paired sample t-test with a p-value equals to 0.001.

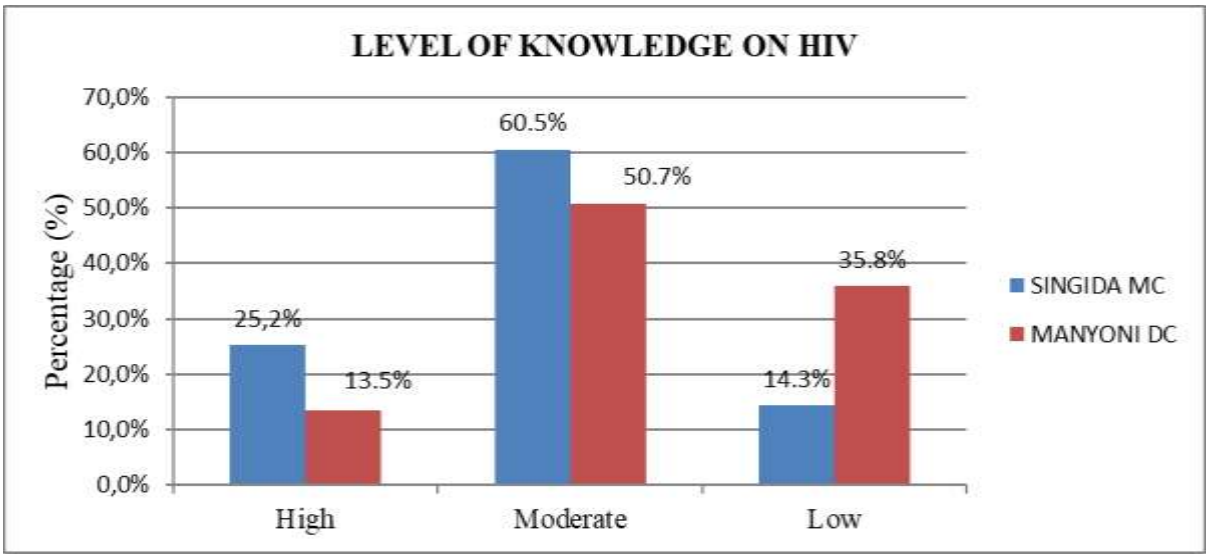


Figure 5: distribution of knowledge on HIV among respondents from Singida and Manyoni councils.

4.4.2 Knowledge of HIV testing

Out of all respondents in Singida Municipal Council, only 2.5% did not know which sample was used for testing HIV, while in Manyoni District Council 5% did not know which sample was used for testing HIV.

4.4.3 Knowledge of HIV treatment

Respondents from Singida Municipal had 9% difference higher in the level of knowledge on HIV treatment compared to Manyoni District council.

Stressing on the importance of knowledge, the majority of the key informants felt that it is important that education is continued to be provided to AGYWs so that they can know where they can get access to service. One of the key informants stated;

"……..Education should continue to be given because others understand about HIV but they don't know where to access medicine" (Key informant 3).

4.5 Seeking HIV testing and treatment

AGYWs who did not test for HIV in Manyoni District Council were 32.3% higher than their counterparts in Singida Municipal Council (Figure 6). The difference was statistically significant with a p-value less than (0.001).

