JQRHS

Journal of
Qualitative Research in Health Sciences

https://jqr1.kmu.ac.ir
doi:10.34172/jqr.1451
J Qual Res Health Sci 2026;15:1451

Original Article

Open Access
Publish Free

Barriers and Facilitators of Adherence to HIV Treatment: A Qualitative Study

Ehsan Vesali-Monfared[1,2], Mayam Barati[1,2], Shahriar Parsa Majd[1,2], Forouzan Rezapur-Shahkolai[1,3,4*]

[1]Department of Public Health, School of Public Health, Hamadan University of Medical Sciences, Hamadan, Iran
[2]Student Research Center, Hamadan University of Medical Sciences, Hamadan, Iran
[3]Social Determinants of Health Research Center, Hamadan University of Medical Sciences, Hamadan, Iran
[4]Research Center for Health Sciences, Hamadan University of Medical Sciences, Hamadan, Iran

***Corresponding Author:** Forouzan Rezapur-Shahkolai, Email: forouzan.rezapour@gmail.com

Abstract

Introduction: Adherence to antiretroviral therapy (ART) is critical for improving life expectancy among patients with HIV/AIDS and plays a significant role in preventing and controlling the HIV/AIDS epidemic in society. This qualitative study explored the barriers and facilitators of treatment adherence among patients with HIV/AIDS.

Methods: This qualitative study was conducted using conventional content analysis in July and August 2020 in Qom, Iran. Participants were selected through purposive sampling with maximum diversity, and data collection continued until saturation was reached. Semi-structured, face-to-face interviews were conducted with 15 patients with HIV/AIDS at a behavioral disease counseling center in Qom, Iran, using a pre-defined interview guide.

Results: Four subcategories of barriers were identified, including *patient-related factors*, *drug-related factors*, *sociocultural factors*, and *factors related to the healthcare delivery system*. Two subcategories of facilitators, including *education and information campaigns* and *encouragement and increased motivation* also emerged.

Conclusion: To design and implement effective intervention strategies for improving adherence to HIV/AIDS treatment, it is essential to identify the obstacles faced by patients. Moreover, establishing harm reduction centers (Drop-In Centers, DICs), fostering trust and mutual understanding between healthcare providers and patients, and reducing stigma and discrimination can play an effective role in promoting treatment adherence.

Keywords: HIV/AIDS, Compliance, Antiretroviral therapy, Treatment adherence, Qualitative method

Citation: Vesali-Monfared E, Barati M, Parsa Majd S, Rezapur-Shahkolai F. Barriers and facilitators of adherence to HIV treatment: a qualitative study. J Qual Res Health Sci 2026;15:1451. doi:10.34172/jqr.1451

Received: December 25, 2024, **Accepted**: March 17, 2025, **ePublished**: June 26, 2026

Introduction

The human immunodeficiency virus (HIV) is a virus that attacks the body's immune system, impairing or disrupting the function of immune cells. As the infection progresses, the immune system weakens, increasing susceptibility to opportunistic infections. The most advanced stage of HIV infection is acquired immunodeficiency syndrome (AIDS) (1). According to the 2023 statistics from the Joint United Nations Programme on HIV/AIDS (UNAIDS), approximately 39 million people worldwide are living with HIV. Of these, 29.8 million have access to antiretroviral therapy (ART), 1.3 million people are newly infected with HIV, and 630,000 people died from AIDS-related illnesses. Since the beginning of the HIV/AIDS pandemic, an estimated 6.85 million people have been infected with HIV, and 4.4 million have died. Among the 39 million people currently living with HIV, 37.5 million are aged 15 years or older, including 20 million women and 4.17 million men, while 1.5 million are children under the age of 15 (2). One of the Sustainable Development Goals (SDGs) is to control this epidemic by 2030. The World Health Organization (WHO) Global Health Sector Strategy on HIV for 2016-2021 outlines three ambitious targets, known as the 90-90-90 goals: 90% of people living with HIV worldwide should be diagnosed, 90% of those diagnosed should receive ART, and 90% of those on treatment should achieve viral suppression (3). Achieving these targets would enable 73% of people living with HIV to suppress the virus, marking an effective step toward ending the epidemic by 2030 (4). The primary goals of ART are to prevent disease progression, improve quality of life, and prolong survival. The key to its success lies in the willingness of people living with HIV to adhere to treatment regimens (5). WHO defines adherence as "the extent to which a person's behavior—taking medication, following a diet, and/or executing lifestyle changes—corresponds with agreed recommendations from a healthcare provider" (6). Correct use of ART is the most effective way to ensure patient adherence. Access to these

© 2026 The Author(s); Published by Kerman University of Medical Sciences. This is an open-access article distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

services improves patients' quality of life, increases their life expectancy, controls the HIV epidemic, and reduces the risk of transmitting the disease to others (7). The first step in addressing non-adherence is to accurately identify patients at high risk of non-adherence (8). Factors such as patients' realistic evaluation of treatment regimens, clear and effective communication between patients and healthcare providers, and recognition of the patient as an individual with unique challenges related to the disease are crucial for promoting treatment adherence (9). ART is highly effective in suppressing viral load, reducing transmission risk, and preventing AIDS-related deaths. However, it is necessary to identify and report the rate of non-adherence to treatment and to focus more on identifying and addressing the barriers and facilitators of adherence to ART in patients with HIV to achieve high levels of ART adherence (90%) as well as to ensure the achievement of positive and effective treatment outcomes. Accordingly, this qualitative study aimed to explore and explain the barriers to and facilitators of treatment adherence among patients with HIV.

