



# Barriers and Facilitators to Retention in Care and Adherence to Antiretroviral Therapy in a Ghanaian Referral Hospital

Amida Awudu Rahman

Department of Public Health, Greater Accra Regional Hospital (GARH), Accra, Ghana

## Email address:

amidar31@gmail.com

## To cite this article:

Amida Awudu Rahman. Barriers and Facilitators to Retention in Care and Adherence to Antiretroviral Therapy in a Ghanaian Referral Hospital. *International Journal of HIV/AIDS Prevention, Education and Behavioural Science*. Vol. 9, No. 2, 2023, pp. 39-45.

doi: 10.11648/j.ijhpebs.20230902.11

Received: July 6, 2023; Accepted: July 22, 2023; Published: July 31, 2023

---

**Abstract:** The rise in new HIV infection cases has prompted widespread worry. High trends of patients receiving anti-retroviral therapy in hospitals have been caused by the increase, particularly in Sub-Saharan Africa, including Ghana, where more than 300,000 people are currently receiving ART. HIV incidence is rising in Ghana, particularly among young people, despite the implementation of goals, policies, and initiatives aimed at improving patient adherence and length of stay in care. This issue has been partially attributed to the lack of scholarly works on the subject, which has hampered efforts to meet the 95-95-95 targets. This study examined the enablers and impediments to adherence and retention to ART among HIV patients at the Greater Accra Regional Hospital in order to contribute to policy and academic literature. This study was significant because it offers advice for adherence and retention policies to assist governments and international organizations like UNAIDS. To support the study, the Anderson Model of Healthcare Utilization was used. Case study using qualitative methodologies was used. The findings demonstrate that non-disclosure of status, socio-cultural ties, the perception of improved health, access to free medication, cultural and religious preferences, and support from the healthcare facility all help patients adhere to ART and stay in care. Additionally, the study discovered that Model of Hopes have a vital role as counselors, educators, and hope models who visit patients at home, engage them in conversation, and motivate them to adhere. Because of this, client adherence to ART has improved. According to the study, older women who are not employed maintain their treatment regimens better than both working and unemployed males. The study also found that there has been a gradual shift in patients' priorities, with less reliance on spiritual guidance and religious supplications at the expense of ART. Issues with money, the economy, stigma, and religion are obstacles to HIV patients' adherence and retention.

**Keywords:** HIV, Antiretroviral Therapy (ART), Retention in Care and Adherence to ART

---

## 1. Background

Many academics and medical professionals are puzzling over how to limit and contain the spread of HIV/AIDS at the patient level in the wake of the recent spike in worldwide HIV/AIDS statistics [22, 25]. Over 35 million people worldwide are estimated to have HIV/AIDS, and of those, 19 million do not realize they are infected, according to a 2014 UNAIDS report on the AIDS epidemic [9]. Retention in care of HIV patients is a key metric for any HIV management program, according to the World Health Organization. Although international health organizations are working to

increase patient retention in care, the trend and numbers in Sub-Saharan Africa are declining [14]. Continuous involvement with medical care at a healthcare facility after initial enrollment in the system is referred to as adhesion and retention in HIV care [3, 16]. The patient's capacity to make at least two appointments at the clinic in a year with appointments spaced by at least 2 to 6 months [3, 16]. The global average retention rate at 12 months after starting ART is 81% [21, 24]. According to a meta-analysis, Sub-Saharan Africa had a retention rate that was 77% lower than the global average after initiating ART for a year [7]. Improvements in HIV care management systems, according to [4], are essential

to ensuring patient retention and adherence to antiretroviral therapy for those with the disease. Antiretroviral therapy enhances the quality of life for people who are infected with the virus and lowers the prevalence, incidence, and fatalities associated with HIV [5].

With reference to the first, second, and third 95, Ghana is performing at 71%, 99%, and 76%, respectively, compared to the global performance of 85%, 75%, and 68%, respectively [1, 3]. This demonstrates that there is a lack of care retention and adherence, which leads to viral resistance to first-line ART. This is problematic in countries where the supply of second- and third-line antiretroviral drugs may be limited. As a result, there may be insufficient viral suppression, which increases the risk of HIV transmission, opportunistic infection, and decreased survival rates for those who are HIV-positive [13]. This subsequently undermines efforts made at the national and international levels to meet the 95 95 95 targets by 2030 [5].