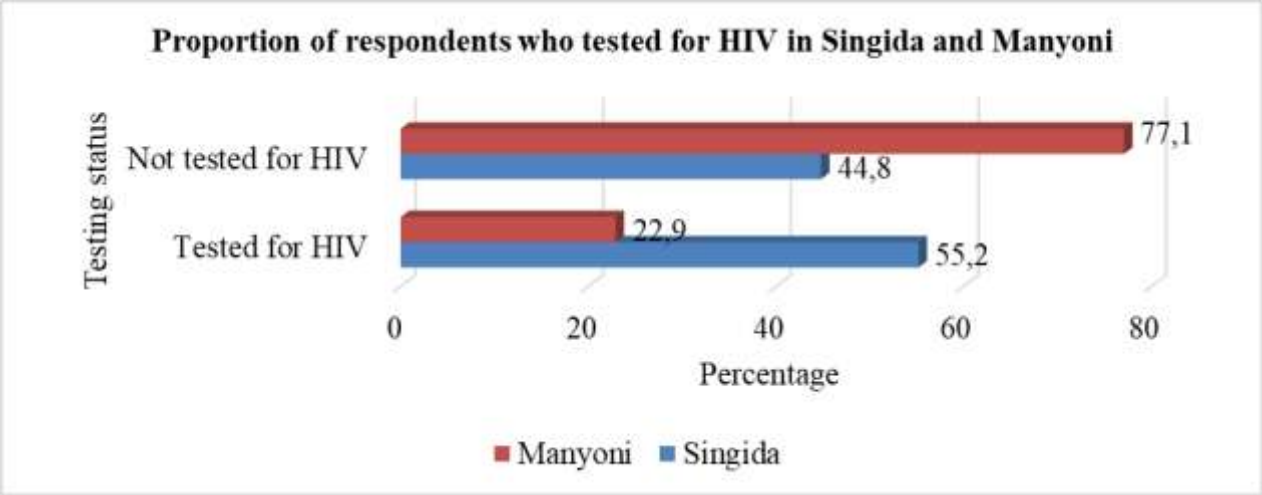


Figure 6: Distribution of testing status among respondents from Singida and Manyoni

4.6 Factors affecting HIV testing and treatment initiation

Misconceptions

It has been reviled from the informants that AGYWs have not been well informed about HIV which leads to the misconceptions about HIV and how the virus is transmitted may affect intention to HIV testing and treatment. Understanding an individual's HIV knowledge-level is virtually the same as understanding how much they perceive risk when engaging in behaviours that could lead to transmission of the virus.

As one of the respondents pointed out that:

"….Young people are not well informed. They have misconceptions regarding HIV testing and treatment. This challenge can be overcome by providing education through text messages…Also, Education should be a sustainable strategy through media" (Key informant 2).

HIV - Related Stigma

One among the factors affecting HIV testing and treatment reported by the key informant was the fear of confidentiality of the answers, that if they are HIV positive and the information leak they are going to be stigmatized. It has been revealed certain belief or preconceptions about individuals with HIV may serve as a barrier to HIV testing and treatment. As pointed out by key informants:

"....I once asked a number of youths why people fear testing for HIV, among them responded that people have fear of being known HIV positive in the community. Also, youth feel embarrassed when they share services with adults. I think youth should have their own clinics" (Key informant 5).

Availability of HIV testing and treatment

Availability of HIV testing and treatment services has been neglected in remote areas. To get access to services youth have to walk long distances to the health centers in the district. Also, it has been revealed by key informants that service providers they focus most on HIV prevention services as compared to care and treatment and social support. As stated by one key informant.

"...For sure we have done a great job introducing IEC strategy. Beside that attention to testing and treatment has not been enough given as compared to the availability of prevention methods (condoms availability)" (Key informant 7).

Allocation of testing resources

Rapid HIV test is useful for quick confirmation for HIV infection diagnosis, to patients with AIDS-defining illness but have unknown HIV status. The test helps to identify patients who will from ART and hence delaying progression to AIDS. The results revealed that there is shortage of access to HIV rapid test. Also, it has been difficult to ensure that testing resources are going to populations that need them most. It was stated by one of the key informants that

"*…Although HIV rapid test has transformed the HIV screening process, access to it has been a problem. I think public health officials need to re-think of the most effective ways to advertise for health screening" (Key informant 1).*

CHAPTER FIVE

5.0 DISCUSSION

5.1 INTRODUCTION

This chapter covers the discussion of the findings of the study generated by both quantitative and qualitative research instruments. Discussion focuses on awareness and knowledge on HIV, HIV testing and treatment, and HIV testing status and treatment.

5.2 Awareness on HIV, HIV testing and treatment

IEC has been effective in making AGYW awareness of HIV testing and treatment. Results suggested that those exposed to IEC intervention more likely to be aware as compared to the control group which did not receive the intervention. Results showed the statistical significance difference in HIV testing and treatment awareness between Singida and Manyoni. These results are supported by the study done by(WHO, 2000) which suggested that people become aware after they are first exposed to the basic information on HIV through various channels. Due to the fact that bringing about behaviour change is among the complex processes, the study proposed that a variety of approaches must be used to promote the movement of individuals and populations along the continuum of behaviour change.

Also (Avert, 2018a) revealed that AGYW who are unaware of the need to protect themselves from HIV are more prone to be infected as they tend to perceive themselves as being at low risk of HIV. There is a need to critically ensure women and girls have access to HIV prevention services.