Material and Methods

This qualitative study explored the barriers to and facilitators of adherence to HIV treatment among patients with HIV/AIDS. The study was conducted using conventional content analysis on a sample of 15 patients with HIV/AIDS in July and August 2020 in Qom, Iran. Conventional content analysis is typically used to describe a phenomenon, particularly when existing theory or research literature on the topic is limited. This approach avoids the use of preconceived categories, allowing categories and their names to emerge directly from the data. Researchers immerse themselves in the data to derive new insights, a process also referred to as inductive category development (10).

Participants were selected through purposive sampling with maximum diversity, and sampling continued until data saturation was achieved. The study included individuals living with HIV/AIDS who were receiving care at the behavioral disease counseling center and were on antiretroviral therapy (ART). The exclusion criterion was the participant's reluctance to be interviewed after two follow-ups.

Data were collected through semi-structured interviews. Each interview began with the researcher establishing informal communication, introducing himself, clearly stating the study objectives, ensuring the confidentiality of the information, and obtaining informed consent. Interviews were conducted in Persian (Farsi) at behavioral disease counseling centers, where participants received medication and healthcare services. The average duration of each interview was 45 minutes. Interviews were recorded using a tape recorder with participants' permission. At the beginning of each interview, demographic information such as age, marital status, education level, and occupation was collected. The interview then proceeded with main questions focusing on barriers to and facilitators of adherence to HIV treatment. Example interview questions included: "In your opinion, what are the barriers to treatment adherence among patients with HIV/AIDS?", "In your opinion, what factors facilitate the promotion and improvement of treatment adherence among patients with HIV/AIDS?, and "What factors do you think can increase a patient's desire and intention to adhere to treatment? To gain deeper insights, the researcher used exploratory questions such as, "Can you explain more?" Or "Can you give an example?"

After completing the interviews, the recordings were carefully listened to multiple times. The content of the interviews was transcribed verbatim in Persian and then translated into English. To ensure accuracy, the English translations were back-translated into Persian independently, and discrepancies were resolved. For data analysis, the transcripts were read multiple times to gain a general understanding. The text was then divided into meaning units and codes. Moreover, codes with semantic similarity were grouped into categories and subcategories. To enhance the accuracy of data analysis, two members of the research team independently performed coding and analysis, and consensus was reached through discussion. The study received ethical approval from the Ethical Committee of Hamadan University of Medical Sciences (9809196968).

Trustworthiness

To ensure the scientific rigor of the study, the four criteria proposed by Guba and Lincoln (2006), including credibility, transferability, dependability, and confirmability, were applied (11,12). To enhance credibility, participants were selected with maximum diversity, and data collection continued until saturation was reached. The researchers in this study maintained close, constant, and continuous engagement with participants, avoided prolonging the process of data collection, and involved participants in data interpretation (member checking). Besides, the research was conducted collaboratively by multiple researchers. Colleagues and participants provided feedback at various stages of the study, particularly during code extraction and final evaluation (peer review). Finally, to establish transferability, the study provided a detailed description of the research setting, participants, and data analysis methods, enabling others to evaluate the applicability of the findings to different contexts.

Results

The study included 15 patients with HIV/AIDS, with a mean age of 38.41 ± 5.56 years. Through coding and analyzing the data obtained from the interviews, the codes were categorized into two groups including *barriers to HIV/AIDS treatment adherence* and *facilitators of HIV/AIDS treatment adherence*. Figures 1 and 2 illustrate the barriers, and Figures 3 and 4 depict the facilitators. Within the barriers category, four subcategories emerged, including *patient-related factors*, *drug-related factors*, *sociocultural factors*, and *factors related to the healthcare delivery system*. The facilitators were also divided into two subcategories,

including *education and information campaigns* and *encouragement and increased motivation*.

Barriers

As shown in Figures 1 and 2, the barriers were classified into four subcategories, including *patient-related factors*, *drug-related factors*, *sociocultural factors*, and *factors related to the healthcare delivery system*, each of which is explained below.

Patient-related factors

Adherence to HIV/AIDS treatment is a critical factor in the success of treatment and the prevention of drug resistance. The qualitative analysis of the study findings revealed that patient-related factors significantly influenced treatment adherence. These factors included fear of and concern about the disclosure of information, economic problems, beliefs and attitudes toward treatment, substance abuse, hopelessness, and the impact of other patients' death.

For example, one participant stated, «*To avoid being recognized by relatives and friends, I wear a mask and glasses or I prefer to enter the behavioral counseling center carefully. Sometimes, at the moment of entering, I look around several times and quickly enter one of the nearby rooms, take my medication, and hide it*".