Despite studies looking at the barriers to these practices [11, 12, 16], there is little research on retention in HIV care and adherence to ART in Ghana [2]. Determining the variables that affect adherence and retention to ART as well as those that do not is the aim of this study. The capacity to identify obstacles to and factors that support medication adherence at the level of the individual patient was hampered by previous studies' major focus on factors impacting patient retention at the healthcare level [3]. Therefore, it was more difficult to understand the factors influencing patients' adherence to and retention in HIV care. In order to reduce the risk of opportunistic infection, lower the risk of HIV transmission, and reduce HIV-related morbidity and mortality in Ghana, this study aims to examine the barriers to retention in HIV care as well as adherence to ART from the perspective of HIV patients. It also provides creative HIV care management solutions.

## 2. Methodology

The study used qualitative approaches to gather and examine opinions and replies from respondents who were HIV patients. Because it helps researchers conduct their research effectively, the qualitative method is adopted in this study. To investigate the study objectives, this research uses a case study methodology. 12 respondents were selected for the data using a purposeful sampling strategy. This is because only respondents who had been diagnosed with HIV at least six months prior, who were older than 18, and who attended the ART unit of GARH were of interest to the researcher. According to the research, there should be between 8 and 12 people in a focus group discussion. Nevertheless, we were able to sample six individuals per focus group. This is due to the sensitive nature of the study and the difficulty in obtaining consent from clients, particularly men. Only 12 of the 20 participants who volunteered to take part in the study showed up for the conversations. Interviews were used to gather primary data for the study. Experienced research assistants who are proficient in twi performed the interviews and

discussions. All conversations and interviews were audio recorded, and brief notes were also taken. The data were analyzed using a thematic or content approach. Each respondent was given a number when the audio recordings were typed into a Microsoft Word document. To aid in coding and analysis, the interview transcript was afterwards loaded into QSR Nvivo 11. The primary pattern and processes evident in the responses were then highlighted using thematic data analysis, which was used to qualitatively evaluate the data. This was done in order to look into and identify the important ideas and expressions from the interview responses that most accurately reflected the respondents' perspectives. The themes were evaluated and improved prior to selecting the final theme names.

It was guaranteed that the responses of the researchers would only be used for scholarly purposes. Respondents had the choice to decline participation in the data collection procedure. It was requested that the GARH management give their consent. Participants were given a detailed explanation of the study and were asked for their informed permission. Participants had the option of stopping the interview, refusing to answer some questions, or refusing to take part in the study at all. They were not required to participate in the study. Information is always kept private. After the consent form had been signed or thumb printed, the participants were questioned. To ensure uniformity and accuracy, research assistants received training on suitable data collection and data entry techniques.

## 3. Findings and Discussion of Results

Descriptive statistics were employed to assess the demographic profile of 12 respondents, while narrative analysis was used to analyze the qualitative data. In this chapter, the letter "R" stands for respondents. Table 1 shows the profile of respondents' responses.

*Table 1. Profile of Respondents.*

Variable	Frequency	Percent (%)
Sex		
Male	0	0.0
Female	12	100
Age (years)		
31-40	7	58.33
41-50	3	25.00
Above 50		16.67
Marital status		
Single	5	41.67
Married	2	16.67
Widow	4	33.33
Divorced /separated	1	8.33
Educational level		
None	5	41.67
Primary	4	33.33
JHS	2	16.67
SHS	1	8.33
Religion		
Christian	9	75.00
Moslem	2	16.67
No religion	1	8.33

Variable	Frequency	Percent (%)
Occupation		
Unemployed	8	66.67
Self-employed	4	33.33

Source: Field Survey (2023)

The table above shows the profile of the study participants. There was a total of 12 participants, and there was not a single man among them. Due to only two males accepting the study, out of all the potential participants who were contacted, this occurred. On the day of the discussions, these two men did not appear. People over 50 years old made up 83.3% of the responses. Most of the participants—roughly half—had no formal schooling. They were mostly Christians (75%). Of the total participants, 66.67% were unemployed.

