ASSESSMENT OF COMMUNITY HEALTH WORKERS PERFORMANCE IN TRACKING BACK HIV PATIENTS TO TREATMENT IN KATAVI REGION, TANZANIA

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DEPARTMENT OF ECONOMICS AND COMMUNITY ECONOMIC DEVELOPMENT

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CERTIFICATION

The undersigned certifies that has read and hereby recommends for acceptance by the Open University of Tanzania a dissertation titled: **"Assessment of Community Health Workers Performance in Tracking Back HIV Patients to treatment in Katavi Region, Tanzania"** in partial fulfillment of the requirements for the degree of Master of Art in Monitoring and Evaluation (MAME).

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Date

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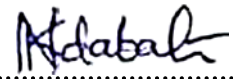
DECLARATION

I, **Katale Iddi Ndabagenga,** do hereby declare that, the work presented in this dissertation is original. It has never been presented to any other University or Institution. Where other people's works have been used, references have been provided. It is in this regards that I declare this work as originally mine. It is hereby presented in partial fulfillment of the requirement for the Degree of Master of Art in Monitoring and Evaluation.



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ABSTRACT

Community Health Workers are well known for their contribution in tracking back HIV patients to treatment. Despite their effort, the extent to which they contribute in tracking back HIV patients to treatment in a low to medium HIV prevalence region such as Katavi (3.8%) is unknown. The aim of this study was to analyze the performance of CHWs in tracking back HIV patient to treatment and examining whether individual and institutional factors associated with their performance are applicable in Katavi region. Methods: Cross-sectional design was used where by questionnaires were administered to both 138 sampled CHWs and 5 key informants (CHW coordinators) to gather required information. The dependent variable was CHWs performance while independent variables were individuals and institutional factors associated with CHWs performance. Logistic regression was used to examine the applicability of factors associated with CHWs performance. Results: The performance level of CHWs was good (77.7%). Individual factors found to be significant applicable were age and education level. education level was more significant (OR 6.25, 95% CI 1.17 - 33.37, p=0.032 for certificate; OR 0.26, 95% CI 0.09 - 0.72, p=0.010 for secondary level) as compared to age (OR 5.09, 95% CI 1.32 - 19.50, p=0.006 for age 26-35 years; OR 0.07, 95% CI 0.00 - 0.68, p=0.036 for above 45 years). Organizational factors found to be significant applicable were working gears (OR 0.33, 95% CI 0.13 - 0.78, p=0.013) and allowance (OR 3.86, 95% CI 1.02 - 14.52, p=0.045 for 80,000 and OR 4.70, 95% CI 1.66 - 13.31, p=0.003 for 100,000). Conclusion: CHWs performance was good (77.7%) but for the sake of eradicating new HIV infection, factors affecting their performance should not be left unchecked.

Keywords: *Community Health Workers, Tracking back HIV patients, HIV prevalence*

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LIST OF ABBREVIATIONS

AIDS	Acquired immune deficiency syndrome
ART	Antiretroviral therapy
CBHS	Community-based health services
CHW	Community health worker
CTC	Care and treatment clinic
HF	Health facility
HIV	Human Immunodeficiency Virus
LTF	Loss to follow-up
MoHSW	Ministry of Health and Social Welfare
NACP	National Aids Control Programs
SDG	Sustainable development goals
UNAIDS	United Nations Program on HIV/AIDS
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Till the end of 2022, approximately 39 million people in the world were living with HIV. Out of that population, approximately 1.5 million people are children aged 0-14 years. In 2022 alone, it is approximated that 1.3 million people were diagnosed with HIV in the globe. In addition to that, 630,000 deaths which were reported in 2022, were associated with HIV (WHO, 2023). In Tanzania, HIV prevalence is estimated at 4.4% where by women are more affected than men population. Regional wise, Zanzibar has lowest prevalence while Njombe has the highest which is estimated at 0.4% and 12.7% respectively. The government but also NGOs have employed a number of both prevention and treatment interventions to address this global disease.

In reducing new HIV infection, UNAIDS established 95-95-95 target where by the first 95 indicates that 95% of HIV patient should be identified, the second 95 stands for 95% of identified HIV patients should be in treatment and the last 95 means 95% of HIV patients in treatment should suppress their viral load. In Tanzania, till 2022, 82.7% of people living with HIV were aware of their status, 97.9% of HIV patients who knew their status have already started ART and 94.3% of patient on ART have suppressed their viral load (THIS, 2022-2023).

Katavi is the region in Tanzania which is located in westside of Tanzania and is estimated to have a population of 1.2 million (Tanzania census, 2022). It consists of three districts namely Mpanda, Tanganyika and Mlele. These districts have a total of 134 health facilities where by 100 are dispensaries, 25 health centers and 9 hospitals

(Tanzania census, 2022). HIV prevalence of this region is at 3.8% (THIS, 2022-2023). Among strategies which are used in addressing prevention of new HIV infection in Katavi is provision of community-based health services (National Operational Guideline for CBHS, 2021).

Community-based Health services is traced back in 1967 during Arusha declaration where by late president Hon Julius Kambarage Nyerere established this to solve various critical issues related to HIV and AIDS, maternal, child and neonatal health, Nutrition, Tuberculosis, Malaria and adolescent sexual and reproductive health. These services are very key to increase turnups of people with various critical health conditions to health facilities (National Operational Guideline for CBHS, 2021). Community health workers (CHWs) are community volunteers whose duties include tracking HIV patients in the community who have not visited heath facilities for picking ART as well as linking newly tested HIV positive clients to care and treatment clinic (CTC).

Since they have a number of duties to execute, their performance specifically in tracking back HIV patients to treatment is not tracked (National Operational Guideline for CBHS, 2021). Due to the importance of UNAIDS target in eradicating HIV new infection and since CHWs are also part of strategies established to achieve this milestone then it is very crucial to know their contribution as well as examining applicability of individual and institutional factors which may affect their performance.

1.2 Problem Statement

Although the government has done a lot to ensure HIV patients are receiving

treatment regularly at health facilities including the use of community-based health workers to track back to treatment missed and loss to follow up patients, but still there is a problem of HIV patients not adhering to treatment. The percentage of HIV patients who have not attended clinic for three months and above (LTF) is estimated at 31% from which only 8% were confirmed dead. The problem of not adhering to treatment by HIV patients may results into hospitalization, treatment failure, increased risk of opportunistic infections and increased chances of new infection prevalence. (Mushy et al., 2023).

That being the case, this study aims on assessing the performance of CHWs in tracking back HIV patients to treatment in Katavi region. Knowing CHWs performance as well as examining applicability of Institutional and individual factors which may affect their performance will inform decision makers on whether to continue employing CHWs in HIV/AIDS and strengthen shortcomings or finding another way to improve HIV treatment outcomes.

1.3 Research Objectives

1.3.1 General Objective

The general objective of this study is to assess the performance of CHWs in tracking back HIV patients to treatment in Katavi region.

1.3.2 Specific Objectives

i. To analyze the performance of CHWs in tracking back HIV patients to treatment in Katavi region
ii. To examine the applicability of individual factors associated with the performance of CHWs in Katavi region

iii. To examine the applicability of institutional factors associated with the performance of CHWs in Katavi region

1.4 Research Questions

i. To what extent are CHWs contributed in tracking back HIV patients to treatment in the study area?

ii. How applicable are individual factors associated with the performance of CHWs in Katavi region?

iii. How applicable are institutional factors associated with the performance of CHWs in Katavi region?

1.5 Significance of the Study

Towards achieving sustainable development goals specifically SDG 3 (Ensure healthy lives), member states committed to achieve the end of AIDS by 2030. In order to reach this milestone, precise strategies should be used to ensure new HIV infections in the community are ended (UNAIDS, 2021). Community-based health services provision as one of the strategies should also be assessed to examine its efficiency. This study will benefit various stakeholders including the government, NGOs, community members and CHWs as well. Information obtained from this study will help the government and non-governmental organizations to make decision whether to continue with CHWs approach and improve their working environment or adapting a new strategy of ensuring retention rate of HIV patients to treatment is increased. On the side of community members and CHWs, this study will provide them with precise HIV service provision approach and improved working environment respectively.

1.6 Limitation of the Study

This study was limited by time and budget. Involving more than one region as well as assessing more factors which can be associated to CHWs performance might result into more precise findings but due to time and financial barriers, these was not be part of the study. To address these limitations, key informants (CHWs coordinators) were engaged to have detailed information.

CHAPTER TWO

LITERATURE REVIEW

2.1 Chapter Overview

This chapter focuses on key terminologies in this study, theories which relate to what is being investigated, literature review, research gap, conceptual framework as well as review on policy which address the study.

2.2 Definition of Key Terms

2.2.1 Community Health Workers

Community health workers are individuals who execute health and social welfare duties voluntarily at community level. These are volunteers who live in the community they serve and receive lower levels of formal education and training than professional health care workers such as nurses and doctors. This human resource group has enormous potential to extend health care services to vulnerable populations, such as communities living in remote areas and historically marginalized people, to meet unmet health needs in a culturally appropriate manner, improve access to services, address inequities in health status and improve health system performance and efficiency (WHO, 2014). The rationale behind their existence is the shortage of trained healthcare practitioners and thus they help in identification of health problems in the community and referring patients to health facilities (National operational guideline for CBHS, 2021).

In this study, community health workers were referred as community members or volunteers who were trained in serving HIV patients by either government or partner organizations using government community health services provision curriculum.

After being trained, these volunteers are normally provided with working gears and monthly working allowance to help them execute assigned responsibilities effectively.

2.2.2 Retention

In HIV/AIDS terms, retention means the condition where by a person enrolled in HIV/AIDS care, routinely attends at care and treatment clinic in accordance with their needs (WHO, 2014). This refers to the state where by patients remain in contact with HIV care services once linked to the clinic for HIV care and treatment (Nicol, 2022). Retention of HIV/AIDS patients stands as the measure of how well health practitioners play their role in providing information and education to HIV patients on the importance of adhering to treatment as the way of eradicating new HIV infection in the community. Tracking back HIV patients into care is very important since it helps in informing patients on their health progress, early identification of treatment failure, provision of enhanced adherence counselling and improving HIV/AIDS treatment outcomes (National guidelines for the management of HIV and AIDS, 2019).

In this study, retention was referred as the percentage of HIV patients successfully tracked back to treatment by community health workers. This percentage shows how committed community health workers are in tracking HIV patients. Retention of less than 75% was termed as poor retention or performance otherwise good.

2.2.3 Missed Appointments and Loss to Follow-Ups

Missed appointments refers to the number of HIV/AIDS patients who missed their appointment of picking ART at CTC for three days hence they fail to use their

medication for three consecutive days. Loss to follow-ups refers to patients who have not attended CTC for three consecutive months and above, thus they fail to use their medications during that time (National guidelines for the management of HIV and AIDS, 2019). Missed appointments and loss to follow-ups are indicators of how well HIV patients adhering to treatment and thus they are used to tell the retention rate of patients to care. Patients who have been confirmed to either picking drugs at other care and treatment clinic or died are excluded in these two categories (Loss to follow-ups and missed appointments) (Moyo et al., 2016).