Another participant shared, «*Before coming here, I lived in Kermanshah; it was very difficult for me to stay there. I was worried that someone would recognize me… my husband›s family lived there. That›s why I moved to Qom. I feel very comfortable here because I›m a stranger… no one knows me…*".

A third participant expressed, «*Every time I take my medication, I put it in another container. Several times my daughter has asked me what medication I am taking and for what disease. I am worried she will recognize the pills and realize I have AIDS*".

A participant also highlighted, «*When we hear that one of the patients has died, it deeply affects us, we lose hope and become depressed*».

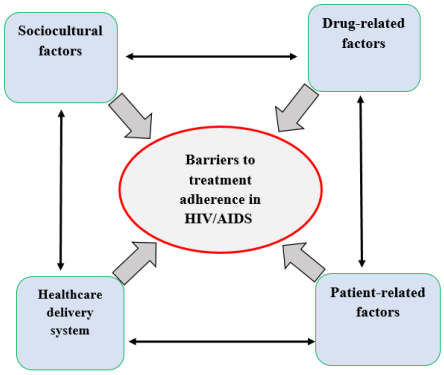


Figure 1: Key barriers associated with antiretroviral treatment adherence in patients with HIV/AIDS

Figure 1. Key barriers associated with antiretroviral treatment adherence in patients with HIV/AIDS

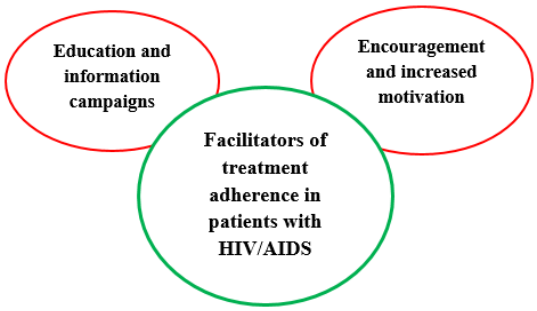


Figure 3. Key facilitators associated with antiretroviral treatment adherence in patients with HIV/AIDS

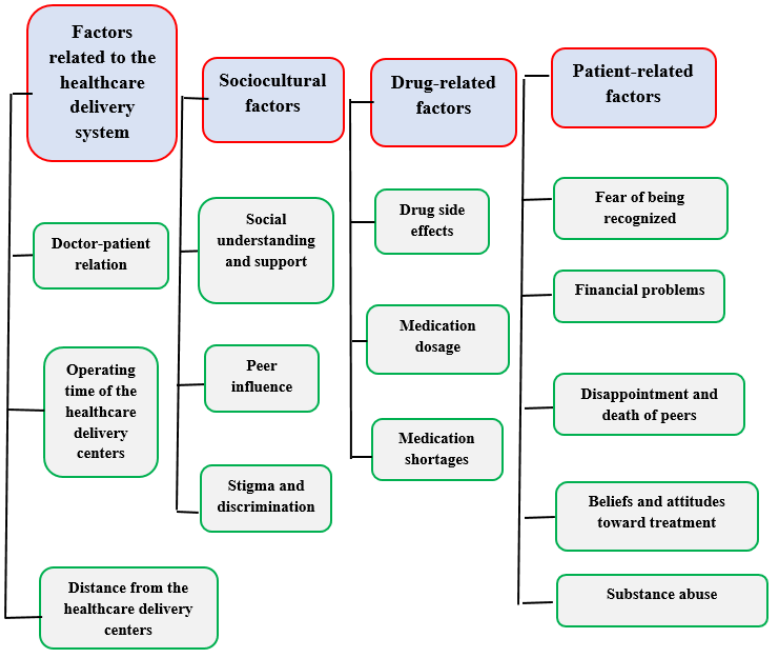


Figure 2. Subcategories of barriers related to antiretroviral treatment adherence in patients with HIV/AIDS

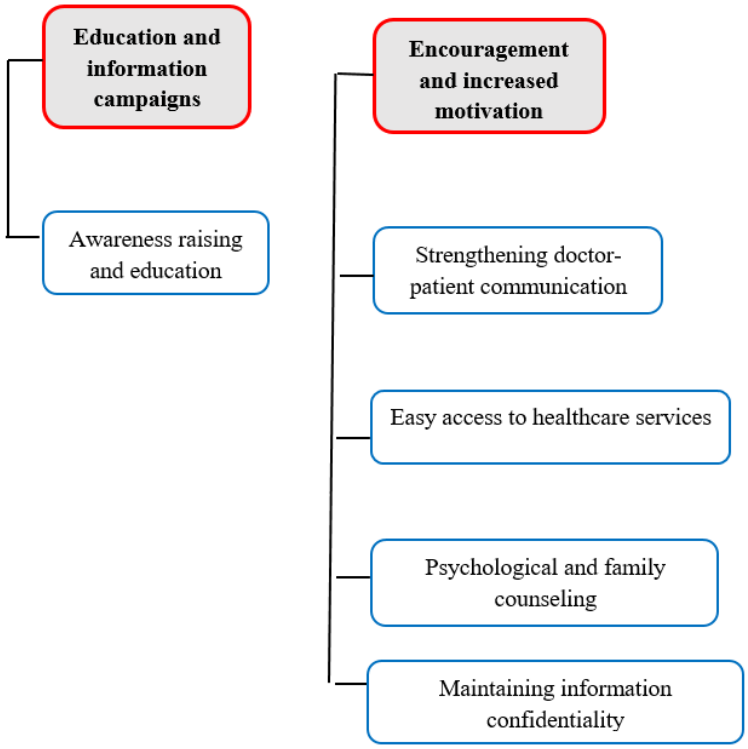


Figure 4. Subcategories of facilitators related to antiretroviral treatment adherence in patients with HIV/AIDS

