




Barriers and Facilitators of Same-Day Antiretroviral Therapy Initiation Among People Newly Diagnosed with HIV in Ethiopia: Qualitative Study Using the Transtheoretical Model of Behavioral Change

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Purpose: HIV test and treat approach is currently a strategy used as a part of the prevention and control program in Ethiopia. The strategy adopts initiating antiretroviral therapy (ART) on the same-day as HIV diagnosis or in the next visit. However, there is little evidence on barriers and facilitators of same-day (ART) initiation in Ethiopia. Therefore, this study aimed to investigate barriers and facilitators of same-day (ART) initiation in the northwest Ethiopia.

Patients and Methods: A qualitative study was conducted in East Gojjam Zone in north-west Ethiopia. Purposely selected HIV patients, healthcare workers, and treatment assistants participated in the qualitative study. Data were collected through in-depth interviews and focus group discussions (FGDs). Coding was done via ATLAS.ti software thematically. The interviews and FGDs were conducted in Amharic (local language) and then transcribed verbatim and translated into English. Coding was done via ATLAS.ti software. The thematic analysis approach was employed using the constructs of the transtheoretical behavioral model (TTM) to show stages of change that newly HIV diagnosed experienced in the course of preparation for treatment initiation.

Results: A total of 19 patients, 12 treatment supporters, and 9 healthcare workers participated in the qualitative study. Shocking due to the test result, having no symptoms, mistrust of the test result, and seeking spiritual healing from holy water were the major barriers to start ART in the same-day of diagnosis or within the next visit.

Conclusion: During HIV diagnosis, more barriers were observed in the early stages, while treatment facilitators emerged in the later stages of TTM. The TTM model can be applied to characterize where participants were in the stages of change.

Keywords: same-day, test and treat, ART initiation, transtheoretical model, Ethiopia

Introduction

Test-and-treat is a strategy in which the population at risk of HIV is screened for infection, those who are diagnosed receive early treatment. This is done to stop the transmission of HIV and ultimately eliminate the epidemic by 2030.^{1,2} Test and immediate initiation of antiretroviral therapy (ART) have been adopted by the Ethiopian Ministry of Health since 2017.^{3,4} The current ART guidelines of Ethiopia recommend the initiation of ART as soon as possible when a person is

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confirmed HIV positive with most patients starting by the next visit.⁴ This was necessary to pave the path for ending AIDS by 2030 through averting 70,000–80,000 new HIV infections and saving about half a million lives till 2020 which was in line with the three '90s (90–90–90) treatment targets set by UNAIDS to help end the AIDS epidemic.⁵

Many studies have shown that immediate antiretroviral therapy initiation is effective as a strategy for elimination of HIV transmission at the population level.^{6–12} The same-day antiretroviral treatment provided to all HIV-infected individuals, regardless of CD4+ T cell count, will reduce the morbidity and mortality associated with HIV infection as well as reduce the potential for transmission.¹³ The same-day treatment initiation also facilitates immediate linkage to care.¹⁴

The same-day strategy has been implemented in many countries following the recommendation of the World Health Organization (WHO) in 2016.¹⁵ Some studies indicated such an early ART initiation in asymptomatic persons raised doubts in the minds of the clients about the accuracy of the HIV diagnosis.¹⁶ Besides, they are in doubt about the need for treatment in the absence of symptoms or signs in apparently healthy individuals.¹⁷ Most patients who are in a fairly good physical condition and who feel “healthy” would be in a state of shock to learn about their HIV status and lack readiness to initiate ART.¹⁸ Also, fear of disclosure, lack of social support, prior negative experiences with health services, and perceived drug side effects are potential barriers to early ART initiation.^{19,20} On the other hand, an already declining health status, motivation to stay healthy, patient-friendly clinic services, and fear of death facilitate early acceptance.^{18,21,22}

The previous studies on the subject matter^{19,23–25} were pilot studies conducted before the actual wide-scale test and treat program implementation that may not reflect real-world scenarios.²⁵ Moreover, there are indications that factors affecting same-day ART initiation vary across contexts.^{19,26} The test and treat strategy for HIV is a very important method to study, especially in areas with a high disease burden and in a resource-challenged country like Ethiopia. However, no study has been conducted in the Ethiopian context. Therefore, this study aimed to explore the barriers and facilitators of same-day ART initiation in the Ethiopian context.

Theoretical Perspectives

Research on the utilization of health services has traditionally taken several approaches. These include socio-cultural,

socio-economic, social-psychological, organizational and the social system.²⁷ The most often used theories of health behavior are social cognitive theory (SCT), the transtheoretical model (TTM)/stages of change, the health belief model (HBM), and the theory of planned behavior (TPB).²⁸ Increasing evidence suggests that public health and health-promotion interventions that are based on social and behavioral science theories are more effective than those lacking a theoretical base.²⁸

Kübler–Ross model, commonly known as five stages of grief was first introduced in 1969 on death and dying. The stages included denial, anger, bargaining, depression and acceptance. The stages applied to people who are suffering from terminal illness, later to any form of catastrophic personal loss. This may include significant life events such as the death of a loved one, divorce, drug addiction, the onset of the disease or chronic illness etc. we did not consider this model for our study due to the final stage was acceptance while our interest was beyond accepting the HIV test result. These include initiation of ART and remained in care. Despite its potential use on the acceptability of HIV test result, it cannot indicate the fate of an individual after accepting the HIV positive test result.²⁹ Therefore, Kübler-Ross model was not selected to guide our analysis in the current study.

Health Belief Model (HBM) is more descriptive than explanatory, and does not suggest a strategy for changing health-related actions unlike the transtheoretical model of behavioral change (TTM).²⁸ Therefore, TTM is better to explain behavioral change over time.

We considered the transtheoretical model of behavioral change (TTM) to investigate the barriers and facilitators of same-day ART initiation. The TTM is a model that assesses persons' intention to act on a new, healthier behavior. The TTM provides six stages of change (pre-contemplation, contemplation, preparation, action, maintenance, and termination) and different intervention strategies for each stage of change, to guide the individual.³⁰ The model explains that 40% of people targeted for behavioral change are often unaware that their behavior is problematic or produces negative consequences (the pre-contemplation stage), 40% of people recognize that their behavior may be problematic and they are willing to entertain changing their behavior (contemplation stage), and only about 20% of people are ready to take action within the next 30 days (preparation stage). The different intervention strategies can be used to move the individual to the next stage of change, with “maintenance” as the ideal stage of behavior.³⁰ This model can

also be used to explore barriers and facilitators of same-day treatment for HIV as it emphasizes behavior changes over time rather than a one-off decision.³⁰

Therefore, we investigated the test and treat approach using TTM to understand how the stages of change model may help to explain barriers and facilitators to antiretroviral therapy (ART) uptake by Ethiopians living with HIV.