In this study, missed appointments and loss to follow-ups were taken as HIV patients who did not attend their appointments at health facilities and thus community health workers have to track them back to treatment. Both missed appointments and loss to follow-ups patients are inserted in tracking registers for follow-up.

2.2.4 Tracking Register

Tracking register is a register which is stationed at care and treatment clinic that is used to track patients who have not attended their appointments. This register comprises of individual information of patients including their names, age, sex and geographical locations as well as date of appointment, tracked back date and tracking status. It also contains tracking status which can be either a patient was found and returned to care, not found, died, shifted to another clinic or decided to stop using ART. This is a very useful tool in ensuring patients adhere to treatment since it documents all patients who have not attended clinic at a given period and whether community health worker or facility health worker tracked them back to care (National guidelines for the management of HIV and AIDS, 2019).

In this study, tracking register was defined as a book that comprises of all HIV patients who have not attended their appointments at assigned health facilities, for tracking purposes. This register plays a great role in knowing the number of patients who were tracked back to treatment by CHWs and thus make it possible to make inference on the contribution of community health workers in tracking back HIV patients to treatment.

2.2.5 Individual Factors

These are personal attributes which have direct or indirect influence on performance of CHWs. On other words these are personal factors which can determine the level of performance of CHWs. These factors may be confidentiality, attitude, education level, personality, age, experience and disability status to mention a few (Boon et al., 2012). These are factors which are advised to be controlled early during recruitment of CHWs to ensure acquisition of right CHWs for the task. They are called individual factors because the one who controls them is the person himself rather than the organization or institution where they work (National guidelines for the management of HIV and AIDS, 2019).

In this study, individual factors were referred to personal characteristics of community health workers which may affect their performance. These factors are directly associated with community health worker him/herself and thus they can be controlled during recruitment. This study considered those factors as age, sex, education level, confidentiality and disability status.

2.2.6 Institutional Factors

Institutional factors also known as organizational factors refer to organizational attributes which can influence performance of CHWs. For CHWs to perform as expected, they should be provided with a number of items including working gears, transport allowance, cooperation from health facility and community members, motivation and training related to the task (Boon et al., 2012). They are called institutional factors because the one who controls them is the organization or institution itself (National operational guideline for CBHS, 2021).

In this study, institutional factors were defined as practices set by an organization, institution or community which may affect performance of community health workers in their daily routine. These factors are directly associated with an organization or community where community health worker reside or work and thus, they cannot be controlled by CHWs. This study considered working gears, allowance, training programs as well as health facility and community members cooperation as institutional factors.

2.3 Review of the Theory

Performance theory was used as a guide to assess the performance of CHWs in tracking back HIV patients for treatment in the Katavi region.

2.3.1 Performance Theory

This theory was advocated by Don Elger (2007). The theory forms fundamental concepts in analyzing performance, defining performance criteria and establishing effective performance measures. According to Elger (2007), it is impossible to measure performance when performance criteria are not known. Performance criteria

refer to what is meant by good, average or poor performance. Performance criteria help in knowing the status of performance and what performance measures need to be set to improve performance.

Performance theory points out six components which can be used to define and assess performance. These components are identity, learning skills, knowledge, context, personal factors and fixed factors. Identity being the first component, Elger (2007) explains that as individuals grow professionally, they tend to acquire shared identity of professional community. For example, as a lawyer grows professionally, they tend to join law schools or law societies which eventually improve their performance. Knowledge and learning skills refer to gaining information or facts as the results of attending formal or informal education as well as from experience.

Elger (2007) described context as environment in which a certain task is performed. Tasks are performed in different context for example they can be performed per individual or as a team. This can influence performance. Furthermore, this theory highlighted personal and fixed factors as all factors within an individual control and out of individual control respectively which may influence performance. This theory is very relevant to the study because it details the concept of performance, starting with how to assess performance, including setting performance criteria. It also explains six components that may influence performance in any discipline.

Performance theory has explained performance in general, but this study aimed to assess the performance of CHWs specifically in tracking back HIV patients in treatment and examined the applicability of both institutional and individual factors associated with their performance.

2.4 Empirical Literature Review

2.4.1 Community health workers performance

Mushi et al., (2019) conducted a descriptive cross-sectional study on how Back to Care Initiative (B2CI) has reduced loss to follow- up to clients living with HIV/AIDS in Kongwa District in Dodoma. This study was conducted in six health facilities in Kongwa. Purposive and random sampling techniques were used to obtain 35 key informant and 305 patients living with HIV/AIDS. Stata software was employed to analyze quantitative data while qualitative data were summarized using Atlas.ti software. This study revealed that the use of tracking registers, adherence to counselling and health care worker confidentiality, improve patients' retention to treatment. In addition, this study pointed out CHWs as people who contribute in tracking back patients to treatment. This study is silent on institutional factors which may influence retention of patients to treatment but also the extent to which CHWs contribute.

Brandon, et al., (2020) performed a study which aimed on knowing patients' perspectives on the helpfulness of a community health worker program for HIV care engagement in Tanzania. Two health facilities were selected and 23 HIV/AIDS patients from those facilities were recruited in this study. Qualitative data were collected from selected patients via interviews and data were analyzed through an inductive, team-based qualitative approach. Most participants of the study found this program very helpful and recommended increase of the number of CHWs so they can reach more people living with HIV/AIDS. Despite the information obtained from this study, there is no information on factors that influence CHWs performance.

Abdullateef et al., (2023) examined CHWs commitment to HIV/AIDS control in Africa where by data used were obtained from various databases such as PubMed, ResearchGate, Google Scholar, websites of the Centers for Disease Control and Prevention (CDC) and the Joint United Nations Program on HIV/AIDS (UNAIDS). 22 studies which met the eligibility criteria were taken for analysis. It was concluded that CHWs have contributed much in tracking back HIV/AIDS patients into care which resulted to 20% reduction in the rate of HIV incidence reported in some communities who benefited from them. Again, this study has not taken into account factors which may influence performance of CHWs.

2.4.2 Individual Factors

Davoust et al., (2022) in a study titled "*He Gave Me Spirit and Hope: Client Experiences with the Implementation of Community Health Worker Programs in HIV Care*", examined the individual factors which influenced CHW performance in tracking back HIV patients into treatment. This study was conducted in United States where by qualitative methods were used to know patients' perceptions on CHWs involvement in HIV/AIDS interventions. 30 patients were selected from 6 different HIV/AIDS clinics. This study revealed that CHWs are valuable resources since they are very caring, confidential, positive attitude and are available whenever needed. This study failed to assess the performance of CHWs in tracking back HIV/AIDS patients to treatment.

Rachlis, et al., (2016) did a study on community perceptions on CHWs and their roles in management of HIV, Tuberculosis and Hypertension in western Kenya. Among other motives, this study aimed on exploring community members

perceptions on the way CHWs work as well as factors driving their performance. A sample of 207 community members including 110 individuals living with HIV/AIDS was interviewed. Most respondents identified confidentiality and being knowledgeable as individual factors that influence CHWs performance. This study did not assess CHWs performance in tracking back HIV/AIDS patients to treatment.

A study done by Mushi, et al., (2019) titled "*Reducing Loss to follow-up among Clients Living with HIV through Back to Care Initiative in Kongwa District in Dodoma*" suggested that among other reasons, CHWs individual factors such as age, sex, confidentiality and education level influence their role of bringing back to care HIV/AIDS patients. This study did not highlight institutional factors such as working environment of CHWs which may influence their performance.

2.4.3 Institutional Factors

Association of Nurses in AIDS Care (2021), conducted a study titled "*The Role of Community Health Workers in HIV Care Engagement: A Qualitative Study of Stakeholder Perspectives in Tanzania*". This study aimed on assessing the value of CHWs in supporting HIV care. A qualitative questionnaire was administered on a sample of 48 participants comprised of nurses, CHWs and patients. Study participants especially patients who have met with CHWs frequently, responded that CHWs play a vital role in supporting HIV/AIDS patients adherence to treatment and argued that institutional factors such as allowance and working gears which affect their performance should be improved. One of the shortcomings of this study is the fact that, performance of CHWs was not assessed.

Ngcobo, et al., (2022) studied on roles, barriers, and recommendations for

community health workers providing community-based HIV care in Sub-Saharan Africa where by an aggregative narrative synthesis approach was used to summarize the qualitative studies published between January 1, 2000, and November 6, 2020 in PubMed, CINAHL, PsycINFO, Web of Science, and Google Scholar databases. 17 studies met the selection criteria and were included in the analysis. The study revealed that CHWs are very efficient way of providing education to the community on HIV/ADS, as well as offering referrals and tracking back HIV/AIDS patients to treatment. Furthermore, this study identified institutional factors such as lack of resources, inadequate training and health system challenges as barriers to CHWs performance. This study did not incorporate assessment of CHWs contribution in tracking back HIV/AIDS patients.

Schneider at, al., (2008) conducted a study titled "*Community health workers and the response to HIV/AIDS in South Africa: tensions and prospects*". This study aimed on identifying number of CHWs present in health facilities providing HIV/AIDS care and treatment services as well as pinpointing institutional factors which affect CHWs performance. CHWs were selected at random from 16 identified health facilities. Two rounds of interviewing CHWs were done where by the first round involved interviewing 231 CHWs followed by the second round of 182 CHWs. Schneider at, al., (2008) revealed that there was significance presence of CHWs in South Africa health system but also CHWs were facing a number of institutional factors such as motivation, working gears and relationship between them with HCWs which affected their performance. On other side, this study failed to look on individual factors which may affect CHWs performance but also no assessment on CHWs performance was done.

2.5 Research Gap

Various studies have been done on CHWs contribution in improving HIV patients' retention to treatment in Tanzania but no study has been done on extent to which CHWs contribute, specifically in regions with low to moderate HIV prevalence such as Katavi (3.8%), as well as addressing factors associated with CHWs performance. This study aims on filling that gap.