Drug-related factors

While most participants emphasized the importance of medication adherence, the analysis showed that drug-related factors, such as side effects, medication form and dosage, medication shortages, and the number and size of drugs can hinder adherence. Participants frequently mentioned the adverse effects of their medications.

One participant stated, «*I get confused when I take my medication at night, I can›t wake up easily in the morning..... Since I work as a driver, I have to adjust my sleep, pills, and driving conditions so that I don›t get into trouble*".

Another participant reported, «*Every night when I take my medication, I experience bad dreams, hand and leg pain, nausea, and vomiting*".

A participant highlighted, "*The timing of my medication does not align with my work hours. These drugs disrupt my sleep and appetite and cause gastrointestinal issues at work*".

Another participant shared, "My daughter and I have this disease. She was diagnosed in the hospital and took syrup until she was almost six years old. Now, the doctor has prescribed pills, but she refuses to take them. The medication is no longer available in syrup form, and I don't know what to do".

Sociocultural factors

Data analysis indicated that adherence to treatment in patients with HIV/AIDS is influenced by social and cultural factors, such as social understanding and support, stigma, discrimination, and peer influence.

One participant emphasized, «*If family members treat the patient well and provide support, treatment adherence improves… For example, in my case, my brothers help me… When they help me, I can take my medication much easier.*»

Another participant described the lack of social support, « *Family members, friends, and sometimes society do not support the patient. They may even expel the patient from their home, fearing the disease will spread. Many people consider this disease as a sex disease*".

A third participant expressed concerns about familial rejection,» *If my wife›s family finds out I have AIDS, they won›t let me live with them… They say that our children will also get the disease… If this happens, it will be very bad.* «.

Another participant shared an experience of social stigma, *"I wanted to rent a house and after completing the contract, I got the rented house, but after a while, the landlord, who found out that I had AIDS, accused me of inappropriate behavior and asked me to vacate the house. People easily start stigmatizing individuals and their families when they learn about the disease, considering it a bad disease".*

Factors related to the healthcare delivery system

The qualitative analysis of the interviews showed that challenges within the healthcare system, such as service delivery time, distance, patient-physician relationship, communication methods, and the availability of doctors are significant barriers to adherence to treatment in patients with HIV/AIDS.

One participant highlighted the difficulties faced by rural residents, *"Patients who live in rural areas face*

significant challenges in accessing medication and other services, and it is very difficult and expensive to go to health centers".

Another participant explained, «*When I want to go to the center, I have to take time off work and coordinate my schedule. The distance and travel time are major issues for me. That›s why I have to leave in the morning and this is a big problem".*

Another participant noted, "*Tests are conducted on specific days, and if I miss the appointment or arrive late, I lose the chance to receive services, which is due to the distance and operating time of the centers".*

Facilitators

As illustrated in Figures 3 and 4, the facilitators were classified into two subcategories, including *education and information campaigns* and *encouragement and increased motivation*. Each of these subcategories is explained in detail below.

Education and information campaigns

The analysis of the interviews revealed that education and information campaigns targeting patients, their families, and peers serve as significant facilitators in improving treatment adherence. Providing comprehensive information about the disease, medication, and the importance of adherence can enhance patients' understanding and commitment to treatment.

One participant emphasized, «*When a person comes for treatment, they should be educated about what happens when they take the medication, including the side effects. They should be told that if they tolerate these side effects for some time, their condition will get better. They should also be informed that taking the medication on time can extend their life span. Many people who do not take their medication correctly, have not been properly trained. If they were trained, they would use it properly.... Training is very important… They should be trained about three things: knowing the virus, the effects of the medication on the virus, and how to disregard stigma and discrimination".*

Another participant stated, "*It's been a while since a unit called the 'Positive Club' has been established at this center. It offers training sessions, brainstorming activities, nutrition classes, and even camping trips. These events bring us together here on the same day every week. The training class is also very inspiring."*

Encouragement and increased motivation

The results of this qualitative study indicated that incentives and motivational strategies, such as ensuring confidentiality, providing psychological counseling, increasing service accessibility, and fostering intimate and constructive communication between doctors and patients can significantly enhance treatment adherence among patients with HIV/AIDS.

