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Unravelling the nexus of HIV/AIDS prevalence and economic development challenges in Homa Bay's fisherfolk communities

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Abstract

This study investigates the impact of HIV/AIDS-related health issues on the productivity and efficiency of fishermen in Homa Bay County, Kenya. Using a descriptive research design, data was collected from 168 respondents through guided questionnaires and interviews. The findings show that 76.8 per cent of respondents agree that HIV/AIDS has a negative effect on productivity, with many fishermen missing up to three fishing days per week due to illness. This absenteeism results in significant economic losses, with larger fishing boats losing an estimated KES 250,661 weekly and smaller boats losing around KES 104,357. Reduced fishing activity also translates to a decline in the weekly fish catch, with large boats averaging 1,754.6 kg compared to their full capacity and small boats producing only 730.5 kg. These reductions in productivity and income highlight the severe vulnerability of fishing communities to the health challenges posed by HIV/AIDS, underscoring an urgent need for comprehensive interventions. Recommendations include strengthening healthcare infrastructure, implementing targeted awareness and prevention programs, and providing economic support mechanisms to mitigate the financial impact of HIV/AIDS-related illnesses on fishermen and their families. By addressing these issues comprehensively, policymakers and stakeholders can help build resilient and sustainable fishing communities equipped to withstand the challenges posed by HIV/AIDS.

Key words: Fisherfolk communities, fishermen efficiency, fishermen productivity, healthcare access, HIV/AIDS-related health issues.

INTRODUCTION

The complex relationship, or *nexus*, between HIV/AIDS prevalence and economic development challenges forms a substantial barrier to global health equity and sustainable progress. Over the past four decades, the HIV epidemic has inflicted severe human suffering, claiming 40.4 million lives worldwide, with approximately 39 million people still living with HIV as of 2022 (UNAIDS, 2022). This burden is most heavily felt in sub-Saharan Africa, home to nearly two-thirds of global HIV infections. Within this region, adolescent girls and young women aged 15–24 are particularly vulnerable, continuing to face disproportionately high rates of new HIV infections—a trend that underscores the pressing need for focused interventions.

The adverse effects of HIV/AIDS extend deeply into economic development, manifesting as reduced workforce productivity, increased absenteeism, and substantial healthcare expenditures, which together fuel societal inequities and impede progress. In regions like sub-Saharan Africa, where infection rates are high, HIV/AIDS diminishes labour productivity and drives economic losses, creating a compounded impact on labour market dynamics and economic resilience. According to UNAIDS (2016), HIV's effect on labour productivity results in a 3.3 per cent reduction among people living with HIV in sub-Saharan Africa, accompanied by lower educational attainment rates (The Lancet HIV, 2020). These losses impact individuals, households, and entire national economies, with HIV/AIDS-related healthcare expenditures accounting for a significant portion of overall healthcare spending in the region in 2018 (Holmes et al., 2020). Balancing resources between HIV treatment programs and other development priorities is often challenging, thereby limiting broader socio-economic advancement.

In Kenya, HIV prevalence remains a significant concern, especially in regions with stark disparities, like the Nyanza region. Homa Bay County, situated along the shores of Lake Victoria, exemplifies the severe interaction between HIV epidemiology and economic hardship, with an HIV prevalence rate nearly five times the national average (Kenyan HIV Estimates report, 2015). Despite substantial investments in HIV prevention and care initiatives, understanding the epidemic's root causes and economic impacts within Homa Bay's fishing communities remains elusive. These *fisherfolk communities*—groups dependent on fishing for their livelihoods—experience unique economic development challenges that are often intensified by the health and social burdens of HIV/AIDS. This study, therefore, seeks to unravel the multifaceted dynamics driving HIV prevalence in Homa Bay's fishing communities, examining the epidemic's profound implications for economic development.

The entangled challenges of HIV/AIDS prevalence and economic development pose a significant concern within the marginalised fisherfolk communities of Homa Bay County. Despite substantial global investments and efforts, HIV/AIDS persists as a deeply embedded issue that places significant socio-economic pressures on affected individuals. Restricted access to healthcare, pervasive stigma, and economic marginalisation contribute to these communities' vulnerability and hinder sustainable development efforts. A critical knowledge gap exists regarding the specific ways in which HIV prevalence impacts economic development within Homa Bay's fish landing beaches, where fishing forms the backbone of the local economy. These *fish landing beaches* serve as economic hubs, yet the demanding nature of fishing exacerbates the toll of HIV/AIDS, leading to reduced productivity as skilled labour is depleted. This economic strain is further compounded by healthcare costs, diverting resources from essential services like education and infrastructure, thereby perpetuating cycles of poverty and underdevelopment.

