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Factors Related to the Inaccessibility of HIV Tests for Women of Reproductive Age in Uzbekistan

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Abstract: HIV testing is important for women of reproductive age. It will be risky during the period of pregnancy, delivery, and breastfeeding and lead to MTCT (mother-to-child transmission) of HIV/AIDS. This study aimed to examine the factors associated with HIV testing. This study used MICS data that gathered the data from November 2021 to January 2022. The total respondents in this study were 1,893 women. The result revealed that 42.58% of women in this study found inaccessibility to HIV testing. The multivariate analysis found the impactful factors are lived in rural area, experienced more than once marriage, and husband/partner as the main decision maker to select health facilities, with AOR 1.29; 1.74; and 1.56, respectively. In sum, almost half of women in reproductive age in Uzbekistan cannot access the HIV testing with experienced more than once marriage had the highest risk. Qualitative approach can be included for the future study.

Keywords: HIV testing; MICS; Uzbekistan; Women of reproductive age

Introduction

HIV testing access in Uzbekistan is a critical public health concern, especially given the high prevalence of HIV in the country. Uzbekistan has reported the highest HIV prevalence in Central Asia at 10% (Davlidova et al., 2021). This high prevalence underscores the importance of ensuring widespread access to HIV testing and subsequent linkage to care and treatment. However, despite the high prevalence, reported that HIV-testing uptake was high in a national TB cohort in Uzbekistan, suggesting that the country should maintain and further improve this aspect, even though Uzbekistan is a low prevalence country (Gadoev et al., 2015). This indicates that there are existing efforts to promote HIV testing in specific populations, such as TB patients, but there is a need to expand these efforts to reach a broader demographic (Supriatin et al., 2023).

Furthermore, highlighted that despite notable advances in expanding HIV testing for key populations, the number of people who inject drugs (PWID) who have been tested for HIV in the last 12 months continues to be relatively low, varying from 29% in Uzbekistan to 65% in Kazakhstan (Shaw et al., 2016). This indicates a significant gap in HIV testing coverage, particularly among high-risk populations. Additionally, emphasized the need to improve access to HIV testing, prevention, treatment, and care for injection drug users (IDUs) in Almaty, Kazakhstan, which suggests similar challenges may exist in neighboring countries like Uzbekistan (El-Bassel et al., 2013).

The importance of quality HIV testing services was underscored by, who emphasized the need for such services to enable early diagnosis and linkage to treatment for people with HIV (Johnson et al., 2017). Also highlighted the critical role of HIV diagnostics in achieving epidemic control and the need for a hybrid of

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conventional laboratory-based diagnostic tests and new technologies, including point-of-care testing, to expand coverage and increase access (Parekh et al., 2018).

Moreover, the study by revealed disparities in HIV testing uptake among labor migrants from Central Asia in Russia, with less than half of legally employed labor migrants from Kyrgyzstan using Compulsory Health Insurance (CHI) certificates and being less likely to undergo HIV testing compared to migrants from Tajikistan and Uzbekistan (Poletaev, 2022). This suggests that there may be structural and systemic barriers to accessing HIV testing for specific migrant populations, which could also be relevant in the context of Uzbekistan.

In summary, the synthesis of these references highlights the urgent need to address barriers to HIV testing access in Uzbekistan, particularly among key populations such as people who inject drugs, labor migrants, and individuals with comorbid conditions like tuberculosis. Efforts to improve access to quality HIV testing services, expand coverage, and address structural barriers are crucial in combating the HIV epidemic in Uzbekistan. This study aimed to examine the factors associated with access to HIV testing among women of reproductive age in Uzbekistan by using MICS data.

Method

The State Committee of the Republic of Uzbekistan on Statistics and the United Nations Children's Fund (UNICEF) Uzbekistan Country Office implemented the Multiple Indicator Cluster Survey (MICS) second cycle, providing secondary data for this cross-sectional study. MICS was one of the main sources of data concerning mothers and children, and the data were gathered between November 2021 and January 2022.

Three-stage stratified sampling was the design strategy adopted. Fourteen regions, both urban and rural, were selected to collect data. In Uzbekistan, the six geo-economic regions include the Western (Republic of Karakalpakstan, Khorezm Region), Central (Jizzakh, Syrdarya and Tashkent Regions), Southern (Kashkadarya and Surkhandary Regions), Central-Eastern (Bukhara, Samarkand and Navoi Regions), Eastern (Fergana, Andijan and Namangan Regions) and Tashkent City. MICS sought to evaluate the state of women and children in the nation following international models and criteria to enable cross-national comparison. As many as 4,448 households were the focus of the MICS in Uzbekistan. In 2021, 10,879 homes in 556 clusters completed interviews with the household head and all other members.