One of the participants stated,» *The environment at the service provider center should be relaxing and safe, not tense. Patients are diverse, and the center should tailor its communication to the needs of each disease group".*

Another participant expressed,» *This city has only one behavioral counseling center and it is difficult for many patients to visit on time due to the distance. It is needed to increase the number of centers».*

Another participant remarked,» *Many patients at this center, like me, are breadwinners who work. It is difficult for us to find time to visit in the morning. If the behavioral counseling centers operated in the afternoon, it would be much more convenient».*

A participant also noted,» *We have challenges with many treatment procedures outside this center, such as dental care. We need to get a referral letter. It would be much better for patients if dental services were available within this center".*

Finally, a participant emphasized,» *For female patients like me, it is difficult and annoying to say many things to a male doctor. This center has only one doctor and he is a man. My suggestion is to have both a female specialist and a female doctor to visit female patients".*

Discussion

Qualitative studies play a crucial role in examining adherence to HIV/AIDS treatment by exploring patients' perspectives and experiences, as well as identifying potential strategies to improve adherence (13). Therefore, it is important to identify the reasons and degrees of non-adherence to HIV/AIDS treatment. The first step is to accurately identify the barriers and facilitators of treatment adherence in patients who are at high risk of non-adherence.

The results of the present study regarding the barriers hindering adherence to treatment among patients with HIV/AIDS showed that the fear of disclosure and being recognized by others, economic problems, despair, beliefs about treatment, and substance abuse emerged as significant patient-related factors hindering adherence. In line with the current findings, prior studies have identified fear of disclosure and recognition by others as one of the most important and common factors that reduce treatment adherence in patients with HIV/AIDS (14,15). Studies show that most patients on ART, who conceal their condition, experience frequent treatment interruptions, as they have to take medications secretly to avoid revealing their condition (16). Consistent with the findings of the present study regarding the fear of disclosure, Kvarnström et al. believed that the fear of disclosing patient information is a common reason for non-adherence, particularly in the context of HIV/AIDS (17). Similarly, a study on adults with HIV/AIDS found that the most common reason for non-adherence to treatment is the fear of disclosure of information and recognition caused by drug use at home and in family settings (18).

Economic problems were also identified as a barrier to adherence to HIV/AIDS treatment in this study. This aligns with existing research suggesting that reducing economic and financial barriers can enhance treatment adherence

(19,20). Numerous studies also showed that many patients cite treatment costs as a barrier to adherence (21,22). Moreover, feelings of hopelessness and the impact of the death of other patients with HIV/AIDS were described as effective obstacles to adherence to treatment. Men et al.'s study also found that patients with HIV/AIDS delay seeking treatment due to a belief that they will not survive (13,23).

The role of patients' attitudes and beliefs about medication was another key finding of this study. Similarly, many studies emphasize the influence of attitudes and beliefs on treatment adherence (21,24). A meta-analysis also demonstrated that individuals with a history of alcohol abuse exhibited a 40-50% reduction in adherence to treatment (25). The studies by Farhoudi et al. (23), Hosseini et al. (26), and others have also highlighted the detrimental impact of substance abuse on treatment adherence (27).

Drug-related factors, such as side effects, medication form and dosage, medication shortages, and the amount of drugs needed to be taken were also identified as barriers to treatment adherence in patients with HIV/AIDS. The study by Sasaki et al. supports this, showing that reducing the number of pills significantly improves adherence and quality of life in patients with HIV/AIDS (24). The side effects of antiretroviral drugs are a well-documented reason for poor adherence globally (28,29). Consistent with the present study, the study by Remien et al. found that some patients perceive drugs as toxic and believe their side effects outweigh their benefits, leading them to discontinue treatment (30). Similarly, Ahmed et al.›s study identified adverse drug reactions as a potential reason for non-adherence (13). Bezabhe et al. (14) and Kumarasamy et al. (22) also noted that side effects and the number of drugs are frequently cited barriers to treatment adherence. Mimiaga et al.'s study further emphasized that limited access to medication contributes to non-adherence (31).

Sociocultural factors, including stigma, discrimination, and peer influence, were also significant barriers to adherence to treatment among patients with HIV/AIDS. Physical, mental, economic, and nutritional support provided by family plays a critical role in adherence, as highlighted in several studies (13,15,32). Patients who receive cultural and social support from healthcare organizations and centers demonstrate better self-efficacy, fewer missed doses of medication, and higher self-confidence (33,34). The results of Ahmed et al.›s study showed that counseling and communication with peer groups can help patients take their medications correctly. These people can be sources of motivation for other patients (13). In line with the findings of the present study, the results of previous studies showed that stigma and discrimination are the main factors of non-adherence to treatment in patients with HIV/AIDS (14,15). The fear of being stigmatized can be so intense that some patients prefer not to take their medications (35). A study on adults with HIV/AIDS showed that the most common reasons for non-adherence to treatment might be the fear of stigma and discrimination caused by drug use at home and in family settings (18).

The relationship between patients and healthcare providers, as well as the accessibility issues, such as distance and clinic hours, were also mentioned as barriers. Consistent with these results, studies have shown that positive interactions with healthcare staff can enhance adherence (14), while long distances and poor access to care contribute to non-adherence (36). Inadequate communication between patients and healthcare providers can lead to insufficient counseling, leaving patients to manage medication challenges alone. Thus, strengthening the patient-physician relationship is essential, as highlighted by Kvarnström et al. (17) and Souter et al. (37), who showed that poor communication can result in treatment interruptions and non-adherence..