While existing research acknowledges the economic ramifications of HIV/AIDS, evidence detailing its precise impact on the fisherfolk communities of Homa Bay remains limited. Bridging this gap in understanding the *nexus* between HIV prevalence and economic dynamics is crucial for developing targeted interventions that can foster sustainable development within this vulnerable context. This study responds to this pressing need by examining the specific mechanisms through which high HIV/AIDS prevalence shapes economic pathways in

Homa Bay's fish landing beaches. Addressing these challenges is not just an academic endeavour—it is an urgent call to action to mitigate the socio-economic impacts of HIV/AIDS in one of Kenya's most affected communities.

LITERATURE REVIEW

Influence of HIV/AIDS on the Productivity of Fishermen

Several empirical studies have explored the intricate relationship between HIV/AIDS and economic development indicators, including fish catch per person and hours worked per week among fisherfolk communities. While some studies directly address these aspects, others provide valuable insights into broader economic implications that indirectly affect fish catch and working hours. For instance, Mokgele et al. (2021) found that HIV-positive individuals had lower odds of labour force participation, which may translate to fewer hours worked per week among affected individuals within fisherfolk communities. Similarly, Boyer and Ramalho (2020) discovered that firms with a higher proportion of HIV-positive workers exhibited lower productivity levels, potentially impacting the number of hours worked by employees in the fishing industry.

Furthermore, Piotrowski et al. (2020) highlighted the detrimental effects of HIV/AIDS on agricultural productivity, a sector closely linked to fishing activities in many communities. Reduced agricultural productivity may lead to increased reliance on fishing as a livelihood option, potentially resulting in longer hours worked per week by fisherfolk to compensate for income losses from other sectors. Additionally, Janssens et al. (2019) revealed that HIV/AIDS-related adult mortality led to decreased household labour supply, which could indirectly affect fish catch per person as fewer individuals are available to engage in fishing activities within households.

Despite the indirect nature of some findings, these studies collectively underscore the multifaceted impact of HIV/AIDS on economic development indicators within fisherfolk communities, including fish catch per person and hours worked per week. By elucidating the complex interplay between HIV/AIDS and economic activities, policymakers and stakeholders can develop targeted interventions to address the socio-economic challenges faced by vulnerable populations. Thus, further research focusing specifically on the direct influence of HIV/AIDS on fish catch per person and working hours per week within fisherfolk communities is warranted to provide comprehensive insights into the economic dynamics of affected regions.

Influence of HIV/AIDS on the Efficiency of Fishermen

The empirical literature provides substantial evidence regarding the influence of HIV/AIDS on the efficiency of fishermen, which encompasses various aspects of their productivity and economic activities. Mokgele et al. (2021) conducted a study in South Africa, revealing that HIV-positive individuals had lower odds of labour force participation and higher odds of absenteeism, indicating a potential reduction in work efficiency. Similarly, Boyer and Ramalho (2020) investigated the impact of HIV on firm productivity in Zambia, finding that firms with a higher proportion of HIV-positive workers exhibited lower levels of productivity, especially in small and medium-sized enterprises. These findings suggest that HIV/AIDS can directly affect the efficiency of workers, including fishermen, by reducing their ability to participate in the labour force and contribute to productive activities.

Moreover, the literature highlights the indirect effects of HIV/AIDS on the efficiency of fishermen through its impact on household welfare and economic activities. Janssens et al. (2019) explored the effect of HIV/AIDS-related deaths on household labour supply and consumption in rural Malawi, revealing significant negative impacts on household welfare outcomes. The study found that HIV/AIDS-related mortality reduced the amount of time household members spent on productive activities, such as farming, which could indirectly affect the efficiency of fishermen who rely on agricultural activities for sustenance. Similarly, Piotrowski et al. (2020) conducted a systematic review of the relationship between HIV/AIDS and agricultural productivity, indicating a reduction in productivity among smallholder farmers and households with HIV-positive members, which may extend to

fishermen who engage in agricultural activities alongside fishing.

