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Non-adherence to antiretroviral treatment among migrating fishermen in western Kenya's islands: a rapid qualitative study

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Fishing communities in many Sub-Saharan African countries are a high-risk population group disproportionately affected by the HIV epidemic. The association of migration with HIV and AIDS in sub-Saharan Africa is well documented. Frequent mobility, high consumption of alcohol, multiple sexual partners, transactional and commercial sex, poor health infrastructure and limited access to health services are reported among the main factors shaping the HIV epidemic in fishing communities. Moreover, studies have been conducted in sub-Saharan Africa on adherence to antiretroviral treatment (ART) among fishers; however, non-adherence to ART remains poorly understood among migrating fishermen in the western Kenya islands. This qualitative study investigated factors contributing to non-adherence among fishermen in the western Kenya islands. This study utilised 51 in-depth interviews and six focus group discussions to highlight factors contributing to non-adherence to ART by mobile fishermen. Data were analysed using a contextualised thematic analysis. Results show that migration, alcohol consumption and ART sharing contributed to non-adherence. Adherence to ART is a powerful predictor of survival for individuals living with HIV and AIDS. The Kenyan government can use lessons from this study to target fishermen to achieve the UNAIDS 2025 recommendations on people-centred and context-specific service responses to AIDS as this would move Kenya closer to the 90% reduction in annual infections by 2030. This article contributes to a deeper understanding of how and why fishermen from the islands in western Kenya struggle to adhere to treatment even though they can access ARTs through the public health care system. Longitudinal studies should be conducted to explore how the factors associated with non-adherence correlate with other key health outcomes such as drug resistance.

Keywords: anthropology, HIV and AIDS, Luo community, migrating, sexual behaviour

Introduction

Fisheries are among the most important natural resources in Africa and vital for the economy and survival of many communities in several African countries. Fishing communities in many sub-Saharan African countries are a high-risk population group disproportionately affected by the HIV epidemic (Musumari et al., 2021). Patient adherence to antiretroviral treatment (ART) remains a complex challenge for HIV treatment and prevention efforts (Rosen et al., 2019). Thus, adherence to antiretroviral therapy (ART) is beneficial in reducing the risk of the emergence of HIV-resistant strains (Yaya et al., 2014). Sub-optimal ART adherence, including periodic interruptions of HIV treatment or defaulting from care altogether, facilitates HIV disease progression and has been implicated in resistance to first- and second-line therapies (Beyrer and Pozniak, 2017). Indeed, poor ART adherence threatens Kenya's response to AIDS as the country aims to move closer to the 90% reduction in annual infections by 2030. Moreover, such poor adherence also makes it difficult for Kenya to achieve the UNAIDS 2025 mission on a people-centred and context-specific service response to AIDS (Joint United Nations Programme on HIV/AIDS [UNAIDS], 2020). Short-term mobility and recent migration present an additional challenge to the plethora of

barriers that people living with HIV (PLWH) experience when seeking care (Ombere et al., 2015; Phillips et al., 2018). Population mobility is commonly identified as a key driver of the HIV epidemic, linking geographically separate epidemics and intensifying transmission through leading to riskier sexual behaviours (Deane et al., 2010). High fisherfolk mobility, for instance, may result from the need to maintain good fish catches in the context of seasonal fish stock fluctuations (Nunan, 2010). According to Kwena et al. (2020) and Ombere et al. (2015), such mobilities are associated with engagement in transactional sex while the fisherfolk are away from home for long periods. Additionally, many studies have associated mobility with poor adherence to ART and retention in HIV care, leading to treatment interruptions and poor health outcomes (Seeley and Allison, 2005; Isdory et al., 2015; Tumwine et al., 2019).

Studies have shown that good adherence to ART has huge benefits because it is necessary not only in reducing the risk of the emergence of HIV resistance strains, but also in improving the health status of PLWHA (Meresse et al., 2014; Yaya et al., 2014; Mukui et al., 2016). Moreover, adherence to ART and the success of treatment have other public health benefits such as lowering community viral load and reducing sexual, perinatal and injection-related transmission of HIV (Cohen et al., 2011; Mukui et al., 2016).

Thus, targeting migrating populations such as the fishermen can be one possible way to reduce the fishing community's viral loads.

