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INFLUENCE OF HEALTH PROFESSIONALS' ADEQUACY ON IMPLEMENTATION OF HIV PROGRAMS IN ARID AND SEMI-ARID REGIONS: A CASE OF ISIOLO SUB COUNTY, KENYA

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Abstract

Isiolo County, with an HIV prevalence of 1.8% and MTCT rate of 22.1%, faces critical health workforce shortages. Inadequate and unevenly distributed professionals hinder service delivery, delay treatment, and weaken the county's overall HIV response, especially in remote and underserved areas. Therefore, this study sought to assess the effects of adequacy of health professionals on the implementation of HIV programs in the area. The research employed a cross-sectional survey design and the target population consists of 18 program/Project officers implementing HIV community Organization, 9 staff working in National Syndemic Disease Control Council, 90 staff working in Comprehensive Care Clinics in Isiolo Sub County, CEC Health, County Director of Health, 2 Chief Officers of Public health & Medical Services, 2 Deputy Directors of Health, 12 CHMT members, medical superintendent Isiolo County Referral Hospital, Sub County AIDS and STI Coordinator (SCASCO) Isiolo, 10 community health promoters and 10 peer educators. The research adopted a census approach and hence the entire population was included in the study. Primary data was collected by use of semi-structured questionnaires and a key informant interview guide. These research instruments generated both qualitative and quantitative data. Qualitative data underwent thematic analysis. Quantitative data was analyzed by use of both descriptive and inferential statistics. The study found that health professionals' adequacy has a significant influence on the implementation of HIV programs in Isiolo Sub County. The study recommends strengthening health workforce capacity through targeted recruitment, equitable distribution and retention strategies to enhance the effectiveness of HIV program implementation in Isiolo County.

Keywords: *Heath Professionals, Adequacy, Implementation, HIV Programs*

INTRODUCTION

Human Immunodeficiency Virus (HIV) was first identified in the early 1980s, with the initial case reported in 1981 in the United States. By 2022, approximately 39 million people globally were living with HIV, and by 2021, about 40.4 million had died from HIV-related complications (World Health Organization, 2021, 2022). In response, the third target of Sustainable Development Goal 3 (SDG 3) aims to end the HIV/AIDS epidemic by 2030 (UNAIDS, 2023). This goal aligns with national and county-level strategies focused on HIV prevention, expanding healthcare access, strengthening care and treatment services, and reducing prevalence rates

(Global Fund, 2024). Achieving SDG 3 depends heavily on a strong health system built around six building blocks: health financing, service delivery, leadership and governance, medical products and technologies, health information systems, and the health workforce (Oleribe, Momoh & Uzochukwu, 2019). Among these, the health workforce is central to delivering quality care and sustaining HIV/AIDS interventions. Without adequate human resources for health (HRH), efforts to control and eventually end the epidemic may falter.

The health workforce plays a pivotal role in HIV program implementation through activities such as prevention, treatment, care, and rehabilitation. Mounier-Jack and Griffiths (2019) highlight the critical importance of having an adequate number of healthcare professionals for effective HIV service delivery, while Noviana and Rosdiana (2022) emphasize that workforce capacity, particularly sufficient staffing levels, is essential to policy execution. Globally, many HIV programs face challenges related to inadequate numbers of healthcare workers (Fujita & Akashi, 2021). For example, Malaysia's HIV response suffers from staff shortages and scaling issues that weaken service continuity (McKay Dolcini & Catania, 2019). Estonia, with a 4.6% HIV prevalence, struggles with uneven distribution of healthcare workers, especially between urban and rural areas, limiting access to care (Rüütel, Lemsalu & Epštein, 2019). Similarly, Haiti's HIV programs contend with insufficient health professional capacity, which impedes service delivery (Basu, Honoré & Puttkammer, 2021).

Sub-Saharan Africa continues to face critical human resources for health (HRH) challenges that significantly impact the adequacy of healthcare professionals necessary for effective HIV programs (Kisumbe & Mashala, 2020). The region suffers from an acute shortage of skilled healthcare workers, including doctors, nurses, and counsellors, which limits the delivery of essential HIV prevention, testing, treatment, and support services (Ifeagwu, 2021). In Nigeria, targeted efforts to increase the number of healthcare professionals have expanded access to HIV testing and care, yet many other countries continue to experience inadequate staffing levels (Olanipekun & Taiwo, 2021). Malawi faces an uneven distribution of healthcare professionals, particularly in rural areas, which restricts access to antiretroviral therapy and related services (Payne, Wadonda-Kabondo & Gummerson, 2023). Tanzania's progress is hindered by persistent shortages and maldistribution of healthcare personnel, undermining sustained HIV response efforts (Kisumbe & Mashala, 2020).

Kenya faces critical shortages in healthcare professionals necessary for effective HIV program delivery, particularly in Isiolo County. The county's HIV prevalence rose from 1.1% to 1.8%, with mother-to-child transmission rates increasing sharply. Isiolo has significant deficits in key health cadres, including over 75% shortages in consultants, pharmacists, dentists, and laboratory technologists (Isiolo County Health Department, 2022). These gaps are most severe in remote areas, where infrastructure and geographic isolation discourage healthcare worker deployment (Kenya Coordinating Mechanism, 2024). The inadequate workforce limits access to essential HIV prevention, testing, and treatment services, undermining program effectiveness (National Syndemic Disease Control Council, 2022). Addressing the adequacy and distribution of healthcare professionals is vital to improving HIV outcomes in Isiolo and similar underserved counties.