Comparing these empirical findings with the study's results on the impact of HIV/AIDS on the efficiency of fishermen in Homa Bay County reveals notable parallels. The consensus among respondents in the study regarding the negative impact of HIV/AIDS on fishermen's productivity aligns with existing literature, which demonstrates similar trends across various sectors and geographic regions. The data from the study corroborate the broader patterns observed in previous research, emphasising the need for targeted interventions to address the challenges faced by fishermen affected by HIV/AIDS and mitigate the adverse effects on their efficiency and livelihoods. In summary, while previous research has laid the groundwork for understanding the influence of HIV/AIDS on productivity and economic activities, there are specific gaps related to the efficiency of fishermen in HIV-affected communities that this study aimed to fill.

Influence of HIV/AIDS-related Health Issues among Fishermen on their Productivity

The relationship between work-related illness rates among fisherfolk communities and economic development has garnered significant attention in recent literature, particularly within the context of HIV/AIDS prevalence. Sichei and Muchapondwa (2020) conducted a comprehensive study across Sub-Saharan Africa, revealing the negative impact of HIV/AIDS on human capital and economic growth. Their findings underscored a direct correlation between increased HIV prevalence and reduced economic productivity, with a 10 per cent rise in HIV prevalence resulting in a significant reduction in years of schooling and real GDP per capita. Similarly, Mbong and Alagoa (2021) explored the ramifications of HIV/AIDS on labour productivity and economic growth within the region, emphasising the adverse effects of the epidemic on overall economic development. Their regression analysis indicated a clear decline in both labour productivity and economic growth with rising HIV prevalence rates, highlighting the urgent need for targeted interventions to mitigate these impacts.

Pitts and Rosenman (2020) delved into the micro-level effects of HIV/AIDS on household income in South Africa, shedding light on the intricate interplay between health outcomes and economic well-being. Their panel data analysis revealed a negative association between HIV prevalence and household income, with households harbouring HIV-positive members experiencing lower income levels compared to their counterparts. Furthermore, Kapwepwe et al. (2021) provided insights into the broader economic implications of HIV/AIDS on households in Zambia. Their study demonstrated that households with HIV-positive members faced heightened financial challenges, including lower incomes and higher expenditures, ultimately exacerbating poverty levels within affected communities. Comas-Herrera et al. (2021) conducted a systematic review of the relationship between HIV/AIDS and human capital, shedding light on the multifaceted pathways through which the epidemic impacts productivity and economic development.

Despite the wealth of research examining the impact of HIV/AIDS on economic development, there remains a notable gap in the literature regarding the specific influence of work-related illness rates among fisherfolk communities on economic prosperity. While existing studies have explored the broader economic ramifications of HIV/AIDS, few have delved into the unique challenges faced by fisherfolk communities, where work-related illnesses, including HIV/AIDS, may have distinct implications for economic development.

Gaps in the Literature

The literature review highlights the multifaceted relationship between HIV/AIDS and the productivity of fishermen, revealing insights from empirical studies that address various economic indicators. While research by Mokgele et al. (2021) and Boyer and Ramalho (2020) suggests a direct impact of HIV/AIDS on labour force participation and firm productivity, respectively, there remains a gap in understanding the specific influence of HIV/AIDS on fish catch per person and working hours per week within fisherfolk communities. Additionally, studies by Janssens et al. (2019) and Piotrowski et al. (2020) illuminate the indirect effects of HIV/AIDS on household welfare and economic activities, which

may ultimately affect the efficiency of fishermen. However, the literature lacks a comprehensive analysis of the unique challenges faced by fisherfolk communities in relation to work-related illness rates and economic prosperity, indicating a need for further research to fill this gap and provide targeted interventions.

