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The Role of Stigma and Knowledge Gaps in Shaping HIV Testing and Treatment-Seeking Behaviors

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ABSTRACT

Background: HIV/AIDS continues to be a major global health concern, disproportionately affecting vulnerable populations in developing regions. In Pakistan, particularly in Balochistan, HIV testing and treatment uptake remain alarmingly low due to stigma and knowledge gaps. **Objectives:** The purpose of this study was to investigate how stigma and false information around HIV affect the uptake of HIV testing and treatment among underprivileged populations in Balochistan. It also looked at how testing behaviours and adherence to antiretroviral medication (ART) are predicted by sociodemographic traits, stigma, and knowledge gaps.

Methods: A systematic 15-item questionnaire encompassing sociodemographic characteristics, HIV knowledge, stigma, and testing/treatment behaviours was used in a cross-sectional survey. High-risk groups were represented thanks to purposeful sampling. SPSS was used for the analysis of data from 150 participants. Distributions were summarized using descriptive statistics, relationships between categorical variables were examined using chi-square, and predictors of HIV testing and treatment uptake were found using binary logistic regression.

Results: Only 36% of respondents correctly identified sexual transmission, and only 29.3% acknowledged the effectiveness of ART, indicating significant knowledge gaps. Only 32% of participants were on ART, 30% acknowledged missing doses, and little over half (51.3%) reported having been tested for HIV in the previous 12 months. Latent social and moral stigma was reflected in the moderate level of stigma, with mean Likert scale scores of about 3.0. Sociodemographic and testing uptake did not significantly correlate, according to chi-square analysis ($\chi^2 = 4.280$, $p = 0.118$). The combined impact of stigma, knowledge, and

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sociodemographic characteristics, however, significantly predicted HIV testing, according to logistic regression ($\chi^2 = 47.342$, $p = 0.039$).

Conclusion: In Balochistan, stigma and false information continue to be major obstacles to HIV care, compromising testing and treatment compliance. Regression research revealed that the combination of sociodemographic, knowledge, and stigma together predicted testing behaviours, even though demographic characteristics by themselves had no discernible impact on uptake. To improve HIV outcomes in the province, targeted interventions that emphasise stigma reduction, culturally tailored information campaigns, and increased access to ART are desperately needed. **Keywords:** HIV/AIDS, stigma, knowledge gaps, HIV testing, ART adherence, Balochistan, Pakistan.

INTRODUCTION

It is widely acknowledged that HIV/AIDS or acquired immunodeficiency syndrome is a worldwide epidemic. One Based on the statistics provided by the United Nations Programme on HIV/AIDS. [1]. In 2022, there were approximately 39 million carriers of HIV in the world with 1.3 million infected in the last one year. Girls and women constituted one-half of the total HIV persons (PL-HIV). Moreover, it has been estimated that approximately 630, 000 individuals will have succumbed to diseases that are related to AIDS before the year 2022. [2].

The world health organization (WHO) claims that HIV can cause the destruction or impairment of the immune system; this can result in AIDS, being the terminal stage of HIV infection. Over 70 percent of the world HIV/AIDS incidences are in Sub-Saharan Africa. HIV prevalence in the entire globe can be averted provided that appropriate actions are taken to avert it. Africa's subSaharan region. New HIV infections and all HIV-related deaths were 58% and 65% in SubSaharan Africa respectively, among other effects of the virus in the world in 2021.

It is notable that the burden of all new HIV infections in the region overwhelmingly falls on the heterosexual women and girls with 59 per cent. of all new HIV infections in the region [3]. United Kingdom has a high rate of HIV infection compared to other industrialized nations where currently the number of people who are infected with the virus stands at 107,800. It also contains 320 AIDS-diagnosed people and 6,000 with the first diagnosis of HIV. [4].

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The present study has clearly shown that the prevalence of PLHIV has risen significantly in the Eastern part of the Mediterranean. The rise in the rate of mortality due to HIV/AIDS has also been used as a characteristic of this geographic region. Thus, the Eastern med and African region has been ranked amongst the sections in the world, concerning the mortality rates, about the PLHIV and HIV/AIDS. Pakistan is one of the five nations that have nearly 80 percent of the total cases ever reported to the WHO Regional Office of Eastern Mediterranean. [5]. The problem of prevalence of HIV/AIDS among the increasingly developing countries is now of great concern within the country. Pakistan has been rated second best in the Pacific Asian region.