Statement of the Problem

Isiolo County recorded an overall HIV prevalence rate of 1.8% in 2022, up from 1.1% in 2021with sub-county disparities showing Isiolo at 2.3%, Merti at 1.4%, and Garbatulla at 1.3% (UNAIDS, 2022). In 2023, HIV prevalence rate in Isiolo County reduced to 0.7% (National Syndemic Disease Control Council, 2023). Notably, the prevalence rate among females was

2.7% compared to 0.9% in males. The Mother-to-Child Transmission (MTCT) rate stood at 22.1%, ranking the county among Kenya's ten highest-burden counties. Despite 144 pregnant women being enrolled in HIV care in 2022, only 89 received Prevention of Mother-to-Child Transmission (PMTCT) services reflecting significant performance gaps (UNAIDS, 2022). Furthermore, 14 adolescents aged 10–19 years and 33 youth aged 15–24 years acquired HIV in 2022, contributing to 98 new infections and 54 AIDS-related deaths (National Syndemic Diseases Control Council, 2022). Of an estimated 3,347 people living with HIV (PLHIV), only 1,879 were on ART, representing 58% coverage as of March 2023 (KHIS, 2023).

Critical human resource management challenges continue to undermine the implementation of HIV program. This includes shortages of healthcare professionals such as doctors, nurses and counselors, uneven distribution of skilled personnel across different health facilities in Isiolo County (County Government of Isiolo, 2022). In addition, the professional in Isiolo County fall short of WHO-recommended ratio of 4.45 health workers (doctors, nurses, and midwives) per 1,000 population necessary to achieve adequate healthcare coverage. With only 1159 health professionals and support staff, compared to the proposed minimum of 2338, there is a deficit of 1179. There exists a disparity in numbers, cadres and distribution of the health workforce in the County. For example, the Garbatulla level 4 health facility has only one doctor resulting in a doctor-population ratio of 1:20,000 for the County. The shortage of human resources in Isiolo Sub-County leads to delays in service delivery, as there may not be enough healthcare workers to meet the demand for HIV testing, treatment, and care services (National Syndemic Diseases Control Council, 2022). This delay could result in individuals not receiving timely access to life-saving treatment or prevention services, thereby increasing the risk of disease progression or transmission. Also, a shortage of healthcare workers in Isiolo Sub-County limits the coverage of key interventions, such as Prevention of Mother-to-Child Transmission (PMTCT) programs, which are crucial for preventing new HIV infections among infants.

While previous studies have examined HRM and health service delivery in Kenya, such as those by Nyawira, Tsofa, and Musiega (2022), Wachira and Kurgat (2022), and Miseda and Were (2019) these have not focused on HIV program implementation in Isiolo County. Differences in context and HR dynamics between counties mean that findings from other regions may not be applicable to Isiolo. Additionally, these studies have not explicitly analyzed how specific adequacy of health professionals influences the effectiveness of HIV programs at the sub-county level. Therefore, this study seeks to fill this knowledge gap by examining how adequacy of health professionals influences the implementation of HIV programs in Isiolo Sub County, with the aim of informing targeted, evidence-based strategies to improve health outcomes and service delivery in arid and semi-arid settings.

LITERATURE REVIEW

Implementation of HIV Programs

The implementation of HIV programs refers to the strategic and coordinated efforts undertaken to put into action a set of activities, interventions, and policies aimed at managing, mitigating and preventing the effect of HIV/AIDS within a given community, region, or country (Li, Benbow & Villamar, 2022). These programs encompass a wide range of initiatives designed to address various aspects of the HIV/AIDS epidemic, including prevention, testing and counseling, treatment, care, support, and advocacy. HIV Programs comprise of prevention strategies, testing and counseling, support services, mother-to-child transmission prevention, community engagement and advocacy (Musuka & Dzinamarira, 2023). The implementation of HIV programs is dynamic and evolving process that requires collaboration among governments,

healthcare professionals, community organizations, and international partners. Successful implementation involves adapting strategies to the unique characteristics of the affected population, addressing social determinants, and fostering a supportive and inclusive environment for those affected by HIV/AIDS.

The 95-95-95 targets are critical global objectives set by UNAIDS to manage and ultimately eliminate the HIV/AIDS epidemic. These targets aim to achieve by 2030: ensure 95% of people living with HIV know their HIV status; ensure 95% of those who know their HIV status have access to antiretroviral therapy (ART) and ensure that 95% of those on ART achieve viral suppression (reducing their viral load to very low levels) (Musuka & Dzinamarira, 2023). Achieving these targets requires a comprehensive and coordinated approach involving various stakeholders such as healthcare providers, policymakers, community organizations, and individuals engaged in HIV programs

Vanhamel, Rotsaert and Vuylsteke (2020) studied the implementation of HIV prevention and management programs. Using systematic review of literature, the study's findings unveil a nuanced landscape in the delivery of Pre-Exposure Prophylaxis (PrEP) for HIV prevention. While a predominant mode involves centralized delivery within clinical or hospital settings, the narrative expands to embrace diverse models, reflecting a spectrum of accessibility and inclusivity. In the traditional clinical or hospital setting, PrEP takes on a structured form. Clinically trained health professionals, equipped with medical expertise, administer and oversee the delivery. This conventional model ensures a rigorous approach to healthcare standards, with the emphasis on monitoring and medical guidance. Beyond the walls of hospitals, community-based PrEP delivery emerges as a dynamic response to the special wants of various populations.