For this study, the total sample of women aged 15 to 49 years was 5,068 eligible, and 4,772 were interviewed. The inclusion criteria to select a sample for this current study were women aged 15 to 49 years, currently living with husbands or partners, and completely interviewed. Women not completely interviewed or refused during the interview were excluded. The final sample for this study totaled 1,893 women after data cleaning and excluding missing data in each variable.

In September 2020, the preliminary study was conducted in one urban and one rural mahalla in Karakalpakstan, one urban and one rural mahalla in Tashkent City, and one rural mahalla in the Tashkent Region. The translation and wording of the questionnaires were changed in response to the findings of the pre-tested survey. According to the dependent variable, the exact question is, "Would you say that using contraception is mainly your decision, mainly your husband's/partner's decision, did you both decide together, or is it the decision of a health care worker?". The options provided include mainly respondent (women), mainly husband/partner, the joint decision of respondent and husband/partner, and health workers/others.

The Health Media Lab's Ethical Review Board approved the MICS Uzbekistan survey procedure in March 2020. The protocol comprised a protection policy covering potential dangers throughout the survey's life cycle and management techniques to reduce them. The data collection used Computer-Assisted Personal Interviewing (CAPI) and Census and Survey Processing System (CSPro) Software, Version 6.3. Data were aggregated cluster by cluster to create the final datasets, processed using CSPro, and analyzed using SPSS. All software used for MICS was under the UNICEF license. The MICS Uzbekistan constituted an open-access dataset with registration required. The dataset and all documentation can be downloaded via the website https://mics.unicef.org/surveys.

The dependent variable in this study is the experience of HIV testing. The question is "Have you ever been HIV tested?" (yes/no). The independent variables in this study include women's age, place of residence, educational level, marital status, currently using contraception, number of marriages, healthcare decision-maker, and region.

The univariate, bivariate, and multivariate analysis was tested using STATA Software, Version 17, licensed for the Institute for Population and Social Research, Mahidol University, Thailand. The univariate analysis aimed to find the general description of the respondents. The categorical variables were presented in percentage and frequency, and continuous variables were presented by minimum, maximum, mean, and standard deviation. The bivariate analysis aimed to test the correlation between independent and dependent variables. It used

the Chi-square test for categorical predictors with a 95% confidence interval (CI) to define the significance. Multivariate analysis aimed to test the correlation between the independent and dependent variables by adjusting with other independent variables. The multivariate analysis was performed using binary logistic regression.

Result and Discussion

Table 1 describes the general information of the respondents. It was reported that 42.58% of women in this study found inaccessibility to HIV testing. According to their age, among 1,893 women who participated in this study, around half were aged 30 to 39 years (43.53%). More than half of them lived in rural areas (51.45%) and almost half completed vocational study (47.81%). Moreover, just a few of them lived with partner (0.48%), instead of married (99.52%). More than three-fourths of women in this study currently use contraceptives (76.86%) and have one number married (76.86%). Furthermore, healthcare' decision maker is mostly impacted by joint decisions (60.54%). This study has geographical with those who lived in Eastern was dominated (23.77%).

The correlation between each independent variable and accessibility to HIV testing is described in Table 2. It was found that some variables correlated accessibility to HIV testing, including women's age, area of residence, educational level, health care decision-making, and georegion. However, other independent variables were found insignificantly associated such as marital status, currently using contraceptives, and number of marriages.

The binary logistic regression with Adjusted Odds Ratio is revealed in Table 3 below. There are some variables which significantly associated with difficulties to access HIV testing such as living in rural area, graduated from vocational and higher, married for more than one times, husband or partner as decision maker to select health care, and lived in Central, Southern, Central Eastern, Eastern, and Tashkent City. In detail, compared to women lived in urban area, those lived in rural area were 1.29 times more likely to not access the HIV testing after adjusted to other independent variables. Moreover, compared to women who graduated from primary or secondary, women graduate from vocational and higher decreased 47% and 56% respectively probability for not accessing the HIV testing. In terms of the number of marriages, women who married more than once were 1.74 times more likely to inaccessible HIV testing compared to women who married once. According to decision maker to select healthcare, it was found husband or partner as the main decision maker will put the women 1.56 times more likely to not access HIV testing compared to women as the main decision maker. Additionally, compared to those lived in Western region, women lived in others region decreased probability to not accessing HIV testing by 85%, 34%, 53%, 57%, and 93%, respectively. However, other variables including women's age and currently using contraception found insignificantly associated with accessibility to HIV testing.