Age that AIDS is on the loose. It displays a severe spike of 20000 new cases in 2017 alone. [7]. Drug injectors, people already infected with HIV, people who received blood transfusion or some rural and urban areas of developing countries, among others are some of the most at-risk populations that may spread HIV. Pakistan is one of the countries whose outbreaks have increased when the number of new HIV cases in the world has decreased and one of the most developing countries in Asia with high virus rates. It is worth mentioning, however, that only 21 percent of Pakistani PLHIV know about their current condition, namely, whether they have HIV or not, and only 12 percent are currently under medical care. [10]. In Pakistan, the people who engage in commercial sex work and drug injection are two of the most vulnerable groups in the country. [11].

There are numerous challenges to HIV prevention and treatment in Pakistan. Among the most significant obstacles is stigma or social discrediting and discrimination that people may experience because of their HIV status or belonging to major communities at risk [12]. The stigma of HIV usually leads to people hiding or concealing their status, delaying treatment, and refusing to take voluntary testing. Stigma is directly connected with cultural, religious and ethical systems that support negative attitudes towards people living with HIV (PLHIV) in less liberal settings like Balochistan [13].

Lack of awareness on the spread of HIV, prevention, and treatment is also another significant contributing factor. There is a term known as knowledge gap as it implies a gap of knowledge or wrong knowledge regarding the causes of HIV, its way of transmission, its prevention, and the effectiveness of antiretroviral medication (ART) [14]. Low awareness on HIV especially in rural and poor provinces, has been repeatedly identified through research surveys thus resulting in myths and misconceptions that bring extra stigma and

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fear [15]. As an example, PLHIV lack the support networks in society as most people feel that even in a casual contact, HIV is spread. Treatment uptake is the proportion of the PLHIV who have commenced and continued to take antiretroviral medicine (ART) by diagnosis [18]. The decrease of ART in viral load, long-term survival and avoidance of further transmission is proved. Such advantages have not resulted in high therapy enrollment with only about 12 percent of Pakistanis enrolling in therapy which is an indication of structural failure in patient adherence, access to healthcare and access [10,19]. Other areas like Balochistan also present complications in initial treatment and retention since
the stigma is saturated and poorly developed health care infrastructure.

Balochistan is one in which these issues are especially problematic. Balochistan is a geographically large province in Pakistan but now, it is the least socio-economically developed province with limited access to health care and healthcare system and to the specified HIV treatment [20]. Literacy rates are lowest in the country; population is distributed throughout rural lands and there is a lack of transport. These are compounded with the existence of strong cultural stigma and misinformation to form environments in which HIV testing and treatment uptake is extremely low.

Therefore, The aim of the research is to examine how stigma and lack of knowledge affect HIV testing and treatment uptake among the populations in Balochistan. It also seeks to identify barriers to successful HIV prevention and care in the province both in the sociocultural and healthcare setting.

OBJECTIVE OF THE STUDY

The main objective of the research is to investigate the stigma and the absence of information in Balochistani testing and treatment follow-uls of HIV. This study will particularly aim at comprehending the role of cultural and religious stigma, the misunderstanding of how HIV is spread and ignorance as one of the reasons that lead individuals to seek testing and continue taking antiretroviral (ART) in the name of being infected with HIV. The investigation of the social and institutional obstacles that deprive vulnerable groups (including injectable drug users and sex workers) of access to HIV-related medical care is another target. The sociocultural context of Balochistan will be the place into which the study will attempt to establish such factors to bring information that will subsequently be used to enhance the effectiveness of prevention, awareness and treatment programs.

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RESEARCH QUESTIONS

1. Is there a significant association between the level of HIV-related stigma and the likelihood of undergoing HIV testing among individuals in Balochistan?
2. How do stigma, knowledge gaps, and sociodemographic factors (age, gender, and education) influence adherence to antiretroviral therapy (ART) in Balochistan?