The Stages of Transtheoretical Change Model in the HIV Test and Treat Context

Precontemplation is the stage in which people are not intending to take action in the foreseeable future. This was patients are not willing to start lifelong ART or does not self-identify as ART candidate. Contemplation is the stage in which people are intending to change their behavior-starting ART. At this stage, willing to start lifelong ART and self-identify as in need of treatment but need more time. They are more aware of the pros of changing but are also acutely aware of the cons. Preparation is the stage in which people are intending to take action (start ART) in the immediate future. Action is the stage in which people have made specific overt modifications in their lifestyles (pro-active in seeking health care). Maintenance is the stage in which people are working to prevent relapse but they do not apply change processes as frequently as do people in action.³⁰

Patients and Methods

Study Design

We used a cross-sectional study design with a qualitative approach. An exploratory study with a phenomenology design³¹ was carried out to discover the barriers and facilitators of same-day ART initiation among newly HIV diagnosed people.

Study Settings

The study was conducted in East Gojjam Zone, Northwest Ethiopia. According to the East Gojjam zonal health department report dated in May 2018, there were a total of 32 ART centers. Among which 25 health centers and 7 hospitals. At the time of the report, a total of 16,926 HIV positive people were registered in the zone. The zone started the test and treat program since November 2017. According to the Ethiopian guideline for the implementation of HIV/AIDS, case managers are HIV positive people who are trained as non-healthcare professionals who are high school graduate

with some experience on HIV/AIDS while adherence supporters are also HIV positive people with a minimum of an 8th-grade education that are enrolled in HIV care and demonstrated good adherence to HIV care.^{4,32}

Sampling Method and Study Participants

The study participants were HIV patients, healthcare providers and treatment assistants (case managers and adherence supporters), selected purposively for the study. Participants were selected purposively both from primary and secondary healthcare units to access adequate information in the study areas. Therefore, study participants were recruited from Debre Markos Referral Hospital, Debre Markos Health Center, Dejen Health Center, and Amanuel Health Center. The purposive sampling included HIV patients with varied ranges of treatment experience (treatment naïve, started in the “new” approach and “old” approach). The participation of various groups of patients who were engaged in care with different treatment initiation criteria was to gather information from a different perspective of individuals. The older approach is a situation where patients are on ART having started treatment before a test and treat policy while new ones who commenced ART after the test treat policy and finally, newly diagnosed patients were included. In addition to this, healthcare providers working in the HIV clinic had participated in the study. This was to gain insight on healthcare providers’ experience about the barriers and facilitators on the initiation of same-day ART during the test and treat policy. Thus, we selected the most senior healthcare providers in HIV clinics. We tried to balance the number of participants among the patients who had good treatment adherence in the old approach, patients who refused same-day ART initiation in the new approach, and those who were newly HIV diagnose but did not have an idea when to start treatment. Treatment naïve patients were not involved in the FGD due to the sensitivity nature of being HIV diagnosed. Rather they were participated in the in-depth interview using probing words and phrases.

Data Collection Procedure and Quality Assurance

In-depth interviews and FGDs were conducted in Amharic (local language). First, we conducted in-depth interviews. An idea that was inadequately raised in the interview was further discussed in the group. We used FGDs to generate more ideas and to get a broader sense of barriers and

facilitators of the same-day treatment initiations. Moreover, we used an in-depth interview to obtain in-depth information about the issue being studied. Interview and FGDs guides were developed from similar literature.^{14,16,18–21,25} The interview and discussion guides were piloted in the first round of data collection and enriched subsequently. The pilot study results were also included in the analysis. Themes developed over time were; lack of awareness, economic constraints, policy and government issues, disease stage/progression of disease, religious, acceptability of test result, fear of discrimination and stigma, perceived fear of side effects, lack of social support, perceived barrier health institution and professional related, alternative treatment/holy water, feeling healthy and perceived benefit of ART.

Two data collectors who were trained in qualitative research assisted the data collection. Both have a master's degree in public health and have experience in qualitative study data collection and analysis skills. The interviews and FGDs were conducted in a private quiet room in the HIV clinic. Each interview and FGD were tape-recorded. The principal investigator-led the FGDs while the research assistants took notes of major points. On average, the FGDs lasted about two hours and the in-depth interview lasted forty to sixty minutes. Point of saturation was used to limit the number of participants during the in-depth interview and the number of sessions was used in FGDs.

Data quality was assured though using standardized data capturing tools using local language in which the patients can communicate easily. Stepwise piloting study which improved over time could also increase the validity of the collected information. The involvement of two qualitative research trained data collectors and two researchers analyzed the data to assure the reliability of the information.

Data Analysis

Detailed field notes were completed for each FGD and interview, and audio-recordings were transcribed verbatim and translated into English. Coding and grouping were done using ATLAS.ti, version 7.5.7. We used thematic analysis to analyze data.³³ Furthermore, we used coding to identify patterns, categories and themes that emerged from data. Two of the authors (NAM and OAA) conducted the data analysis while the authors read and re-read the transcript to understand the concepts which were input for further analysis. Then transtheoretical behavioral change model³⁰ was used to guide data analysis. The model was

used to group the possible barriers and facilitators of same-day ART initiation thematically. Themes were categorized based on the nature of being a barrier or facilitator to same-day treatment initiation.

Ethical Approval

The proposal was approved by IRB of the University College Hospital (UCH), University of Ibadan, Nigeria (reference number UI/EC/18/0463). It was also approved by IRB at Debre Markos University (reference number HSC/30/02/2011). We obtained written informed consent from each study participant. There was no payment paid to study participants. It was also confirmed that the participants' informed consent will be included in publication of anonymized responses, and that this study was conducted in accordance with the Declaration of Helsinki.

Results

Socio-Demographic Characteristics of Study Participants

A total of forty-two participants were invited to participate in the study and two treatment naïve patients refused to participate. The main reasons for refusing were lack of interest. Nineteen patients, nine healthcare workers, and twelve health assistants participated in this study. Seven were newly diagnosed HIV positive individuals, four had already started treatment in the new strategy, and eight were patients started in ART the old strategy. Five FGDs were conducted; (2FGDs) from treatment-experienced patients, (1 FGD) from health assistants, and (2 FGD) among healthcare workers. The group size was 4–5 participants. Seventeen in-depth interviews were conducted, in which seven were among treatment naïve patients (Table 1).

