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The study of acceptability HIV self-testing among Iranian injecting drug users: a qualitative study

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Abstract

Background In 2016, The World Health Organization introduced HIV self-testing (HIVST) as an alternative to traditional HIV testing (1), the present study aims to study the acceptability of HIV self-testing among Iranian women injecting drug users (WIDUs). The results of this study are expected to provide valuable evidence for the proper implementation of this program in Iran. Methods: This study employed a content analysis approach to gather qualitative data. The investigation was conducted from April to July 2023. We have chosen the following five provinces, namely Mashhad, Tehran, Kurdistan, Mazandaran, and Kerman, as the designated areas for our study. A sample of Iranians (17–62 years) was selected by purposeful and snowball sampling methods to participate in the study, and 31 semi-structured interviews were conducted. The data collection tool was an interview guide, which was designed based on a review of the literature. The data were analyzed using conventional content analysis. The interviews continued until data saturation was reached. Results: Based on our findings, we distilled 2 main themes and 9 categories including Inhibiting factors (Access and Affordability, Accuracy Concerns, Low knowledge, linkage to HIV treatment, the window period, Ignoring the danger) and Focalizing factors (Empowerment and autonomy, Stigma and privacy.

Conclusion Iran's HIV stigma may discourage regular testing, but self-testing can help overcome challenges. Support for counseling, care links, and accurate information dissemination are crucial.

Keywords Acceptability, HIV self-testing, Injecting drug users, A qualitative study

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Introduction

In 2016, The World Health Organization introduced HIV self-testing (HIVST) as an alternative to traditional HIV testing [1]. HIVST is an added HIV testing choice that allows individuals to find out their HIV status in private [2] In this method, people collect their specimens, perform their own HIV tests, and read the testing results by themselves. The justification of the HIVST approach is accessing HIV test services for key populations that are unable to attend routine test services [3]. Evidence showed positively that about the acceptability and feasibility of HIVST among young people [4, 5]. Despite significant progress, more than 5 million persons with HIV remain undiagnosed [6]. Studies have shown that the majority of new infections are transmitted through people who did not know they were sick [7, 8]. It would appear that around half of people who are living with HIV do not know whether or not they are infected with the virus, a feature that is severely impeding the reaction of the global community to the HIV epidemic [9]. HIVST may lead to increased number testing among the people less likely to test because of barriers such as stigma and discrimination [10]. The people who inject drugs (PWID) are one the key populations that HIVST is a health priority [11]. There is a high level of HIV incidence rate in Iran among people who inject drugs (PWID). Presently, the HIV prevalence in Iran is shifting from men to women, and among Iranian PWID was 13.8% in 2013 [12, 13]. Reasons for not getting an HIV test include fear of stigma and discrimination, perceived lack of confidentially, and inconvenience and opportunity costs of testing [14]. Findings from the study in Iran indicated that HIV self-testing was highly acceptable and feasible among high-risk populations [15]. The utilization of HIV self-testing (HIVST) is influenced by several factors, primarily tied to the demographic makeup of populations. Key determinants include age, educational attainment, marital status, and broader demographic characteristics [16, 17].

An in-depth understanding of experiences of HIVST is needed to develop an appropriate approach to promote HIVST for this reason, this study was designed to develop the necessary measures to implement the test in high-risk groups based on its results. To the best of our knowledge, no study has focused on HIV self-testing among Iranian injecting drug users. To fill this gap in the existing literature, to fill this gap in the existing literature, the present study aims the study acceptability HIV self-testing among Iranian injecting drug users (WIDUs). The results of this study are expected to provide valuable evidence for the proper implementation of this program in Iran.

Methods

Study design, setting, and participants

This study employed a content analysis approach to gather qualitative data. The investigation was conducted from April to July 2023. The study region encompasses five geographical locations surrounding Iran, including the north, south, east, west, and center. We have chosen the following five provinces, namely Mashhad, Tehran, Kurdistan, Mazandaran, and Kerman, as the designated areas for our study and its execution. In this study, we have surveyed injectable drug users at drop-in facilities and camps. Drop-In Centers (DICs) are establishments where drug users can access health and social services.