### 3.1. Adherence and Retention in Care for Art Patients' Facilitators

The results of the study showed that many patient-specific factors have an impact on adherence to ART and retention in therapy. According to the study, factors such as cultural norms, religious and family support, non-disclosure of status, model of hope, reminder, social and relational variables, medication characteristics, free medication, and social and relational variables all aid HIV patients in the region in sticking with and maintaining ART.

#### 3.1.1. Predisposing Facilitators

In terms of predisposing factors, the study's findings showed that patients seek to maintain their privacy to prevent stigmatization. Patients whose HIV status is unknown frequently feel liberated from stigmatization and can focus on their treatments without feeling like victims.

A Respondent stated, "that is why for me I decided not to tell anyone, not even my husband until I started falling sick. My children don't even know because they are not staying with me. Only my pastor is aware. On my appointment day, I get in the morning and walk straight to take my drug. The people would have stigmatized me if they knew that I was HIV positive". (R1)

The study's findings also indicate that wives frequently suggest to their husbands that they seek medical attention at the hospital. Married patients also get support from their partners. Patients who are married must adhere to ART because they witnessed their husband's demise while getting better while taking medication. Four of the 12 responders said they were the ones who suggested the guys get help, but they refused, which ultimately caused their deaths.

A respondent stated that; "I told my husband that there is nothing we can do about this. The only solution we have is to go to the hospital. He started attending to treatment, but he got angry one day and decided not to go the hospital again after the drugs finished. He later went back to the hospital when he started feeling sick. Unfortunately, he died after some few years. I did my best to advise him as my husband, but he defaulted almost all the time" (R3).

Another respondent stated that, "I was pregnant when I was

told that I have the disease. My husband has been very helpful and encourages me to come to hospital and always take my drugs so that I can protect the child. God was so good my child didn't get the disease. Unfortunately, my husband is dead now, but I will continue with my medication" (R7).

The study's findings also indicate that older women adhere to ART more consistently than males. This is because it was thought that young males were less inclined to accept long-term treatments. Once more, males find it very difficult to accept their circumstances and would rather wait to see how things turn out. Most of the men who were approached for the study declined to take part, which led to this conclusion. The few males who consented to take part in the study did not show up. Additionally, according to their past health records, more women than males were identified as adherents. The study's findings also indicated that married people are more motivated to stick with something since they are fearful and want things to go better.

These people thought ART was noteworthy because, despite its initial difficulties, they had profited from it due to its effectiveness. According to multiple studies [16, 17]. the success or benefit of taking medicine influences adherence to ART and retention in therapy. According to the Anderson Model of Health Care Utilization, patient characteristics including stigma, age, gender, and marital status may make it simpler for patients to follow ART instructions and continue receiving care. Once again, participant behavior to adhere to ART and continue in care was influenced by the health belief model, physiological factors such as age and gender, and perceived benefits.

According to the two models, the study finds that marital support and nondisclosure of status help people stick to and stay on ART. The degree of adherence and retention is also influenced by age and gender. In the trial, education had no positive impact on retention in care or adherence to ART. demonstrating that a person's propensity to take their prescription depends on his or her perception of the benefits of keeping their status, age, and gender a secret.

#### Perceived need and enabling factors

According to the study, it is simpler to stick to an ART regimen when there is a reminder, social and family support, free medication and health insurance, employment and housing, the qualities of the medication, and a model of hope. Disclosing one's status to religious leaders, family, and close friends without stigmatization, as per the study's findings, boosts adherence to ART and retention in care. On the other hand, stigmatization makes people less likely to adhere. Because they receive both financial and non-financial support from family and friends, patients stick with the treatment. The study's findings also show that some patients gain support when they disclose their status to their husbands, moms, religious leaders, and health officials. Confidants (trait supporters) are guided through a series of counseling sessions by health care specialists, religious leaders, and organizations. This may be the reason why both disclosure and non-disclosure are acceptable.

The lesson here is that patients should use caution when disclosing their ailment. Several studies have found that stigma prevents HIV patients from adhering with therapy [3, 16]. Take your medication in public, for example, or move slowly in places where people might presume you have HIV. Patients who are afraid of being identified opt to skip appointments and/or prescriptions in these circumstances. Even though there was less stigma, some survey participants kept their status hidden and were very cautious about who they told.