Moreover, while existing literature offers valuable insights into the influence of HIV/AIDS on the efficiency of fishermen, there is limited research specifically addressing the direct and indirect impacts of HIV/AIDS-related health issues on their productivity. Studies by Sichei and Muchapondwa (2020) and Mbong and Alagoa (2021) examine the broader economic implications of HIV/AIDS but overlook the unique challenges faced by fisherfolk communities. Consequently, there is a need for targeted research efforts to address these gaps and provide comprehensive insights into the economic dynamics of HIV-affected regions, particularly within fisherfolk communities. By elucidating these relationships, policymakers and stakeholders can develop effective interventions to mitigate the adverse effects of HIV/AIDS on fishermen's efficiency and livelihoods.

METHODOLOGY

The study employed a descriptive and cross-sectional research design, integrating both qualitative and quantitative methods to explore the impact of HIV/AIDS on economic development in Homa Bay County's fishing communities. Data was collected from five fishing communities, chosen through a mix of purposive sampling to select the study area and simple random sampling to identify participants. This approach ensured a diverse representation of perspectives, with a calculated sample size of 178 adults from 178 households across targeted sites, achieving a confidence level of 92.5 per cent.

Data collection involved structured interviews administered by trained research assistants who used the Open Data Kit (ODK) mobile platform for efficiency. Quantitative data was gathered through questionnaires, while qualitative insights were obtained via key informant interviews. The research assistants, trained at sites in Mbita and Homa Bay town, were briefed on data collection methods, ethical considerations, and mobile data handling, ensuring high data quality and integrity.

Data analysis included both descriptive and inferential statistics using SPSS to identify patterns and significant trends across demographic variables. Qualitative data was transcribed, coded, and thematically analysed, providing contextual depth to the quantitative findings. Security measures, including encryption and restricted server access, were implemented to safeguard data confidentiality. By combining qualitative and quantitative analyses, the study offers a comprehensive examination of the socio-economic implications of HIV/AIDS in these vulnerable communities.

RESULTS AND FINDINGS

Influence of HIV/AIDS on the Productivity of Fishermen

The findings show that 76.8 per cent of respondents agree that HIV/AIDS negatively impacts the productivity of fishermen, with 33.3 per cent strongly agreeing (Table 1). This high level of consensus highlights the pervasive challenges faced by fishermen who are either HIV-positive or affected by the virus within their families. The physical demands of fishing require consistent health and stamina, which are often compromised by HIV/AIDS symptoms and side effects from treatment. The relatively low level of disagreement among respondents further reinforces the belief that HIV/AIDS severely impacts productivity in this sector.

Table 1: HIV/AIDS has had a Negative Impact on the Productivity of Fishermen

		Frequency	%
Extent of agreement	Strongly Disagree	8	4.8
	Disagree	25	14.9
	Moderately Agree	6	3.6
	Agree	73	43.5
	Strongly Agree	56	33.3
	Total	**168**	**100.0**

The impact of decreased productivity among fishermen extends beyond individual income loss to affect the broader economy of fishing communities. Fishing is a key economic activity in Homa Bay County, and reductions in productivity translate to lower daily catches and fewer fish available for trade. This not only affects the income of fishermen but also disrupts the supply chain, impacting local fish markets, traders, and households reliant on fish as a primary food source. Consequently, the reduction in productivity contributes to higher rates of food insecurity and economic vulnerability, affecting the entire community.

The substantial agreement among respondents aligns with studies by Lurie and Drucker (1997) and Floyd et al. (2018), which documented similar productivity declines in other sectors due to HIV/AIDS. These findings underscore the need for interventions that address both health and economic resilience in HIV-affected communities.

Table 2 further shows that 72.1 per cent of respondents agree that HIV/AIDS has a negative impact on fishermen's health, resulting in reduced productivity, while only 17.9 per cent express disagreement.

Table 2: The Impact of HIV/AIDS on the Health and Well-being of Fishermen has resulted in Reduced Productivity

		Frequency	%
Extent of agreement	Strongly Disagree	10	6.0
	Disagree	20	11.9
	Moderately Agree	17	10.1
	Agree	71	42.3
	Strongly Agree	50	29.8
	Total	168	100.0

This agreement reinforces the understanding that compromised health directly impacts productivity. In fishing, productivity is highly dependent on physical well-being, and the symptoms of HIV/AIDS, as well as treatment side effects, reduce a fisherman's ability to work long hours or undertake physically demanding tasks. This dynamic creates a feedback loop where compromised productivity leads to income reduction, which can, in turn, limit access to adequate healthcare and nutrition, further deteriorating health and productivity. This aligns with findings from Sichei and Muchapondwa (2020) and Mbong and Alagoa (2021), which emphasise that workforce productivity is heavily influenced by health outcomes, particularly in labour-intensive industries like fishing.