In Malawi, Payne, Wadonda-Kabondo, and Gummerson (2023) conducted a study on individuals aged 15–64 years on HIV prevalence, incidence trends, and progress towards achieving the UNAIDS 95-95-95 targets. The Malawi Population-based HIV Impact Assessments (PHIAs), conducted in two phases—2015/2016 and 2020/2021—provide comprehensive, nationally representative snapshots of the HIV epidemic in the country. These cross-sectional surveys utilized a rigorous two-stage cluster sampling design and targeted a diverse demographic spanning ages 15 to 64 years. Malawi has demonstrated proactive efforts in its HIV/AIDS response by achieving the second and third 95 targets ahead of the 2030 deadline. These targets aim to ensure that 95% of people living with HIV know their status, 95% of those diagnosed receive continuous and effective treatment (ART), and 95% of those on treatment achieve viral load suppression. The country's progress not only signifies significant strides towards global HIV/AIDS goals but also serves as a model for evidence-based interventions and strategic planning in combating the epidemic.

Lebelonyane, Bachanas, and Moore (2021) undertook a study on achieving widespread awareness of viral suppression, ART coverage and HIV status using a universal test and treat strategy within the Botswana Combination Prevention Project. The study adopted a community randomized trial over a substantial period, commencing in October 2013 and concluding in June 2017. The study was characterized by its comprehensive approach, aiming to evaluate the effectiveness of multiple interventions in reducing HIV incidence within the population. A pivotal component of the Botswana Combination Prevention Project (BCPP) was the implementation of home and mobile campaigns, strategically designed to extend HIV testing services to personnel aged 16 and above. This inclusive approach sought to enhance accessibility, reaching individuals within the comfort of their homes or through mobile testing units. For individuals identified as HIV-positive during the testing campaigns, a systematic

referral system was established. Those not currently on antiretroviral therapy (ART) were directed to treatment services. These programs lead to an improvement in UNAIDS 95-95-95 targets.

Health Professionals' Adequacy and Implementation of HIV Programs

In Côte d'Ivoire, Akoku, Tickell and Kone (2022) undertook a study to examining the correlation between the availability of health workforce and outcomes in HIV programs. This facility level cross-sectional survey analyzed data from HIV program reports spanning from October 2018 to September 2019 across 18 districts. The study investigated the staff allocation among management, pharmacy, laboratory, lay, and support roles in facilities handling different volumes of antiretroviral therapy (ART). The research revealed that health workers (HCWs) in the laboratory and lay roles showed higher rates identifying HIV-positive case and initiation on ART. These results underscore the importance of strategically of deploying HCWs based on the volume of Art patients. Ultimately, in order to achieve national HIV goals and effectively addressing the HIV pandemic, it's essential to enhance investment in health workforce.

Parent, Fromageot, and Coppieters (2018) assessed the adequacy of human resources for improving primary health care frameworks in Africa. By use of a descriptive research design, the research focused on three countries: Nigeria, Ghana, and Botswana. The findings revealed inadequate numbers of healthcare professionals within the primary health care framework across Africa. Professionals often concentrate in urban areas resulting in rural and remote regions inadequately served. This geographical imbalance restricts healthcare access for a significant portion of the population. Furthermore, limited educational institutions hinder the training of sufficient healthcare professionals to accommodate the growing needs of the population.

McKay, Dolcini, and Catania (2019) investigated the impact of human resources on the implementation of an evidence-based HIV prevention intervention. Across a national sample of organizations delivering the Recommended Summary Plan for Emergency Care and Treatment (RESPECT) the study involved conducting interviews with staff members in two waves. Qualitative analysis of these interviews was performed to document changes among RESPECT staff and to explore how these changes influenced the implementation of RESPECT. Organizations reported various shifts in staff, including downsizing, turnover, and expansion of staff positions. These fluctuations affected the number and characteristics of clients reached by RESPECT. Furthermore, changes in staff influenced adherence to specific RESPECT protocols. The study underscores the dynamic nature of HIV prevention program implementation and emphasizes the importance of accounting for staff changes as a factor that impacts the success and long-term viability of evidence-based interventions like RESPECT.