The study's findings also indicated that HIV patients' perspectives on religion, culture, spirituality, and health had changed. Patients view medication adherence and retention as crucial and their only means of survival. Patients are advised to visit the hospital rather than turning to prayers, religious practices, or herbal remedies.

A respondent stated that; *"It is good to pray. I go to church, but medicine is important. My husband is dead because he didn't take his medicine. Once you know your status, you have to take the drugs as scheduled and pray that God in his mercies will heal you. My church women's leader even encourages me to pray and still take my drugs".* (R1)

Another respondent stated that; *"my pastor knows that I have the disease and he encourage me to pray. But at some days when he doesn't see in church, he calls to find out if I am taking my drugs or I go the hospital to meet the doctor..."* (R2)

Patients would rather keep their appointments at the hospital than attend church events. Unexpectedly, the patient revealed that their religious leaders and counselors are now urging them to treat their health seriously in addition to praying. Religious leaders offer patients the chance to receive assistance from dependable individuals once more. As a result, the counseling services they get, which have convinced them that there is no cure for HIV and that taking their medications as prescribed is the only way to live a long and healthy life, have had an impact on their adherence to treatment. Contrary to earlier research findings that suggested cultural and religious barriers to adherence to ART [2, 14]. The Model of Hope and the key informant imply that some patients failed to complete their therapy because of what religious people told them, despite respondents' assurances that they did not rely on their spirituality. Some people make large financial contributions to clergy members and other religious institutions.

### 3.1.2. Hospital Environmental Factors

Healthcare providers and hospital staff traits were found to support the best adherence to treatment, together with the role of health professionals and the service delivery environment. Patients are more likely to return to the hospital for medication refills when they have a good relationship with the medical staff. Additionally, respondents said that because of the seclusion, they trust the hospital and the staff. Once more, the treatment facility's remote location guarantees seclusion and incentivizes adherence to routines.

A respondent said that; *"Since I came here, I have not heard*

*that, my status has been disclosed to anyone. I trust that they will always keep my information safe so that I feel safe coming here every time. The staffs are very caring and treat us very well"* (R5).

Another respondent stated, *"I didn't feel safe in the previous hospital I was attending but when I came here, I feel safe. The doctor attends to me individually. Even though the place is small, but the doctor treats me very well"* (R8).

Positive relationships between patients and clients, according to the study's findings, motivate patients to visit the hospital for refills. While some respondents said they received assistance from the medical team, others said the hospital staff's example of hope and encouragement helped them stick with their therapy. This supports earlier research that found evidence that a good patient-provider relationship influences the patient's decision to continue receiving therapy [10, 19].

According to the study, patients are persuaded to visit the hospital on a regular basis by supportive, nonjudgmental care, privacy, and their view of the medical staff. Respondents were able to accept and follow treatment guidelines thanks to this type of treatment. The respondent said that because their information was kept private, they felt free to express any problems so that they could be resolved.

A respondent stated that; *"We don't have any problem with our health providers. Health workers attend to us very well. They keep our information privately and are good to us. We can tell them the challenges we face, and they listen to us. The only problem is there are some few workers who do not treat us with respect they are usually new staff"* (R11).

This made patients pay close attention to and comply with all instructions given by medical personnel, illuminating the link between adherence to ART and retention in treatment and trust, privacy, and secrecy with medical professionals [6, 16].

They are encouraged to visit the ART center due to the drug's consistent availability and accessibility. Even though the procedure may be a little drawn out, it doesn't take long for them to get their medications. Following up on the initial investigation, it was discovered that respondents were given medications at the facility without charge, which encouraged them to follow refill schedules. To maintain treatment continuity, the supply system made sure that each respondent received medications when they came in for refills. According to the author [23], "adherence to ART cannot be achieved without an effective drug supply system."

A respondent stated it this way; *"The doctors [medical staff] are very good. When I came here first for my drugs, they explained everything to me how I can take my drugs and the side effect after taking the drug. They also told me that I should report any changes that I see after taking the drugs. They are very good, and I feel to come here even to relax myself"* (R7).