2.6 Conceptual Framework

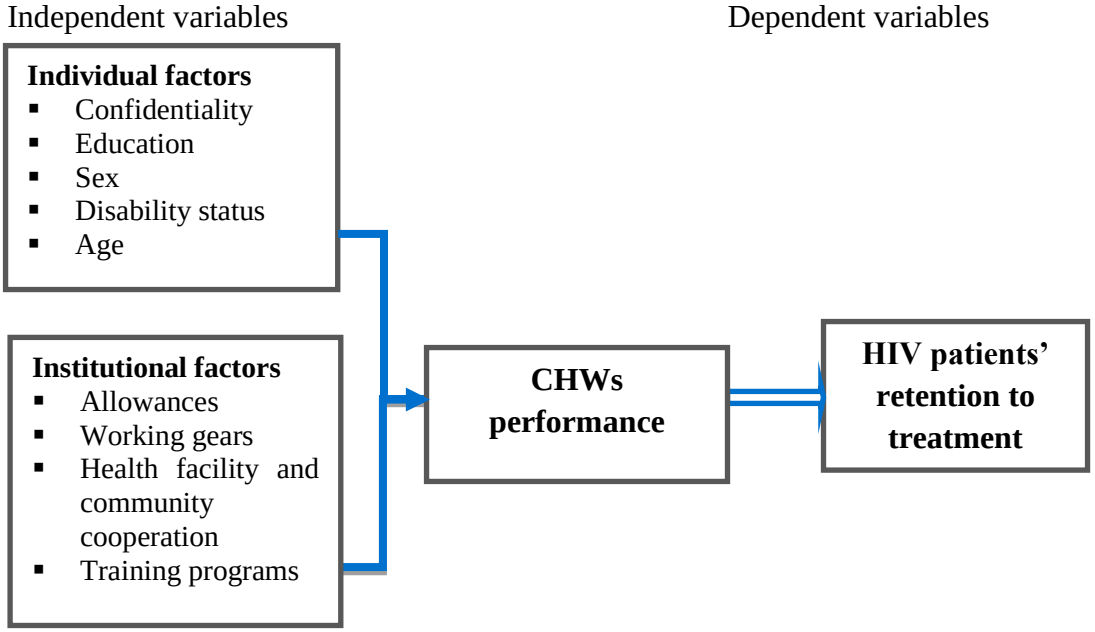

Figure 2.1: Conceptual Framework Illustrating HIV Patients' Retention to Treatment and Factors affecting it

Source: Modified conceptual framework based on Smisha Agarwal (2019).

2.7 Review of Tanzania's Operational Guideline for Community-Based Health Services

Tanzania's operational guideline for community-based health services describes community-based services, including HIV/AIDS, which are provided by CHWs. It details CHWs selection criteria, training package, incentives, service package, mode of service delivery, referral procedures, resource mobilization, and how CHWs' data will be monitored and evaluated. Under monitoring and evaluation, this guideline directs CHW supervisors to monitor CHWs' performance regularly, and their payments should be based on performance. Although the guideline has mentioned the provision of incentives, training, and motivations to CHWs but it is silent on CHWs required education level, frequencies of training on service delivery, and the minimum or maximum amount of allowance or incentives to be provided to CHWs. That being said, institutional and individual factors influencing CHWs performance are not clearly addressed.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Chapter Overview

This chapter describes in details what methods were used to have study findings. It includes study design, area of the study as well as its population, sampling technique and sample size obtained. It also explains how data was collected (both primary and secondary data) and how analysis of data gathered was done.

3.2 Research Design

This study used cross-sectional design where by CHWs performance in tracking back HIV patient to treatment was assessed. Both documentary reviews and interviews were done to obtain data on CHWs performance and factors associated with their performance.

3.3 Scope of the Study

This study aimed on assessing the performance of CHWs in tracking back HIV patients to treatment in Katavi region. It also examined the applicability of both individual and institutional factors associated with CHWs performance. Geographically, this study was conducted at Katavi region targeting health facilities and CHWs assigned in those facilities.

3.4 Study Area

The area of study was Katavi region. Katavi is the region which is located in westside of Tanzania with estimated population of 1.2 million (Tanzania census, 2022). The region occupies an area of 4,752,700 hectares with five councils namely

Mpanda Municipal Council, Nsimbo District Council, Tanganyika District Council, Mlele District Council and Mpimbwe District Council. Agriculture, livestock keeping and fishing sectors employ majority of the population (96%, 0.7% and 0.5% respectively). Other important sectors in the region are forestry, mining and tourism which include mineral deposits, wildlife reserves and water bodies such as Katavi National Park, Nkondwe Waterfalls, Lake Tanganyika and Rukwa Game Reserve.

There are also forest reserve areas which include Inyonga, Msaginya, North East Mpanda, Rungwa, Kabungu, Ugalla River, Mulele Hills and Rungwa River forest reserves, Nkamba and Tongwe West. These resources provide investment opportunities in production, processing and provision of services (socio-economic profile of Katavi region, 2019). A total of 134 health facilities have been established in this region where by 100 are dispensaries, 25 health centers and 9 hospitals. This region has 211 CHWs working in tracking back patients to treatment (Tanzania census, 2022).

This study was done in Katavi because majority of HIV studies are being done in regions with high HIV prevalence (such as Iringa, Mbeya and Njombe with 11.1%, 9.6% and 12.7% respectively) but also no study has been done on extent to which CHWs contribute in tracking back HIV/AIDS patients to treatment, specifically in regions with low to moderate prevalence such as Katavi (3.8%). Furthermore, Katavi was time and cost effective because was where I reside.

Figure 3.1: A Map of Katavi Region

Source: President's Office Regional Administration and Local Government Katavi Region Investment Opportunities (2017).

3.5 Study Population

The study population consisted of 211 CHWs who were responsible for tracking back patients for treatment in the Katavi region. Tracking registers were used to assess CHWs' performance. To gather information on factors associated with CHWs' performance, a questionnaire was developed and administered to CHWs.

3.6 Sample Size

A sample is a finite part or subset of participants drawn from the population in which a given study was conducted for a purpose of drawing conclusions about the population targeted (Jeovany Martínez-Mesa, 2016). Since population size is known

then below Yamane's formula was employed.

$$\mathbf{n} = \frac{\mathbf{N}}{\mathbf{1+N(e)^2}}$$

Whereby;

N is the population size (Number of CHWs tracking HIV patients back to treatment in Katavi region = 211).

e is the margin error (set at 5%=0.05).

n is the sample size.

Mathematically:

$$n = \frac{N}{1+N(e)^2} = \frac{211}{1+211(0.05)^2} = \frac{211}{1+0.5275} = 138$$

Thus, the sample size which was used in this study was 138 CHWs.

3.7 Sampling Technique

Sampling methods can be probabilistic or non-probabilistic. Probabilistic sampling refers to a type of sampling where by every unit in a study population has an equal chance to be selected to represent other units while non probabilistic sampling is characterized by researcher's choice or judgement. Some of techniques used in probabilistic sampling are stratified sampling, simple random sampling, systematic sampling and cluster sampling while non probabilistic sampling includes purposive and judgmental sampling (Martínez Mesa, 2016).

This study employed purposive and simple random sampling. Simple random sampling was used to acquire representative CHWs (unit of analysis) while purposive sampling was used to find key informants. 138 Sampled CHWs were found by listing all 211 CHWs from all 5 councils in a spreadsheet and then random

numbers were assigned to each unit. The first 138 units with the smallest random numbers were taken as a sample. Purposive sampling was used to find people who are more knowledgeable on the subject matter. Since CHWs are being supervised by council CHWs coordinators (5 coordinators), thus these coordinators were taken as key informants. All councils were involved because CHWs from different councils may face different working environment and thus responses may vary from one council to the other.

3.8 Variables and Measurement Procedures

Below is the summary of variables and data sources that were used to collect information and how these variables were measured.

Table 3.1: Summary of Data Sources, Variables and Their Measurements

Name of the Variable	Data source	Measurement of the Variable
Dependent		
CHWs performance	Secondary data from Tracking register	Proportion of HIV/AIDS patients tracked back to treatment by CHWs. $\textbf{CHWs performance} = \frac{\textit{Tracked back by CHWs}}{\textit{Total to be tracked}}$
HIV patients' retention to treatment	Secondary data from Tracking register	Retention was rated depending on CHWs performance percentages as shown below <75% — Poor retention/performance >=75% — Good retention/performance
Independent		
Individual factors	Primary data from questionnaire	• Confidentiality • Education/knowledge • Sex • Disability status • Age
Institutional factors	Primary data from questionnaire	• Allowances • Working gears • Health facility and community cooperation • Training programs

3.9 Data Collection Methods

3.9.1 Primary Data

Primary data refers to the first-hand facts collected by the researcher himself (Ajayi, 2023). In this study, two questionnaires were developed to collect primary data. The first questionnaire aimed on acquiring information from sampled 138 CHWs on individual and institutional factors associated with CHWs performance while the second questionnaire focused on acquiring detailed information from 5 key informants (Council CHWs coordinators).

Survey: Survey refers to the collection of information from a sample of individuals through their responses to questions and then analyzing their answers (Marco Di Zio, 2016). A well-prepared questionnaire for CHWs was uploaded into Kobo collect application to collect information from all 138 sampled CHWs. One-on-one interviews were done to select CHWs and their responses were inserted into the application. Mobile application (Kobo collect) was used instead of paper-based questionnaire to easier data entry exercise.

Key Informant Interview: Council CHWs coordinators were used as key informants. These coordinators were engaged because they have detailed information on CHW's roles, responsibilities and challenges they are facing in their daily routine. Thus, face-to-face interviews were done using a questionnaire inserted into Kobo collect application to collect information from all 5 available coordinators on education level and average age of CHWs as well as applicability of both individual and institutional factors associated with CHWs performance.

3.9.2 Secondary Data

Secondary data are facts that have already been collected by someone else and that have already been passed through the statistical process (Ajayi, 2023). In this study, secondary data was obtained from HIV patients tracking registers available at health facilities. A total number of HIV patients who were tracked back to treatment by CHWs was compared with a total number of patients to be tracked by CHWs in the past six months to tell CHWs' performance.

3.10 Data Analysis

Quantitative data was analyzed using STATA version 14. Descriptive analysis was used to analyze CHWs demographic data, health facilities information and CHWs performance while qualitative data was analyzed using content analysis. Content analysis is a research method used to determine the presence of certain words, themes or concepts within some given qualitative data. Using content analysis, researchers can quantify and analyze meanings and relationships of such concepts. Content analysis was used in analyzing data from key informants.

Logistic regression analysis is a data analysis method that uses mathematics to find the relationships between data variables (independent variables and dependent variable). It then uses this relationship to predict the value of one of those variables based on the other. Unlike linear regression whose dependent variable is metric variable, dependent variable in logistic regression is dichotomous variable (variable which has only two values such as success and failure) (Robert Riffenburgh, 2020). Below is the equation for logistic function.

$$f(z) = \frac{1}{1 + e^{-z}}$$

Whereby;

Z is a linear regression

Logistic regression was performed using STATA application to examine applicability of individual and institutional factors associated with CHWs performance in Katavi region. A p-value of less than 0.05 was considered significant.

3.10.1 Validity

Data validation refers to an activity that aims on verifying whether the value of a data item comes from the given (finite or infinite) set of acceptable values (Marco Di Zio, 2016). To ensure this study captures valid data, pre testing of the questionnaire was used to identify gaps in questions formulation. But also, in making sure collected data are valid or accurate, validation and logical checks were used. Validation and logical checks are tools present in Kobo collect application which helps in ensuring data entered are valid and accurate.