On Lake Victoria in East Africa, most migration is characterised by movement between landing sites, particularly of male boat crews responding to localised changes in fish productivity and using social networks to identify better fishing grounds and areas of higher fish prices (Nunan, 2010; Ombere et al., 2015). The existing literature on fisherfolk migration reports the importance of movement for their livelihoods, and that it is primarily the "pull" factors of better catches and fish prices elsewhere that provide the incentives to move. There is therefore a seasonal dimension to this fisherfolk movement undertaken to sustain livelihoods, although movement can also become part of cultural norms (Nunan, 2010; Ombere et al., 2015; 2018).

Moreover, recent studies have shown how occupational mobility, seasonal migration, substance use and health service disengagement are linked to suboptimal HIV care retention and health outcomes in migrating communities (Lubega et al., 2015; Rosen et al., 2019). A recent study in Uganda described how mobility among fishermen was the principal driver of ART sharing and was associated with other barriers to treatment access, including stigma, fear of adverse health provider interactions and transportation (Rosen et al., 2019). A recent study in Uganda also showed how fishermen share ART to enhance adherence. Apart from migration, the study did not explore other factors that could lead to non-adherence to ART among migrating fishermen in Uganda. In Kenya, there is a dearth of information on the social and behavioural mechanisms underlying the relationship between fishermen's migration and non-adherence to ART. This article addresses this gap as Kenya moves to the provision of ART to all persons living with HIV irrespective of CD4 levels in line with WHO guidelines on ART (World Health Organization [WHO], 2016).

Kenya has a national HIV prevalence of 4.9% (National AIDS Control Council, 2018). However, there has been a sharp decline in HIV incidence among adults of between 15 and 49 years old from 0.35% in 2010 to 0.19% in 2017, possibly due to the scale-up of various prevention and treatment programmes such as ART (National AIDS Control Council, 2018). Available literature from studies in small localised fishing communities from Kenya and Uganda show that Lake Victoria fishing communities, who comprise fishermen, fish traders and processors, boat owners and other traders selling assorted fishing commodities, as well as restaurant and bar workers and sex workers at the fish-landing beaches, are at a much higher risk of HIV infection compared to the general population (Brockhoff and Biddlecom, 1999; Sileo et al., 2016; Ombere et al., 2018; Tumwine et al., 2019; Kwena et al., 2020). HIV prevalence at the fish-landing beaches, defined as the designated areas where fishing boats land with fish for sale, has been shown to range from anywhere between 12 to 32% (Kwena et al., 2010; 2013). While drug sharing is widely documented for other prescription medications, few studies examine ART drug sharing among people living with HIV (Rosen et al., 2019).

Given the unique social, economic and environmental circumstances of such migrating fishermen's populations

at fish-landing sites, there is a dearth of information on the factors that could lead to non-adherence to ART by the mobile fishermen who are already in HIV care and on treatment along Lake Victoria in western Kenya. This is a gap that this article addresses as Kenya moves to the provision of ART to all persons living with HIV irrespective of CD4 levels in line with WHO guidelines on ART and the UNAIDS 2025 targets (WHO, 2016; UNAIDS, 2020). Additionally, understanding the levels and associated factors of non-adherence to antiretroviral therapy (ART) is crucial in designing interventions to improve ART adherence and health outcomes (Mukui et al., 2016).

Methods

The study was conducted from April to May 2021 on three main islands in Siaya County in western Kenya (Ombere et al., 2015). The follow-up rapid qualitative study aimed to provide evidence-based facts to the Siaya County government on what factors hinder adherence to ART among migrating fishermen. Nationally, Siaya County has the highest adult HIV prevalence of 21.0%, approximately four times the national HIV prevalence of 4.9% (National AIDS Control Council, 2018). The islands (Mageta, Oyamo and Ndeda) were purposively selected for this study because they had a lot of activities related to fishing, and low male condom use (National AIDS Control Council, 2018; Ombere, 2021). Initially, the overall study objective was to assess the targeting and uptake of ART among medically circumcised fishermen along the fish-landing beaches in western Kenya. However, an interesting theme emerged regarding non-adherence to ART by the mobile fishermen on the islands of western Kenya who were already in HIV care and on treatment.