Health education, counseling, and monitoring efforts on the part of healthcare professionals were other elements that helped patients stick to their treatment plans. Respondents acknowledged their happiness regarding such actions at the facility, which were carried out by some hospital workers. The

respondents received regular counseling, which motivated them and informed their behavior regarding treatment attendance. The counseling services gave respondents information on the importance of sticking to their drug regimens and even continuing their therapy, as advised by the information incentive model. They were able to get support from others to whom they revealed their situation thanks to the same coaching. By educating participants on how HIV is treated and how to lead a normal, healthy life, health promotion activities made it easier for people to adhere to ART.

### 3.2. Barriers to ART Adherence

The study's findings also indicated that patients encounter several difficulties that have an impact on their adherence to and retention in care. Most of their obstacles were monetary and economic in nature, with the number of refill appointments they had to keep playing a less significant role. The respondents like having a significant quantity of the medications so they can extend their usual visit schedule. Patients who believed they were in good health could not comprehend the necessity of routine doctor visits. They believed that rather than going for routine checkups, patients should have the option to visit the doctor only when they were ill or needed a refill.

Some responders travel from far-off locations to receive care at the facilities under investigation out of fear of stigma. HIV services are set up so that patients are required to receive all of their care at one location in order to improve monitoring and effective care.

A respondent stated that; *"When I was told that I have the disease, I told my children and my husband. We didn't know who infected the other with the virus. Now, my eldest son doesn't even answer my calls again. Anytime I tell them that I want to go to the hospital they look at me in some way. They also tell me that they don't have money for me to take transport or take care of myself. Sometimes I must borrow to pay for my transport and buy food"* (R1).

Similarly, another respondent state that; *"When you are sick and you are going to the hospital for your drugs, those who are aware of your status will be pointing figures at you. Sometimes I feel like, I shouldn't come out of my room, but I must work and go to the hospital for my drugs. Even my children don't want to come close because I remember one told me that there is no hope for me. It very painful so I sometimes don't want to go when they are around"* (R3).

Because of the high expense of delivery over such a vast distance, it is difficult for respondents from distant locations to easily replace their drug supply. In research [9, 15], transportation costs for drug refills were also mentioned as impediments. When they don't have the money, patients occasionally must cancel appointments.

The respondent added that because the medication they take makes them eat a lot, they occasionally forgo treatments until they have enough money to feed themselves. Patients occasionally need to cut back on their caloric intake to save money and keep appointments. They refuse to go to the hospital for treatment when they need it most and cannot rely

on friends and family for support. This was a major hurdle to respondent studies' adherence and retention. Therefore, respondents suggested bringing back the food support system, which once lessened their burden. For most respondents, the delivery of services slowly presented a challenge. Large numbers of patients visiting the clinic contributed to the delay. Additionally, some staff members were uncoordinated and gave those who knew health professionals' preferential treatment. Since some responders had to quit their little side businesses to seek treatment, this was a serious problem. This is in line with a study conducted in Botswana, which revealed that attending clinic appointments required time away from work [18-20].

## 4. Recommendations and Directions for Future Studies

For policy consideration, the following suggestions have been presented.

There have been concerns voiced about how resource-constrained they may be to commute and even eat by themselves if they travel for medications then return for refills after a few weeks. The regular monthly refill attendance drives up transportation costs, which hinders ART retention and adherence. With efficient methods, ARV can be given to patients for longer periods of time, which lowers the cost of transportation. To give the ART refill processes more life and effectiveness, health administrators and policymakers may need to reassess them on a regular basis. It is possible to make a greater effort to guarantee that clients receive their medications in more practical situations. It is again recommended that the reintroduction of food aid, in which patients were provided food to help lower their feeding expenditures, be considered. Since this program promotes retention and adherence to ART, management may be able to work with NGOs and other organizations that support those living with HIV and AIDS to help reintroduce it.

Additionally, fewer health personnel tending to many patients could contribute to service delivery delays. According to the study, stressful working circumstances were caused by health personnel being overworked on clinic days. The provision of high-quality healthcare might be hampered by work-related stress. To reduce workload, it is suggested that additional staff members receive HIV and AIDS training (this was strongly advised by health professionals). Management could plan exciting events as a way to inspire employees. This will allow them to keep doing the fantastic job they're doing to improve the lives of people with HIV. Subsidizing non-ARV medications should be considered, especially for patients who cannot survive without them. Their resolve to adhere to the antiretroviral therapy regimen will grow stronger as a result. Governments should make sure that health professionals are encouraged to engage in training and development programs so they may better understand adherence. Once more, the report suggests that the government broaden its attention to include young people who are rapidly recording high rates of new infection.