Influence of HIV/AIDS on the Efficiency of Fishermen

Data from Table 3 indicates that 76.1 per cent of respondents believe HIV/AIDS negatively affects fishermen's efficiency, with 44 per cent strongly agreeing. This consensus highlights how HIV/AIDS interferes with work efficiency, primarily through health complications that limit fishermen's physical and mental capacity.

Table 3: HIV/AIDS has had a Negative Impact on the Efficiency of Fishermen

		Frequency	%
Extent of agreement	Strongly Disagree	11	6.5
	Disagree	20	11.9
	Moderately Agree	9	5.4
	Agree	54	32.1
	Strongly Agree	74	44.0
	Total	168	100.0

Efficiency in fishing involves not only physical stamina but also the mental acuity required for tasks like night fishing and equipment maintenance. HIV/AIDS-related symptoms, such as fatigue and mood changes, reduce the ability to perform these tasks effectively, leading to inefficiency. This inefficiency not only decreases the amount of fish caught but also affects the quality of work, potentially increasing the frequency of equipment issues or accidents. Reduced efficiency has a direct impact on income, as inefficient workers generate less output, affecting their earnings and the economic stability of their households. This aligns with Mokgele et al. (2021) and Boyer and Ramalho (2020), who found that health issues decrease workforce efficiency in other labor-intensive sectors. Interventions targeting healthcare and support systems for HIV-affected fishermen would, therefore, enhance productivity and, in turn, improve economic resilience within these communities.

Influence of HIV/AIDS-related Health Issues among Fishermen on their Productivity

Table 4 presents data showing how HIV/AIDS-related health issues lead to frequent missed workdays. Specifically, 31.6 per cent of respondents reported missing at least two days per week due to illness, with 25.6 per cent missing three days. These frequent absences disrupt fishing schedules, significantly affecting productivity.

Table 4: How Many Days in a Week would the Boat Fail to go Fishing due to HIV-Related Sickness?

		(n)	%
No of days per week	0.0	44	26.2
	1.0	16	9.5
	2.0	53	31.6
	3.0	43	25.6
	4.0	3	1.8
	5.0	3	1.8
	6.0	2	1.2
	7.0	4	2.4
	Total	**168**	**100.0**

Missing fishing days has direct economic consequences, as fishers lose daily income opportunities. For communities dependent on consistent fishing schedules, absenteeism disrupts the steady supply of fish to local markets, affecting traders and reducing community revenue. This issue creates economic ripples, as decreased availability of fish increases local prices, affecting affordability and access to protein sources. Financially, reduced income limits fishermen's ability to reinvest in necessary equipment or healthcare, perpetuating cycles of economic and health vulnerabilities. This finding aligns with research by Sichei and Muchapondwa (2020), which links health issues to declines in economic productivity and household income.

Table 5 quantifies the economic loss associated with missed fishing days, indicating that large boats incur weekly losses of approximately KES 250,661, while smaller boats lose around KES 104,357. These figures highlight the financial toll that health-related absenteeism places on the fishing economy in Homa Bay.

Table 5: Impact of HIV on the Weight of Fish Caught per Day in Kgs (Statistical Mean) (N=168)

	Fish catch in Kg/day and week by a big boat.	Fish catch in Kg/day and week by a small boat.	Total average sale of fish catches by big boat (KES).	Total average sale of fish catches by small boat (KES).
Fish catch and sales per boat in Kgs/day and KES. (Mean)	250.7	104.4	125,330.5	52,178.5
Fish catch and sales per boat in Kgs/week and KES. (Mean)	1,754.6	730.5	877,313.50	365,249.50
NB: Price of Nile perch per Kg in August 2023 at the fish landing beaches in Homa Bay.				

The significant weekly income losses for both large and small boats indicate the financial vulnerability of fishing communities impacted by HIV/AIDS. These financial strains reduce the ability of fishermen to invest in better fishing gear, cover healthcare expenses, or save for economic uncertainties. As a result, these losses inhibit economic growth within the community and contribute to broader poverty rates. The reduced productivity not only impacts individual fishermen but also limits the community's economic development potential, as lower fish sales reduce local economic activity.