Table 1. General characteristics of respondents (n=1,893)

Characteristics	Frequency	Percentage
Woman's age (years)		
18 to 29	439	23.19
30 to 39	824	43.53
40 to 49	630	33.28
Place of residence		
Urban	919	48.55
Rural	974	51.45
Education level		
Primary / Secondary	751	39.67
Vocational	905	47.81
Higher	237	12.52
Marital status		
Married	1,884	99.52
Cohabitation	9	0.48
Currently using contraception		
Yes	1,455	76.86
No	438	23.14
Number of marriages		
Once	1,808	95.51
More than once	85	4.49
Healthcare's decision-maker		
Woman	566	29.90
Husband/partner	141	7.45
Joint decision	1,146	60.54
Others	40	2.11
Georgian		
Western	266	14.05
Central	391	20.66
Southern	265	14.00
Central Eastern	350	18.49
Eastern	450	23.77
Tashkent city	171	9.03

Factors associated with HIV testing access are multifaceted and encompass a wide range of determinants. Existing literature has identified various barriers and facilitators that influence the uptake of HIV testing among different populations. For instance, studies have highlighted the role of social support, accessibility, HIV knowledge, risk perception, stigma, and prior experience in sexual reproductive health communication as enabling factors for HIV testing access (Jung et al., 2022; Nall et al., 2019; Pradnyani et al., 2020). Conversely, barriers such as lack of knowledge about HIV/AIDS and testing availability, low self-perceived risk of HIV, fear of test results, lack of trust in healthcare professionals, stigma, discrimination, and lack of social support have been reported as hindrances

to accessing HIV testing services (Abbamonte et al., 2020; Fatimah, 2020; Fauk et al., 2018; Lubogo et al., 2015; Wulandari et al., 2019).

Table 2. Bivariate analysis result

Characteristics	Accessible	Inaccessible	Total
Woman's age (years)*			
18 to 29	264 (60.14)	175 (39.86)	439 (100)
30 to 39	489 (59.34)	335 (40.66)	824 (100)
40 to 49	334 (53.02)	296 (46.98)	630 (100)
Place of residence***			
Urban	586 (63.76)	333 (36.24)	919 (100)
Rural	501 (51.44)	473 (48.56)	974 (100)
Education level***			
Primary / Secondary	350 (46.60)	401 (53.40)	751 (100)
Vocational	566 (62.54)	339 (37.46)	905 (100)
Higher	171 (72.15)	66 (27.85)	237 (100)
Marital status			
Married	1,079 (57.27)	805 (42.73)	1,884 (100)
Cohabitation	8 (88.89)	1 (11.11)	9 (100)
Currently using contraception			
Yes	831 (57.11)	624 (42.89)	1,455 (100)
No	256 (58.45)	182 (41.55)	438 (100)
Number of marriages			
Once	1,043 (57.69)	765 (42.31)	1,808 (100)
More than once	44 (51.76)	41 (48.24)	85 (100)
Healthcare's decision-maker**			
Woman	342 (60.42)	224 (39.58)	566 (100)
Husband/partner	59 (41.84)	82 (58.16)	141 (100)
Joint decision	663 (57.85)	483 (42.15)	1,146 (100)
Others	23 (57.50)	17 (42.50)	40 (100)
Georegion***			
Western	97 (36.47)	169 (63.53)	266 (100)
Central	298 (76.21)	93 (23.79)	391 (100)
Southern	112 (42.26)	153 (57.74)	265 (100)
Central Eastern	180 (51.43)	170 (48.57)	350 (100)
Eastern	246 (54.67)	204 (45.33)	450 (100)
Tashkent city	154 (90.06)	17 (9.94)	171 (100)

*p-value <0.05, **p-value <0.01, ***p-value <0.001

Moreover, demographic factors such as age, gender, residence, and socioeconomic status have been associated with HIV testing access, with younger age, lower socioeconomic status, and lower educational achievement being linked to lower testing rates (Ansa et al., 2016; Chandler et al., 2020; Choudhary et al., 2020). Additionally, the presence of comorbidities, fear, HIV-related stigma, low self-perception of risk, and lack of knowledge of testing guidelines have been identified as barriers to HIV testing (Oladunni et al., 2021; Severin et al., 2022; Zheng et al., 2014). Furthermore, structural barriers, confidentiality concerns, and fear of discrimination have also been recognized as significant obstacles to HIV testing (Hakawi & Mokhbat, 2022; Moyo & Mavhandu-Mudzusi, 2021; Wiklander et al., 2015; Xu et al., 2018; Zhong et al., 2022).