5.3 Knowledge on HIV, HIV testing and treatment

The study findings pointed out that the intervention area (Singida) had a large number of respondents with moderate and high knowledge on HIV, HIV testing and treatment as compared to Manyoni. HIV knowledge of HIV status is critically important in ensuring the expansion of service at a right time. It is also important as it offers PLHIV to receive information and tools which will ultimately help to prevent HIV transmission to others**.**

The study done in South Africa on evaluating whether the effect of testing on sexual risk behaviour depended on HIV transmission and prevention knowledge revealed that; respondents who had been tested for HIV were more knowledgeable about HIV than those who had not been tested (Lingala and Ghany, 2016).

Increased access to HIV testing and counselling is essential in working towards universal access to HIV prevention, treatment, care and support as endorsed by G8 leaders in 2005 and the UN General Assembly in 2006 (WHO and UNAIDS, 2007).

When studying HIV testing behaviours, findings from a meta-analysis of 60 studies revealed that HIV knowledge was ranked among the most common factors selected by researchers which were positively correlated with HIV testing (Evangeli, Pady and Wroe, 2016).

Understanding an individual's HIV knowledge-level is tantamount to understanding how much they perceive risk when engaging in behaviours that could lead to transmission of the virus, such as unprotected sex (Glick & Sahn, 2007). (Glick & Sahn, 2007) reported a positive relationship between education and HIV testing in nine African countries. Other research indicates a positive relationship between HIV knowledge and testing (Okumu, 2017).

5.4 HIV testing status and treatment

IEC is critically important to ensure that adolescent girls and young women sick HIV testing and treatment services. The study findings showed that the intervention area (Singida) had a high percentage (55.2%) of respondents who have had tested for HIV as compared to Manyoni (22.9%) which didn't receive the intervention and had a low level of knowledge compared to Singida.

The study done by (Kuehne *et al.*, 2018) revealed that knowledge about HIV and discussing HIV in communities increased the odds of having attended HIV testing among respondents. It also suggested that lacking knowledge about HIV could be the underlying factor behind both sexual risky behaviour and having never tested HIV.

Stigma and discrimination particularly affect women and adolescent girls living with HIV. Anticipated or actual mistreatment and abuse from health-care workers prevent them from linking to and staying engaged in HIV care services. Stigma and discrimination, especially surrounding adolescent girls' sexuality, alongside HIV disclosure issues and travel and waiting times at clinics, are among the reasons for low adherence (UNAIDS, 2019).

This is supported by one of the key informants who respondent to the question on the perceived barriers among AGYWs aged 15-24 years on seeking HIV testing and treatment.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

This is the closing chapter of the study. It is meant to provide a conclusion and recommendations on what can be done about issues raised in the study.

6.1 Conclusion

IEC strategy played a crucial role in improving awareness and knowledge on HIV, HIV testing and treatment among adolescent girls and young women aged 15-24 years in Singida Municipal Council.

There has been significant change in awareness on HIV, HIV testing and treatment contributed by IEC strategy in Singida Municipal Council as compared to Manyoni where intervention was not conducted. The study also revealed significant change in the level of knowledge HIV, HIV testing and treatment contributed by IEC in Singida Municipal Council as compared to Manyoni district.

The result showed that the strong sources of information for both HIV/AIDS and HIV testing were peers groups for the intervention group (Singida).

Also, the study has identified several factors affecting HIV testing and treatment among adolescent girls and young women which are social factors (misconceptions, HIV related stigma), and structural factors (availability and allocation of testing resources).

6.2 Recommendations

The study findings should be used to make informed decisions on future programing of AGYW intervention by AMREF and other organizations which will be implementing HIV interventions of similar nature. Other strategies should be introduced which will also focus on care and treatment, not only on prevention.

Stressing on the importance of knowledge, the study suggested that it is important that education continues to be provided to AGYWs so that they can know where they can get access to service.

Also, the study recommends that further studies focusing on experimental design should be so as to identify the exact impact of the intervention.

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APPENDICES

Appendix I: Informed Consent Form (English Version)

Muhimbili University of Health and Allied sciences

Directorate of Research and Publications, MUHAS

Consent form

ID number ☐ ☐ ☐

Consent to participate in the study

Hello, my name is Edith Masuki. I am a Master's student from Muhimbili University of Health and Allied Sciences. I am currently pursuing a Master of Science in project management monitoring and evaluation in health and as part of fulfilment for the award of this degree, I am supposed to conduct research and produce some findings, which will be useful for my study, the university and the community at large. I am conducting a study on **"Information, Education and Communication strategy in improving HIV testing and treatment among adolescents aged 15-24 years. A comparative study of Singida Municipal Councils and Manyoni District Councils"**

Purpose

The study is conducted in partial fulfillment of the requirements for the degree of Master of Science in project management monitoring and evaluation in health. The results will be used by stakeholders, Ministries and decision making bodies in designing effective regulatory measures so as to meet public health demand.