Validation checks were set for discrete variables such as age and CHWs performance while logical checks were employed in questions whose responses affect the other. These checks helped much in ensuring validity of collected data.

3.10.2 Reliability

Data is considered reliable when it reflects the commonly accepted characteristics of various data items, compliant to user requirements and resembles to reality (Nachman Agmon, 2016). To ensure data reliability in this study, only designed

questionnaire developed for this study was used to gather information. But also, since valid data should come from data source or individuals who are well informed on the topic, thus data collected were from CHWs and CHWs coordinators. CHWs were involved because they are the ones who track back HIV patients to treatment while the rationale of engaging coordinators was the fact that they are well aware on regulations guiding community health services provision as well as factors affecting CHWs performance. Collecting information from both CHWs and their supervisors (CHWs coordinators) played a great role in ensuring reliability of data collected.

3.10.3 Ethical Considerations

In conducting this study ethics was also considered. Before data collection, permission from authorities governing health facilities and respondents' consent was asked. Respondents were not asked their names when interviewed. But also, information collected was not exposed to third parties. Information obtained was treated with high level of confidentiality.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 Overview

This chapter consists of data analysis, presentation, and discussion. In this chapter, detailed explanations of findings related to objectives are highlighted.

4.2 Participants' Information

Out of 138 sampled CHWs, most of them (42.8%) were from age category 36-45. Majority of the participants were males (56.5%), had primary level of education (47.8%) and were from dispensary (55.1%). In addition to that, all sampled 138 CHWs attended comprehensive training in provision of community-based health services, only 8.7% of participants had disabilities, majority stored documents with patients details at home (83.3%) and were equipped with all required working gears (51.45%).

These findings are supported by Ngcobo et al., (2022) in the study titled "Roles, barriers and recommendations for community health workers providing community-based HIV care in Sub-Saharan Africa". The purpose of this study was to identify CHWs demographic information, responsibilities, challenges and suggesting ways to improve their working environment for betterment of community-based health services provision. This study revealed that majority of CHWs were adult, male and had low level of education. Table 4.1 summarizes the information of participants involved in this study.

Table 4.1: Participants Information (n=138)

Variables	n (%)
Age (years)	
18-25	28 (20.2)
26-35	31 (22.5)
36-45	59 (42.8)
45+	20 (14.5)
Sex	
Male	78 (56.5)
Female	60 (43.5)
Education level	
Primary	66 (47.8)
Secondary	42 (30.4)
Certificate	30 (21.8)
Number of sampled CHWs per facility level	
Dispensary	76 (55.1)
Health centre	55 (39.86)
Hospital	7 (5.07)
CHW's disability status	
Disabled	12 (8.7)
Not disabled	126 (91.3)
Attended CHW comprehensive training	
Yes	138 (100)
No	0 (0)
Confidentiality of patient's details	
Stores documents at health facility	13 (9.4)
Stores at home	115 (83.3)
No specific area for storing documents	10 (7.3)
Availability of working gears	
Yes	71 (51.45)
No	67 (48.55)

Source: Research data, (2024)

4.3 Health Facilities Information

Health facilities refer to buildings where patients visit for health checkups and treatment services including HIV/AIDS. All sampled 138 CHWs came from these health facilities. Out of 67 health facilities, majority (67.2%) were dispensaries. Most of sampled CHWs (94.93%) reside more than 500 meters away from assigned health facilities. Furthermore, majority of CHWs rated health facilities and community cooperation as somehow cooperative (92.8% and 90.6% respectively).

The same was found by Schneider at, al., (2008) who conducted a study titled

"*Community health workers and the response to HIV/AIDS in South Africa: tensions and prospects*". The aim of this study was to check the presence of CHWs as well as their contribution in improving HIV/AIDS outcomes. This study revealed that CHWs were not receiving adequate cooperation from both healthcare workers at health facilities and community members. According to Schneider at, al., (2008), this inadequate cooperation has led to poor performance of CHWs in their daily routine. Table 4.2 summarizes the information of participants involved in this study.

Table 4.2: Health Facilities Information

Variables	Total (%)
Number of facilities per level	
Dispensary	45 (67.2)
Health centre	19 (28.3)
Hospital	3 (4.5)
Total number of CHWs in sampled facilities	
Dispensary	152 (38.1)
Health centre	219 (54.9)
Hospital	28 (7.0)
Distance from HF to CHW's residence	
200 – 500 meters	7 (5.07)
More than 500 meters	131 (94.93)
Health facility cooperation to CHWs	
Not cooperative at all	8 (5.8)
Somehow cooperative	128 (92.8)
Very cooperative	2 (1.4)
Community members cooperation to CHWs	
Not cooperative at all	11 (7.9)
Somehow cooperative	125 (90.6)
Very cooperative	2 (1.5)

Source: Research data, (2024).

4.4 Performance Level of CHWs in Tracking back HIV Patients to Treatment

To know the performance level of CHWs in tracking back HIV patients to treatment, tracking registers were employed where by total number of HIV patients required to be tracked by CHWs together with tracked HIV patients in the past six months (February – July 2024) was identified. Below formulae was used to calculate

performance level of CHWs.

$$\textbf{CHWs performance} = \frac{\boldsymbol{Tracked\ back\ by\ CHWs}}{\boldsymbol{Total\ to\ be\ tracked}} = \frac{\mathbf{9,114}}{\mathbf{11,730}} = \mathbf{0.777}$$

Thus, performance of CHWs in tracking back HIV patients to treatment was 77.7%. According to performance scale, this performance falls under good performance category (>=75%). This means that despite various challenges faced by CHWs in executing daily duties, but still their performance is good. This finding was the same as what Mushi et al., (2019) in a study conducted in Kongwa district in Dodoma Region, on how Back to Care Initiative (B2CI) has reduced loss to follow- up to clients living with HIV/AIDS. This study revealed that CHWs performance was good and among reasons identified were the use of tracking registers, patient's adherence to counselling and health care workers confidentiality.

CHWs were pointed out as people who contribute more in tracking back patients to treatment. The same was found by Brandon et al., (2020) in a study which aimed on knowing patients' perspectives on the helpfulness of community health worker program for HIV care engagement in Tanzania. Most participants of this study responded that the program was very helpful and due to good performance of community workers, they recommended increase of the number of CHWs so they can reach more people living with HIV/AIDS. Also, Abdullateef et al., (2023) in a study titled "CHWs commitment to HIV/AIDS control in Africa" concluded that CHWs have contributed much in tracking back HIV/AIDS patients into treatment which resulted to 20% reduction in the rate of HIV incidence reported in some communities who benefited from them.

Also, the five interviewed CHWs coordinators (key informants) revealed that in the past six months (February – July 2024), CHWs performance was in good performance category (75.6%). One of the senior CHW coordinator stated that "*Since the introduction of community-based services provision approach in Katavi region, CHWs particularly in the area of tracking back HIV patients to treatment have been doing a good job in reaching out lost patients who are located in remote areas"*. Figure 4.1 shows the performance level of CHWs in tracking back HIV patients to treatment.

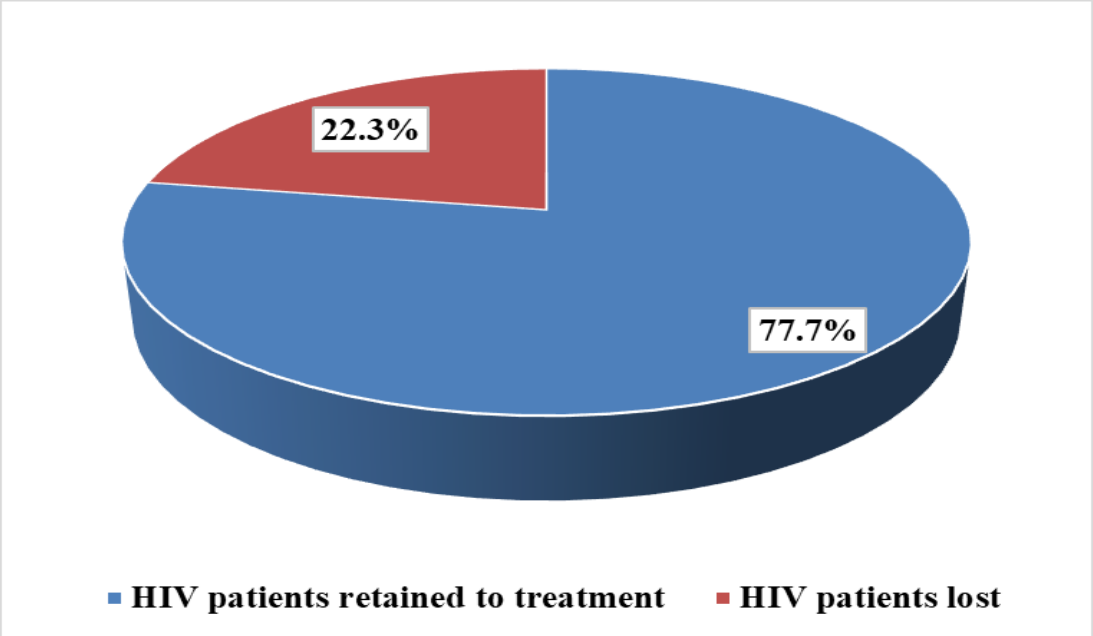

Figure 4.4: Performance Level of CHWs in tracking back HIV Patients to Treatment

4.5 Applicability of Individual Factors Associated with Performance of CHWs

CHWs individual factors such as confidentiality, education level, sex, disability status and age were examined to check whether they were significantly applicable with CHW's performance. Logistic regression analysis was performed using Stata

software to accomplish this task. Two individual factors (age and education level) were found to be significantly applicable; education level being more significant. Young CHWs were more likely to have good performance compared to old CHWs (OR 5.09, 95% CI 1.32 - 19.50, p=0.006 for age 26-35 years; OR 3.35, 95% CI 1.08 - 10.41, p=0.036 for age 36-45 years; OR 0.07, 95% CI 0.00 - 0.68, p=0.036 for those aged above 45 years).

The reason behind this might be the fact that young people are flexible in moving to remote areas where some HIV patients reside but also can adapt to new knowledge quickly as compared to old CHWs. When it comes to education, participants (CHWs) with certificate level were found to be more likely to have higher performance as compared to others with secondary education (OR 6.25, 95% CI 1.17 - 33.37, p=0.032 for certificate; OR 0.26, 95% CI 0.09 - 0.72, p=0.010 for secondary education). This might be due to the knowledge they have on HIV/AIDS as well as their higher convincing power than other CHWs.