Process of Treatment Initiation, Barriers, Facilitators, and Interventions

From HIV diagnosis to commencement of ART, patients move along a continuum of change from an unwillingness to start ART to self-initiated consultation with healthcare workers. Barriers and facilitators of treatment initiation were fitted into the transtheoretical behavior change model. Most of the barriers of same-day treatment initiation appeared in the first phase of the model, while the facilitators of treatment initiation appeared towards the last phases of the model. Thus, the first stage (ART pre-contemplation) was indicated as patients

Table 1 Socio-Demographic Characteristics of Study Participants of Same-Day ART Initiation in the Northwest Ethiopia (N=40)

Characteristics	Number	Remarks
Sex		
Male	14	
Female	26	
Age groups in years		
18 to 31	20	
32 to 60	20	
Roles in the healthcare		
Health professionals	9	(8 nurses, 1 Medical doctor)
Adherence supporters	6	(5 Females, 1 Male)
Case managers	6	(5 Females, 1 Male)
Patients	19	(10 Female, 9 Males)
The treatment experience of patients based on		
CD4 or WHO clinical stage based	8	On ART for 2 to 13 years
Treat-all strategy	4	on treatment for < 1 year
Treatment naïve	7	newly diagnosed

were not willing to start lifelong ART or do not self-identify as ART candidates. In the second stage of the model (ART contemplation), patients were willing to start lifelong ART and self-identify as a need to treatment but need more time due to several reasons. In the third stage (ART preparation), patients have treatment supporters and prepared for drug adherence. During the fourth stage (ART initiation), patients consult with a healthcare worker and have initiated ART. In the final stage (ART maintenance), patients adhered to ART and return for the next clinical visits. Stages of change in TTM were used as a guide to create themes of the study. The barriers and facilitators of same-day ART initiation are given in the table below (Table 2).

Results Integrated with the Transtheoretical Model

Pre-Contemplation (Unwilling to Start Lifelong ART or Do Not Self-Identify as an ART Candidate)

Socio-economic barriers such as being young and in lower-class economic status were associated with delayed ART initiation. Healthcare workers cited that young people, mobile people including daily laborers and students are in difficulty to initiate same-day treatment. In addition, couples who were tested for HIV before they got married are not willing to start ART rapidly. People in the low

economic class, such as commercial sex workers, daily laborers, and those who are mobile people due to the nature of their work hesitate to start treatment with no clinical symptoms.

The most difficult clients to initiate treatment immediately are those who present for pre-marital HIV tests, commercial sex workers, long distance truck drivers, and 'healthy' people.

(FGD, M, 56 years, case manager)

Patients were shocked due to the emergency nature of learning one's HIV status. This was reported as a major barrier to initiating same-day ART. HIV positive people need time to stabilize themselves and accept their test results. They often demand time to discuss with their family members about treatment initiation or to think over it before starting ART. This is due to the sudden nature of discovering one's HIV positive test result and being told that the treatment is lifelong. This statement is supported by the quotations below.

"... I am thinking for today I am not sure whether or not I live tomorrow"

(IDI, M, 32 years, treatment naïve)

"I am not ready to start ART crying I am healthy"

(IDI, F, 21 years, treatment naïve)

Lack of awareness about policy shifts and poor HIV related knowledge caused patients to prefer waiting in the

Table 2 Barriers and Facilitators of Same-Day ART Initiation Using the Transtheoretical Change Model in Ethiopia

Stages of Change	Pre-Contemplation	Contemplation	Preparation	Action	Maintenance
Characteristics of patients	Unwilling to start lifelong ART or do not self-identify as an ART candidate	Willing to start lifelong ART and self-identify as in need of treatment	Have treatment supporters, Prepared for drug adherence	Consulting healthcare workers and has initiated ART	Adhere to ART and return for the next clinical visit
Barriers	Socio-economic factors such as Poverty, being male, young, urban, commercial sex workers (CSW), daily laborers and students; feeling "healthy"/fear of lifelong treatment and 'psychological importance, Shocked due to the test result (emergence) and hopeless; lack of awareness (disease progression, ways of transmission, the importance of ART); mistrust the test result; fear of disclosure (stigma, discrimination and poor social support); came for other medical service and perceived fear of side effects; professionals attitude towards early ART due to fear of drug resistance, believe in one either (drug/ART or God)	Lack of understanding about HIV/AIDS and ART Demand re-test after holy water Programmatic enforcement (healthcare workers urge patients to initiate ART) Need time to absorb the meanings of the test result, "let me try holy water first"	Lack of continuous social support consult family members, need time to share the experience with fellow patients	Lack of finance for transport, drugs for opportunistic infections, treatment interruption due to holy water, demand re-test after ART along with holy water	Overcrowded clinic Persisting perceived stigma and discrimination
Facilitators	Symptomatic patients especially unexplained weight loss, risk assessment positive patients during pretest counseling, exhausting with all treatment options (traditional, holy water and modern), knew someone on ART, have a history of HIV test (due increased awareness), repeated test before initiate ART	Disclosed HIV status, agree to take both ART and holy water, aware pros and cons of timely ART initiation, improved awareness about HIV/ART	Availability of treatment supporters, understand lifelong commitment for ART	Patient-friendly clinical environment, good patient-clinic staffs relationship Availability of free ART	Stay healthy and live for others, encouraged due to good treatment outcomes

Possible intervention	Counsel and educated about the advantage of early ART initiation (further complications; help to prevent transmission to others; prevents disfiguring and reduce stigma and decrease MTCT; increase quality of life and productivity); about the immunity and viruses interaction; testing procedure; treat/address patient's' priority first, the special emphasis for male, CSW and students	Assisted by case managers/adherence supports/peer supporters to counsel, join HIV associations, Individualized care (give time); Use mass media to create awareness about the test and treat policy	open discussion with healthcare workers and patients encourage disclosure and treatment supporter	Access for health insurance system, encourage patients to take treatment in their locality	Policy interventions such as appointment spacing for stable patients, continued awareness creation, patient transfer out to other health facilities to their locality
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pre-ART lists for a while, as this was the practice before the test- and -treat approach. The FGD participants mentioned that there is a lack of awareness creation activities about the treatment policy shift from CD4 or clinical-based treatment initiation to test and treat approach. As the result, new patients asked healthcare providers to wait in the pre-ART list as it was done in previous treatment approach. Patients also argued on the possibility of lifestyle modification such as exercise, diet, and rest before ART initiation. Furthermore, the FGD discussants raised that most patients believe in the management of HIV without drugs through lifestyle modification.

Test and treat have benefit, but the previous strategy (CD4 based) was not good. I know someone who died due to a lack of treatment (ART) because his CD4 count was 210. Government policy and media are barriers

(FGD, F, 38 years, Case manager)

"I believe I got infected with HIV while I was eating raw meat, so that if I stopped eating it again, I may recover from the illness".

(IDI, M, 35 years, on treatment for 6 years)

Mistrusting the HIV test results in primary healthcare were also reported by some healthcare providers as a possible reason to look at other higher levels of treatment centers. Most health care providers reported that clients are suspicious of the quality of healthcare providers, HIV test reagents, and testing kit in general. Nurses reported that there was preference of clients towards hospitals than health centers regarding HIV testing and counselling, and some clients ask for confirmation of test results in hospitals, as described in the quotation below.