LITERATURE REVIEW

HIV/AIDS research has continuously shown that stigma is one of the major causes of people around the world denying themselves to be tested and receive treatment. It has been established in previous studies that HIV stigma can take the form of self-stigmatization, discriminative behavior and social rejection which all delay diagnosis and decrease adherence to treatment [21]. Stigma influences the way people access health care, the way policies are implemented and is therefore a systemic and an individual issue as defined by Stangl et al. [22].

Stigma is commonly confounded with cultural and religious perceptions that regard HIV as a sinfulness and not an ailment especially in conservative south Asian states [23]. A study conducted in India [24] found out that a significant number of the population were aware of the preventative measures of HIV; however, they feared being discriminated against and hence, they were not open to having voluntary testing. The same has been shown in Iran and Afghanistan whereby the compliance to treatment had decreased and denials of services occurred due to the stigma in the healthcare systems [25].

Ignorance about the spread and management of HIV has also been another source of an everpresent impediment. Low knowledge of HIV preventive measures as a comprehensive review conducted by Peltzer and Pengpid [26] indicated fear, lack of understanding and risky behaviors are closely related. The Pakistani rural communities still have a misconception regarding the possibilities of catching HIV due to casual contact, or through sharing of utensils [27]. The lack of such information will decrease the readiness of individuals to be properly taken care of on time and stimulate stigma further.

The exaggeration of the stigma and knowledge gap on uptake of HIV testing and treatment is more evident, especially in the case of evidence in Pakistan. This is even with the presence of testing facilities but a report by the National AIDS Control Program (NACP) has indicated that a good number of individuals at-risk fail to attend the facilities due to fear of being discriminated and being socially exposed [28]. Another study

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conducted in Punjab [29] also indicates that even when there is a deficiency of knowledge regarding the benefits of antiretroviral therapy (ART), linkage to treatment is poor even if there is such testing.

Research in Baluchistan, compared to other provinces, is minimal, however, the limited studies that have been carried out show concerning trends. In spite of the growing trend of high-risk population such as sex workers and injecting drug users (IDU) in Balochistan, the UNAIDS country data informs us that the proportion of the community members who are tested is disproportionately lower than in Sindh and Punjab [30]. It was also established in qualitative research carried out by Rehman et al. [31] that individuals in Balochistan tended to avoid HIV clinics due to the fear that they would be stigmatized and rejected by communities. These are comparable to regional statistics that indicate that the two main obstacles that limit HIV care in developing countries are stigma and ignorance [32].

In Pakistan, treatment is not a major problem. They have discovered that institutional and personal barriers to adherence do exist despite the proven effectiveness of ART in terms of reducing the viral load and further transmission. Among the issues that affected the individuals are denial, stigma and family support absence and structural ones are lack of medical facilities, shortage of ART distribution Centre and expensive travelling [33]. Such difficulties are enhanced by fake facts and poor health-seeking attitudes because Baluchistan is one of the least literate regions in the country [34].

HYPOTHESES

1. There is a significant association between the level of HIV-related stigma (high vs. low) and the likelihood of undergoing HIV testing among individuals in Balochistan.
2. Stigma, knowledge gaps, and sociodemographic factors (age, gender, education, and income) significantly predict adherence to antiretroviral therapy (ART) in Balochistan.

METHODOLOGY

This study examines how stigma and information affect the use of HIV tests and treatment among the people in Balochistan using cross-section survey research design. A standardized questionnaire of 15 questions will be used in the collection of data, which will be subdivided into four categories, e.g., sociodemographic data, HIV knowledge, HIV-related stigma, and HIV testing and uptake of treatment.

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Sampling will be purposive and will be conducted to include all the groups at risk to make sure that the responses will be anonymous so that people will be free to tell the truth during the engagement.

The SPSS version 24 shall be used to analyze the data. Frequencies To summarize distributions, categorical variables, such as sociodemographic variables, questions on HIV knowledge, and HIV testing/treatment behavior, will be presented in the form of frequency table. To determine the level of stigma overall and its variation, descriptive statistics, like mean and standard deviation, will be employed in order to evaluate the Likert-scale items concerning stigma. Chisquare test will be used to test correlations between different categorical variables because it will determine how gender is related to HIV testing uptake or education level and HIV awareness. In addition, binary logistical regression will be used to determine the sociodemographic factors, knowledge levels and stigma predictors of HIV testing and treatment uptake because of using independent variables, i.e. sociodemographic factors, knowledge scores and stigma levels. This integrative approach to analysis will give both descriptive information and inferential information to fulfil the aims of the study.