Table 3. Multivariate Analysis

Characteristics	AOR	95% conf. interval	p-value
Woman's age (years)			
18 to 29 (ref)			
30 to 39	0.93	0.71 – 1.23	0.626
40 to 49	1.13	0.84 – 1.52	0.421
Place of residence			
Urban (ref)			
Rural	1.29	1.05 – 1.59	0.014*
Education level			
Primary/Secondary (ref)			
Vocational	0.53	0.42 - 0.67	0.000***
Higher	0.44	0.31 - 0.63	0.000***
Marital status			
Married (ref)			
Cohabitation	0.18	0.02 – 1.60	0.123
Currently using contraception			
Yes (ref)			
No	1.01	0.79 – 1.29	0.959
Number of marriages			
Once (ref)			
More than once	1.74	1.04 – 2.91	0.034*
Healthcare's decision-maker			
Woman (ref)			
Husband/partner	1.56	1.03 – 2.35	0.034*
Joint decision	0.84	0.67 – 1.06	0.138
Others	0.85	0.42 – 1.72	0.645
Georegion***			
Western (ref)			
Central	0.15	0.10 – 0.21	0.000***
Southern	0.66	0.46 – 0.95	0.026*
Central Eastern	0.47	0.33 – 0.65	0.000***
Eastern	0.43	0.31 – 0.60	0.000***
Tashkent city	0.07	0.04 – 0.14	0.000***

*p-value <0.05, **p-value <0.01, ***p-value <0.001
Pseudo R2 = 0.1185, Log likelihood = -1138.1607

On the other hand, facilitators such as peer support, access to information, and government initiatives (e.g., free-of-cost tests, reimbursements of travel costs) have been found to positively influence HIV testing uptake (Pradnyani et al., 2020; Rudi et al., 2020). Additionally, factors such as accessing needle exchange services, having a regular physician, and the privacy of testing sites have been associated with increased access to HIV testing and medical care (Sebastião et al., 2020; Xu et al., 2018). The factors associated with HIV testing access in Uzbekistan are influenced by a multitude of determinants, including social, structural, and individual factors. Despite Uzbekistan being a low HIV prevalence country, it is crucial to maintain and further improve HIV testing uptake, as highlighted in a national TB cohort study (Gadoev et al., 2015). This emphasizes the importance of sustaining efforts to promote HIV testing, even in low prevalence settings, to ensure early diagnosis and linkage to care.

Moreover, the prevalence of HIV in Uzbekistan has been reported at 10%, the highest in Central Asia,

signifying the critical need for widespread access to HIV testing services (Davlidova et al., 2021). Additionally, factors such as social support and accessibility have been identified as facilitators for HIV testing access, indicating the significance of supportive environments and easy access to testing services (Chanda et al., 2017).

Furthermore, the study by emphasized that HIV knowledge, risk perception, gender, education, and sexual violence influenced access to HIV prevention services, which could also impact HIV testing access in Uzbekistan (Likindikoki et al., 2022). Additionally, the study by highlighted disparities in HIV testing uptake among labor migrants from Central Asia in Russia, suggesting potential barriers to testing access for specific migrant populations, which could be relevant in the context of Uzbekistan (Poletaev, 2022).

On the other hand, fear, HIV-related stigma, low self-perception of risk, and lack of knowledge of testing guidelines have been identified as barriers to HIV testing access. These barriers underscore the need to address stigma and fear associated with HIV testing to improve access and uptake.

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Conclusion

It can be concluded that almost half of women in reproductive age in Uzbekistan cannot access the HIV testing. The factors of living in rural area, graduated from vocational and higher, married for more than one times, husband or partner as decision maker to select health care, and lived in Central, Southern, Central Eastern, Eastern, and Tashkent City found significantly as the barriers for women to access HIV testing.

Addressing these factors is crucial for improving HIV testing access and uptake in Uzbekistan, particularly among key populations and in diverse geographic settings

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The authors declare no conflict of interest

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