"They (patients) did not trust HIV test results especially in the district health centers".

(FGD, F, 48 years, adherence supporter)

Contemplation Stage

In this stage, patients are willing to start lifelong ART and self-identify as in need of treatment but also try other alternative healings. Besides, though patients are aware that they need treatment, they believe that they are not eligible at this time in point. They (patients) look for alternative treatment like holy water and this was the most common reason for delaying ART initiation. Almost all study participants cited that people prefer to visit holy water before initiating ART. This was also cited by both patients and healthcare providers repeatedly. Some tried holy water for a minimum of 2 weeks and others took

almost one year before initiating ART. After taking spiritual and holy water “therapy” for a long period, they request the healthcare providers a re-test since they often believed that they have been cured of the disease. The reason why people do not believe in ART was, healthcare workers told the patients ART never cured HIV but will suppress the viral replications. On the other hand, in the community, there is a rumor that holy water can cure HIV. Additionally, in many occasions, “religious leaders” teach they have cured HIV through praying via television and other Medias.

“I started ART after I spent about 8 months to persuade myself”.

(IDI, F, 23 years, start treatment by test and treat)

There is a rumor that there are a few holy water places (particularly Ethiopian Orthodox Church) that can completely cure HIV. Patients sometimes reported that the “devil” told to them as they were cured of HIV. Moreover, in the Protestant religion, some patients gave witness in the television broadcast as they have been cured of HIV. Furthermore, some patients do not take both holy water and ART at the same time. This is due to the view that “one does not have two beliefs”.

“I tried a lot in holy water yet, there was no change and I return to the treatment”.

(IDI, F, 35 years, on treatment for 10 years)

Though most patients believed in the need for ART, they want to postpone because of having no symptoms. Asymptomatic clients refused to start ART immediately following HIV positive test results. Both patients and healthcare providers mentioned that the reasons for hesitation to start to treat were mistrust of the HIV test result and some prefer to try alternative treatment options including holy water and traditional medicine. Patients also expressed the psychological importance of delaying ART treatment, as described in the quotation below.

Early ART initiation has its own adverse psychological implication. Because, delaying to start ART gives me hope as the disease is not serious and help me avoid stress and have a free mind.

“I am taking a drug and I am not eligible to a drug” has a different meaning.

(IDI, M, 50 years, on treatment for 11 years)

Since the treatment is lifelong, patients fear to start it early. This was due to the fear of treatment interruption (poor adherence). The reason was information provided by healthcare workers that ART is taken lifelong with no

interruption. Similarly, some patients believe that ART may interfere with daily life such as fieldwork and working with others. Such concern may reflect the fear of HIV related discrimination and stigma.

“Most important issue is knowing their HIV status early than starting ART, it can give some time once diagnosed. Especially for those people working in a field is very difficult to take ART lifelong. It would be nice if there is long-acting ART drugs or appointment spacing.”

(IDI, M, 50 years, on treatment for 11 years)

Despite patients’ knowledge of the need for ART, still they may persist in the contemplation phase (without action) due to the perceived fear of HIV-related discrimination and stigma. The fear of ART drug side effects was also reported to be a barrier to initiate ART. Some clients also have a fear of ART side effects. Health professionals’ counseling may be misleading to perceive as side effects are life-threatening.

“... the reason I was afraid to start the drug was, health care workers counseled me that the side effects were serious. I was worried that some people may be aware of my HIV status. Then after I carefully analyzed the advantage of taking the drug, I decided to tell my daughter who was 17 years old. I told her and I warned her as I may be sick due to the side effects she has to take care of me and other family members but it was not as serious as I expected. It was only, I spend in bed up to 10 am. I was happy compared to my fear”.

(IDI, F, 35 years, start treatment by test and treat)

Some patients needed more time to absorb the meaning of their HIV test result and made arrangements to disclose for their treatment supporters. Nevertheless, some healthcare providers urge the patients to start ART on the day of HIV diagnosis.

“Health professionals prescribe a drug (ART) to clients with no adequate adherence preparation. This is because they (health professionals) are judged based on the number of new clients who started ART each month; if not started, even at the district level they will be criticized. As a result, they “force” clients to start ART. You can check that most of the defaulters take only one round of drug prescription. Just for the sake of report. After several struggles, we (case managers) arrange to give 1 to 2 week spacing between tests and treat. I do not know those came only one visit but those with more than one visit I can remember even in the street.

(FGD, F, 38 years, case manager)

It was reported that most HIV positive people do not disclose their HIV status to someone due to fear of stigma

and discrimination. Some disclose their seropositive status to their sexual partner, family members, and friends. But a few of them want to hide their HIV status even for the next of kin who is responsible for their care and support such as partners or children.

“We have the experience that a husband and wife meet in the HIV clinic to take their drug (ART). It was without their respective awareness of where to go. It was sudden and highly destructive in the clinic. The marriage ended up with divorce”

(IDI, F, 45, VCT counselor)

Another reason that caused a patient not to initiate ART the same-day of HIV diagnosis was reported to be poverty. This was due to some people who are in financial problems to treat opportunistic infections and laboratory investigations such as X-rays. Healthcare providers suggested that everyone should be a member of health insurance to cover basic laboratory investigation costs.

“We suggested patients to be a member of the community-based health insurance or to be covered by the government subsidy programs”

(IDI, F, 45, VCT counselor)

Preparation Stage

The preparation stage of behavioral change was associated with the facilitation of treatment initiation possibly the same-day of HIV diagnosis or thereafter. These included patients being exhausted trying of other alternative treatment packages, having symptoms during HIV diagnosis, having a history of HIV positive risk assessment, learn from others' experiences and disclosed their HIV status to somebody.

It was reported that patients having symptoms during HIV diagnosis because of untreated opportunistic infections initiated rapid ART following their HIV positive test result. However, healthcare providers preferred to treat opportunistic infections before the initiation of immediate ART. The pre-ART period can extend from a few days to weeks depending on the types of opportunistic infection being treated. For example, in the cases of tuberculosis, about eight weeks of extension after the commencement of anti-tuberculosis is recommended.

“I got traditional treatment, I went to holy water but no change. After I knew my status I came to the hospital. I was sick for a long time, I will start the treatment today”

(IDI, F, 25 years, treatment naïve)

Both healthcare providers and patients witnessed that people will not accept treatment unless falling sick. Clients

who have seen others' bad experiences due to lack of treatment also learn from that worst scenario and decide to start treatment timely.

