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# Factors affecting the utilization of HIV counseling and testing services: A case-control study in Indonesia

Ricka Putri Hardianti[1], Arlinda Sari Wahyuni[2]✉, Delfitri Munir[3], Restuti Hidayani Saragih[4,5], Juliandi Harahap[2]

[1]*Master Program in Tropical Medicine, Faculty of Medicine, Universitas Sumatera Utara, Medan, North Sumatera, Indonesia*

[2]*Department of Community Medicine, Faculty of Medicine, Universitas Sumatera Utara, Medan, North Sumatera, Indonesia*

[3]*Department of Ear, Nose and Throat, Faculty of Medicine, Universitas Sumatera Utara, Medan, North Sumatera, Indonesia*

[4]*Division of Tropical Medicine and Infectious Diseases, Department of Internal Medicine, Faculty of Medicine, Universitas Sumatera Utara, Medan, North Sumatera, Indonesia*

[5]*H. Adam Malik General Hospital Medan, North Sumatera, Indonesia*

## ABSTRACT

**Objective:** To analyze factors affecting the utilization of human immunodeficiency virus counseling and testing (HCT) service among human immunodeficiency virus risk groups at Hessa Air Genting Health Center, Asahan Regency, North Sumatera, Indonesia.

**Methods:** This quantitative unmatched case-control study was conducted from April 2024 to April 2025 at Hessa Air Genting Health Center, Asahan Regency, North Sumatra Province, Indonesia. Female sex workers and men who have sex with men were selected using purposive sampling based on predefined inclusion and exclusion criteria. Data were collected *via* questionnaires and analyzed using SPSS version 18.0, with univariate analysis, bivariate analysis (*Chi*-square test), and multivariate analysis (logistic regression analysis).

**Results:** Comprehensive analysis of 75 cases and 75 controls was conducted to identify factors affecting the utilization of HCT services. Specifically, this study identified significant effects of knowledge (*OR* 3.2, 95% *CI* 1.5-7.0, *P*=0.003), perception (*OR* 5.6, 95% *CI* 2.5-12.5, *P*<0.001), information media (*OR* 3.1, 95% *CI* 1.4-6.8, *P*=0.005), and health workers encouragement (*OR* 4.0, 95% *CI* 1.5-10.4, *P*=0.005). In contrast, access to health services did not have a significant effect.

**Conclusions:** Knowledge, perception, information media, and health worker encouragement had significant effects on HCT service utilization, with perception identified as the dominant factor. To improve utilization, strengthening positive perceptions, targeted training for healthcare workers, strengthened partnerships with local non-governmental organizations, and the use of social media for health promotion are recommended.

**KEYWORDS:** Human immunodeficiency virus counseling and testing; Human immunodeficiency virus risk group; Case-control study; Indonesia

**Summary**

**Question:** What factors affect the utilization of human immunodeficiency virus (HIV) counseling and testing services among HIV risk groups in Asahan Regency, Indonesia?

**Findings:** Risk groups with good knowledge, positive perceptions, access to health information, and support from health workers had an 89.2% probability of utilizing HIV Counseling and Testing services. These factors were identified as the main contributors to service utilization.

**Meaning:** Strengthening positive perceptions, empowering health workers, non-governmental organization collaboration, and leveraging social media are essential strategies to enhance service utilization.

✉To whom correspondence may be addressed. E-mail: arlinda@usu.ac.id

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## 1. Introduction

Human immunodeficiency virus counseling and testing (HCT) is a program to control human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) in the health sector. This program is implemented to strengthen diagnostic processes, primarily aiming to prevent the transmission and escalation of HIV cases in the first place, as well as expedite the initiation of treatment[1]. 86% of people living with HIV (PLHIV) were aware of their HIV status in 2022 globally against the target of 90%[2]. Based on national data, the proportion of individuals at risk of HIV infection who undergo HIV screening in Indonesia reaches 76%, while the target that should be achieved in 2023 is 85%. North Sumatra Province is ranked 16th out of 39 provinces with a percentage of screening achievement for people at risk of HIV at 66%[3].