The study done by Mushi et al., (2019) titled “Reducing Loss to follow-up among Clients Living with HIV through Back to Care Initiative in Kongwa District in Dodoma” also support this finding. Among other issues, this study examined individual factors affecting CHWs performance and concluded that individual factors associated with CHWs performance included age, sex, confidentiality and education level influenced their role of bringing HIV patients back to treatment. The same was found by Davoust et al., (2022) in a study titled “He Gave Me Spirit and Hope: Client Experiences with the Implementation of Community Health Worker Programs in HIV Care”. This study was conducted in United States where by qualitative

methods were used to know patients' perceptions on CHWs involvement in HIV/AIDS interventions. It was revealed that, performance of aged CHWs and CHWs with low level of education was low as compared to others.

In addition to that, all 5 CHWs coordinators who were involved in this study as key informants, agreed that individual factors which are associated with CHWs performance are also applicable in Katavi region. In response to the question on whether CHWs individual factors are applicable in Katavi, one coordinator responded that "In my council, CHWs who are form four leaver and above together with young CHWs are performing well and are quick learners compared to those with standard seven education as well as aged ones". Table 4.2, shows the results of the logistic regression analysis done using Stata software to assess the applicability of individual factors associated with performance of CHWs.

Table 2.3: Effects of Individual factors on CHWs Performance

		Performance		
Variables	**Target**	**Actual (%)**	**OR (95% CI)**	**p-value**
Age (years)				
18-25	412	308 (74.8)	Ref	Ref
26-35	452	364 (80.5)	5.09 (1.32 - 19.50)	0.006
36-45	806	655 (81.3)	3.35 (1.08 - 10.41)	0.036
45+	285	192 (67.4)	0.07 (0.00 - 0.68)	0.022
Sex				
Male	1,101	885 (80.4)	Ref	Ref
Female	854	634 (74.2)	0.63 (0.25 - 1.61)	0.341
Education level				
Primary	952	746 (78.4)	Ref	Ref
Secondary	590	415 (70.3)	0.26 (0.09 - 0.72)	0.010
Certificate	413	358 (86.7)	6.25 (1.17 - 33.37)	0.032
Disability status				
Disabled	176	146 (83)	Ref	Ref
Not disabled	1,779	1,373 (77.2)	2.27 (0.42 - 12.11)	0.334
Confidentiality				
Stores docs at HF	174	128 (73.6)	Ref	Ref
Stores at home	1,637	1,272 (77.7)	1.90 (0.40 - 9.03)	0.418
No specific area	144	119 (82.6)	12.55 (0.81 - 193.36)	0.070

Source: Research data, (2024)

4.6 Applicability of Institutional Factors Associated with Performance of CHWs

Institutional factors (including allowances, working gears, training programs together with cooperation from health facilities and community members) which were said to have association with CHWs performance were also examined to check their applicability in Katavi region. Two institutional factors (working gears and allowance) were found significant applicable. Parameters for working gears were OR 0.33, 95% CI 0.13 - 0.78, p=0.013. This implies that CHWs who were supplied with all required working gears (bag, bicycle, registers, raincoats, rainboots etc) were more likely to have higher performance (85.1%) than other CHWs with inadequate gears (70.2%).

It was also found that CHWs who receive higher allowances tend to perform well as compared to others who receive low rates (OR 3.86, 95% CI 1.02 - 14.52, p=0.045 for 80,000 and OR 4.70, 95% CI 1.66 - 13.31, p=0.003 for 100,000). Also, key informants in this study responded the same. This is very obvious finding because CHWs need both working gears as well as reasonable allowance to facilitate their daily routines; therefore, performance of well-paid and equipped CHWs can hardly resemble to other CHWs.

This finding is in line with the study done by Association of Nurses in AIDS Care (2021) titled “The Role of Community Health Workers in HIV Care Engagement: A Qualitative Study of Stakeholder Perspectives in Tanzania”. This study aimed on assessing the value of CHWs in supporting HIV care. In this study, it was revealed that CHWs who are well equipped with working gears were good performers as

compared to other CHWs. Another study done by Ngcobo et al., (2022) which aimed on identifying roles, barriers and recommendations for community health workers providing community-based HIV care in Sub-Saharan Africa, pointed out low allowance and motivation to CHWs affect their performance.

But also, Schneider, at, al., (2008) conducted a study titled “Community health workers and the response to HIV/AIDS in South Africa: tensions and prospects”. This study aimed on identifying number of CHWs present in health facilities providing HIV/AIDS care and treatment services as well as pinpointing institutional factors which affect CHWs performance. The study identified lack of motivation and working gears as factors which affect CHWs performance. All these previous studies emphasized on equipping CHWs with all required working gears as well as providing them with motivation allowance to enable them executing their duties effectively. Table 4.3, shows the results of the logistic regression analysis of applicability of institutional factors associated with performance of CHWs.

Table 4.4: Applicability of Institutional Factors Associated with CHWs Performance

Variables	Performance Target	Actual (%)	OR (95% CI)	p-value
Working gears presence				
Yes	981	835 (85.1)	Ref	Ref
No	974	684 (70.2)	0.33 (0.13 - 0.78)	0.013
Allowance				
40,000	492	323 (65.7)	Ref	Ref
80,000	266	214 (80.5)	3.86 (1.02 - 14.52)	0.045
100,000	1,197	982 (82)	4.70 (1.66 - 13.31)	0.003
HF cooperation				
Not cooperative	115	96 (83.5)	Ref	Ref
Somehow	1,810	1,400 (77.3)	0.22 (0.01 - 2.68)	0.237
Very cooperative	30	23 (76.7)	2.1 (0.03 - 119.46)	0.709
Community cooperation				
Not cooperative	146	125 (85.6)	Ref	Ref
Somehow	1784	1,374 (77)	0.26 (0.04 - 1.61)	0.151
Very cooperative	25	20 (80)	0.04 (0.00 - 2.72)	0.135
Attended CHW's training				
Yes	1,828	1,419 (77.6)	Ref	Ref
No	127	100 (78.7)	1.47 (0.28 - 7.68)	0.646

Source: Research data, (2024).

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Overview

This study intended to know the extent to which CHWs contribute in tracking back HIV patients to treatment as well as applicability of individual and institutional factors associated with their performance in Katavi region. Findings of this study help to know whether is reasonable to use CHWs in tracking back HIV patients to treatment and whether individual and institutional factors affecting CHWs performance are applicable in Katavi region so that they can be looked on for improvement.

5.2 Conclusion

5.2.1 To Analyze the Performance of CHWs in Tracking back HIV Patients to Treatment in Katavi Region

This study found that CHWs contribute by 77.7% in tracking back HIV patients to treatment. This means that in every ten lost HIV patients, CHWs were able to track back to treatment seven patients. According to performance criteria, this performance fall under good performance category (>=75%). Therefore, despite presence of some individual and institutional factors that was associated with CHWs performance, CHWs managed to perform well.

5.2.2 To Examine the Applicability of Institutional Factors Associated with The Performance of CHWs in Katavi Region

Individual factors particularly age and education level which affect CHWs performance were found applicable in Katavi region. This means that performance of

young CHWs was better than aged CHWs. But also, when it comes to education level, CHWs with higher education were performing well as compared to other CHWs. The reason behind this might be the fact that young CHWs together with CHWs with high level of education are more likely to be quick learners and flexible as various studies suggested.

5.2.3 To Examine the Applicability of Institutional Factors Associated with The Performance of CHWs in Katavi Region

Two institutional factors (allowance and working gears) which affect CHWs performance were also applicable in Katavi region. CHWs who were well paid performed well as compared to those received less. But also, CHWs who were equipped with all required working gears were able to accomplish their responsibilities better than others. Just like other studies suggested, institutional factors such as allowance and working gears were taken by CHWs as motivations and thus they affect performance.

5.3 Recommendations

5.3.1 To analyze the performance of CHWs in tracking back HIV patients to treatment in Katavi region.

Since CHWs contribute much in tracking back HIV patients to treatment, majority of interviewed CHWs coordinators suggested that regional authorities can consider increasing the number of CHWs in needy areas so as to increase the retention rate of HIV patients to treatment and eventually decrease HIV prevalence rate in Katavi region and in Tanzania at large. The same was recommended by Brandon et al., (2020) who performed a study which aimed on knowing patients' perspectives on the

helpfulness of a community health worker program for HIV care engagement in Tanzania.

5.3.2 To Examine the Applicability of Institutional Factors Associated with The Performance of CHWs in Katavi Region

Due to the fact that CHW's individual factors such as age and education level can be controlled during recruitment, interviewed CHWs coordinators recommended that authorities responsible in CHWs recruitment (especially council health management team) should consider these factors during recruitment. But also, for the purpose of sustainability, coordinators suggested incorporation of required CHWs age range and education level in national guideline for community health services provision.

5.3.3 To Examine the Applicability Of Institutional Factors Associated with the Performance of CHWs in Katavi Region

But also, organizational factors (for instance allowance and working gears) which affect CHWs performance should be addressed. CHWs coordinators directed this issue to ministry of health to set a reasonable amount of CHWs allowance to be paid per month by all partner organizations as well as generating a standard working gears package to be provided to CHWs soon after completing comprehensive CHWs training.

5.4 Area for Further Studies

Further studies should focus on knowing also the contribution of health care practitioners in tracking back HIV patients to treatment. Knowing this will help to make a better comparison on performance of healthcare workers versus CHWs and draw conclusion on whether to concentrate more on CHWs or not for effective results.

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APPENDICES

Appendix i: Questionnaire for CHWs

My name is Katale Iddi Ndabagenga a student from Open University of Tanzania pursuing a Masters of Arts in Monitoring and Evaluation. I am conducting research on the assessment of community health workers performance in tracking back HIV patients to treatment in Katavi region, Tanzania. The findings from this study will help in increasing retention of HIV patients to treatment. You have been selected as one of the participants in this study. Respondent's names will not be collected, and data will only be used for intended purposes. Participation for this study is entirely voluntary. If you decide to participate, the interview will take about 10-15 minutes.

Agree…….1 (Proceed) Decline ……..2 (End)

Questionnaire ID…….

Name of facility……

Health facility level

i. Dispensary
ii. Health center
iii. Hospital

Specific objective 1: To analyze the performance of CHWs in tracking back HIV patients to treatment in Katavi region

1. What is the average number of HIV clients you track back to care per month?

   …….....

What is the average number of HIV clients you are required to track back to treatment per month? …….....