RESULTS Frequency Tables

Table 1: Age

		Frequen cy	Percent	Valid Percent	Cumulative Percent
Vali d	18–25	44	29.3	29.3	29.3
	26–35	33	22.0	22.0	51.3
	36–45	36	24.0	24.0	75.3
	46 and above	37	24.7	24.7	100.0
	Total	150	100.0	100.0	

Table 2: Gender

		Frequen cy	Percent	Valid Percent	Cumulative Percent
Vali d	Male	62	41.3	41.3	41.3

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	Femal e	38	25.3	25.3	66.7
	Other	50	33.3	33.3	100.0
	Total	150	100.0	100.0	

Table 3: HIV Sexual Transmission

		Frequen cy	Percent	Valid Percent	Cumulative Percent
Vali d	Yes	54	36.0	36.0	36.0
	No	41	27.3	27.3	63.3
	Dont know	55	36.7	36.7	100.0
	Total	150	100.0	100.0	

Table 4: HIV Sharing Utensils

		Frequen cy	Percent	Valid Percent	Cumulative Percent
Vali d	Yes	46	30.7	30.7	30.7
	No	54	36.0	36.0	66.7
	Dont know	50	33.3	33.3	100.0
	Total	150	100.0	100.0	

Table 5: HIV Clean Needles

		Frequen cy	Valid Percent	Cumulative Percent
Vali d	Yes	59	39.3	39.3	39.3
	No	41	27.3	27.3	66.7

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	Dont know	50	33.3	33.3	100.0
	Total	150	100.0	100.0	

Table 6: HIV Controlled ART

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	44	29.3	29.3	29.3
	No	57	38.0	38.0	67.3
	other	49	32.7	32.7	100.0
	Total	150	100.0	100.0	

Table 7: HIV Ever Tested

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	77	51.3	51.3	51.3
	No	73	48.7	48.7	100.0
	Total	150	100.0	100.0	

Table 8: HIV_Tested_Last_12_Months

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	77	51.3	51.3	51.3
	No	73	48.7	48.7	100.0
	Total	150	100.0	100.0	

Table 9: ART Currently Taking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	48	32.0	32.0	32.0

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	No	44	29.3	29.3	61.3
	Not Applicable	58	38.7	38.7	100.0
	Total	150	100.0	100.0	

Table 10: ART Missed Doses

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	45	30.0	30.0	30.0
	No	48	32.0	32.0	62.0
	Not Applicable	57	38.0	38.0	100.0
	Total	150	100.0	100.0	

DESCRIPTIVE STATISTICS

Table 11: Stigma Avoid Contact

	N	Minimum	Maximum	Mean	Std. Deviation
Stigma Avoid Contact	150	1	5	3.10	1.304
Valid N (listwise)	150				

Table 12: Stigma Unfair Treatment

	N	Minimum	Maximum	Mean	Std. Deviation
Stigma Unfair Treatment	150	1	5	3.10	1.335
Valid N (listwise)	150				

Table 13: Stigma Ashamed Family

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	N	Minimum	Maximum	Mean	Std. Deviation
Stigma Ashamed Family	150	1	5	3.05	1.469
Valid N (listwise)	150				

Table 14: Stigma Punishment

	N	Minimum	Maximum	Mean	Std. Deviation
Stigma Punishment	150	1	5	2.86	1.400
Valid N (listwise)	150				

Table 15: Chi-Square Tests

	Value	df	Asymptotic Significance (2sided)
Pearson Chi-Square	4.280[a]	2	.118
Likelihood Ratio	4.313	2	.116
Linear-by-Linear Association	.025	1	.874
N of Valid Cases	150		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 18.49.