This study included injection drug users who were willing to share their experiences and perspectives on HIV self-testing, as well as professionals actively working in the field of HIV, healthcare experts employed in behavioral disease centers with experience in working with HIV-positive patients, and decision-makers and experts familiar with the health and social issues of Iranian society. Individuals who were unable or unwilling to provide informed consent, as well as those with cognitive or communication impairments that hindered effective participation in interviews, were excluded from the study.

Ethical considerations

The study received ethics approval from the Research Ethics Committee of Kurdistan University of Medical Sciences (ethics code: IR.MUK.REC.1401.239). All participants were informed that their involvement in the study was entirely voluntary, with the option to withdraw at any stage. Confidentiality and privacy were assured, ensuring that no individuals would be identifiable in any subsequent publications. Informed consent was obtained from all participants before the commencement of the interviews.

Sampling and data collection

A purposive sampling strategy was utilized to choose a group of 25 persons who actively engage in injecting drug usage, as well as 6 specialized HIV care providers. The process of data collecting involved conducting individual, in-depth semi-structured interviews with the participants. The interview used in this study was adapted from the interview questions employed in the previous study by Ghobadi et al. [15]. The interviews were done using open-ended questions to get deeper into the beliefs and opinions of injecting drug users regarding the acceptability of HIV self-testing. "What do you think about HIV self-testing?" Examples of questions, include 'How do you find information on HIV self-testing?' and 'What factors are most important when choosing an HIV self-test kit?' Depending on the participant's responses, the moderators rephrased some questions or asked

Table 1 Socio-demographic characteristics of participants ($n=31$)

Age (years)		Values, *n* (%)
	17–32	17(54.8)
	33–48	13(41.9)
	49–64	1(3.2)
Gender		
	Male	21(67.7)
	Female	10(32.2)
Education		
	Primary	7(22.5)
	Secondary	15(48.3)
	Higher	9(29)
Occupation		
	Government's employee	6(19.3)
	Freelance job	10(32.2)
	Unemployed	15(48.3)

additional questions if they wanted to delve deeper into specific issues that were brought up by the respondents. Examples included "What do you mean?" and "Can you explain this more ….we used the memo writing method to document our analytical concept. The duration of each interview was between approximately 1.5 and 2 hours. The collection of data continued until it reached a point of saturation. The term "quality assurance" refers to a series of operations that take place before an investigation to ensure that the data gathered are of the greatest possible standard. In addition, the term "quality control" refers to any activities carried out during the process of gathering information or locating and changing any deviations from the criteria that govern the executable. For this investigation, the following methods were utilized to ensure and control the quality of the data collected: A standard executive protocol was produced, the authoritative administrative guide was assessed using a pilot study, and an organizational observer was employed to monitor and assess the research process closely. The pilot study was used to evaluate the executive protocol, and the administrative guide was used to evaluate the pilot study. There were consistent weekly meetings held to discuss and find solutions to problems as well as repeatedly clean the data.

The study aimed to improve data credibility and reliability by fostering positive relationships between interviewers and participants, ensuring sufficient data collection time, and sharing interview transcripts with participants and external observers to ensure accuracy and validity.

Data analysis

The study used Graneheim and Landman's approach to analyze interviews, identifying main themes and comparing patterns. Audio-recorded interviews were carefully transcribed into Persian, and transcripts were converted into meaning units. Keywords and expressions were built into codes, and the coding structure was identified. The transcripts were coded and restored using MAXQDA software, and code relationships and differences were explored. The study aimed to provide accessible audio files and transcripts for reviewers.

Table 2 Main themes and categories

Main Category	
Facilitating factors	Empowerment and autonomy
	Stigma and privacy
	convenience
Inhibiting factors	Access and Affordability
	Accuracy Concerns
	Low knowledge
	Linkage to HIV treatment
	The window period
	Ignore the danger

Results

In total, 31 Iranian people aged 17–59 years took part in the study. The characteristics of the participants are reported in Table 1.