Specific objective 2: To examine the applicability of institutional factors associated with the performance of CHWs in Katavi region

3. Sex

i. Male

ii. Female

4. Age …….

i. 18 – 25

ii. 26 – 35

iii. 36 – 45

iv. 45+

5Highest education level

i. Primary education

ii. Secondary education

iii. Certificate

iv. Diploma

v. Degree and above

6. Do you have any disability?

i. Yes (If Yes specify…….)

ii. No

7. Average distance from your residence to area of work

i. Less than 200 meters

ii. 200 – 500 meters

iii. More than 500 meters

8. Where do you store documents with patient's details

i. At health facility locked cupboards

ii. At home

iii. No specific area for storing documents

9. How many CHWs in this facility track patients in the community …….

10. How often do you track your performance in order to identify your progress?

i. Very often

ii. Rarely

iii. Never

Specific objective 3: To examine the applicability of institutional factors associated with the performance of CHWs in Katavi region

11. Do you have all working gears required to accomplish the role?

i. Yes

ii. No

12. If No, please specify missing gears

……

13. What amount are you being paid as working/motivation allowance?.....

14. Frequencies of receiving working/motivation allowance

i. Monthly

ii. Quarterly

iii. Semi annual

iv. No specific time

15. Who is responsible in paying working/motivation allowance?

i. Respective health facility

ii. Partner organizations

iii. Local government authorities

iv. Don’t know

16. So far, is working allowance sustainable (occurs after every specific time)?

i. Yes

ii. No

17. To whom are monthly/quarterly reports sent to?

i. Health facility in charge

ii. Council CHWs coordinator

iii. Partner organizations

iv. No specific reporting lines

18. Have you ever received feedback from your supervisor on your performance?

i. Yes

ii. No

19. If yes how useful was the feedback helping you to improve your performance?

i. Very usefully

ii. Somehow useful

iii. Not useful

20. How do you rate health facility cooperation in executing your daily duties?

i. Very cooperative

ii. Somehow cooperative

iii. Not cooperative at all

21. How do you rate community members cooperation in executing your daily duties?

i. Very cooperative
ii. Somehow cooperative
iii. Not cooperative at all

22. How do you rate partner organization support in executing your daily duties?

i. Very supportive
ii. Somehow supportive
iii. Not supportive at all

23. Have you ever attended a comprehensive CHWs training?

i. Yes
ii. No

24. Who was responsible in accommodating the training?

i. Government
ii. Partner organization
iii. Don't know

25. What do you think should be done to improve your performance?

i. Refresher trainings should be available
ii. Better access to resources
iii. Better working/motivation allowance
iv. Others (Specify)……

Thank you for participating in this study

Appendix ii: Questionnaire for Key Informants (Council CHWs Coordinators)

My name is Katale Iddi Ndabagenga a student from Open University of Tanzania pursuing a Masters of Arts in Monitoring and Evaluation. I am conducting research on the assessment of community health workers performance in tracking back HIV patients to treatment in Katavi region, Tanzania. The findings from this study will help in increasing retention of HIV patients to treatment. You have been selected as one of the participants in this study. Respondent's names will not be collected, and data will only be used for intended purposes. Participation for this study is entirely voluntary. If you decide to participate, the interview will take about 10-15 minutes.

Agree…….1 (Proceed) Decline ……..2 (End)

Questionnaire ID……. Name of Council ……..

Specific objective 1: To analyze the performance of CHWs in tracking back HIV patients to treatment in Katavi region

1. What is the average number of HIV clients tracked back to treatment by CHWs per month at your council?.....
2. What is the average number of HIV clients are required to be tracked back to treatment by CHWs at your council per month?.....

Specific objective 2: To examine the applicability of institutional factors associated with the performance of CHWs in Katavi region

3. How many CHWs in this council track patients in the community? …….
4. What is the level of education of majority of these CHWs?

   …….

5. Are there CHWs with disability? (Yes/No)……
6. What is the average age of CHWs working in the community?.....
7. What is the average distance (in Kms) from CHWs localities to health facility?.....
8. Do you believe CHWs individual factors such as age, sex, disability status and education level affect their performance? (Yes/No) .....

If Yes/No please clarify…….

9. On a scale of 1 to 5, how applicable are individual factors on CHWs performance at your council?.....
10. What do you think should be done to control negative impacts of individual factors on CHWs performance at your council?

.....……

…….

Specific objective 3: To examine the applicability of institutional factors associated with the performance of CHWs in Katavi region

11. Are current working CHWs received comprehensive training package on service delivery? (Yes/No)…….

    If No please state the reason……..
12. Are CHWs provided with all required working gears (such as T-shirts, boots, raincoats and registers)? Yes/No……..
13. If No please state the reason……..
14. Is CHWs allowance rate known and paid after every fixed interval (i.e weekly/monthly/quarterly)? Yes/No……

If No please state the reason……..

15. On a scale of 1 to 5, how do you rate health facility and community cooperation with CHWs in their daily routine? .....
16. Do you believe institutional factors such as training, allowance, working gears as well as community and health facility cooperation affect CHWs performance? (Yes/No) .....

    If Yes/No please clarify……..

13. On a scale of 1 to 5, how applicable are institutional factors on CHWs performance at your council?.....
14. What do you think should be done to control negative impacts of institutional factors on CHWs performance at your council? .....

Thank you for participating in this study

MANUSCRIPT

ASSESSMENT OF COMMUNITY HEALTH WORKERS PERFORMANCE IN TRACKING BACK HIV PATIENTS TO TREATMENT IN KATAVI REGION, TANZANIA

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ABSTRACT

Background: *Community Health Workers are well known for their contribution in tracking back HIV patients to treatment. Despite their effort, the extent to which they contribute in tracking back HIV patients to treatment in a low to medium HIV prevalence region such as Katavi (3.8%) is unknown. The aim of this study was to analyze the performance of CHWs in tracking back HIV patient to treatment and examining whether individual and institutional factors associated with their performance are applicable in Katavi region.* ***Methods:*** *Cross-sectional design was used where by questionnaires were administered to both 138 sampled CHWs and 5 key informants (CHW coordinators) to gather required information. Logistic regression was used to examine the applicability of factors associated with CHWs performance.* ***Results:*** *The performance level of CHWs was good (77.7%). Individual factors found to be significant applicable were age and education level. education level was more significant (OR 6.25, 95% CI 1.17 - 33.37, p=0.032 for certificate; OR 0.26, 95% CI 0.09 - 0.72, p=0.010 for secondary level) as compared to age (OR*

5.09, 95% CI 1.32 - 19.50, p=0.006 for age 26-35 years; OR 0.07, 95% CI 0.00 - 0.68, p=0.036 for above 45 years). Organizational factors found to be significant applicable were working gears (OR 0.33, 95% CI 0.13 - 0.78, p=0.013) and allowance (OR 3.86, 95% CI 1.02 - 14.52, p=0.045 for 80,000 and OR 4.70, 95% CI 1.66 - 13.31, p=0.003 for 100,000). ***Conclusion:*** *CHWs performance was good (77.7%) but for the sake of eradicating new HIV infection, factors affecting their performance should not be left unchecked.*

Keywords: Community Health Workers, Tracking back HIV patients, HIV prevalence

INTRODUCTION

Till the end of 2022, approximately 39 million people in the world were living with HIV. Out of that population, approximately 1.5 million people are children aged 0-14 years. In 2022 alone, it is approximated that 1.3 million people were diagnosed with HIV in the globe. In addition to that, 630,000 deaths which were reported in 2022, were associated with HIV (WHO, 2023). In Tanzania, HIV prevalence is estimated at 4.4% where by women are more affected than men population. Regional wise, Zanzibar has lowest prevalence while Njombe has the highest which is estimated at 0.4% and 12.7% respectively. The government but also NGOs have employed a number of both prevention and treatment interventions to address this global disease.

In reducing new HIV infection, UNAIDS established 95-95-95 target where by the first 95 indicates that 95% of HIV patient should be identified, the second 95 stands for 95% of identified HIV patients should be in treatment and the last 95 means 95% of HIV patients in treatment should suppress their viral load. In Tanzania, till 2022, 82.7% of people living with HIV were aware of their status, 97.9% of HIV patients who knew their status have already started ART and 94.3% of patient on ART have suppressed their viral load (THIS, 2022-2023).

Katavi is the region in Tanzania which is located in westside of Tanzania and is estimated to have a population of 1.2 million (Tanzania census, 2022). It consists of three districts namely Mpanda, Tanganyika and Mlele. These districts have a total of 134 health facilities where by 100 are dispensaries, 25 health centers and 9 hospitals (Tanzania census, 2022). HIV prevalence of this region is at 3.8% (THIS, 2022-2023). Among strategies which are used in addressing prevention of new HIV

infection in Katavi is provision of community-based health services (National Operational Guideline for CBHS, 2021).

Community-based Health services is traced back in 1967 during Arusha declaration where by late president Hon Julius Kambarage Nyerere established this to solve various critical issues related to HIV and AIDS, maternal, child and neonatal health, Nutrition, Tuberculosis, Malaria and adolescent sexual and reproductive health. These services are very key to increase turnups of people with various critical health conditions to health facilities (National Operational Guideline for CBHS, 2021). Community health workers (CHWs) are community volunteers whose duties include tracking HIV patients in the community who have not visited heath facilities for picking ART as well as linking newly tested HIV positive clients to care and treatment clinic (CTC).

Since they have a number of duties to execute, their performance specifically in tracking back HIV patients to treatment is not tracked (National Operational Guideline for CBHS, 2021). Due to the importance of UNAIDS target in eradicating HIV new infection and since CHWs are also part of strategies established to achieve this milestone then it is very crucial to know their contribution as well as examining applicability of individual and institutional factors which may affect their performance.

MATERIALS AND METHODS

Study Population

The study population consisted of 211 CHWs who were responsible for tracking back patients for treatment in the Katavi region. Tracking registers were used to

assess CHWs' performance. To gather information on factors associated with CHWs' performance, a questionnaire was developed and administered to CHWs.

Study Area

The area of study was Katavi region. This region has a total of 134 health facilities where by 100 are dispensaries, 25 health centers and 9 hospitals. CHWs working in tracking back HIV patients to treatment are 211 (Tanzania census, 2022).

This study was done in Katavi because majority of HIV studies are being done in regions with high HIV prevalence (such as Iringa, Mbeya and Njombe with 11.1%, 9.6% and 12.7% respectively) but also no study has been done on extent to which CHWs contribute in tracking back HIV/AIDS patients to treatment, specifically in regions with low to moderate prevalence such as Katavi (3.8%).

Sample Size and Sampling procedure

Since population size is known then below Yamane's formula was employed.

$$\mathbf{n} = \frac{\mathbf{N}}{\mathbf{1+N(e)^2}}$$

Whereby;

N is the population size (Number of CHWs tracking HIV patients back to treatment in Katavi region = 211).

e is the margin error (set at 5%=0.05).

n is the sample size.

Therefore, the sample size which was used in this study was 138 CHWs. Sampling methods employed were purposive and simple random sampling. Simple random sampling was used to acquire 138 CHWs (unit of analysis) while purposive sampling

was used to find key informants. Since CHWs are being supervised by council CHWs coordinators (5 coordinators), thus these coordinators were taken as key informants.

Data types and data collection methods

Both primary and secondary data were used in this study. Primary data was used to examine applicability of individual and institutional factors associated with CHWs performance. Two questionnaires were developed to gather this information from CHWs and key informants.