The study employed a purposive sampling method to access fishermen who were on ART. Eligibility criteria for participation in this study included that fishermen had to be HIV infected and on ART for at least six months before the study, at least 18 years old and on migration at the selected beach. The study utilised purposive sampling to find the fishermen. Two male grassroots mobilisers and three community health volunteers who were well-known fishermen on the three islands assisted in getting access to the fishermen and the screening process to know who met the inclusion criteria for this study. Out of 105 fishermen on ART that met the inclusion criteria and were identified by the grassroots mobilisers, only 51 fishermen consented to participate in this study. The study utilised 51 in-depth interviews (IDIs) followed by focus group discussions (FGDs) with the fishermen. The FGDs comprised 7 to 10 fishermen on each island, and each session lasted approximately 60 minutes. The FGD sessions were arranged in a convenient and neutral space suggested by the fishermen on each island. Apart from the two grassroots mobilisers, the researcher led two trained research assistants in conducting the 51 IDIs and six FGDs (two FGDs on each island). The interviews were audio-recorded. The interviews were done in Dholuo (the local language), and the responses from the respondents were translated into English by the first author. COVID-19 protocols were followed and the first author provided face masks to the

participants during the IDIs and FGDs. Social and physical distance was maintained throughout the interviews.

Data analysis began while the fieldwork was in progress. The first author took note of emerging themes and how they developed in the course of the research. Data from FGDs and IDIs were analysed using a contextualised thematic analysis by the first author who transcribed the data from IDIs and FGDs. The second author has a solid background in qualitative analysis methods and helped in the confirmation and identification of the additional emerging themes for coding. The coding scheme was then modified after a review of the data by all authors and one independent research supervisor grounded in qualitative research and HIV and AIDS in western Kenya (not in this article). Discrepancies in coding were discussed and a consensus reached by all authors. Finally, through an iterative process of reviewing of the coded data, major themes were identified. Qualitative data are presented here in textual descriptions and illustrations using verbatim quotes.

The study was approved by Maseno University Ethical Review Committee. Informed consent was obtained from all participants. A summary of the study findings was made available to the participants in a dissemination process in a location agreed by the researcher and the study participants at Mahanga beach on Mageta Island through the beach chairperson's *baraza* or formal beach meeting after the study.

Results

Respondents were allocated pseudonyms to ensure confidentiality.

Migration

Migration emerged as a theme in almost all the FGDs and IDIs with the fishermen in this study. The excerpts below show that fishermen predicted the duration of their trips, however, this was disrupted by low or high fish catches, and during such periods, fishermen were most likely to run out of medication, thus leading to treatment lapses. The excerpt reflects how economic disparity (looking for more money) catalysed migration from one island to another, contributing to limited time to get prescription refills from the mainland.

We migrate to islands, yes, but if the catch is good on the island, most fishermen prefer getting more money first. Sometimes you hear fish catch is good in beach "X" and your medicine is almost over. We go for money first then go for treatment later; this can take weeks or even a month (Orobiia, FGD).

Another fisherman added:

Most fishermen on ART default taking drugs when they migrate to the islands because we anticipate a short stay, then we find that our migration, searching for a heavy fish catch, takes two or three months and this makes us default (Madhar – head of fishing crew, IDI).

Alcohol consumption

This study shows that alcohol use occurs in both occupational and social settings. Social drinking was usually in the company of other men (family, peers) and in local bars during the daytime and at night, depending on the time to go

fishing and other work schedules. The participants reported that alcohol use was considered a normalised part of the fishing occupation, and it made fishermen have confidence when the lake was rough. Alcohol consumption led to non-adherence due to addiction and fear of vomiting up the medication. Alcohol made fishermen forget to take their medication, leading to non-adherence and sometimes death.

We carry alcohol, which gives us the confidence to face the rough lake. I avoid taking my drugs when drunk, because I vomit (Aginga, IDI).

FGDs corroborated results from IDIs: *"But when we take alcohol, it is so difficult to take our drugs; one can vomit easily"* (Amine, FGD). Approximately 38 men interviewed in this study alluded to using alcohol for stress relief, eventually leading to non-adherence. Specific stressors included coping with HIV and AIDS-related stress, financial worries and marital and interpersonal conflict. Specific HIV-related stressors identified by the participants included being diagnosed with HIV, HIV-related stigma, grief for loved ones who had died from HIV, and low fish catch, meaning not enough money to send to the families at home.

Because of stress, we take alcohol to forget sad moments. When drunk, I tell you, so many fishermen forget to take their medicine, which is common with those who take alcohol (Ojameh, IDI).