The study's sample size, design, and methods for measuring adherence and retention are all restricted. To generalize about adherence and retention in ART care, the sample size is insufficient. Because men were not included in the study, it was only able to include women. Future research should expand the sample size and add male participants.

## References

- [1] Abana, C. Z. Y., Kushitor, D. K., Asigbee, T. W., Parbie, P. K., Ishikawa, K., Kiyono, H., Mizutani, T., Siaw, S., Ofori, S. B., Addo-Tetebo, G., Ansong, M. R. D., Williams, M., Morton, S., Danquah, G., Matano, T., Ampofo, W. K., & Bonney, E. Y. (2023). Community based multi-disease health screening as an opportunity for early detection of HIV cases and linking them to care. *BMC Public Health*, 23 (1), 1051. <https://doi.org/10.1186/s12889-023-15948-6>
- [2] Adam, A., Fusheini, A., Ayanore, M. A., Amuna, N., Agbozo, F., Kugbey, N., Kubi Appiah, P., Asalu, G. A., Agbemafle, I., Akpalu, B., Klomegah, S., Nayina, A., Hadzi, D., Afeti, K., Makam, C. E., Mensah, F., & Zotor, F. B. (2021). HIV stigma and status disclosure in three municipalities in Ghana. *Annals of Global Health*, 87 (1), 1–12. <https://doi.org/10.5334/aogh.3120>
- [3] Alhassan, R. K., Ketor, C. E., Ashinyo, A., Ashinyo, M. E., Nutor, J. J., Adjadeh, C., & Sarkodie, E. (2021). Quality of antiretroviral therapy services in Ghana: Implications for the HIV response in resource-constrained settings. *SAGE Open Medicine*, 9. <https://doi.org/10.1177/20503121211036142>
- [4] Atuhaire, L., Shumba, C. S., Mapahla, L., & Nyasulu, P. S. (2022). A retrospective cross sectional study assessing factors associated with retention and non-viral suppression among HIV positive FSWs receiving antiretroviral therapy from primary health care facilities in Kampala, Uganda. *BMC Infectious Diseases*, 22 (1). <https://doi.org/10.1186/s12879-022-07614-w>
- [5] Awaity, S. Al, Ghazy, R., & Mahomed, O. (2023). Progress of the Gulf Cooperation Council (GCC) Countries Towards Achieving the 95-95-95 UNAIDS Targets: A Review. In *Journal of Epidemiology and Global Health*. Springer Science and Business Media B. V. <https://doi.org/10.1007/s44197-023-00097-1>
- [6] Bor, J., Kluberg, S. A., Lavalley, M. P., Evans, D., Hirasen, K., Maskew, M., Long, L., & Fox, M. P. (2022). One Pill, Once a Day: Simplified Treatment Regimens and Retention in HIV Care. *American Journal of Epidemiology*, 191 (6), 999–1008. <https://doi.org/10.1093/aje/kwac006>
- [7] Brown, L. B., Getahun, M., Ayieko, J., Kwarisiima, D., Owaraganise, A., Atukunda, M., Olilo, W., Clark, T., Bukusi, E. A., Cohen, C. R., Kanya, M. R., Petersen, M. L., Charlebois, E. D., Havlir, D. V., & Camlin, C. S. (2019). Factors predictive of successful retention in care among HIV-infected men in a universal test-and-treat setting in Uganda and Kenya: A mixed methods analysis. *PLoS ONE*, 14 (1), 1–16. <https://doi.org/10.1371/journal.pone.0210126>
- [8] Cuadros, D. F., Chowdhury, T., Milali, M., Citron, D., Nyimbili, S., Vlahakis, N., Savory, T., Mulenga, L., Sivile, S., Zyambo, K., & Bershteyn, A. (n. d.). *Geospatial Patterns of Progress towards UNAIDS “95-95-95” Targets and Community Vulnerability in Zambia*. <https://doi.org/10.1101/2023.04.24.23289044>
- [9] Dandachi, D., May, S. B., Davila, J. A., Cully, J., Amico, K. R., Kallen, M. A., & Giordano, T. P. (2019). The Association of Unmet Needs with Subsequent Retention in Care and HIV Suppression among Hospitalized Patients with HIV Who Are out of Care. *Journal of Acquired Immune Deficiency Syndromes*, 80 (1), 64–72. <https://doi.org/10.1097/QAI.0000000000001874>