In Kenya, Nyawira, Tsofa, and Musiega (2022) investigated the management of human resources for health and its impact on health systems efficiency. The research adopted a mixed methods research design, conducting in-depth interviews with HRH stakeholders at national and county levels, along with reviewing documents and secondary data. Qualitative data was gathered through the interviews, while document and secondary data reviews provided additional insights. The study highlighted the scarcity of healthcare workers, especially medical specialists, which necessitated inappropriate task shifting, potentially affecting the quality of care and health outcomes. There was also an uneven distribution of healthcare workers that favoured higher-level facilities, leading to unnecessary referrals and compromising the quality of primary healthcare

Theoretical framework

The study was anchored on the Herzberg's Two-Factor Theory, which was developed by psychologist Frederick Herzberg in the 1950s. The theory explores the factors influencing employee satisfaction and dissatisfaction in the workplace. According to this theory, Herzberg identified two distinct sets of factors that independently affect job satisfaction. The factors are categorized as hygiene factors and motivators (Rai, Thekkekara & Kanhare, 2021). Hygiene factors pertain to the work environment and are crucial for averting dissatisfaction. However, their presence alone does not automatically guarantee satisfaction. Conversely, the absence or inadequacy of hygiene factors can contribute to employee dissatisfaction. In contrast, motivators are linked to the kind of the task itself and contribute significantly to job satisfaction and increased motivation (Alrawahi, Sellgren & Brommels, 2020). The presence of motivators fosters positive job attitudes and enhances job performance.

Herzberg's Two-Factor Theory suggests that hygiene factors are essential for preventing job dissatisfaction. These factors include elements of the work environment such as salary, working conditions, company policies, and interpersonal relationships (Yousaf, 2020). Deficiencies or shortcomings in these factors can lead to dissatisfaction among employees. Motivators are identified by Herzberg as factors that directly contribute to job satisfaction as well as increased motivation. These factors are inherent to the kind of the task and encompass features such as responsibility, work itself, recognition, achievement, recognition as well as opportunities for advancement. The theory is based on the premise that personnel have diverse sets of needs and aspirations. Hygiene factors address fundamental needs and help mitigate dissatisfaction, whereas motivators are linked to higher-level needs related to personal and professional growth and fulfilment (Rai, Thekkekara & Kanhare, 2021).

Herzberg's Two-Factor Theory was applied to explain how the adequacy of health professionals influences the implementation of HIV programs. According to the theory, job satisfaction and motivation are driven by hygiene factors and motivators. Adequate staffing addresses hygiene factors by reducing dissatisfaction caused by workload pressure, burnout, and resource shortages. When sufficient numbers of skilled health professionals are available, it creates a more supportive work environment that minimizes stress and operational challenges. Additionally, the presence of an adequate workforce can enhance motivators such as recognition, achievement, and professional growth opportunities, which further improve employee commitment and performance. Therefore, ensuring adequate health professional staffing is critical for the effective delivery and sustainability of HIV programs.

Conceptual Framework

Figure 1 illustrates the link between the independent variable (human resource adequacy) and the dependent variable was implementation of HIV programs.

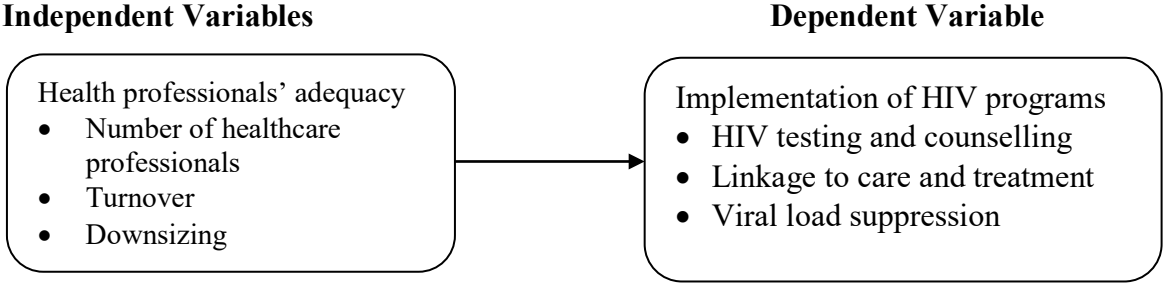

Figure 1: Conceptual Framework

METHODOLOGY

The study adopted a cross-sectional survey design. The target population in this study was 18 program/Project officers implementing HIV community Organization, 9 staff working in National Syndemic Disease Control Council, 90 staff working in Comprehensive Care Clinics in Isiolo Sub County, CEC Health, County Director of Health, 2 Chief Officers of Public health & Medical Services, 2 Deputy Directors of Health, 12 CHMT members, Medical Superintendent Isiolo County Referral Hospital, Sub County AIDS and STI Coordinator (SCASCO) Isiolo, 10 Community Health promoters and 10 Peer Educators.

Table 1: Target Population

Category	Target Population
Program/project officers in HIV community organization	18
Staff working in National Syndemic Disease Control Council	9
Staff working in Comprehensive Care Centers in Isiolo Sub County	90
CEC Health	1
Chief Officers Health – Public health& Medical Services	2
County Director of Health	1
Deputy Directors – Public health & Medical Services	2
County Health Management Team	12
Sub County AIDS and STI Coordinator (SCASCO)	1
Medical Superintendent Isiolo County Referral Hospital	1
Community Health Promoters	10
Peer Educators	10
Total	**157**

The research used a census approach and hence the whole population was included in the study. The study used primary data, which was collected by use of semi structured questionnaire and a key informant interview guide. The questionnaire comprised of structured (closed-ended) and unstructured (open-ended) questions. Semi-structured questionnaires include open-ended questions to capture qualitative insights and fixed-choice questions with predefined response options (Latwal, 2020). The semi-structured questionnaire incorporated both types of questions in this study. The key informants for this research included the CEC Health, County Director of Health, and Sub County AIDS and STI Coordinator (SCASCO) in Isiolo County. An interview guide tailored for key informants were used to collect qualitative data, addressing questions connected to both independent as well as dependent variables. A pre-test was conducted in Marsabit County Referral Hospital to assess the validity and reliability of the research instruments. The pre-test group constituted of 10% of intended sample size (15) for the main study. According to Kumar (2019), using 10% of the full study sample size is appropriate for pre-testing research instruments.