Table 6 further details the economic loss from missed fishing days due to HIV-related illnesses, underscoring the financial impact of absenteeism on weekly income.

Table 6: Loss in Fish Catch and Sales by Big and Small Boats in Kes/Week due to HIV-Related Illnesses

	Days missed by big boat	Days missed by small boat	Loss in sales by big boat in KES/week	Loss in sales by small boat in KES/week
No of days boat fails to go fishing	2	2	250,661.00	104,357.00
One fishing boat requires a minimum of 4 (four) able-bodied men to go fishing in the lake at night.				

The economic consequences of absenteeism are clear from the income losses shown in Table 6. For communities already facing economic challenges, these income reductions can be debilitating. Lost

sales mean that families have less disposable income to allocate toward essential expenses like food, education, and healthcare. The community as a whole suffers as reduced spending power circulates less revenue within local markets, further stalling economic growth. These findings echo studies by Piotrowski et al. (2020) and Boyer and Ramalho (2020), which show that absenteeism from health-related issues impacts income potential in resource-dependent industries.

CONCLUSION AND RECOMMENDATIONS

Conclusion: The study reveals the substantial impact of HIV/AIDS-related health issues on the productivity and efficiency of fishermen in Homa Bay County, Kenya. A significant majority of respondents acknowledge the negative effects of HIV/AIDS, with fishing schedules frequently disrupted due to illness among crew members. These disruptions lead to reduced fish catches and considerable sales losses, underscoring the economic vulnerability of fishing communities affected by health-related challenges. Moreover, the study highlights the interconnectedness between health and economic stability, pointing to the need for holistic approaches to address the adverse effects of HIV/AIDS on both individual livelihoods and community well-being.

The findings indicate that the decline in fishermen's productivity has far-reaching consequences that extend beyond individual income loss. Reduced productivity diminishes the local fish supply, which not only lowers income for fish traders and associated businesses but also impacts food security in the community, where fish is a primary source of protein. These productivity losses contribute to higher poverty rates, reducing household purchasing power and hindering the economic development of the community. The cumulative effect of these challenges jeopardises the fishing industry's viability in Homa Bay County, creating a cycle of economic hardship and vulnerability.

Lower fish availability disrupts local markets and affects pricing, making fish less accessible and affordable for some households, further exacerbating food insecurity. The reduced economic activity in the fishing sector also negatively impacts related industries, such as fish processing and local retail, as fewer fish are available for sale and export. This economic contraction affects not only the direct participants in the fishing industry but also the wider community that depends on this sector for economic stability and growth.

These findings call for coordinated efforts from multiple sectors to address both the health and economic challenges in Homa Bay's fishing communities. Improving healthcare access, strengthening HIV/AIDS prevention and awareness programs, and providing economic support to affected individuals and families are essential first steps. Furthermore, collaboration between healthcare providers, economic development agencies, and social services is vital to creating a sustainable response that tackles the underlying issues contributing to reduced productivity and economic decline. By adopting a comprehensive, cross-sectoral approach, policymakers and stakeholders can work toward enhancing the resilience and economic viability of fishing communities affected by HIV/AIDS, ensuring a more stable and prosperous future for these communities.

Recommendations: Based on the findings of the study, several recommendations can be made to address the challenges posed by HIV/AIDS-related health issues among fishermen in Homa Bay County. Firstly, there is a need to strengthen healthcare infrastructure and services in fishing communities to improve access to HIV testing, treatment, and support services. This includes providing training and resources to healthcare providers and community health workers to enhance their capacity to deliver quality care to affected individuals. Additionally, targeted awareness and prevention programs should be implemented to educate fishermen about the risks of HIV/AIDS and promote healthy behaviours and practices. These programs should be culturally sensitive and tailored to the specific needs and challenges faced by fishing communities. Furthermore, economic support mechanisms, such as microfinance initiatives and income-generating activities, should be introduced to mitigate the financial impact of HIV/AIDS-related illnesses on fishermen and their families. By addressing these issues comprehensively, stakeholders can work towards building resilient and sustainable fishing

communities that are better equipped to cope with the challenges posed by HIV/AIDS.

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