Procedure to be followed

If you agree to be in this study, you will be asked to respond to some questions through a self-administered questionnaire or key interview guide. Study time: Study participation will take a total of approximately 20 minutes.

Benefits

There is no direct benefit to you anticipated from participating in this study. However, it is hoped that the information gained from the study will help to identify strategies and

opportunities for improving ways of raising awareness and knowledge about HIV testing and treatment.

Risks/Discomforts

Some of the study instruments may make you uncomfortable or upset, but you are free to decline to answer any questions you do not wish to or to leave the group at any time.

Confidentiality

Your study data will be handled as confidentially as possible. If the results of this study are published or presented, individual names and other personally identifiable information will not be used.

Rights

Participation in research is completely voluntary. You have the right to decline to participate or to withdraw at any point in this study without penalty or loss of benefits to which you are otherwise entitled.

Question /Contact information

If you have any questions or concerns about this study, you may contact the principal investigator, Edith Masuki from MUHAS P. O. BOX 65001, Dar es Salaam, mobile number 0754099688 or the MUHAS Ethical and Review Committee Secretariat.

Signature: …….

Do you agree? Participant agrees…… Participant does not agree ……

I _____have read/listened the contents in this form.

My questions have been answered. I agree to participate in this study.

Signature of participant _____

Signature of research assistant _____

Date of signed consent _____

Appendix II: Informed Consent Form (Swahili Version)

Namba ya utambulisho

Utambulisho

Habari, jina langu ni Edith Masuki . Mimi ni mwanafunzi wa Shadaha ya uzamili kutoka Chuo Cha sayansi na Tiba Muhimbili. Kwa sasa nafanya Shahada ya sayansi ya uzamili katika ufuatiliaji na usimamizi na tathmini ya miradi ya afya na kama sehemu ya kutimiza tuzo ya shahada hii, ninahitaji kufanya utafiti na kutoa matokeo mengine, ambayo yatakuwa muhimu kwa utafiti wangu, chuo kikuu na jumuiya kwa ujumla. Ninafanya utafiti juu ya "Mkakati wa Habari, Elimu na Mawasiliano katika kuboresha upimaji na matibabu ya VVU kati ya vijana wenye umri wa miaka 15-24. Utafiti wa kulinganisha wa Manispaa ya Singida na Halimashauri ya wilaya ya Manyoni".

Madhumuni ya Utafiti

Utafiti huo unafanyika kwa kutimiza sehemu ya mahitaji ya Shahada ya sayansi ya uzamili katika ufuatiliaji na usimamizi na tathmini ya miradi ya afya. Matokeo yatatumika na wadau, Wizara na bodi za kufanya maamuzi katika kubuni hatua za udhibiti bora ili kufikia mahitaji ya afya ya umma.

Mbinu za utafiti

Ikiwa unakubali kuwa katika utafiti huu, utaulizwa kujibu maswali fulani ama kupitia dodoso, au mahojiano. Wakati wa kujifunza: Ushiriki wa kujifunza utachukua jumla ya dakika 20.

Faida

Hakuna faida moja kwa moja unayotarajia kuipata katika utafiti huu. Hata hivyo, ni matumaini kwamba habari zilizopatikana kutoka kwenye utafiti zitasaidia kutambua mikakati na fursa za kuboresha mikakati ya kuongeza ufahamu na kutoa elimu juu ya upimaji na matibabu ya VVU

Hatari

Baadhi ya maswali yanaweza kukufanya uwe na wasiwasi au kukuudhi, lakini unaruhusiwa kujibu maswali yoyote wakati wowote.

Usiri

Data yako ya utafiti itashughulikiwa kama siri iwezekanavyo. Ikiwa matokeo ya utafiti huu yatachapishwa au yatawasilishwa, majina kibinafsi na maelezo mengine ya kibinafsi hayatatumiwa.

Haki

Kushiriki katika utafiti ni kwa hiari kabisa. Una haki ya kukataa kushiriki au kujiondoa wakati wowote katika utafiti huu.