Overall, two major themes and 9 subcategories have emerged from the analysis: (Table 2).

Facilitating factors

Empowerment and autonomy

HIV self-testing empowers individuals by granting them control over their health. It allows people to make informed decisions about their sexual health without the immediate involvement of healthcare providers. This autonomy can reduce stigma and encourage more people to get tested, particularly those who might be hesitant to visit a clinic due to privacy concerns or fear of judgment. Also, Self-testing provides autonomy by allowing individuals to test themselves discreetly and conveniently in their own space and time. This autonomy promotes a sense of agency over one's health and encourages regular testing, which is essential for early detection and timely treatment of HIV.

> *I think if it is possible to take the test at home or wherever you are comfortable, we will be much less anxious. Many times after the joint injection, I couldn't sleep for fear that I might not have AIDS, but I was still afraid to go for a test (participant 15). Whenever I took a test, the counselors did this and even interpreted it themselves. Taking the test yourself and finding the result gives you a sense of self-confidence and you take care of yourself more (participant 13).*

Stigma and privacy

Self-testing for HIV provides a private and confidential option, addressing the stigma that often deters people from seeking testing in public clinics. By conducting the test in their own space, individuals can avoid potential judgment or discrimination associated with HIV. This approach enhances privacy, enabling discreet testing at one's convenience, potentially benefiting those hesitant to access healthcare due to privacy concerns or fear of stigma.

> *The city where I live is very small and everyone knows each other well, so I am afraid that someone will see me in the addiction treatment center. Now if I take a test and everyone knows the result, it will be very bad (participant 6).*

> *In all transit centers or treatment centers for behavioral diseases, people can be tested anonymously, this helps them not feel embarrassed and reduces stigma, so even though these HIV self-tests are the same, they are no different from the rapid test (expert1).*

Convenience When we say HIV self-testing is convenient, we mean that it offers ease and comfort in several ways: Self-testing kits are often easily available, This accessibility removes the need for individuals to visit a clinic specifically for testing, making it more convenient, especially for those who might face barriers accessing healthcare services. Also, Self-testing provides flexibility in terms of time and location. Individuals can perform the test at their own convenience and in a private setting, bypassing the need for appointments or adhering to clinic hours. This flexibility encourages more frequent testing, which is crucial for early detection.

> *It's really easy to use HIV self-tests, it's done in the shortest possible time and the interpretation is easy, you don't need to go to a medical center or worry about someone knowing that you took the test. I hope it's available to the public in Iran. get a date.*

Inhibiting factors

Access and affordability

Access and affordability are crucial factors influencing the widespread adoption of HIV self-testing. From 2012, the HIV rapid test has been used in Iran's health system as the first step of screening suspected HIV cases, followed by ELISA and western blot test for positive samples. The use of HIV rapid tests for self-testing is illegal and these tests are limited to the triangular clinics. In practice, some of the individuals go to diagnostic laboratories for illegal HIVST and, therefore, Actually, there is no easy access to these kits and these people we interviewed had used these kits through pilot projects or research projects.

> *I have taken an HIV test many times in the camp or DIC centers, but to test myself and interpret the results, it happened only once in an experimental plan (participant 14).*

In Iran, HIV testing services are free and widely available in different centers, and people can use these services anonymously, safely and without discrimination.

> *I have done the quick test many times and it was free. I heard that if the test becomes popular, we have to pay. Well, in my opinion, it is illogical and no one welcomes it. Now we are taking tests without money and under the supervision of a consultant, so why should we pay for a test that is free (participant 2).*

(WHO) guidelines from 2016 emphasize the vital role of integrating HIV self-testing into national healthcare systems. This involves making self-testing kits accessible in clinics, pharmacies, and community centers. Such integration enhances overall access to testing services, ensuring availability in diverse healthcare settings for improved public health outcomes.