- [10] Frank, T. D., Carter, A., Jahagirdar, D., Biehl, M. H., Douwes-Schultz, D., Larson, S. L., Arora, M., Dwyer-Lindgren, L., Steuben, K. M., Abastabar, H., Abu-Raddad, L. J., Abyu, D. M., Adabi, M., Adebayo, O. M., Adekanmbi, V., Adetokunboh, O. O., Ahmadi, A., Ahmadi, K., Ahmadian, E., ... Murray, C. J. L. (2019). Global, regional, and national incidence, prevalence, and mortality of HIV, 1980-2017, and forecasts to 2030, for 195 countries and territories: A systematic analysis for the Global Burden of Diseases, Injuries, and Risk Factors Study 2017. *The Lancet HIV*, 6 (12), e831–e859. [https://doi.org/10.1016/S2352-3018\(19\)30196-1](https://doi.org/10.1016/S2352-3018(19)30196-1)
- [11] Fuente-Soro, L., Iniesta, C., López-Varela, E., Cuna, M., Guilaze, R., Maixenchs, M., Bernardo, E. L., Augusto, O., Gonzalez, R., Couto, A., Munguambe, K., & Nanche, D. (2019). Tipping the balance towards long-term retention in the HIV care cascade: A mixed methods study in southern Mozambique. *PLoS ONE*, 14 (9), 1–16. <https://doi.org/10.1371/journal.pone.0222028>
- [12] Gabster, A., Socha, E., Pascale, J. M., Talavero, G. C., Castellón, A., Quiel, Y., Gantes, C., & Mayaud, P. (2022). Barriers and facilitators to antiretroviral adherence and retention in HIV care among people living with HIV in the Comarca Ngäbe- Buglé, Panama. *PLoS ONE*, 17 (6 June), 1–14. <https://doi.org/10.1371/journal.pone.0270044>
- [13] Ghana AIDS Commission. (2019). *GHANA'S HIV FACT SHEET 2019 National Estimates Estimated Number of People Living with HIV (PLHIV)*. 523, 1–6.
- [14] Ha, J. H., Van Lith, L. M., Mallalieu, E. C., Chidassica, J., Pinho, M. D., Devos, P., & Wirtz, A. L. (2019). Gendered relationship between HIV stigma and HIV testing among men and women in Mozambique: A cross-sectional study to inform a stigma reduction and male-targeted HIV testing intervention. *BMJ Open*, 9 (10), 1–10. <https://doi.org/10.1136/bmjopen-2019-029748>
- [15] Hlongwa, M., Hlongwana, K., Makhunga, S., Choko, A. T., Dzinamarira, T., Conserve, D., & Tsai, A. C. (2023). Linkage to HIV Care Following HIV Self-testing Among Men: Systematic Review of Quantitative and Qualitative Studies from Six Countries in Sub-Saharan Africa. In *AIDS and Behavior* (Vol. 27, Issue 2, pp. 651–666). Springer. <https://doi.org/10.1007/s10461-022-03800-8>
- [16] Ibiloye, O., Masquillier, C., Jwanle, P., Van Belle, S., van Olmen, J., Lynen, L., & Decroo, T. (2022). Community-Based ART Service Delivery for Key Populations in Sub-Saharan Africa: Scoping Review of Outcomes Along the Continuum of HIV Care. In *AIDS and Behavior* (Vol. 26, Issue 7, pp. 2314–2337). Springer. <https://doi.org/10.1007/s10461-021-03568-3>
- [17] Lebelonyane, R., Bachanas, P., Block, L., Ussery, F., Alwano, M. G., Marukutira, T., El Halabi, S., Roland, M., Abrams, W., Ussery, G., Miller, J. A., Lockman, S., Gaolathe, T., Holme, M. P., Hader, S., Mills, L. A., Wirth, K., Bock, N., & Moore, J. (2021). To achieve 95-95-95 targets we must reach men and youth: High level of knowledge of HIV status, ART coverage, and viral suppression in the Botswana Combination Prevention Project through universal test and treat approach. *PLoS ONE*, 16 (8 August). <https://doi.org/10.1371/journal.pone.0255227>