“I took a lesson from my husband who died due to lack of treatment but I am still alive since I got treatment (ART)”. (FGD, 32, F, case manager)

During pre-test information, those clients with risk assessment positive for HIV are more likely to initiate ART rapidly. These risk assessment positive indicators include; a history of unprotected sex, having multiple sexual partners and present with sexually transmitted infections) are more likely to accept their HIV test result and ready to start ART immediately. However, some people do not tell the truth to healthcare providers. Appropriate history taking and establishment of rapport with the client will help to dig out the risk status of clients.

“They did not tell us the truth about their risk of exposure. Finally, if their test result is HIV positive, they would tell us the truth. If negative, they would not have disclose their experience”

(IDI, F, 45 years, VCT counselor)

Clients who have treatment supporters are more likely to be ready for same-day ART initiation. In addition to this, patients use different mechanisms to assist their drug adherence. For example, patients try to associate the time with their usual practices such as dinner time. Moreover, using adherence reminders is reported to improve ART adherence.

“... Now I strictly follow the drug (ART) I use alarms to remind myself as I said ‘my mobile charge is gone’ to hide from other people”.

(FGD, F, 45 years, start treatment by test and treat)

Action Stage

Patients falling in this category of the model are characterized by active consultations and seeking help from healthcare providers. Demonstrate a sort of good drug adherence to ART drugs or other drugs given to treat opportunistic infections. At this stage, the role of healthcare providers, treatment assistants, and other family members positively influenced the speed of ART initiation. Possible interventions that could enhance the preparation of patients for ART initiation were reported from study participants.

It was reported that proper counseling on the advantage of early ART initiation may shorten the time between HIV diagnosis and treatment initiation. Healthcare workers shared their experience with researchers on how to counsel new clients to facilitate treatment uptake. They counseled

about the advantage of early ART initiation mainly focusing on its' (ART) advantage: to prevent opportunistic infections and further complications, it helps to prevent transmission to a sexual partner, prevents disfiguring and reduces stigma, decreases mother to child transmission of HIV, improves the quality of life and productivity, it helps to stay healthy and care for dependent family members. It is also important to counsel about disease progression, the role of ART and its interaction with the disease stage.

"Using case managers and adherence supporters helps to teach the real experience of themselves for newly diagnosed".

(FGD, M, 28 years, Nurse)

The use of case managers, adherence supporters, and peer support could improve the initiation of rapid ART among newly HIV diagnosed people. Case managers, adherence supporters and healthcare providers recommended that each new client had better come with someone or case attendant. This will decrease the probability of loss of follow-up and poor drug adherence.

"Patients presented with no attendant were more likely to disappear or lost from care even in the next appointment"

(FGD, M, 28 years, Nurse)

"It has been nine years since I knew my status. Yet, it is 2 years since I started ART. It was CD4 based to start ART. However, my leg was paralyzed. If it was before my sign and symptoms, it would have saved me from my sufferings".

(IDI, M, 30 years, start treatment by test and treat)

The actual initiation of ART depends on the individual circumstances of the patient. The study participants reported that individualized care should be considered for newly identified HIV patients.

Both patients and healthcare workers suggested that about 2 to 4 weeks are necessary for adjusting themselves. This may not be given to all patients. It depends on the readiness of the individual.

"... Not feasible within 7 days since it is mandatory to start in PMTCT context"

(FGD, F, 34 years, Nurse)

"Now we did not start ART immediately unlike the earlier times, we give 15 days for trial/acceptance of treatment"

(FGD, F, 42 years, adherence supporter)

Maintenance Stage

After the initiation of ART, patients keep regular clinical appointments and drug refill services. Most of the

treatment-experienced patients witnessed the life-saving drug (ART) and reported as the main reason for adherence was to stay healthy and to live for others.

"I disclosed my HIV status to my child and husband then they helped me. I took my drug thinking to live to my children. Just to live for them"

(IDI, F, 35 years, start treatment by test and treat)

"Some started ART immediately as reasoned to live for their children"

(IDI, F, 32 years, VCT counselor)

Policy interventions such as appointment spacing patient care model for stable patients, continued awareness creation, patient transfer out to other health facilities to their locality may help to sustain the final stage of TTM.

Discussion

This study aimed to investigate the barriers and facilitators of same-day ART initiation among newly HIV diagnosed people in northwest Ethiopia. Several barriers and facilitators of same-day treatment initiation were identified and presented using the transtheoretical model. The findings suggested that most of the barriers associated with same-day ART initiation were observed during the early (pre-contemplation and contemplation) stage of TTM, while the facilitators appeared towards the end of the model (preparation, action, and maintenance) stages.

In the pre-contemplation stage, we have addressed one important question, which was why newly HIV diagnosed individuals were unwilling to start lifelong ART or do not self-identify as ART candidates? The majority of HIV positive individuals were not prepared to start treatment. The PLHIV may be in this stage because they are uninformed or under-informed about the consequences of delay in treatment initiation.³⁰ It was noted that none of the study participants mentioned that early treatment initiation was used as prevention that shows an awareness gap about the one major reason for the policy shift from CD4 or clinical based to universal treatment provision.²³ Case managers and adherence supporters emphasized that telling their personal history to the new clients helps to persuade them easily. Moreover, government bodies need to use public mass-media to announce policy shift from clinical or CD4-based criterion to treat-all approach.

The current study found that newly diagnosed HIV positive people are shocked by their test results and are not willing to listen to the information provided by healthcare workers. This is supported by a previous qualitative study in Ethiopia.³⁴ Barriers to ART treatment initiation

were reported that the majority of the participants' also revealed difficulties when coping with their HIV status initially which were followed by courage and optimism. It was also evidenced from South Africa, patients refused to initiate ART, most of whom (92%) continued to refuse after two months of counseling.³⁵ The implication of such findings (shocked patients) due to the sudden nature of discovering one's HIV status, call up that there is a need to give multiple sessions for absorbing the meaning of the test result and address other medical or psychological priorities before starting ART.

Perceived quality of HIV testing service and health service-related barriers was identified in the present study, which includes mistrust of the HIV testing process, especially in health centers. Some patients suspicious on the quality of health professionals, testing reagents, or testing kits at the health center level, so they want to confirm in referral hospitals. This repeated testing in other health facilities may delay ART initiation and has cost implications for the health system. Repeated HIV testing after receiving a positive result may give insight into reasons for delayed linkage to care.^{17,36} Fortunately, now there are guidelines recommendation to repeat HIV tests to confirm HIV positivity in the same health facility in Ethiopian that may overcome client-initiated repeat testing in another health facility.⁴ Therefore, this is a good opportunity for healthcare workers to teach patients about the testing procedure and its reliability in both hospital and health center settings.