The facilitators of adherence to treatment identified in this study included education and awareness campaigns, peer training, constructive and intimate relationships between patients and healthcare providers, and counseling sessions. These strategies aim to address issues such as depression, family problems, and access to services, while fostering confidence and mutual trust. Increasing patients› awareness and knowledge about their condition and treatment and educating their peers, were found to be effective in promoting adherence to antiretroviral treatment. Patients emphasized the importance of being treated with dignity and without prejudice by healthcare providers. In line with these findings, studies have shown that constructive and positive communication between doctors and patients can play an exceptional role in improving adherence (14). Several studies have revealed that poor access to healthcare and long waiting times lead to poor medication adherence (13,36). Souter et al. showed that unfavorable, poor, and sometimes discriminatory communication between doctors, medical staff, and patients with HIV/AIDS can lead to treatment problems. These, in turn, can result in treatment discontinuation or non-adherence to maintenance therapy (37). In some cases, poor patient-provider relationships lead to inadequate patient counseling and leave the patient alone to struggle with drug problems (17). The findings of the present study align with those of the studies by Reda et al. (38), Bangsberg (39), and Simoni et al. (40), which showed that one of the important and effective strategies for improving and promoting adherence to treatment in patients with AIDS is counseling for depression, substance abuse reduction, improved patient-provider relationships, and family support. Moreover, a meta-analysis indicated that adherence interventions may be most effective when targeting individuals with poor adherence and gaps in educational and psychological counseling (41).

This study had several limitations. Due to the qualitative nature of the research, the findings cannot be generalized to the entire population of patients with HIV/AIDS. Besides, while the results were noticeable, relevant, and significant for treatment adherence among patients with HIV/AIDS in Qom, further studies are needed to identify additional barriers and facilitators of antiretroviral therapy adherence.

Conclusion

To design and implement effective intervention strategies for enhancing adherence to HIV/AIDS treatment, it is essential to identify the barriers and facilitators of adherence among patients. Supporting patients with HIV/AIDS, launching social campaigns, identifying obstacles to adherence, establishing harm reduction centers (e.g., Drop-In Centers, DICs), and fostering trust and mutual understanding between healthcare providers and patients to reduce stigma and discrimination are critical steps to promote treatment adherence.

Acknowledgments

This study was approved and supported by Hamadan University of Medical Sciences. We would like to thank the Deputy for Research and Technology of Hamadan University of Medical Sciences for their approval and financial support. We also express our gratitude to all participants who contributed to this study.

Authors' Contribution

Conceptualization: Ehsan Vesali-Monfared, Maryam Barati, Shahriar Parsa Majd, Forouzan Rezapur-Shahkolai
Data Curation: Ehsan Vesali-Monfared, Maryam Barati, Shahriar Parsa Majd
Formal Analysis: Ehsan Vesali-Monfared, Maryam Barati, Forouzan Rezapur-Shahkolai
Funding Acquisition: Ehsan Vesali-Monfared, Forouzan Rezapur-Shahkolai
Investigation: Ehsan Vesali-Monfared, Forouzan Rezapur-Shahkolai
Methodology: Ehsan Vesali-Monfared, Maryam Barati, Forouzan Rezapur-Shahkolai
Project Administration: Ehsan Vesali-Monfared, Forouzan Rezapur-Shahkolai
Resources: Ehsan Vesali-Monfared, Maryam Barati, Shahriar Parsa Majd
Software: Ehsan Vesali-Monfared, Forouzan Rezapur-Shahkolai
Supervision: Forouzan Rezapur-Shahkolai
Validation: Ehsan Vesali-Monfared, Forouzan Rezapur-Shahkolai
Visualization: Ehsan Vesali-Monfared, Forouzan Rezapur-Shahkolai
Writing–Original Draft: Ehsan Vesali-Monfared, Maryam Barati, Shahriar Parsa Majd, Forouzan Rezapur-Shahkolai

Competing Interests

The authors declare no conflict of interest.

Ethical Approval

This study was approved by the Ethical Committee of Hamadan University of Medical Sciences (ethics code IR.UMSHA.REC.1398.744).

Funding

This study was financially supported by the Deputy for Research and Technology of Hamadan University of Medical Sciences (9809196968).