Swali / Mawasiliano

Ikiwa una maswali yoyote au wasiwasi juu ya utafiti huu, unaweza kuwasiliana na anae hoji, Edith Masuki kutoka MUHAS P. O. BOX 65001, Dar es Salaam, simu ya simu 0754099688 au Sekretarieti ya Kamati ya Uadilifu na Uhakikisho wa MUHAS

Sahihi.....

Je unakubali kushiriki? Ninakubali kushiriki ☐ Sikubali kushiriki ☐

Mimi _____ nimesoma/nimesomewa na kuyaelewa vyema maelezo yaliyomo katika fomu hii. Maswali yangu yamejibiwa. Ninakubali kushiriki katika utafiti huu.

Sahihi ya Mshiriki _____

Sahihi ya Mtafiti _____

Tarehe ya kusaini _____

Appendix III: Questionnaire – English Version

AGYWs	
SECTION 1: SOCIAL DEMOGRAPHIC CHARACTERISTICS	
1) **What is the age of the respondent?**	**2) Sex of the respondents**
Age [ ]	a) Male [ ] b) Female [ ]
3) **Highest level of education**	**4) Where do you live**
a) None [ ] b) Primary education [ ] c) Secondary education [ ] d) Certificate/ College (Diploma) [ ] e) University level [ ]	a) Home ( ) b) Rented ( ) c) Owned ( )
5) Who do you live with?	
a) Parent(s) ( ) b) Alone ( ) c) Friend(s) ( ) d) Relatives ( )	
SECTION 2: A) AWARENESS ON HIV TESTING	
6) Have you ever heard the AIDS virus called HIV?	Yes [ ] No [ ]
7) Have you ever heard of HIV testing?	Yes [ ] No [ ]
8) Where did you hear it from?	Response: a) Peers

	b) Youth clubs c) Radio d) Posters
9) Do you think a person who is infected with the AIDS virus can look and feel well and healthy?	Yes [ ] No [ ]
B) AWARENESS ON HIV TREATMENT	
10) Are you aware of available drugs which can lengthen the life of a person with the AIDS virus?	Yes [ ] No [ ]

SECTION 3: LEVEL OF KNOWLEDGE ON HIV			
11) How do you scale your level of knowledge on			
a) HIV transmission	Low	Moderate	High
	1	2	3

KNOWLEDGE ON HIV TESTING	
12) Which sample is used for testing HIV?	a) blood b) Saliva c) don't remember
13) If yes in question (10); can you please mention the one you know?	a) ARV b) I don't know

SECTION 4: HIV SERVICE SEEKING BEHAVIOR	
14) Have you ever tested for HIV?	Yes [ ] No [ ]

Appendix IV: Questionnaire – Swahili Version

<table>
<tr><th colspan="3">AGYWs</th></tr>
<tr><td colspan="3">SEHEMU 1: TABIA ZA KIJAMII NA KIDEMOGRAFIA</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td colspan="2">1) Je mhojiwa ana umri gani?</td><td>2) Jinsia ya mhojiwa</td></tr>
<tr><td colspan="2">Umri [ ]</td><td>a) Mwanaume [ ]
b) Mwanamke [ ]</td></tr>
<tr><td colspan="2">3) Kiwango cha Elimu</td><td>4) Unaishi wapi?</td></tr>
<tr><td colspan="2">a) Hakuna [ ]
b) Elimu ya msingi [ ]
c) Elimu ya sekondari [ ]
d) Cheti/ Stashahada [ ]
e) Shahada [ ]</td><td>a) Nyumbani ( )
b) Nimepanga ( )
c) Nyumba yangu ( )</td></tr>
<tr><td colspan="3">5) Unaishi na nani?
a) Mzazi/Mlezi ( )
b) Peke yangu ( )
c) Rafiki/marafiki ( )
d) Ndugu ( )</td></tr>
<tr><td colspan="3">SEHEMU 2: A) UELEWA JUU YA UPIMAJI VVU</td></tr>
<tr><td colspan="2">6) Umewahi kusikia kuhusu virusi vinavyo sababisha Upungufu wa Kinga Mwilini (UKIMWI) vinavyoitwa Virusi Vya Ukimwi (VVU)?</td><td>Ndio [ ]
Hapana [ ]</td></tr>
<tr><td colspan="2">7) Umewahi kusikia kuhusu upimaji wa VVU?</td><td>Ndio [ ]
Hapana [ ]</td></tr>
<tr><td colspan="2">8) Ulisikia kupitia nini?</td><td>Majibu:
a) Elimisha rika [ ]
b) Klabu za vijana [ ]
c) Radio [ ]</td></tr>
</table>

	d) Vipeperushi [ ]
9) Unadhani mtu aliye athirika na virusi vya UKIMWI anaweza kuwa na muonekano mzuri na kujiskia vizuri na mwenye afya?	Ndio [ ] Hapana [ ]
B) UELEWA JUU YA MATIBABU VVU	
10) Je una uelewa juu ya upatikanaji wa dawa zinazoweza kurefusha maisha ya mtu mwenye virusi vya UKIMWI?	Ndio [ ] Hapana [ ]