> *In my opinion, there are many concerns for the integration of these tests in the national network, for example, we may lose patients and the patients may not enter the treatment process, and this causes many risks) expert 3).*

Accuracy concerns

Accuracy is a key concern when it comes to HIV self-testing. Despite their generally high sensitivity and specificity similar to lab-based tests, inaccuracies may occur due to misinterpretation or early infection when the virus isn't detectable. Healthcare professional confirmation after a positive self-test is crucial for accuracy, guiding proper care and management, and alleviating worries about false results.

> *I don't think I can trust the results of these tests; they are like pregnancy tests; they don't give accurate results (Participant 3).*

> *It is very normal to worry about the result of HIV test, sometimes some patients deny rapid test with*

a positive result, and sometimes go for a laboratory test even with a negative result. Most people doubt that it can be done with saliva or a small amount of blood (expert 4).

Lack of counseling services

The absence of counseling services in HIV self-testing presents a significant challenge. Traditional testing settings often provide immediate counseling and support after results, aiding individuals in understanding and coping with the outcomes. However, self-testing lacks this immediate guidance, potentially leading to emotional distress, confusion, or inadequate follow-up care for those with positive results.

HIV counseling is essential because if the result is positive, the patient will be stressed and anxious, and a counselor can help her, maybe that person wants to do something dangerous (participant 16).

One concern regarding the expansion of HIV self-testing is the absence of counseling services accompanying these tests. This counseling not only reassures the individual but also facilitates their connection to the treatment process. Counselors play a crucial role in guiding individuals toward treatment and overcoming barriers (expert 1).

Linkage to treatment

HIV self-testing can influence an individual's engagement with HIV treatment programs in several ways. A positive self-test result might prompt proactive actions, such as seeking immediate medical advice or accessing support services voluntarily. Conversely, it could lead to a state of shock or denial, delaying the person's engagement with treatment.

When someone discovers a positive result using an HIV self-test, they might delay seeking treatment due to confusion or fear of potential disclosure to others. The shock of the diagnosis and concerns about confidentiality could hinder their immediate steps toward accessing necessary healthcare services. (expert1).

just knowing that you have HIV can give you a feeling that you may not go into treatment, for example, you want to take revenge or make someone sick or not care at all (participant 11).

In Iran, conducting a rapid HIV test in addiction treatment centers and mid-term residential centers or camps is considered part of the treatment protocol, and in these conditions, conducting the test helps to identify patients with HIV and these people enter the treatment process.

One of my friends found out that her test result was positive when she registered in the drug addiction treatment camp, and she was referred to the health department and was treated, of course, she could not stay in the camp anymore.

Low knowledge

Limited awareness about HIV self-testing hampers its effectiveness. Insufficient knowledge regarding test availability, procedures, reliability, and interpretation leads to misconceptions and hesitation. Educational programs are vital to enhance awareness, provide accurate information, and empower informed health decisions, promoting HIV self-testing as a valuable tool in prevention and early detection.

I think many people have no knowledge about these tests, how to use them and how to read the results is very important. Literacy is very important. I don't think people with low literacy can use these tests well (participant 5).
If HIV self-testing is to be made available to everyone in Iran, it is necessary to increase the awareness of the country's public about it and prioritize high-risk groups, such as drug users or people involved in high-risk sexual behaviors, sex workers .... (expert 1).

The window period

The window period poses a significant challenge in HIV self-testing. This period represents the time between HIV infection and when the virus is detectable by a test. Self-tests may have varying window periods, impacting their ability to detect early infections accurately. This challenge is crucial as testing during this period might yield false-negative results, leading individuals to believe they are HIV-negative when they're not. Educating individuals about the window period is essential to guide them on when to test effectively after potential exposure, reducing the risk of false results and ensuring timely and accurate diagnosis.

I don't accept these types of tests because, for example, you have to know when to take a test, for example, you may be infected, but the test result is negative, and this is very confusing....