From socio-demographic factors affecting ART initiation, being male and young was cited repeatedly. That is supported from previous systematic reviews that men and younger people were at increased risk of poor linkage and loss of follow-up.^{12,37-39} Furthermore, couples tested for pre-marital HIV screening were not ready to start ART. This indicated that there is a need for strong pre-test information that includes test result acceptance preparation. Mobile people, due to the nature of their occupation, such as female commercial sex workers, long-distance drivers, and daily laborers were also not ready to start HIV treatment. These people are more likely to be less adherent to clinical appointments. Hence, special emphasis is needed to address such population groups. Students lack time for clinical adherence that affected drug initiations. This needs special arrangements for students due to competing priorities.

In the second stage (contemplation) patients were willing to start treatment and self-identify as in need of

treatment but need some additional time. The majority of patients need time to discuss about starting lifelong ART with family members, while some rebelled to try alternative healing systems such as holy water. Study participants underlined the importance of disclosure of the HIV test results as a coping mechanism.³⁴ Newly diagnosed HIV patients are under stress for various reasons namely, some came for other medical complaints and others may have come with no clinical symptoms. Therefore, healthcare workers are forced to postpone to the next visit. In the next visit, maybe within one or two weeks after diagnosis, again the patient may not be ready due to fear of lifelong drug adherence commitment. A significant number of patients need additional time to discuss with potential treatment supporters. Even it was demonstrated that some clients did not come back to the HIV clinic. According to the Ethiopian HIV/ART guidelines of test and treat policy, PLHIV have to initiate treatment possibly on the same day of diagnosis or within the next visit.⁴ Despite this, there is also a lack of time to counsel about the disease and prepare the patient for drug adherence. If healthcare workers forced clients to start treatment without adequate preparation, they would not start the drug or may interrupt it. This was supported by a previous study in Swaziland where the process of HIV status acceptance or denial influenced the patients' health-seeking and linkage practices.¹⁴

The contemplation stage is further characterized by the fact that most patients are symptomatic, learn from others' experiences and change their behavior due to healthcare workers' counseling. Then they start to recognize as they are in problem, yet they are also acutely aware of the cons of early treatment initiation. This balance between the costs and benefits of changing can produce profound ambivalence that can keep people stuck in this stage for long periods.³⁰

It is well-established fact that patients who disclosed their HIV status to treatment supporters (peer groups, family members, and community health workers) are more likely to engage in clinical care and achieve good viral suppression.^{18,22,24,26,34,37,39} In agreement to this, in the current study, participants revealed that patients need more time to disclose their status to their family members and treatment supporters. This is supported by a previous study that most of the treatment eligible patients were not ready to start ART in the same-days of diagnosis in Ethiopia.³⁴ The main reason mentioned for the refusal of disclosure was fear of stigma and discrimination. It was also cited that patients change their names, addresses, and

give “fake” phone numbers for health care workers. This implies that let alone disclosing their status to a third party, they did not share their feelings with healthcare providers. There were also occasions that patients want to start ART out of their locality and ask transfer after a while. This was due to fear of being seen by their community during their initial diagnosis and treatment initiation. Hence, special counseling mechanism, such as stepwise disclosure is necessary to help patients to disclose their status to anyone who is responsible to assist them. This will be achieved after detailed discussions and counsel over multiple sessions.

One of our major findings as a barrier to initiating treatment on the day of diagnosis or within the next clinical visit was seeking alternative spiritual treatment. In the study area, almost all patients preferred to try out holy water or other spiritual practices before initiating ART whereas some took both ART and holy-water at the same time. Though most of the religious leaders encouraged to use both treatment modalities, few patients considered using both holy-water and ART is against “God’s order”. Furthermore, there is a deep-rooted rumor that some holy-water places in Ethiopia can cure HIV. So patients request healthcare workers to re-test their HIV status after spending time in spiritual healing. This is done usually in another health institution in a hidden way or in the same health facility where they learned their HIV status. This suggested that healthcare workers were also biased by the rumor as it was recalled that they sometimes perform re-test for known HIV positive patients which is against the Ethiopian HIV testing guidelines.⁴ Such findings are not common from previous studies in Africa and somewhere else.^{14,17,19,20,40} One study in Tanzania reported that spiritual healing through prayer was more sought than medicines.⁴¹ The reason can be explained that in our study area, the majority of the community are Ethiopian Orthodox Christian followers. Hence, it is important to involve religious leaders in HIV management. Further study is recommended to rule out the deep-rooted rumors about the curability of HIV using religious interventions.

Newly HIV diagnosed spend several days and weeks in the contemplation phase. This was due to patients who have no clinical symptoms refraining from initiating ART. The major reasons raised for delaying ART commencement among asymptomatic patients were fear of lifelong commitment for drug adherence, fear of potential drug side effects and the psychological importance of being

“free from drug”. This is because patients who delay ART perceived that the disease progression is slow or it is due to fear of learning about one’s true health status.²¹ Again, this was supported by a study that reported that the subjective view of wellness was framed within the context of treatment being reserved for the sick.⁴² Therefore, patients perceived that taking medications/ART in the absence of clinical symptoms indicated that their health condition is deteriorated. Similar studies from Russia, Swazi, South Africa, Mozambique, Kenya and Uganda support that there was a tendency to decline ART initiation among asymptomatic patients.^{18–21,35}

Poverty was also one barrier to initiate ART timely. It was witnessed that some patients expect full coverage of all HIV/AIDS treatment-related costs from public institutions but the health institutions cover only HIV drugs and patients have to buy drugs for opportunistic infections and other investigations, such as X-ray. Despite opportunistic infection management and laboratory investigations are not prerequisites to initiate ART, this may be also a barrier for timely initiation of ART. There was a similar experience in Ethiopia, Philadelphia, and Swazi which reported that financial instability was a barrier for starting treatment.^{20,22,34} This implied that healthcare providers should encourage HIV patients to be members of the national health insurance scheme or find a way to cover their expenses from government subsidies.

The study also confirmed that potential drug side effects are barriers to treatment initiation. This was mainly due to a lack of understanding of the healthcare workers’ advice or miss-informed about the potential side effects. We recommend healthcare workers to give special emphasis during counseling about potential drug side-effects.

In the third stage (preparation), at this point, patients have treatment supporters, prepared for drug adherence, and ready to have drug adherence reminders. At this stage, healthcare providers and expert patient trainers’ intervention would improve the preparation phase. One study indicated that the reason for delayed ART initiation was not only due to a lack of knowledge about the importance of early drug initiation but also resistance to start treatment.¹⁸ Hence, healthcare providers should counsel about the advantage of early ART initiation. To mention some importance of early treatment initiation, it prevents opportunistic infections and further complications, helps to prevent transmission to sexual partner/s, prevents disfiguring and reduces stigma, decreases mother to child transmission, increases the quality of life and productivity and

it helps to stay healthy and care for dependents.¹⁸ It was also noted that patients with a history of a risk assessment positive result such as having unprotected sex, having multiple sexual partners, and presented with STI needed less time for preparation to initiate ART.