The research instruments generated qualitative and quantitative data. Thematic analysis was used in analysing qualitative data from open ended questions and key informant interviews. The results were presented in a narrative form. Descriptive and inferential statistics were used to analyse quantitative data with the help of Statistical Package for Social Sciences (SPSS version 28). Descriptive statistics included frequency distribution, percentages, measures of central tendency (mean), and measures of dispersion (standard deviation). Subsequently, inferential statistics such as Pearson correlation analysis and regression analysis were conducted. The study adhered to a 95% confidence level, establishing a significance threshold of $p = 0.05$. Associations and relationships with a p-value of 0.05 or less were deemed statistically

significant, while those exceeding 0.05 was considered statistically insignificant. The findings were presented using tables. The regression model was structured as follows:

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon$$

Whereby: Y = Implementation of HIV programs; β_0 = Constant; β_1 = Coefficients of determination; X_1 = Health professionals' adequacy; ε = Error term

RESULTS AND DISCUSSION

The researcher targeted one hundred and fifty seven (157) respondents. However, out of the 157 questionnaires distributed, one hundred and forty two questionnaires (142) were completely filled and returned yielding a response rate of 90.45%. According to Latwal (2020), a response rate above 50% is considered adequate for data analysis, while Kumar (2019) suggests that a rate exceeding 70% is excellent. This implies that the study's response rate falls within an acceptable range for conducting data analysis, drawing conclusions, and making recommendations for future research.

Table 2: Response Rate

Responses	No.	Percentages
Administered questionnaires	147	100%
Returned	142	90.45%
Non Responses	5	9.55%

Demographic Characteristics of the Respondents

The demographic characteristics of the respondents in this study comprised of the gender, age bracket, highest level of education and working duration. From the results, 52.8% of the respondents indicated that they were male while 47.2% indicated that they were female. This indicates that the majority of respondents in this research are male, suggesting potential for enhanced advocacy for gender-inclusive strategies and a more balanced approach to addressing HIV-related challenges. In regard to the age bracket, 41.5% of the respondents indicated that they were aged between 46 and 55 years, 40.8% indicated that they were aged 36 to 45 years while 14.1% indicated that they were aged between 26 and 35 years. In addition, 3.5% of the respondents indicated that they were above 55 years. This implies that majority of the respondents were aged between 46 and 55 years, representing a seasoned yet adaptable workforce.

In terms of education, 72.5% of respondents had an undergraduate degree, 16.9% had a college diploma, 7% had a master's degree, and 3.5% had a college certificate. The findings suggest that most respondents have at least an undergraduate degree. Regarding profession, 26.06% of respondents were nurses, 21.13% were other healthcare providers, and 17.61% were clinical officers and laboratory officers, respectively. Also, 10.56% were medical officers, and 7.04% were pharmacists and pharmaceutical technologists.

Concerning work duration, 44.4% of the respondents indicated that they had worked in the organization for between 11 and 20 years, 27.5% indicated that they had worked for above 20 years while 17.6% indicated that they had worked for between 5 and 10 years. In addition, 10.6% of the respondents indicated that they had worked for less than 5 years. The findings imply that majority of the respondents in the study had worked in the organization for between 11 and 20 years, reflecting extensive institutional knowledge and expertise.

Table 1: **Demographic Characteristics of the Respondents**

Category	Frequency	Percent
Gender		
Male	75	52.8
Female	67	47.2

Total	142	100
Age Bracket		
26 to 35 years	20	14.1
36 to 45 years	58	40.8
46 to 55 years	59	41.5
Above 55 years	5	3.5
Total	142	100
Highest Education Level		
Masters' Degree	10	7
College Diploma	103	72.5
Undergraduate Degree	24	16.9
College Certificate	5	3.5
Total	142	100
Profession		
Clinical officers	25	17.61
Nurses	37	26.06
Other healthcare providers	30	21.13
Laboratory	25	17.61
Medical officer	15	10.56
Pharmacist and pharmaceutical technologists	10	7.04
Total	142	100
Working Duration		
Less than 5 years	15	10.6
5 to 10 years	25	17.6
11 to 20 years	63	44.4
Above 20 years	39	27.5
Total	142	100

Health professionals' Adequacy

The study sought to determine the influence of health professionals' adequacy on the implementation of HIV programs in Isiolo Sub County. Table 4 presents the descriptive statistics for the current and required staffing levels in HIV programs, including the minimum, maximum, mean, and standard deviation for each question. The results show a notable difference between the current and required staffing levels for HIV programs. Findings show that on average the health facilities have 5 staff supporting HIV programs. A standard deviation of 7 indicates that staffing levels are relatively low with high variability across health facilities. Some health facilities (Garbatulla hospital) have no staff (minimum =0) and others have as many as 44. This suggests significant inequality or inconsistency in staff distribution. Respondents estimate the ideally 13 (mean) staff per facility are required to run HIV program effectively. Standard dev=13 which suggested large variability. Findings show that some facilities need a few staff as low as 10 and others up to 75. The staffing needs are diverse, likely due to differences in facility size, workload, and population served. This suggests that respondents believe more staff are needed, with a wider range of responses and greater variability in the perceived staffing requirements.