- [18] Lebelonyane, R., Bachanas, P., Block, L., Ussery, F., Alwano, M. G., Marukutira, T., El Halabi, S., Roland, M., Abrams, W., Ussery, G., Miller, J. A., Lockman, S., Gaolathe, T., Holme, M. P., Hader, S., Mills, L. A., Wirth, K., Bock, N., Moore, J., ... Holmes, D. (2019). Implementation and effectiveness of a linkage to HIV care intervention in rural South Africa (ANRS 12249 TasP trial). *PLoS ONE*, *16* (1), 1–11. <https://doi.org/10.1007/s10461-021-03530-3>
- [19] Maheu-Giroux, M., Marsh, K., Doyle, C. M., Godin, A., Lanièce Delaunay, C., Johnson, L. F., Jahn, A., Abo, K., Mbofana, F., Boily, M. C., Buckeridge, D. L., Hankins, C. A., & Eaton, J. W. (2019). National HIV testing and diagnosis coverage in sub-Saharan Africa: A new modeling tool for estimating the “first 90” from program and survey data. *Aids*, *33* (September 2019), S255–S269. <https://doi.org/10.1097/QAD.0000000000002386>
- [20] Marukutira, T., Scott, N., Kelly, S. L., Birungi, C., Makhema, J. M., Crowe, S., Stooze, M., & Hellard, M. (2020). Modelling the impact of migrants on the success of the HIV care and treatment program in Botswana. *PLoS ONE*, *15* (1), 1–14. <https://doi.org/10.1371/journal.pone.0226422>
- [21] Maskew, M., Brennan, A. T., Venter, W. D. F., Fox, M. P., Vezi, L., & Rosen, S. (2021). Retention in care and viral suppression after same-day ART initiation: One-year outcomes of the SLATE I and II individually randomized clinical trials in South Africa. *Journal of the International AIDS Society*, *24* (10), 1–6. <https://doi.org/10.1002/jia2.25825>
- [22] Mengesha, M. M., Teshome, A., Ajema, D., Tura, A. K., Hallström, I. K., & Jerene, D. (2023). The association between HIV diagnosis disclosure and adherence to anti-retroviral therapy among adolescents living with HIV in Sub-Saharan Africa: A systematic review and meta-analysis. *PLOS ONE*, *18* (5), e0285571. <https://doi.org/10.1371/journal.pone.0285571>
- [23] Opoku, S., Sakyi, S. A., Ayisi-Boateng, N. K., Enimil, A. K., Senu, E., Ansah, R. O., Aning, B. D., Ojuang, D. A., Wekesa, D. N., Ahmed, F. O., Okeke, C. B., & Sarfo, A. D. (2022). Factors associated with viral suppression and rebound among adult HIV patients on treatment: a retrospective study in Ghana. *AIDS Research and Therapy*, *19* (1), 1–10. <https://doi.org/10.1186/s12981-022-00447-2>
- [24] Paioni, P., Aebi-Popp, K., Martinez de Tejada, B., Rudin, C., Bernasconi, E., Braun, D. L., Kouyos, R., Wagner, N., Crisinel, P. A., Güsewell, S., Darling, K. E. A., Duppenhaler, A., Baumann, M., Polli, C., Fischer, T., Kahlert, C. R., Abela, I., Aebi-Popp, K., Anagnostopoulos, A., ... Yerly, S. (2023). Viral suppression and retention in HIV care during the postpartum period among women living with HIV: a longitudinal multicenter cohort study. *The Lancet Regional Health - Europe*, *31*. <https://doi.org/10.1016/j.lanep.2023.100656>
- [25] Plazy, M., Diallo, A., Hlabisa, T., Okesola, N., Iwuji, C., Herbst, K., Boyer, S., Lert, F., McGrath, N., Pillay, D., Dabis, F., Larmarange, J., & Orne-Gliemann, J. (2023). Implementation and effectiveness of a linkage to HIV care intervention in rural South Africa (ANRS 12249 TasP trial). *PLoS ONE*, *18* (1 January), 1–17. <https://doi.org/10.1371/journal.pone.0280479>