Moreover, the mechanism to trace the loss of follow-up clients were in the study areas. Thus, case managers and adherence supporters stressed that health institutions should request personal identification numbers to avoid the wrong address. So that they can trace patients in case the patient loss of follow up or dropout from clinical care. In some health facilities, healthcare providers cited that there was a pushing force from the managerial side to start the same-days of diagnosis. This was for the sake of a report where patients may not take the drug as prescribed. Our findings confirmed that there was a patient friendly environment in the HIV clinic which is not common among African countries such as Mozambique, Kenya, Uganda and Botswana.^{18,19,39} Therefore, we recommend maintaining this positive patient-provider relationship.

In the fourth stage of action, in which it is the actual ART initiation. Patients are active in consulting with healthcare providers and have initiated ART. In the action stage of TTM, patients have a good awareness of the pros and cons of early treatment initiation so that they may have good treatment adherence preparation. However, still, some barriers are affecting actual drug initiation. These are lack of money for transport, opportunistic infections treatment, and treatment interruption due to holy water. Therefore, it should be recommended that access to the health insurance system and encourage patients to take treatment in their locality would decrease treatment costs associated with travel.

The fifth stage of maintenance, can be characterized by patients who have demonstrated a good level of compliance and return for the next clinical visit. Potential threats to retention were reported as overcrowded HIV clinics, persisting perceived stigma and discrimination, while the most common reason to retain in care was to stay healthy and to live for others. Thus, Policy interventions such as implementing an appointment spacing mode for stable patients and continued awareness creation is needed.

Limitations of the Study

Though this study is the first to employ TTM to investigate barriers and facilitators of treatment acceptance among newly HIV diagnosed people, there are some limitations

due to the nature of the study design and the model itself. The first limitation is that even though we concluded as all patients will be ready to start the treatment stage by stage depending on their baseline clinical and psychological status, the exact days of readiness is not determined. In other words, there is no clear sense of how much time is needed for each stage, or how long a person can remain in a stage. Second, the model assumes that individuals make coherent and logical plans in their decision-making process when this is not always true. Though we found that TTM can be used as a guide for new patient preparation of ART initiation, the duration they need to stay before moving from one stage to the next stage was not determined. Hence, a large-scale study is recommended to follow the same patients across the change process to develop an intervention guidelines using this model. Further study may also help to study ways of expediting the change process.

Conclusions

This study identified several barriers and facilitators for starting same-day treatment. Seeking spiritual healing from holy water is a major barrier to start ART in the same days of diagnosis or within the next visit. Still fear of HIV status disclosure due to perceived stigma and discrimination persists in the study area. In addition to health professionals working in HIV clinics, expert patient trainers (case managers and adherence supporters) play a crucial role in teaching their experience to shorten the time between diagnosis and treatment uptake. Men, young people, students, people who have a moveable job, and couples presented for pre-marital HIV screening need due emphasis during counseling since they were not ready to accept treatment shortly.

Also, this study tried to address five basic questions related to same-day ART initiation using TTM. These were; First, why newly HIV diagnosed individuals are unwilling and do not self-identify as ART candidates? Second, why HIV positive individuals do not start ART despite their awareness of the importance of the treatment? Third, what are the most important barriers to prepare for lifelong ART? Forth, what are the facilitators for the actual initiation of ART? And the fifth, what are the facilitators and barriers to retaining patients in care. Therefore, it was confirmed that the transtheoretical model of behavioral change can be used as a guide to preparing new HIV patients for drug initiation. This is because not all patients have the same level of risk

awareness, willingness, and readiness to initiate ART. It can be concluded that HIV patients may fall under one of the five stages of changes depending on the patient's character presented during the initial assessment.