Ignore the danger

In the context of HIV self-testing, risk substitution could manifest if individuals misinterpret the test results or

perceive a negative test as absolute protection. This might lead to changes in behavior, such as foregoing other preventive measures like using condoms or reducing the frequency of regular testing, assuming a false sense of security.

> *This type of test is most accurate after at least 3 months from the potential exposure to HIV. It takes time for the body to produce antibodies that the test detects. This period is very important. If the test is given early, the result may be negative and the person will be relieved and not be careful about his behavior or not be connected to the treatment in genera (Expert 5).*

Discussion

This study aimed to investigate inhibiting and facilitating factors related to HIV self-testing among injecting drug users In Iran. The World Health Organization (WHO) supports HIV self-testing (HIVST) as a valuable supplement to traditional HIV testing services [18]. Although HIV self-testing has been added to the national care program of countries with high HIV prevalence, it has not yet been implemented in Iran [2]. Therefore, it is important to study and understand the situation of Iranian society in terms of health and social economy in order to make decisions in this field. Therefore, this study was conducted with the aim to explore the acceptance of HIVST among injecting drug users in Iran. Based on the extracted codes, two classes of facilitating factors and inhibiting factors were compiled, which we will discuss below.

The outcomes of other research studies demonstrated a high degree of acceptability for self-testing HV [19, 20], and in this regard, our study was comparable. In our study, this kind of test had a high acceptability rate as well. Even while the Iran Rapid Test is free to take in all designated centers, allows participants to complete it anonymously, and offers counseling services, taking the test on its own is still a good alternative for them.

Facilitating factors

Empowerment and autonomy

The majority of participants in this study articulated a notable sense of empowerment arising from engaging in the HIV self-testing process. According to these individuals, personally undertaking the test affords them the opportunity to exercise autonomy in decision-making and assert control over their health. The results of this study are in line with other studies that have pointed to the feeling of self-empowerment and independence of patients [21–23].

Stigma and privacy

Among the other results of this study, he pointed out the experience of confidentiality and privacy in performing HIV self-testing. These findings have been confirmed in most related studies [24–26].

By removing the legal barrier to HIV testing, Iranians will be able to check their HIV status, potentially lowering stigma. Because access to health care providers may be limited in Iran's small cities, HIVST may be a viable option [2]. In Iran, as in other HIV-affected countries stigma is seen as the most significant barrier to adopting HIV/AIDS preventative behaviors such as HIV voluntary counseling testing. By removing the legal barrier to HIV testing, Iranians will be able to check their HIV status, potentially lowering stigma.

A study from Ethiopia showed that self-testing was highly acceptable among health care workers and the primary reason was increased privacy and confidentiality [27].

Convenience HIV self-testing provides a unique level of convenience. It permits individuals to conduct tests at their convenience, in a comfortable environment, without the necessity of a healthcare professional's immediate involvement. This increased convenience significantly lowers the barriers to testing, enhancing accessibility. Moreover, it encourages more frequent testing, which is pivotal for early detection and timely intervention in managing HIV.

Access and affordability

A limited number of countries have integrated HIV self-testing (HIVST) into their national HIV strategies, while several nations are currently evaluating their approaches to implementing this practice [15]. The Islamic Republic of Iran stands among the nations that have acknowledged the potential of HIV self-testing (HIVST) as an effective method for identifying HIV-positive individuals. Efforts are underway to assess the feasibility and potential integration of HIV self-testing within Iran's healthcare framework, reflecting a proactive approach toward improving HIV diagnosis and care [28, 29]. While the formal implementation of the HIV self-testing strategy has not yet been established in Iran, the primary obstacle faced by high-risk populations, especially injecting drug users, is the lack of access to HIV self-test kits. Some patients have mentioned that various types of rapid tests are available at pharmacies.

However, it is important to note that the cost of health services plays a crucial role in their acceptability [30] and these tests are not offered free of charge and may not be financially accessible to a significant portion of patients.