Secondary data was employed in knowing CHWs performance. Tracking registers were used to tell the performance of CHWs in the past six months (February – July 2024).

Variables and Measurement Procedures

Below is the summary of variables and data sources that were used to collect information and how these variables were measured.

Table 1. Summary of Data sources, Variables and their Measurements

Name of the Variable	Data source	Measurement of the Variable
Dependent		
CHWs performance	Secondary data from Tracking register	Proportion of HIV/AIDS patients tracked back to treatment by CHWs. $\textbf{CHWs performance} = \frac{\textit{Tracked back by CHWs}}{\textit{Total to be tracked}}$
HIV patients' retention to treatment	Secondary data from Tracking register	Retention was rated depending on CHWs performance percentages as shown below <75% — Poor retention/performance >=75% — Good retention/performance
Independent		
Individual factors	Primary data from questionnaire	• Confidentiality • Education/knowledge • Sex • Disability status • Age
Institutional factors	Primary data from questionnaire	• Allowances • Working gears • Health facility and community cooperation • Training programs

Data Analysis

Quantitative data was analyzed using STATA version 14. Descriptive analysis was used to analyze CHWs demographic data, health facilities information and CHWs performance while qualitative data was analyzed using content analysis.

Logistic regression was performed using STATA application to examine applicability of individual and institutional factors associated with CHWs performance in Katavi region. A p-value of less than 0.05 was considered significant.

RESULTS AND DISCUSSION

Participants' Information

Out of 138 sampled CHWs, most of them (42.8%) were from age category 36-45. Majority of the participants were males (56.5%), had primary level of education (47.8%) and were from dispensary (55.1%). In addition to that, all sampled 138 CHWs attended comprehensive training in provision of community-based health

services, only 8.7% of participants had disabilities, majority stored documents with patients details at home (83.3%) and were equipped with all required working gears (51.45%).

These findings are supported by Ngcobo et al., (2022) in the study titled “Roles, barriers and recommendations for community health workers providing community-based HIV care in Sub-Saharan Africa”. The purpose of this study was to identify CHWs demographic information, responsibilities, challenges and suggesting ways to improve their working environment for betterment of community-based health services provision. This study revealed that majority of CHWs were adult, male and had low level of education. Table 2 summarizes the information of participants involved in this study.

Table 2. Participants Information (n=138)

Variables	n (%)
Age (years)	
18-25	28 (20.2)
26-35	31 (22.5)
36-45	59 (42.8)
45+	20 (14.5)
Sex	
Male	78 (56.5)
Female	60 (43.5)
Education level	
Primary	66 (47.8)
Secondary	42 (30.4)
Certificate	30 (21.8)
Number of sampled CHWs per facility level	
Dispensary	76 (55.1)
Health centre	55 (39.86)
Hospital	7 (5.07)
CHW's disability status	
Disabled	12 (8.7)
Not disabled	126 (91.3)
Attended CHW comprehensive training	
Yes	138 (100)
No	0 (0)
Confidentiality of patient's details	
Stores documents at health facility	13 (9.4)
Stores at home	115 (83.3)
No specific area for storing documents	10 (7.3)
Availability of working gears	
Yes	71 (51.45)
No	67 (48.55)

Source: Research data, (2024).

Health Facilities Information

Health facilities refer to buildings where patients visit for health checkups and treatment services including HIV/AIDS. All sampled 138 CHWs came from these health facilities. Out of 67 health facilities, majority (67.2%) were dispensaries. Most of sampled CHWs (94.93%) reside more than 500 meters away from assigned health facilities. Furthermore, majority of CHWs rated health facilities and community cooperation as somehow cooperative (92.8% and 90.6% respectively).

The same was found by Schneider at, al., (2008) who conducted a study titled

"*Community health workers and the response to HIV/AIDS in South Africa: tensions and prospects*". The aim of this study was to check the presence of CHWs as well as their contribution in improving HIV/AIDS outcomes. This study revealed that CHWs were not receiving adequate cooperation from both healthcare workers at health facilities and community members. According to Schneider at, al., (2008), this inadequate cooperation has led to poor performance of CHWs in their daily routine. Table 3 summarizes the information of participants involved in this study.

Table 3. Health Facilities Information

Variables	Total (%)
Number of facilities per level	
Dispensary	45 (67.2)
Health centre	19 (28.3)
Hospital	3 (4.5)
Total number of CHWs in sampled facilities	
Dispensary	152 (38.1)
Health centre	219 (54.9)
Hospital	28 (7.0)
Distance from HF to CHW's residence	
200 – 500 meters	7 (5.07)
More than 500 meters	131 (94.93)
Health facility cooperation to CHWs	
Not cooperative at all	8 (5.8)
Somehow cooperative	128 (92.8)
Very cooperative	2 (1.4)
Community members cooperation to CHWs	
Not cooperative at all	11 (7.9)
Somehow cooperative	125 (90.6)
Very cooperative	2 (1.5)

Source: Research data, (2024).

Performance Level of CHWs in Tracking back HIV Patients to Treatment

To know the performance level of CHWs in tracking back HIV patients to treatment, tracking registers were employed where by total number of HIV patients required to be tracked by CHWs together with tracked HIV patients in the past six months (February – July 2024) was identified. Below formulae was used to calculate performance level of CHWs.

$$\textbf{CHWs performance} = \frac{\boldsymbol{Tracked\ back\ by\ CHWs}}{\boldsymbol{Total\ to\ be\ tracked}} = \frac{\mathbf{9,114}}{\mathbf{11,730}} = \mathbf{0.777}$$

Thus, performance of CHWs in tracking back HIV patients to treatment was 77.7%. According to performance scale, this performance falls under good performance category (>=75%). This means that despite various challenges faced by CHWs in executing daily duties, but still their performance is good. This finding was the same as what Mushi et al., (2019) in a study conducted in Kongwa district in Dodoma Region, on how Back to Care Initiative (B2CI) has reduced loss to follow- up to clients living with HIV/AIDS. This study revealed that CHWs performance was good and among reasons identified were the use of tracking registers, patient's adherence to counselling and health care workers confidentiality.

CHWs were pointed out as people who contribute more in tracking back patients to treatment. The same was found by Brandon et al., (2020) in a study which aimed on knowing patients' perspectives on the helpfulness of community health worker program for HIV care engagement in Tanzania. Most participants of this study responded that the program was very helpful and due to good performance of community workers, they recommended increase of the number of CHWs so they can reach more people living with HIV/AIDS. Also, Abdullateef et al., (2023) in a study titled "CHWs commitment to HIV/AIDS control in Africa" concluded that CHWs have contributed much in tracking back HIV/AIDS patients into treatment which resulted to 20% reduction in the rate of HIV incidence reported in some communities who benefited from them.

Also, the five interviewed CHWs coordinators (key informants) revealed that in the past six months (February – July 2024), CHWs performance was in good performance category (75.6%). One of the senior CHW coordinator stated that "*Since the introduction of community-based services provision approach in Katavi region, CHWs particularly in the area of tracking back HIV patients to treatment have been doing a good job in reaching out lost patients who are located in remote areas"*. Figure 1 shows the performance level of CHWs in tracking back HIV patients to treatment.

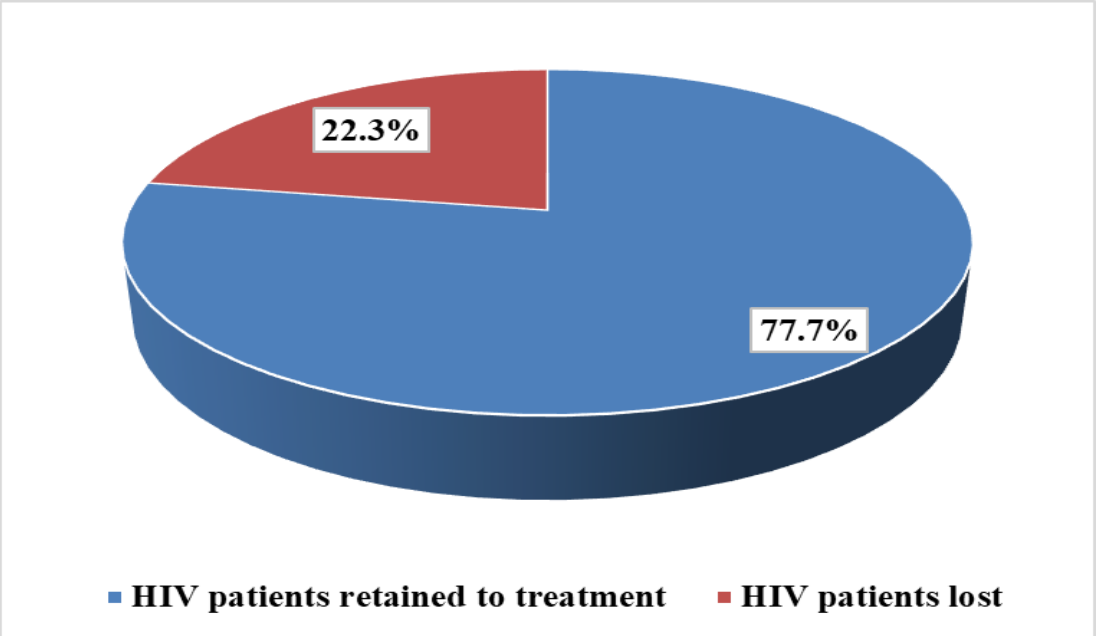

Figure 1. Performance Level of CHWs in tracking back HIV Patients to Treatment

Applicability of Individual Factors Associated with Performance of CHWs

CHWs individual factors such as confidentiality, education level, sex, disability status and age were examined to check whether they were significantly applicable with CHW's performance. Logistic regression analysis was performed using Stata

software to accomplish this task. Two individual factors (age and education level) were found to be significantly applicable; education level being more significant. Young CHWs were more likely to have good performance compared to old CHWs (OR 5.09, 95% CI 1.32 - 19.50, p=0.006 for age 26-35 years; OR 3.35, 95% CI 1.08 - 10.41, p=0.036 for age 36-45 years; OR 0.07, 95% CI 0.00 - 0.68, p=0.036 for those aged above 45 years).

The reason behind this might be the fact that young people are flexible in moving to remote areas where some HIV patients reside but also can adapt to new knowledge quickly as compared to old CHWs. When it comes to education, participants (CHWs) with certificate level were found to be more likely to have higher performance as compared to others with secondary education (OR 6.25, 95% CI 1.17 - 33.37, p=0.032 for certificate; OR 0.26, 95% CI 0.09 - 0.72, p=0.010 for secondary education). This might be due to the knowledge they have on HIV/AIDS as well as their higher convincing power than other CHWs.