Table 2: Health professionals' adequacy

	N	Minimum	Maximum	Mean	Std. Deviation
Staffing in HIV Programs (Current)	142	0	44	5	7
Staffing in HIV Programs (Required)	142	10	75	13	13

Similarly, the key informants indicated that Isiolo County experiences persistent challenges with staffing levels in HIV programs. They noted a shortage of skilled professionals such as nurses, clinical officers, and counselors, which creates an imbalance in service delivery across different

regions. Staffing gaps are most severe in rural health facilities, making it difficult to ensure equitable access to HIV services. High turnover rates and delayed recruitment due to bureaucratic processes were also mentioned as major barriers. Moreover, budget limitations hinder efforts to hire and retain qualified personnel. These challenges collectively strain HIV service delivery, overburden existing staff, and weaken program outcomes. One key informant remarked,

> "*We often have only one or two nurses handling the entire HIV clinic, which is overwhelming and unsustainable for the level of care required*," County Director of Health

The research sought to determine the influence of health professionals' adequacy on the implementation of HIV programs in Isiolo Sub County. The participants were requested to indicate the extent on which they agree or disagree with different statements on health professionals' adequacy in HIV programs. From the findings, as shown in Table 5, the respondents agreed with a mean of 3.503 (SD=1.350) that the downsizing of health professionals has led to increased workload and burnout among remaining staff members in our HIV programs. The findings are in consistent with Parent, Fromageot, and Coppieters (2018) observations that the downsizing of health professionals has contributed to increased workload and burnout among remaining staff members in HIV programs. However, the respondents were neutral with a mean of 3.457 (SD=1.556) that they are concerned that the downsizing of health professionals within their HIV programs. Also, the respondents were neutral with the statement indicating that downsizing of health professionals has negatively impacted the morale and job satisfaction of the healthcare as shown by a mean of 3.432 (SD=1.297).

In addition, with a mean of 3.338 (SD=1.243), the respondents were neutral with the statement indicating that the turnover of health professionals in their HIV programs results in increased workload and stress for remaining staff members. With a mean of 3.309 (SD=1.233), the respondents were neutral with the statement indicating that the turnover of health professionals within their HIV programs poses challenges in maintaining quality and consistency in service delivery. Further, the respondents were neutral with the statement indicating that the current number of healthcare professionals in their community ensures timely and effective healthcare services as indicated by a mean of 2.796 (SD=1.102). These findings align with Nyawira, Tsofa, and Musiega (2022), who observed that healthcare workforce shortages can moderately affect the efficiency and responsiveness of service delivery in community health settings.

Moreover, the respondents were neutral that the current staffing levels of healthcare professionals in their HIV programs allow for effective coordination and collaboration among team members as shown by a mean of 2.690 (SD=1.086). Nonetheless, the respondents disagreed with a mean of 2.493 (SD=1.213) that the turnover rate of health professionals within their HIV programs is at an acceptable level. These findings contrast with McKay, Dolcini, and Catania's (2019) observations that the turnover rate of health professionals within HIV programs is at an acceptable level. Similarly, with a mean of 2.338 (SD=1.129), the respondents disagreed that feel confident that their HIV programs have an adequate number of trained healthcare professionals to deliver quality care.

Table 3: Aspects of Health Professionals' Adequacy

	Mean	Std. Deviation
The current number of healthcare professionals in my community ensures timely and effective healthcare services	2.796	1.102

I feel confident that our HIV programs have an adequate number of trained healthcare professionals to deliver quality care.	2.338	1.129
The current staffing levels of healthcare professionals in our HIV programs allow for effective coordination and collaboration among team members.	2.690	1.086
The turnover rate of health professionals within our HIV programs is at an acceptable level	2.493	1.213
The turnover of health professionals within our HIV programs poses challenges in maintaining quality and consistency in service delivery.	3.309	1.233
The turnover of health professionals in our HIV programs results in increased workload and stress for remaining staff members.	3.338	1.243
I am concerned that the downsizing of health professionals within our HIV programs	3.457	1.556
The downsizing of health professionals has led to increased workload and burnout among remaining staff members in our HIV programs.	3.503	1.350
Downsizing of health professionals has negatively impacted the morale and job satisfaction of the healthcare	3.432	1.297

The participants were also asked to indicate how else health professionals' adequacy affects the implementation of HIV programs. According to the respondents, the inadequacy of healthcare professionals has significantly impacted HIV program effectiveness, leading to challenges in service delivery. While adequate staffing allows for specialization in care, close monitoring of patient progress, proper documentation, and effective patient management, the shortage of staff has resulted in burnout, increased defaulters, and poor working conditions. The lack of trained personnel to provide adherence counseling and treatment has led to increased treatment failures, further complicating patient outcomes. Additionally, scheduled clinic days limiting access to care, task shifting that compromises service quality, long waiting times, and a limited skill mix have contributed to inefficiencies within HIV programs. These findings align with Tickell and Kone (2022), who observed that staffing shortages negatively impact healthcare efficiency and patient retention in care.