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Disclosure

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References

- UNAIDS, Joint United Nations Programme on HIV/AIDS (UNAIDS); 2017. Available from: <http://aidsinfo.unaids.org>. Accessed 16 August 2017.
- Sidibé M, Loures L, Samb B. The UNAIDS 90–90–90 target: a clear choice for ending AIDS and for sustainable health and development. *J Int AIDS Soc*. 2016;19;1.
- WHO. *The Use of Antiretroviral Drugs for Treating and Preventing Hiv Infection Preventing Hiv Infection, 2016 Recommendations for a Public Health Approach, W.l.c.-I.-P. Data, Editor*. Geneva, Switzerland: WHO; 2016.
- Ethiopia, F.M.o.H. *National Guidelines for Comprehensive HIV Prevention, Care and Treatment, A.A.M.o. Health, Editor*; 2017.
- FHAPCO. *HIV/AIDS Strategic Plan 2015-2020 in an Investment Case Approach*. FHAPCO-Ethiopia; 2015.
- Granich RM, Gilks CF, Dye C, et al. Universal voluntary HIV testing with immediate antiretroviral therapy as a strategy for elimination of HIV transmission: a mathematical model. *Lancet*. 2009;373(9657):48–57. doi:10.1016/S0140-6736(08)61697-9
- Williams G, Lima BV, Gouws E. Modelling the impact of antiretroviral therapy on the epidemic of HIV. *Curr HIV Res*. 2011;9(6):367–382. doi:10.2174/157016211798038533
- Cori A, Ayles H, Beyers N, et al. HPTN 071 (PopART): a cluster-randomized trial of the population impact of an HIV combination prevention intervention including universal testing and treatment: mathematical model. *PLoS One*. 2014;9(1):e84511. doi:10.1371/journal.pone.0084511
- Hallett TB, Baeten JM, Heffron R, et al. Optimal Uses of Antiretrovirals for Prevention in HIV-1 Serodiscordant Heterosexual Couples in South Africa: A Modelling Study. *PLoS Med*. 2011;8(11):e1001123. doi:10.1371/journal.pmed.1001123
- Eaton JW, et al. HIV treatment as prevention: systematic comparison of mathematical models of the potential impact of antiretroviral therapy on HIV incidence in South Africa. *PLoS Med*. 2012;9(7):e1001245.
- Ford N, Migone C, Calmy A, et al. Benefits and risks of rapid initiation of antiretroviral therapy. *AIDS*. 2018;32(1):17. doi:10.1097/QAD.0000000000001671
- Croxford S, Yin Z, Burns F, et al. Linkage to HIV care following diagnosis in the WHO European Region: A systematic review and meta-analysis, 2006–2017. *PLoS One*. 2018;13(2):e0192403. doi:10.1371/journal.pone.0192403
- Bacon O, et al. The Rapid ART Program Initiative for HIV Diagnoses (RAPID) in San Francisco. 25th Conference on Retroviruses and Opportunistic Infections (CROI). 2018.
- Horter S, Thabede Z, Dlamini V, et al. “Life is so easy on ART, once you accept it”: acceptance, denial and linkage to HIV care in Shiselweni, Swaziland. *Soc Sci Med*. 2017;176:52–59. doi:10.1016/j.socscimed.2017.01.006
- WHO. *Guideline on When to Start Antiretroviral Therapy and on Pre-Exposure Prophylaxis for HIV*; 2015.
- Kiriazova T, Postnov O, Bingham T, et al. Patient and provider perspectives inform an intervention to improve linkage to care for HIV patients in Ukraine. *BMC Health Serv Res*. 2018;18(1). doi:10.1186/s12913-018-2885-4.
- Horter S, Wringe A, Thabede Z, et al. “Is it making any difference?” A qualitative study examining the treatment-taking experiences of asymptomatic people living with HIV in the context of Treat-all in Eswatini. *J Int AIDS Soc*. 2019;22(1):e25220. doi:10.1002/jia2.25220
- Nhassengo P, et al. Barriers and facilitators to the uptake of Test and Treat in Mozambique: A qualitative study on patient and provider perceptions. *PLoS One*. 2018;13(12):e0205919.
- Ayieko J, Brown L, Anthierens S, et al. “Hurdles on the path to 90–90–90 and beyond”: qualitative analysis of barriers to engagement in HIV care among individuals in rural East Africa in the context of test-and-treat. *PLoS One*. 2018;13(8):e0202990. doi:10.1371/journal.pone.0202990
- Adams AK, Zamberia AM. “I will take ARVs once my body deteriorates”: an analysis of Swazi men's perceptions and acceptability of Test and Start. *Af J AIDS Res*. 2017;16:4.
- Kuznetsova AV, Meylakhs AY, Amirkhanian YA, et al. Barriers and facilitators of HIV care engagement: results of a qualitative study in St. Petersburg, Russia. *AIDS Behav*. 2016;20(10):2433–2443. doi:10.1007/s10461-015-1282-9
- Yehia BR, Stewart L, Momplaisir F, et al. Barriers and facilitators to patient retention in HIV care. *BMC Infect Dis*. 2015;15(1):246. doi:10.1186/s12879-015-0990-0
- Knight R, Small W, Thomson K, et al. Implementation challenges and opportunities for HIV Treatment as Prevention (TasP) among young men in Vancouver, Canada: a qualitative study. *BMC Public Health*. 2016;16(1):262. doi:10.1186/s12889-016-2943-y
- Boyer S, Iwuji C, Gosset A, et al. Factors associated with antiretroviral treatment initiation amongst HIV-positive individuals linked to care within a universal test and treat programme: early findings of the ANRS 12249 TasP trial in rural South Africa. *AIDS Care*. 2016;28(sup3):39–51. doi:10.1080/09540121.2016.1164808
- Lo Y-R, Kato M, Phanuphak N, et al. Challenges and potential barriers to the uptake of antiretroviral-based prevention in Asia and the Pacific region. *Sex Health*. 2014;11(2):126–136. doi:10.1071/SH13094
- MacPherson P, MacPherson EE, Mwale D, et al. Barriers and facilitators to linkage to ART in primary care: a qualitative study of patients and providers in Blantyre, Malawi. *J Int AIDS Soc*. 2012;15(2):18020. doi:10.7448/IAS.15.2.18020
- Anderson JG. Health services utilization: framework and review. *Health Serv Res*. 1973;8(3):184.
- Glanz K, Bishop DB. The role of behavioral science theory in development and implementation of public health interventions. *Annu Rev Public Health*. 2010;31(1):399–418. doi:10.1146/annurev.publhealth.012809.103604
- Kübler-Ross E, Kessler D. *On Grief and Grieving: Finding the Meaning of Grief Through the Five Stages of Loss*. Simon and Schuster; 2005.
- Prochaska JO, Velicer WF. The transtheoretical model of health behavior change. *Am j Health Promotion*. 1997;12(1):38–48. doi:10.4278/0890-1171-12.1.38
- Astalin PK. Qualitative research designs: A conceptual framework. *Int J Social Sci Int Res*. 2013;2(1):118–124.

32. Ahmed I, Gugsa ST, Lemma S, et al. Predictors of loss to follow-up before HIV treatment initiation in Northwest Ethiopia: a case control study. *BMC Public Health*. 2013;13(1):867. doi:10.1186/1471-2458-13-867
33. Clarke VBV. Using thematic analysis in psychology. *Qual Res Psychol*. 2006;3:2.
34. Balcha TT, Jeppsson A, Bekele A. Barriers to antiretroviral treatment in Ethiopia: a qualitative study. *J Int Assoc Physicians AIDS Care*. 2011;10(2):119–125. doi:10.1177/1545109710387674
35. Katz IT, Essien T, Marinda ET, et al. Antiretroviral refusal among newly diagnosed HIV-infected adults in Soweto, South Africa. *AIDS*. 2011;25(17):2177. doi:10.1097/QAD.0b013e32834b6464
36. Kulkarni S, Tymejczyk O, Gadisa T, et al. “Testing, Testing”: multiple HIV-Positive Tests among Patients Initiating Antiretroviral Therapy in Ethiopia. *J Int Assoc Provid AIDS Care*. 2017;16(6):546–554. doi:10.1177/2325957417737840
37. Govindasamy D, Ford N, Kranzer K. Risk factors, barriers and facilitators for linkage to antiretroviral therapy care: a systematic review. *Aids*. 2012;26(16):2059–2067. doi:10.1097/QAD.0b013e3283578b9b
38. Mugglin C, Estill J, Wandeler G, et al. Loss to programme between HIV diagnosis and initiation of antiretroviral therapy in sub-Saharan Africa: systematic review and meta-analysis. *Trop Med Int Health*. 2012;17(12):p. 1509–1520. doi:10.1111/j.1365-3156.2012.03089.x
39. Kebaabetswe P, et al. Barriers and facilitators to linkage to care and ART initiation in the setting of high ART coverage in Botswana. *AIDS Care*. 2019;1–7.
40. Tymejczyk O, Brazier E, Yiannoutsos C, et al. HIV treatment eligibility expansion and timely antiretroviral treatment initiation following enrollment in HIV care: a meta-regression analysis of programmatic data from 22 countries. *PLoS Med*. 2018;15(3):e1002534. doi:10.1371/journal.pmed.1002534
41. Layer EH, Kennedy CE, Beckham SW, et al. Multi-Level Factors Affecting Entry into and Engagement in the HIV Continuum of Care in Iringa, Tanzania. *PLoS One*. 2014;9(8):e104961. doi:10.1371/journal.pone.0104961
42. Katz IT, Dietrich J, Tshabalala G, et al. Understanding treatment refusal among adults presenting for HIV-testing in Soweto, South Africa: a qualitative study. *AIDS Behav*. 2015;19(4):704–714. doi:10.1007/s10461-014-0920-y

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