References

1. Cholevas NK, Loucaides CA. Factors that facilitate and barriers towards the implementation of health educational programmes in primary education schools of the prefecture of Achaia, Greece. Health Education Journal 2012;71(3):365-75. doi:10.1177/0017896911406964
2. UNAIDS. UNAIDS Global AIDS Update 2023,. Available from:https://www.unaids.org/en. Accessed August 21, 2023
3. UNAIDS. AIDS and the Sustainable Development Goals. Available from:https://www.unaids.org/en/AIDS_SDGs 2023.
4. Assefa Y, Gilks CF. Ending the epidemic of HIV/AIDS by 2030: Will there be an endgame to HIV, or an endemic HIV requiring an integrated health systems response in many countries. Int J Infect Dis 2020;100:273-7. doi:10.1016/j.ijid.2020.09.011
5. Vervoort SC, Borleffs JC, Hoepelman AI, Grypdonck MH. Adherence in antiretroviral therapy: a review of qualitative studies. AIDS 2007;21(3):271-81. doi:10.1097/qad.0b013e328011cb20
6. Brown MT, Bussell JK. Medication adherence: WHO cares. Mayo Clin Proc 2011;86(4):304-14. doi:10.4065/mcp.2010.0575
7. Infectious Disease Control Centre.2017.Available from:https://health.gov.ag/departments/infectious-disease-control-centre/. Accessed: August 21, 2023
8. Jima F, Tatiparthi R. Prevalence of nonadherence and its associated factors affecting on HIV adults follow-up at antiretroviral therapy clinic in Batu Hospital, Eastern Ethiopia. Indian J Sex Transm Dis AIDS 2018;39(2):91-7. doi:10.4103/ijstd.IJSTD_37_17
9. Martin LR, Williams SL, Haskard KB, DiMatteo MR. The challenge of patient adherence. Ther Clin Risk Manag 2005;1(3):189-99.
10. Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. Qual Health Res 2005;15(9):1277-88. doi:10.1177/1049732305276687
11. Forero R, Nahidi S, De Costa J, Mohsin M, Fitzgerald G, Gibson N, et al. Application of four-dimension criteria to assess rigour of qualitative research in emergency medicine. BMC Health Serv Res 2018;18(1):120. doi:10.1186/s12913-018-2915-2
12. Lincoln YS, Guba EG. But is it rigorous? Trustworthiness and authenticity in naturalistic evaluation. New Directions for Program Evaluation 1986;1986(30):73-84. doi:10.1002/ev.1427
13. Ahmed SI, Farooqui M, Syed Sulaiman SA, Hassali MA, Lee CKC. Facilitators and Barriers Affecting Adherence among People Living With HIV/AIDS: A Qualitative Perspective. J Patient Exp 2019;6(1):33-40. doi:10.1177/2374373518770805
14. Bezabhe WM, Chalmers L, Bereznicki LR, Peterson GM, Bimirew MA, Kassie DM. Barriers and facilitators of adherence to antiretroviral drug therapy and retention in care among adult HIV-positive patients: a qualitative study from Ethiopia. PLoS One 2014;9(5): e97353. doi:10.1371/journal.pone.0097353
15. Wasti SP, Simkhada P, Randall J, Freeman JV, van Teijlingen E. Factors influencing adherence to antiretroviral treatment in Nepal: a mixed-methods study. PLoS One 2012;7(5): e35547. doi:10.1371/journal.pone.0035547
16. Mills EJ, Nachega JB, Bangsberg DR, Singh S, Rachlis B, Wu P, et al. Adherence to HAART: a systematic review of developed and developing nation patient-reported barriers and facilitators. PLoS Med 2006;3(11): e438. doi:10.1371/journal.pmed.0030438
17. Kvarnström K, Westerholm A, Airaksinen M, Liira H. Factors Contributing to Medication Adherence in Patients with a Chronic Condition: A Scoping Review of Qualitative Research. Pharmaceutics 2021;13(7):1100. doi:10.3390/pharmaceutics13071100
18. Biadgilign S, Deribew A, Amberbir A, Deribe K. Barriers and facilitators to antiretroviral medication adherence among HIV-infected paediatric patients in Ethiopia: A qualitative study. SAHARA J 2009;6(4):148-54. doi:10.1080/17290376.2009.9724943
19. Emamzadeh-Fard S, Fard SE, SeyedAlinaghi S, Paydary K. Adherence to anti-retroviral therapy and its determinants in HIV/AIDS patients: a review. Infect Disord Drug Targets 2012;12(5):346-56. doi:10.2174/187152612804142251
20. Orrell C, Bangsberg DR, Badri M, Wood R. Adherence is not a barrier to successful antiretroviral therapy in South Africa. AIDS 2003;17(9):1369-75. doi:10.1097/00002030-200306130-00011
21. Mills EJ, Nachega JB, Buchan I, Orbinski J, Attaran A, Singh S,