Furthermore, the respondents highlighted that the retirement of healthcare professionals without adequate replacement has further strained service provision, exacerbating workload burnout among the remaining staff. Inadequate continuous training and updates on HIV protocols has also affected service quality, client satisfaction, and patient management. Additionally, ineffective supportive supervision at the managerial level has limited the ability of healthcare professionals to provide optimal care. These findings conform to Parent, Fromageot, and Coppieters (2018), who observed that ineffective supportive supervision has limited the ability of healthcare professionals to provide optimal care.

Similarly, the key informants indicated that the shortage of healthcare professionals in Isiolo County significantly affects the delivery and effectiveness of HIV services. Insufficient staff contributes to delays in patient care, long queues, and reduced adherence to follow-up schedules. According to the informants, this not only frustrates patients but also undermines their trust in the health system. Inadequate staffing also limits the implementation of preventive programs and outreach services, especially in remote areas. Overburdened health workers may overlook critical aspects of HIV care, resulting in reduced service quality. The informants agreed that strengthening the human resource base is essential for improving outcomes. One of the key informants said,

"*Our few health workers are stretched thin daily, which greatly compromises their ability to deliver effective and timely HIV services*" (County Director of Health).

Implementation of HIV Programs

The dependent variable of this study was the implementation of HIV programs in Isiolo Sub County. The respondents were asked to indicate their level of agreement with various statements on the implementation of HIV programs. A shown in Table 5, the respondents agreed with a mean of 4.162 (SD=0.919) that HIV counselling is offered in a confidential, respectful, and non-judgmental manner. In addition, the respondents agreed with a mean of 4.099 (SD=0.894) that there are efficient systems in place to link newly diagnosed HIV positive individuals to care and treatment services. Further, the respondents agreed with a mean of 4.028 (SD=1.003) that clients who test positive for HIV receive clear and comprehensive information about their treatment options. The findings are in agreement with Vanhamel et al. (2020) observations that HIV counselling is offered in a confidential, respectful, and non-judgmental manner.

Additionally, the respondents agreed with a mean of 3.596 (SD=0.949) that adherence support programs are available to help clients remain on their HIV treatment regimen. The findings agree with Vanhamel et al. (2020) observations that HIV testing services are readily available and accessible to all populations in need. With a mean of 3.575 (SD=1.050), the respondents agreed that the program effectively identifies and addresses challenges that prevent clients from achieving viral load suppression. Also, the respondents agreed with a mean of 3.528 (SD=1.177) that HIV testing services are readily available and accessible to all populations in need.

However, the respondents agreed were neutral with the statement indicating that clients have access to a variety of treatment options based on their individual needs and preferences as shown by a mean of 3.183(SD=1.377). Similarly, with a mean of 3.169 (SD=1.467), the respondents were neutral with the statement indicating that clients are routinely monitored for viral load to assess the effectiveness of their HIV treatment. The findings concur with Lebelonyane et al. (2021) observations that clients are routinely monitored for viral load to assess the effectiveness of their HIV treatment. Further, the respondents were neutral with the statement indicating that Transportation barriers are minimized to ensure access to care and treatment for people living with HIV as indicated by a mean of 2.909 (SD=1.231).

Table 6: Aspects of Implementation of HIV Programs

	Mean	Std. Deviation
HIV testing services are readily available and accessible to all populations in need.	3.528	1.177
HIV counselling is offered in a confidential, respectful, and non-judgmental manner.	4.162	.919
Clients who test positive for HIV receive clear and comprehensive information about their treatment options.	4.028	1.003
There are efficient systems in place to link newly diagnosed HIV positive individuals to care and treatment services.	4.099	.894
Transportation barriers are minimized to ensure access to care and treatment for people living with HIV.	2.909	1.231
Clients have access to a variety of treatment options based on their individual needs and preferences.	3.183	1.377

Clients are routinely monitored for viral load to assess the effectiveness of their HIV treatment.	3.169	1.468
Adherence support programs are available to help clients remain on their HIV treatment regimen.	3.596	.949
The program effectively identifies and addresses challenges that prevent clients from achieving viral load suppression.	3.575	1.050

Inferential Statistics

Inferential statistics such as correlation and regression were used to assess the influence of health professionals' adequacy, human resource capacity, human resource compensation and human resource planning on the implementation of HIV programs in Isiolo Sub County

Correlation Analysis

Pearson product moment correlation coefficient was employed to evaluate the strength of the relationship between the independent variable (health professionals' adequacy) on the dependent variable (implementation of HIV programs). As shown in Table 7, the study established that there exists a positive significant correlation between health professionals' adequacy and implementation of HIV programs (r=0.842, p-value=0.000). In addition, the p-value was below the significant level of 0.05, indicating that the correlation was significant. The findings conform to Akoku, Tickell and Kone (2022) observations that health professionals' adequacy has an impact on implementation of HIV programs. The findings are also in concurrence with McKay et al. (2019) findings that human resource adequacy positively influence implementation of an evidence-based HIV prevention intervention.