The study done by Mushi et al., (2019) titled “Reducing Loss to follow-up among Clients Living with HIV through Back to Care Initiative in Kongwa District in Dodoma” also support this finding. Among other issues, this study examined individual factors affecting CHWs performance and concluded that individual factors associated with CHWs performance included age, sex, confidentiality and education level influenced their role of bringing HIV patients back to treatment. The same was found by Davoust et al., (2022) in a study titled “He Gave Me Spirit and Hope: Client Experiences with the Implementation of Community Health Worker Programs in HIV Care”. This study was conducted in United States where by qualitative

methods were used to know patients' perceptions on CHWs involvement in HIV/AIDS interventions. It was revealed that, performance of aged CHWs and CHWs with low level of education was low as compared to others.

In addition to that, all 5 CHWs coordinators who were involved in this study as key informants, agreed that individual factors which are associated with CHWs performance are also applicable in Katavi region. In response to the question on whether CHWs individual factors are applicable in Katavi, one coordinator responded that "In my council, CHWs who are form four leaver and above together with young CHWs are performing well and are quick learners compared to those with standard seven education as well as aged ones". Table 4, shows the results of the logistic regression analysis done using Stata software to assess the applicability of individual factors associated with performance of CHWs.

Table 4. Effects of Individual factors on CHWs Performance

Variables	Performance			
	Target	Actual (%)	OR (95% CI)	p-value
Age (years)				
18-25	412	308 (74.8)	Ref	Ref
26-35	452	364 (80.5)	5.09 (1.32 - 19.50)	0.006
36-45	806	655 (81.3)	3.35 (1.08 - 10.41)	0.036
45+	285	192 (67.4)	0.07 (0.00 - 0.68)	0.022
Sex				
Male	1,101	885 (80.4)	Ref	Ref
Female	854	634 (74.2)	0.63 (0.25 - 1.61)	0.341
Education level				
Primary	952	746 (78.4)	Ref	Ref
Secondary	590	415 (70.3)	0.26 (0.09 - 0.72)	0.010
Certificate	413	358 (86.7)	6.25 (1.17 - 33.37)	0.032
Disability status				
Disabled	176	146 (83)	Ref	Ref
Not disabled	1,779	1,373 (77.2)	2.27 (0.42 - 12.11)	0.334
Confidentiality				
Stores docs at HF	174	128 (73.6)	Ref	Ref
Stores at home	1,637	1,272 (77.7)	1.90 (0.40 - 9.03)	0.418
No specific area	144	119 (82.6)	12.55 (0.81 - 193.36)	0.070

Source: Research data, (2024).

Applicability of Institutional Factors Associated with Performance of CHWs

Institutional factors (including allowances, working gears, training programs together with cooperation from health facilities and community members) which were said to have association with CHWs performance were also examined to check their applicability in Katavi region. Two institutional factors (working gears and allowance) were found significant applicable. Parameters for working gears were OR 0.33, 95% CI 0.13 - 0.78, p=0.013. This implies that CHWs who were supplied with all required working gears (bag, bicycle, registers, raincoats, rainboots etc) were more likely to have higher performance (85.1%) than other CHWs with inadequate gears (70.2%).

It was also found that CHWs who receive higher allowances tend to perform well as compared to others who receive low rates (OR 3.86, 95% CI 1.02 - 14.52, p=0.045 for 80,000 and OR 4.70, 95% CI 1.66 - 13.31, p=0.003 for 100,000). Also, key informants in this study responded the same. This is very obvious finding because CHWs need both working gears as well as reasonable allowance to facilitate their daily routines; therefore, performance of well-paid and equipped CHWs can hardly resemble to other CHWs.

This finding is in line with the study done by Association of Nurses in AIDS Care (2021) titled “The Role of Community Health Workers in HIV Care Engagement: A Qualitative Study of Stakeholder Perspectives in Tanzania”. This study aimed on assessing the value of CHWs in supporting HIV care. In this study, it was revealed that CHWs who are well equipped with working gears were good performers as compared to other CHWs. Another study done by Ngcobo et al., (2022) which aimed

on identifying roles, barriers and recommendations for community health workers providing community-based HIV care in Sub-Saharan Africa, pointed out low allowance and motivation to CHWs affect their performance.

But also, Schneider, at, al., (2008) conducted a study titled "Community health workers and the response to HIV/AIDS in South Africa: tensions and prospects". This study aimed on identifying number of CHWs present in health facilities providing HIV/AIDS care and treatment services as well as pinpointing institutional factors which affect CHWs performance. The study identified lack of motivation and working gears as factors which affect CHWs performance. All these previous studies emphasized on equipping CHWs with all required working gears as well as providing them with motivation allowance to enable them executing their duties effectively. Table 5, shows the results of the logistic regression analysis of applicability of institutional factors associated with performance of CHWs.

Table 5. Applicability of Institutional Factors Associated with CHWs Performance

Variables	Performance		OR (95% CI)	p-value
	Target	Actual (%)		
Working gears presence				
Yes	981	835 (85.1)	Ref	Ref
No	974	684 (70.2)	0.33 (0.13 - 0.78)	0.013
Allowance				
40,000	492	323 (65.7)	Ref	Ref
80,000	266	214 (80.5)	3.86 (1.02 - 14.52)	0.045
100,000	1,197	982 (82)	4.70 (1.66 - 13.31)	0.003
HF cooperation				
Not cooperative	115	96 (83.5)	Ref	Ref
Somehow	1,810	1,400 (77.3)	0.22 (0.01 - 2.68)	0.237
Very cooperative	30	23 (76.7)	2.1 (0.03 - 119.46)	0.709
Community cooperation				
Not cooperative	146	125 (85.6)	Ref	Ref
Somehow	1784	1,374 (77)	0.26 (0.04 - 1.61)	0.151
Very cooperative	25	20 (80)	0.04 (0.00 - 2.72)	0.135
Attended CHW's training				
Yes	1,828	1,419 (77.6)	Ref	Ref
No	127	100 (78.7)	1.47 (0.28 - 7.68)	0.646

Source: Research data, (2024).

CONCLUSION AND RECOMMENDATION

This study concluded that CHWs performance is good (>=75%). Individual factors particularly age and education level which affect CHWs performance were found applicable in Katavi region but also two institutional factors (allowance and working gears) which affect CHWs performance were also applicable.

Since CHWs contribute much in tracking back HIV patients to treatment, majority of interviewed CHWs coordinators suggested that regional authorities can consider increasing the number of CHWs in needy areas so as to increase the number of HIV patients tracked back to treatment and eventually decrease HIV prevalence rate in Katavi region and in Tanzania at large.

CHWs coordinators also recommended consideration of age and education level during recruitment of CHWs. On the side of institutional factors which were found applicable (allowance and working gears)**,** CHWs coordinators directed this issue to ministry of health to set a reasonable amount of CHWs allowance to be paid per month by all partner organizations as well as generating a standard working gears package to be provided to CHWs soon after completing comprehensive CHWs training.

DATA AVAILABILITY

Data for this study is available from the corresponding author upon appropriate request.

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Appendix III: Research Clearance

THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

THE OPEN UNIVERSITY OF TANZANIA

Ref. No OUT/PG2022000951 **30th July, 2024**

Regional Administrative Secretary (RAS),

Katavi Region,

P.O Box 235,

KATAVI

Dear Regional Administrative Secretary,

RE: RESEARCH CLEARANCE FOR MR. KATALE IDDI NDABAGENGA REG NO: PG2022000951

2. The Open University of Tanzania was established by an Act of Parliament No. 17 of 1992, which became operational on the 1st March 1993 by public notice No.55 in the official Gazette. The Act was however replaced by the Open University of Tanzania Charter of 2005, which became operational on 1st January 2007.In line with the Charter, the Open University of Tanzania mission is to generate and apply knowledge through research.

3. To facilitate and to simplify research process therefore, the act empowers the Vice Chancellor of the Open University of Tanzania to issue research clearance, on behalf of the Government of Tanzania and Tanzania Commission for Science and Technology, to both its staff and students who are doing research in Tanzania. With this brief background, the purpose of this letter is to introduce to you **Mr. Katale Iddi Ndabagenga, Reg.No: PG2022000951), pursuing Master of Arts in Monitoring and Evaluation (MAME).**We here by grant this clearance to conduct a research titled

"Assessment of Community Health Workers Performance in Retaining HIV Patients to Treatment in Katavi Region, Tanzania". He will collect his data at your area from 31st July 2024 to 30th September 2024.

4. In case you need any further information, kindly do not hesitate to contact the Deputy Vice Chancellor (Academic) of the Open University of Tanzania, P.O.Box 23409, Dar es Salaam. Tel: 022-2-2668820.We lastly thank you in advance for your assumed cooperation and facilitation of this research academic activity.

Yours sincerely,

THE OPEN UNIVERSITY OF TANZANIA

Prof.Gwahula Raphael Kimamala

For: VICE CHANCELLOR

Appendix IV: Research permit Letter

JAMHURI YA MUUNGANO WA TANZANIA
OFISI YA RAISI
TAWALA ZA MIKOA NA SERIKALI ZA MITAA

MKOA WA KATAVI
Telegraphic: ***"REGCOM"***
Simu/Fax: 025-2957108
E-mail: ras.katavi@pmoralg.go.tz
Unapojibu tafadhali taja:-

OFISI YA MKUU WA MKOA,
S.L.P 235,
MPANDA – KATAVI.

09 Agosti, 2024

Kumb.Na.BA. 293/324/01/99

Mkurugenzi Halmashauri ya Manispaa,
S.L.P 216,
MPANDA – KATAVI.

Wakurugenzi Watendaji (H)
Tanganyika, Nsimbo, Mlele na Mpimbwe.

YAH: RUHUSA YA KUFANYA UTAFITI YA NDUGU KATALE IDDI NDABAGENGA MWENYE NAMBA YA USAJILI PG2022000951

Husika na mada tajwa hapo juu.

2. Ndugu Katale Iddi Ndabagenga ni mwanafunzi katika Chuo Huria cha Tanzania (Open University of Tanzania) anaesoma *Master of Arts in Monitoring and Evaluation (MAME)*. Katika kukamilisha elimu yake, ndugu Katale Iddi Ndabagenga anategemea kufanya utafiti wenye kichwa cha habari *"Assessment of Community Health Workers Performance in Retaining HIV Patients to Treatment in Katavi Region, Tanzania"*. Ukusanyaji wa taarifa utafanyika kuanzia tarehe 12 Agosti 2024 mpaka 30 Septemba 2024.
3. Kwa barua hii, unaombwa umruhusu kukusanya taarifa kutoka kwa wahudumu wa afya ngazi ya jamii (CHW) pamoja na waratibu wa huduma ya afya ngazi ya jamii (DCBHS focal) ili kufanikisha utafiti tajwa.
4. Asante kwa ushirikiano.

Dkt. Solomon S. Solomon
Kny: KATIBU TAWALA MKOA
KATAVI

Nakala:
Katibu Tawala Mkoa: Aione kwenye jalada