If $p < 0.05 \rightarrow$ significant association

Binary Logistic Regression (Predictors) Table 16: Omnibus

Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	47.342	32	.039

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	Block	47.342	32	.039
	Model	47.342	32	.039

If $p < 0.05$, model is significant. **Table 17: Hosmer and Lemeshow Test**

Step	Chi-square	Df	Sig.
1	6.259	8	.618

If $p > 0.05$, model fits well.

DISCUSSION OF RESULTS

The current study examined the impacts of stigma and information asymmetry on the HIV testing and treatment uptake in the state of Balochistan. The results were useful in displaying sociodemographic template, awareness and stigma attitudes and testing/treatment behavior of the vulnerable populations.

Based on the age distribution (Table 1), the study sample was well represented within the age groups, with the highest proportion of 18 to 25 (29.3%), and the middle-aged age groups (2645 years collectively = 46%). Due to this, the HIV prevention programs are to be directed to the older individuals who are at risk by virtue of being exposed to risk over a long period of time and to the young adults who are also at risk because of early exposure to sex.

As Table 2 showed, there were more men (41.3) than women (25.3), and 33.3% claimed to be other. Given the fact that transgender and non-binary people are typically more stigmatized and vulnerable in the Balochistan region, it is worth mentioning that the percentage of the other group, in which transgender and non-binary individuals may fall, is high. This supports the conclusions of UNAIDS that transgender populations in South Asia were overrepresented as a risk group facing the threat of being HIV infected.

The findings of Section B revealed some grave misconceptions: Table 3 revealed that merely 36% of the participants indicated that the unprotected sexual intercourse was one of the forms of transmitting HIV.

Table 4 established that the proportion of individuals who considered that sharing of utensils will transmit HIV was quite high (30.7% said yes, 33.3% said don't know).

Table 5 shows that 39.3 percent of those who took part in the study acknowledged the fact that clean needles have a role to play in preventing transmission, but then 27.3 percent still denied that.

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Only 29.3% of the respondents confessed using ART that HIV is manageable, and only 38% denied it, and 32.7% responded that it is other/don't know (Table 6). This demonstrates that the effectiveness of ART is not among the factors that are highly known.

These results indicate a knowledge deficit because, in line with past surveys in rural Pakistan, where the deficiency in knowledge about misconceptions of casual contact still exists, and the degree of awareness on ART remains minimal. These kinds of assumptions reduce the possibility of volunteering to test and are the immediate cause of stigma.

Compared to the national average, 21% of PLHIV know their status, only a bit higher than half of participants (51.3) had an HIV test (Table 7). This may, however, be because of the purposeful selection of the high-risk groups.

Table 8 demonstrates that 51.3 percent of the respondents said that they have been tested over the last 12 months, and this indicates that they are very new consumers of the testing service. Participants were only on ART (Table 9) to uptake treatment (32%) compared to 29.3% not on ART and 38.7% who were inappropriate. However, most importantly, almost thirty percent of ART users indicated having missed doses during the past three days (Table 10). As per these figures, compliance is difficult, and this is in line with previous research conducted in Pakistan, where sustained therapy is jeopardized by stigma and cost and lack of ART centers [33, 34]. Mean scores of the items associated with stigma show moderate stigma across quite a broad area: Avoiding contact (SD = 1.30, mean = 3.10), The feeling that the community is treating HIV unfair (Mean = 3.10, SD = 1.33), Stigmatization on being the one who has an HIV in the family (Mean = 3.05, SD = 1.46), the perception of HIV punishment (Mean = 2.86, SD = 1.40)

Such processes are a sort of latent stigma, especially of morals (punishment, humiliation) though it is about the neutral point (3). Such perceptions inhibit ART adherence and are used to facilitate HIV testing silence in accordance with research results by Rehman et al. [31] to establish that stigma in Balochistan is a barrier to people seeking medical treatment. The chi-square test was used to test the relationship that existed between certain sociodemographic variables and uptake of the HIV test. This was not significant ($p > 0.05$) ($2 = 4.280$, $2 = 2$, $p = 0.118$).

This implies that there was no strong association with demographic variables in this HIV testing population and the demographic variables that were examined. However, it still had some significant tendencies in its

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trend of the frequencies. It may not be statistically significant due to small sample size or due to confounding of the knowledge and stigma which would mask the impact of the demographics. This observation is consistent with local studies that reiterate the point that stigma is not always unimportant relative to the demographic background [31], yet it also conflicts with other international studies, which have revealed that both gender and education were involved [24].