Table 7: Correlation Analysis

	Correlation with HIV Program Implementation	Significance
Health Professionals' Adequacy	0.842**	$p < 0.01$

Regression Analysis

Regression analysis was utilized to assess the influence of independent variable (health professionals' adequacy) on the dependent variable (implementation of HIV programs). From the results, the R-Squared in this study was 0.340, which indicates that 34.0% of the variation in the implementation of HIV programs can be explained by health professionals' adequacy.

Table 8: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.583[a]	0.340	0.287	0.24816

a. Predictors: (Constant), Health professionals' adequacy

The ANOVA results indicate that the regression model is statistically significant. The F-calculated value of 193.275 is much higher than the F-critical value of 3.842, suggesting that the independent variables collectively have a strong relationship with the dependent variable. Additionally, the p-value of 0.000, which is less than the commonly used significance level of 0.05, further shows that the regression model is statistically significant.

Table 9: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	25.453	1	25.453	193.275	.000[b]
	Residual	18.437	140	0.132		
	Total	43.89	141			

a. Dependent Variable: Implementation of HIV programs

b. Predictors: (Constant), Health professionals' adequacy

The regression equation was;

$Y = 1.980 + 0.428X_1 + \varepsilon$

The study found that health professionals' adequacy has a positive and significant influence on the implementation of HIV programs in Isiolo Sub County (β=0.428, P-value=0.000). The p-value was below the significance level (0.05) and therefore the relationship was regarded to be significant. This means that a unit improvement in health professionals' adequacy would result to a 0.428 improvement on the implementation of HIV programs in Isiolo Sub County. The findings are in line with Parent, Fromageot, and Coppieters (2018) observations that health professionals' adequacy has a significant influence on the implementation of HIV programs in Ghana.

Table 10: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.980	0.563		3.517	0.001
	Health professionals' adequacy	0.428	0.099	0.378	4.323	0.000
	Human resource capacity	0.348	0.120	0.231	2.900	0.004
	Human resource compensation	0.323	0.121	0.268	2.669	0.009
	Human resource planning	0.284	0.111	0.231	2.559	0.013

a. Dependent Variable: Implementation of HIV programs

Conclusions

The study found that health professionals' adequacy has a positive and significant influence on the implementation of HIV programs in Isiolo Sub County. The study concludes that the downsizing of health professionals has contributed to increased workload and burnout among remaining staff members in HIV programs. The study concludes that perspectives on the broader implications of downsizing, including its impact on morale, job satisfaction, and service delivery, remain inconclusive. Also, uncertainty exists regarding whether staff turnover directly affects workload, stress levels, and the ability to maintain quality and consistency in service provision. Further, the study concludes that differing views exist on whether the current number of healthcare professionals is sufficient for ensuring timely and effective services, as well as for fostering collaboration among team members. The study concludes that the turnover rate of health professionals within HIV programs is not at an acceptable level. Moreover, there is a lack of confidence in the adequacy of trained healthcare professionals to deliver quality care in HIV programs.

Recommendations

The study found that downsizing of health professionals has negatively impacted the morale and job satisfaction of the healthcare. As such, the study recommends that the organization should prioritize on retention strategies to prevent further downsizing. By offering competitive incentives, creating a supportive work environment, and promoting job satisfaction, the organization can mitigate the negative effects of downsizing on healthcare workers. In addition, the study suggests that the organization should hire additional healthcare professionals to alleviate the increased workload of remaining staff. Introducing stress management programs and redistributing workload would also be beneficial in reducing burnout and preventing further morale degradation among healthcare workers.

The study found that there was uncertainty regarding whether staff turnover poses challenges in maintaining quality and consistency in service delivery. The study recommends conducting a comprehensive assessment to determine the impact of staff turnover on service quality and consistency in HIV programs. Organizations should establish monitoring mechanisms to track how staff turnover affects patient care and program efficiency. In addition, retention strategies such as competitive salaries, career development opportunities, and a supportive work environment should be implemented to reduce turnover rates. Structured mentorship and training programs should be strengthened to ensure continuity in service delivery despite staff changes. Furthermore, clear succession planning and workforce management policies should be developed to minimize disruptions caused by staff departures. Stakeholder engagement should be enhanced to identify and address key workforce challenges, ensuring sustained quality and consistency in HIV program service delivery.

Suggestions for Further Research

The study sought to determine the influence of health professionals' adequacy on the implementation of HIV programs in Isiolo Sub County. However, since the research was limited to Isiolo Sub County, its findings cannot be generalized to other sub counties in Isiolo County, Kenya. As such, the study recommends more research to be done on the influence of health professionals' adequacy on the implementation of HIV programs in other sub counties in Isiolo County, Kenya. In addition, the study found that health professionals' adequacy could explain 34.0% on the implementation of HIV programs. Therefore, further research should be conducted to identify other factors affecting the implementation of HIV programs in Isiolo Sub County.

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