Some of us here fail to adhere to taking medicine because of alcohol. Alcohol relieves the stress such as lack of money to feed the family, sometimes, our friends ridicule us as jo-ndilo, meaning those who take medicine, and some take alcohol to divert stress that they are HIV positive (Alefty, IDI).

A majority of the participants demonstrated awareness that people living with HIV and AIDS should avoid or reduce alcohol use. This was because alcohol affects adherence and treatment efficacy. Moreover, alcohol consumption also made the participants simply forget to take their medication. Probed about where the participants got this knowledge, they noted that it was primarily obtained from health care providers.

We know that alcohol affects adherence to treatment and taking our medicine. Health providers always remind us that we need to avoid taking alcohol for better treatment (Magunga, FGD).

ART sharing

Participants mentioned that ART sharing was a social factor that contributed to non-adherence among migrating fishermen.

Adherence becomes complicated when we migrate and stay long on the islands. I gave out my medicine to a colleague who had forgotten his medicine on the other island. Borrowing HIV drugs is like a culture among fishermen (Miaagah, IDI).

Another participant added: *"It is true, sharing medicine compromises adherence to ART among us, the migrating fishermen"* (Okago, FGD).

I borrowed some tablets from my friend. My medicine got finished and I was attending a colleague's funeral. I don't think sharing is bad, provided we use the same type of medicine. However, as much

as sharing partly helps in adherence, it also has negative consequences. Because of sharing, I know my friend's dosage is interfered with and he is likely to run out of medicine (Monye, IDI).

From the excerpt, it is evident that ART sharing was not practised indiscriminately. Participants described specific criteria for identifying ART suitable for sharing, specifically using tablets' physical attributes (markings and colour) as indicators of similar treatment regimens. As much as ART sharing could facilitate adherence in the context of frequent migration, such sharing of medicine could lead to both sharer and borrower running out of medication and thus experiencing treatment interruptions. The study participants who finished their medicines borrowed HIV medication from their colleagues as a possible solution to treatment adherence. However, this compromised adherence to ART among the migrating fishermen, especially the medicine lender.

Discussion

Global efforts to end HIV and AIDS by 2030 focus on reducing and eventually eliminating new infections in priority populations. From this rapid qualitative study, migration, alcohol consumption, the nature of work and ART sharing were some of the main factors contributing to non-adherence to ART by mobile fishermen.

Prolonged viral suppression is only achievable if the virus does not get the chance to replicate and develop drug-resistant HIV variants. The virus can replicate not only if the patient is untreated, but also if the viral replication is not completely inhibited by the treatment (i.e. due to sub-optimal drug exposure) (Paterson et al., 2002). When replication occurs during treatment, this leads to genetic variation, which leads to the emergence of variants that might be resistant to antiretroviral treatment (Tessema et al., 2010).

The migration of fishermen has been a significant threat to ART adherence and the health of fisherfolk living with HIV. From the FGDs and in-depth interviews, fishermen described how migration from the mainland to the islands in search of fish and money has been the most significant factor in non-adherence and needed to be addressed urgently. Mobility is a human process affecting a broad range of social outcomes (Deane et al., 2010). A recent study also shows that mobility is a potential barrier to HIV care and treatment for mobile individuals living with HIV as it affects entry into care and limits engagement and retention (Olawore et al., 2018; Bahemuka et al., 2022). Recent studies in Uganda and Kenya (Seeley and Allison, 2005; Ombere et al., 2015; Rosen et al., 2019; Tumwine et al., 2019) also reported that mobility encourages behaviour that increases the risk of infection and poses problems for treatment. However, according to Nunan (2010), migration forms an important livelihood strategy for many fisherfolk, mainly through responding to fluctuating fish availability and prices. In the context of this study, when fishermen migrate, they carry HIV drugs that they anticipate will be enough during their stay on the islands. However, due to migration, their HIV medication was finished before the anticipated time, thus leading to non-adherence. Findings from this study suggest that the fishermen's mobility negatively impacted adherence to ART. For instance, previous studies

associate such mobility with engagement in transactional sex while fisherfolk are away from home for long periods, posing a risk to HIV and AIDS transmission (Seeley and Allison, 2005; Ombere et al., 2015). Recent studies also reported that over one-quarter of patients enrolled in HIV care programmes in sub-Saharan Africa are lost to follow-up at 12 months post-ART initiation (Haas et al., 2016). The mobility that takes patients away from their HIV care clinics is one of the reasons (Camlin et al., 2018).