HIV tests were analyzed by the regression model to determine the factors that predict them. Omnibus Test Model Coefficients (Table 16): It was found that the model is statistically significant (df = 32, p = 0.039). This suggests that relative to a null model, the interaction effect of factors (sociodemographic, knowledge, and stigma) was an important addition to the prediction of HIV testing uptake.

Table 17: Hosmer and Lemeshow Test The model fit was good (2 = 6.259, and, 8, p = 0.618). It is larger than the p= 0.05, and hence, there are no significant differences between the description of observed data in the model.

All in all, Hypothesis 2, which posits that the synergistic effect of social demographic variables, knowledge and stigma are predictors of HIV testing and treatment behaviours is proved logistically regressively. Regression is focused on the importance of mutual interaction of all factors and chi-square was not showing any direct relationships. This corroborates other studies that have determined that stigma and lack of knowledge are synergistic in reducing the uptake of HIV care [22, 29, 31].

CONCLUSION

Stigma and the lack of information are significantly identified as the strong factors in

Baluchistan HIV testing and treatment in this paper. The findings indicate that most of the myths associated with the spread of HIV and insignificant knowledge about ART is still common and this is what causes the resistance to voluntary testing and non-adherence to treatment. In the regression analysis, the combination of stigma, knowledge and socio-economic demographic factors was found to be a strong predictor of HIV testing and treatment behaviours but did not show significant relationships between demographic factors and uptake of HIV testing using chisquare analysis.

The results indicate the importance of the multi-pronged intervention to overcome HIV in Balochistan. Interventions must strive to reduce social stigma, the removal of myths about HIV and overall enhancements of community-based awareness interventions, instead of fortifying medical infrastructures.

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Availability of ART and networks of adherence support, particularly to those at risk such as sex workers, injecting drug users and trans also finds its place.

Concluding on the results, one can say that the issue of systemic barriers and cultural beliefs are the main issues that must be eliminated to improve the HIV outcome in the state of Balochistan. The stakeholders in public health can make the environment conducive to encourage voluntary testing, early diagnosis, and treatment adherence via alleviation of stigma and lack of information to reduce HIV transmission and improve the life quality of individuals with HIV.

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Questionnaire

SectionA: Sociodemographic Information

1. Age (in years): o 18–25 o 26–35 o 36–45 o 46 and above
2. Gender:
   - Male o Female o Other
3. Education Level: o No formal education o Primary o Secondary o Higher

Section B: Knowledge about HIV

4. HIV can be transmitted through unprotected sexual contact. o Yes o No
   - Don’t know
5. HIV can spread through sharing utensils. o Yes o No
   - Don’t know
6. Using clean needles prevents HIV transmission. o Yes o No
   - Don’t know
7. HIV can be controlled with antiretroviral therapy (ART). o Yes o No
   - Don’t know

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Section C: HIV-Related Stigma ***(Likert Scale: Strongly Agree – Agree – Neutral – Disagree – Strongly Disagree)***

8. I would feel ashamed if a family member had HIV.
    - Strongly Agree
    - Agree
    - Neutral
    - Disagree
    - Strongly Disagree
9. HIV is a punishment for immoral behavior.
    - Strongly Agree
    - Agree
    - Neutral
    - Disagree
    - Strongly Disagree
10. I would avoid sitting or eating with someone who has HIV.
    - Strongly Agree
    - Agree
    - Neutral
    - Disagree
    - Strongly Disagree
11. People with HIV are often treated unfairly in the community.
    - Strongly Agree
    - Agree
    - Neutral
    - Disagree

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- Strongly Disagree

Section D: HIV Testing and Treatment Uptake

12.Have you ever been tested for HIV?

- Yes
- No

13.Have you been tested for HIV in the last 12 months?

- Yes
- No

14.If HIV-positive: Are you currently taking ART?

- Yes
- No
- Not applicable

15.If on ART: In the last 3 days, did you miss any doses?

- Yes
- No
- Not applicable
-