et al. Adherence to antiretroviral therapy in sub-Saharan Africa and North America: a meta-analysis. JAMA 2006;296(6):679-90. doi:10.1001/jama.296.6.679
22. Kumarasamy N, Safren SA, Raminani SR, Pickard R, James R, Krishnan AK, et al. Barriers and facilitators to antiretroviral medication adherence among patients with HIV in Chennai, India: a qualitative study. AIDS Patient Care STDS 2005;19(8):526-37. doi:10.1089/apc.2005.19.526
23. Farhoudi B, Alipour A, Ghodrati S, Seyedalinaghi S, Zanganeh M, Mohraz M. Barriers to Adherence to Antiretroviral Treatment Among Inmates of a Prison in Tehran, Iran: A Qualitative Study. Archives of Clinical Infectious Diseases 2018;13(2): e57911. doi:10.5812/archcid.57911
24. Sasaki Y, Kakimoto K, Dube C, Sikazwe I, Moyo C, Syakantu G, et al. Adherence to antiretroviral therapy (ART) during the early months of treatment in rural Zambia: influence of demographic characteristics and social surroundings of patients. Ann Clin Microbiol Antimicrob 2012;11(1):34. doi:10.1186/1476-0711-11-34
25. Hendershot CS, Stoner SA, Pantalone DW, Simoni JM. Alcohol use and antiretroviral adherence: review and meta-analysis. J Acquir Immune Defic Syndr 2009;52(2):180. doi:10.1097/QAI.0b013e3181b18b6e
26. Hosseini Z, Eftkhar H, Nedjat S, Ebadi A, Abbasian L, Zamani F, et al. Adherence to HIV/AIDS antiretroviral therapy among drug users: A qualitative study in Iran. Iran J Nurs Midwifery Res 2016;21(1):29-37. doi:10.4103/1735-9066.174757
27. Chesney MA. Factors affecting adherence to antiretroviral therapy. Clin Infect Dis 2000;30(Supplement_2): S171-S176. doi:10.1086/313849
28. Minzi OM, Irunde H, Moshiro C. HIV patients presenting common adverse drug events caused by highly active antiretroviral therapy in Tanzania. Tanzan J Health Res 2009;11(1):5-10. doi:10.4314/thrb.v11i1.43243
29. Mutwa PR, Van Nuil JI, Asiimwe-Kateera B, Kestelyn E, Vyankandondera J, Pool R, et al. Living situation affects adherence to combination antiretroviral therapy in HIV-infected adolescents in Rwanda: a qualitative study. PLoS One 2013;8(4): e60073. doi:10.1371/journal.pone.0060073
30. Remien RH, Hirky AE, Johnson MO, Weinhardt LS, Whittier D, Le GM. Adherence to medication treatment: a qualitative study of facilitators and barriers among a diverse sample of HIV+men and women in four US cities. AIDS Behav 2003;7(1):61-72. doi:10.1023/a:1022513507669
31. Mimiaga MJ, Safren SA, Dvoryak S, Reisner SL, Needle R, Woody G. We fear the police, and the police fear us": structural and individual barriers and facilitators to HIV medication adherence among injection drug users in Kiev, Ukraine. AIDS Care 2010;22(11):1305-13. doi:10.1080/09540121003758515
32. Stutterheim SE, Shiripinda I, Bos AE, Pryor JB, de Bruin M, Nellen JF, et al. HIV status disclosure among HIV-positive African and Afro-Caribbean people in the Netherlands. AIDS Care 2011;23(2):195-205. doi:10.1080/09540121.2010.498873
33. Chen WT, Wantland D, Reid P, Corless IB, Eller LS, Iipinge S, et al. Engagement with Health Care Providers Affects Self-Efficacy, Self-Esteem, Medication Adherence and Quality of Life in People Living with HIV. J AIDS Clin Res 2013;4(11):256. doi:10.4172/2155-6113.1000256
34. Pagès-Puigdemont N, Mangues MA, Masip M, Gabriele G, Fernández-Maldonado L, Blancafort S, et al. Patients' Perspective of Medication Adherence in Chronic Conditions: A Qualitative Study. Adv Ther 2016;33(10):1740-54. doi:10.1007/s12325-016-0394-6
35. van Geffen ECG, Hermsen JHCM, Heerdink ER, Egberts ACG, Verbeek-Heida PM, van Hulten R. The decision to continue or discontinue treatment: experiences and beliefs of users of selective serotonin-reuptake inhibitors in the initial months--a qualitative study. Res Social Adm Pharm 2010;7(2):134-50. doi:10.1016/j.sapharm.2010.04.001
36. Ho SC, Jacob SA, Tangiisuran B. Barriers and facilitators of adherence to antidepressants among outpatients with major depressive disorder: A qualitative study. PLoS One 2017;12(6): e0179290. doi:10.1371/journal.pone.0179290
37. Souter C, Kinnear A, Kinnear M, Mead G. Optimisation of secondary prevention of stroke: a qualitative study of stroke patients' beliefs, concerns and difficulties with their medicines. Int J Pharm Pract 2014;22(6):424-32. doi:10.1111/ijpp.12104
38. Reda AA, Biadgilign S. Determinants of Adherence to Antiretroviral Therapy among HIV-Infected Patients in Africa. AIDS Res Treat 2012;2012:574656. doi:10.1155/2012/574656
39. Bangsberg DR. Preventing HIV antiretroviral resistance through better monitoring of treatment adherence. J Infect Dis 2008;197(s3): S272-S278. doi:10.1086/533415
40. Simoni JM, Amico KR, Pearson CR, Malow R. Strategies for promoting adherence to antiretroviral therapy: a review of the literature. Curr Infect Dis Rep 2008;10(6):515-21. doi:10.1007/s11908-008-0083-y
41. Conn VS, Ruppar TM, Enriquez M, Cooper P. Medication adherence interventions that target subjects with adherence problems: Systematic review and meta-analysis. Res Social Adm Pharm 2016;12(2):218-46. doi:10.1016/j.sapharm.2015.06.001