Accuracy concerns The majority of participants in this study did not feel particularly concerned about the results because they had received the necessary training to administer the test and interpret the results; on the other hand, the few who had received counseling in the form of a printed manual felt most skeptical of the findings. Similar to our study, in many studies, the participants were trained before doing the HIV self-test [18, 31, 32]. Sometimes this test was even done under supervision [33, 34]. In our study, female patients were more distrustful of HIV self-test results than men, which seems that these people had little self-confidence. Several studies have recommended the utilization of confirmatory tests after obtaining a positive result from an HIV self-examination test.

It is advised that factories making HIV self-testing produce friend-user tests to decrease customer error [21, 22]. According to the specialists who took part in the research, various solutions have been suggested as potential ways to allay the anxieties of patients regarding the possibility of HIV self-testing yielding inaccurate results. These solutions include the distribution of training pamphlets and the use of innovative educational approaches such as virtual networks. The importance of education is shown in several different studies. In addition, it has been suggested that societal awareness is a significant contributor to the overall success of the HIV self-testing technique.

Low knowledge The level of knowledge among the study participants regarding HIV self-testing was found to be relatively low. During the initial pilot phase, it was observed that a significant number of respondents had received guidance and instructions on the proper utilization and interpretation of test results from healthcare providers. However, during our group discussions with other people engaged in injecting drug use, we noticed that almost all of them were unaware of the existence of these tests. Furthermore, in numerous instances, they mistakenly equated these tests with the rapid testing services provided at HIV testing facilities. Although they possess distinct characteristics, they are quite dissimilar." Lower Education: Might face challenges in understanding instructions, leading to lower utilization.

Linkage to HIV treatment "Linkage to care is a significant concern among HIV policymakers and healthcare professionals. Many experts highlight that when an individual conducts a self-test in a private setting without involving healthcare professionals, there's a higher likelihood that a positive test might not prompt seeking care. They assert that the decision to exclude this approach from the Iranian national care network is primarily due to uncertainty regarding linkage to care following a testing positive with an HST. According to Choko et al. [35], it has been suggested that the implementation of financial incentives and partner-delivered strategies could potentially enhance the likelihood of male engagement in post-test HIV care.

Ignore the danger

The relationship between risk compensation behavior and HIV self-testing is crucial in public health research. Risk compensation behavior involves individuals taking risks due to a false sense of security from preventive measures, while HIV self-testing is a discreet and convenient method for early diagnosis and treatment. Understanding these dynamics is essential for designing effective public health strategies. risk compensation was one of the biggest concerns of the experts who participated in the study. They believe that our society is not yet ready to be added to the national HIV control network, and despite its usefulness, it may have dangerous consequences.

One prevalent challenge raised by healthcare providers is the possibility of neglecting newly diagnosed patients and failing to actively involve them in the treatment process following a positive HIV test conducted by self-testing. This phenomenon has the potential to pose threats to the well-being of society, as individuals may engage in risky behaviors, such as engaging in unprotected sexual activities or sharing injection equipment. Thus, this behavior has the potential to put at risk the safety of other people.

Conclusion

In Iran, where societal stigma around HIV might discourage regular testing, the introduction and promotion of self-testing could significantly contribute to overcoming these challenges. However, it's essential to ensure that alongside promoting self-testing, there's adequate support for counseling, linkage to care, and accurate information dissemination to ensure appropriate follow-ups and care for those who receive positive results.

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Author contributions
Study concept and design: TP and MKh, acquisition of data: TP analysis and interpretation of data: TP, Mkh, and SN drafting of the manuscript: TP; critical revision: KD, AM and KP; study supervision: TP.

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Data availability
The datasets generated and/or analyzed during the current study are not publicly available because [the participants in my study were injecting drug

users and there are many details about the drug use pattern and sexual relations of these patients, in terms of the commitment to the confidentiality of information, the data study is not publicly available] but are available from the corresponding author on reasonable request.

Declarations

Ethical approval
The present study was approved by the Ethics Committee of the same university with the reference number IR.MUK.REC.1401.239.

Consent for publication
Not applicable.

Conflict of interest
All the authors declared no conflict of interest.

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