SECTION 3: KIWANGO CHA UFAHAMU KUHUSU VVU			
11) Unahisi una kiwango gani cha ufahamu kuhusu			
Maambukizi ya VVU	Chini	Kawaida	Juu
	1	2	3

UFAHAMU KUHUSU UPIMAJI WA VVU	
12) Ni sampuli gani hutumika kupima VVU	a) Damu b) Mate c) Sikumbuki
13) Kama jibu ni ndio (10) tafadhali taja dawa inayoongeza maisha	a) ARV b) Sijui

SEHEMU 4: TABIA YA KUHITAJI HUDUMA ZA VVU	
14) Umewahi kupima VVU?	Ndio [ ] Hapan [ ]

Appendix V: Key Informants Interview Guide

Date of the interview: ____/____/2019…… Time: _____

Position of interviewee_____

No. of years in current position_____

I'm Edith Masuki from Muhimbili University of Health and Allied Sciences. I am conducting a study on **"Information, Education and Communication strategy in improving HIV testing and treatment among adolescents aged 15-24 years. A comparative study of Singida Municipal Councils and Manyoni District Councils"** Your knowledge will be very valuable. The interview will take around 30 minutes.

Interview questions

1. What is your view on IEC strategy on improving HIV testing and treatment among AGYWs aged 15-24 years?

2. Do you think the strategy is sufficient to improve HIV testing and treatment among AGYWs aged 15-24 years?
   - If yes, why? If no, why?
3. What are the perceived barriers among AGYWs aged 15-24 years on seeking HIV testing and treatment?

4. What are the facilitators for HIV testing and treatment among AGYWs aged 15-24 years?

5. How can the success be maintained/challenges be eliminated?

6. What is the facility/organization/district role on improving HIV testing and treatment among AGYWs aged 15-24 years?

7. What can be done to scale up seeking HIV testing and treatment services among AGYWs aged 15-24 years?

Thank you for participating in the study

Appendix VI: Key Informant Interview (KII) Guide (Swahili version)

Tarehe ya mahojiano: ____/____/2019…… Time: _____

Nafasi ya anaye hojiwa_____

Idadi ya miaka katika wadhifa wa sasa_____

Utangulizi:

Mimi ni Edith Masuki kutoka Chuo Kikuu cha Afya na Sayansi ya Tiba Muhimbili. Ninafanya utafiti juu ya **"**Mkakati wa Habari, Elimu na Mawasiliano katika kuboresha upimaji na matibabu ya VVU kati ya vijana wenye umri wa miaka 15-24. Utafiti wa kulinganisha wa Manispaa ya Singida na Halimashauri ya wilaya ya Manyoni" Maarifa yako yatakuwa ya thamani sana. Mahojiano yatachukua karibu dakika 30.

1. Una maoni gani juu ya mkakati wa IEC kuhusu kuboresha upimaji na matibabu ya VVU kati ya AGYWs wenye miaka 15-24?
2. Unafikiri mkakati huu unatosha kuboresha upimaji na matibabu ya VVU kati ya AGYWs wenye umri wa miaka 15-24?
   - Kama ndio; kwanini?
   - Kama hapana; unapendekeza njia gani nyingi?
3. Ni vikwazo gani vinavyotambulika kati ya AGYWs wenye umri wa miaka 15-24 kwa kutafuta kupima VVU na matibabu?
4. Vichochezi kupima VVU na matibabu kati ya AGYWs wenye umri wa miaka 15-24?
5. Mafanikio yanaweza kudumishwa / changamoto ziondolewaje?
6. Ni jukumu gani / shirika / wilaya katika kuboresha upimaji na matibabu ya VVU kati ya AGYWs wenye umri wa miaka 15-24?
7. Ni nini kinachoweza kufanywa ili kuongeza upatikanaji wa huduma za kupima VVU na matibabu kati ya AGYWs wenye umri wa miaka 15-24?

Ahsante kwa kushiriki