Harmful alcohol use is a pattern of use that causes damage to health, either physical or mental. It is worth noting that almost all fishermen interviewed in this study reported that taking alcohol led to non-adherence. According to Seeley and Allison (2005) and Sileo, Kizito et al. (2019), alcohol may interact with prescribed medications, lessening the treatment's effectiveness. Of course, this impact depends on the amount of alcohol consumed, the specific drugs prescribed and the health status of the person taking the ART. Alcohol consumption is a mechanism fishermen use to cope with risk and uncertainty in their work (Sileo, Kizito et al., 2019). Gratz (2003) argued that alcohol and drugs can provide a way of coping with risky, dangerous or unpleasant work. Studies in the USA reported that alcohol use worsens antiretroviral utilisation or adherence (Lucas et al., 2002). Current study findings corroborate other studies which reported that alcohol use adversely affects those on ART through poor compliance (Tumwesigye et al., 2012). Seeley and Allison (2005) noted that the occupational sub-culture of fishermen, with respect to taking risks, plays a part in their increased vulnerability to HIV infection and may also affect their adherence to therapy. Othieno et al. (2012) noted that alcohol use affected HIV prevention and AIDS treatment in several ways. Alcohol use leads to dis-inhibition through its overall psycho-depressant actions on the brain.

Moreover, Nkosi et al. (2016) also reported that alcohol consumption affected ART adherence. There is unintentional non-adherence due to impairment of cognitive functioning (e.g. forgetting) from drinking alcohol. Additionally, alcohol also had an effect on intentional non-adherence due to patients' beliefs that mixing alcohol and ART results in interactive toxicity, or renders the ART ineffective (Camlin et al., 2018). Therefore, alcohol use is one of the key barriers to ART adherence for men in HIV care in fishing communities on the islands in western Kenya. Despite the desire to reduce drinking, men identified considerable stress and social and occupational barriers to alcohol reduction. People living with HIV and AIDS on ART from Uganda also reported that concurrent alcohol misuse renders treatment ineffective as patients may fail to adhere to the treatment regimens required to achieve viral suppression. Also, alcohol may interact with the ART medications, further exacerbating their adverse effects (Chemhaka et al., 2021).

Sharing ART was commonly mentioned as a factor contributing to non-adherence to ART. The findings corroborate results from Uganda. Occupational mobility has recently been reported as one of the main reasons for ART sharing among fishermen (Rosen et al., 2019). According to Rosen et al. (2019) and Bogart et al. (2016), fishermen's long journeys and irregular work schedules on Lake Victoria

have been reported as challenges to adherence. The unpredictable duration of these trips, which varied according to fish catch, meant fishermen could run out of medication, thus leading to non-adherence. Moreover, ART sharing also carries risks of improper drug dosing, treatment interruption and poor health outcomes, including drug resistance (Rosen et al., 2019).

The findings described in this article add to the growing literature on fisherfolk's experiences of adherence to treatment and care in Africa. For instance, recent qualitative research has described the influence of transport (Tumwine et al., 2019), alcohol use (Sileo, Wanyenze et al., 2019), and masculinity (Sileo, Reed et al., 2019) on HIV-related health care-seeking practices in these settings. This article provides an in-depth account of how mobility influences adherence to ART among fishermen on western Kenya islands.

Conclusion

Fishing communities in many sub-Saharan African countries are a high-risk population group disproportionately affected by the HIV epidemic. While this qualitative approach facilitated an in-depth discussion of factors contributing to non-adherence to ART by migrating fishermen, measuring the prevalence of non-adherence in this population was difficult. However, even in the small sample, the study participants commonly mentioned contributing factors to non-adherence, such as migration, alcohol consumption and sharing of ART. This is the first qualitative study on non-adherence to ART by migrating fishermen on the western Kenya islands. This article contributes to a deeper understanding of how and why fishermen from the islands in western Kenya struggle to adhere to treatment even though they can access ARTs through the public health care system. Lessons can be drawn from the findings to enable Kenya to achieve the UNAIDS 90-90-90 recommendation by 2030. Additionally, the county government can develop policies targeting migrating populations such as the fishermen for the establishment of mobile clinics to serve these vulnerable populations. Longitudinal studies should be conducted to explore the extent to which the factors associated with non-adherence are correlated with other key health outcomes of drug resistance.

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