One of the inhibiting factors in the implementation of HCT services is that many individuals who have risk factors are reluctant to undergo HIV testing, and there are even cases where patients who have been tested provide false addresses[4]. HIV-related stigma, misconceptions about the virus, and fear of a positive test result contribute to the hesitancy to get tested[5]. Factors of knowledge about HIV, perception about HCT services, availability of health service support facilities, and support from friends are related to the acceptance of HCT services among key populations[6]. Other factors that affect the voluntary participation of Female Sex Workers (FSW) in HCT services include information media, access to health facilities, and the role of healthcare staff[7]. In this study, variable selection was guided by Lawrence Green's behavior change theory (1980), which states that human behavior is influenced by these main factors, namely predisposing factors including knowledge and perception, enabling factors including the availability of health facilities and infrastructure, and reinforcing factors including the attitudes and actions of health workers. If HCT is not properly implemented and continues to fall short of established targets, there is a risk of an iceberg phenomenon. In the context of HIV, this phenomenon implies that only a small proportion of cases are detected and reported, while a much larger number remain undiagnosed due to the lack of testing. PLHIV who are unaware of their status will not receive appropriate treatment, resulting in the continued transmission of HIV within the community.

The objective of this study was to comprehensively analyze the factors affecting the utilization of HCT services, specifically knowledge of HCT services, perceptions HCT services, exposure to HCT-related information media, access to HCT services, and encouragement provided by healthcare workers. This context highlights the need to analyze factors affecting the utilization of HCT services among HIV risk groups at Hessa Air Genting Health Center, Asahan Regency, North Sumatra, Indonesia.

## 2. Methods

### 2.1. Study design and subjects

This quantitative study adopted an unmatched case-control design, conducted from April 2024 to April 2025 at Hessa Air Genting Health Center, Asahan Regency, North Sumatera, Indonesia. The subjects-FSWs and MSM-were still actively engaged in activities that place them at risk of HIV transmission. Respondents who had utilized HCT services were classified as the case group, while those who had never utilized such services were classified as the control group. A total of 75 cases and 75 controls were selected using purposive sampling based on inclusion criteria: aged ⩾15 years, ability to communicate, and openness to participate. The exclusion criteria were pregnancy, active tuberculosis and sexually transmitted infections; this was to avoid bias in the study sample selection as these groups have become priority targets in collaborative programs that mandate routine HIV testing by healthcare providers in accordance with the prevailing national guidelines[8,9].

### 2.2. Sample size

The sample size was calculated using the formula for an unmatched case-control study:

$$n = \frac{\{Z_{1-\frac{\alpha}{2}}\sqrt{2P_2(1-P_2)} + Z_{1-\beta}\sqrt{P_1(1-P_1)+P_2(1-P_2)}\}^2}{(P_1-P_2)^2}$$

The proportion of cases ($P_1$) was estimated using the formula $P_1 = (OR \times P_2) / [(OR \times P_2)+(1-P_2)]$. Using an odds ratio ($OR$) of 2.455 and a control proportion ($P_2$) of 0.317, both derived from Onyemachi *et al*., the estimated $P_1$ was 0.533. A 95% confidence level was applied ($Z_{1-\alpha/2}=1.96$) along with 80% statistical power ($Z_{1-\beta}=0.84$). Substituting these values into the sample size formula yielded a minimum required sample size of 75 subjects per group, resulting in a total sample size of 150 participants.

### 2.3. Data collection

Hessa Air Genting Health Center is a first-level outpatient health service facility located in Air Batu District, Asahan Regency, North

Sumatra Province, Indonesia. This health center oversees a service area covering 6 villages, namely Hessa Air Genting, Air Genting, Pulau Pule, Hessa Perlompongan, Danau Sijabut, and Sijabut Teratai. The HIV program is one of the direct infectious disease control programs available at this facility.

Data collection in this study was conducted using a self-designed questionnaire consisting of closed-ended questions. The questionnaire was designed based on relevant literature and then adapted to the research context, respondent characteristics, and the study variables. Content validity of the questionnaire was evaluated by experts to ensure the quality of the research instrument. Prior to data collection, the researcher clearly explained that participation in this study was voluntary, the study data would be kept confidential, and personal information would not be disclosed. In addition, the researcher also collected supplementary data, such as HCT visit records from Hessa Air Genting Health Center.

To avoid missing data, the researcher reviewed each questionnaire immediately after its completion by the respondent to ensure all items were fully answered. This procedure ensured data completeness and enhanced the reliability of the study findings.

Variable assessment was based on a Likert scale. Respondents were categorized as having good knowledge if they provided correct answers to at least 50% of the items assessing HCT knowledge. The same 50% threshold was applied to information media exposure, health service access, and healthcare worker support. Perception was classified as good when respondents achieved a minimum of 66.7% correct responses to the items measuring HCT-related perception.

### 2.4. Reliability and validity

Item validity was assessed by examining the correlation between each questionnaire item and the total score using the pearson product-moment correlation test. The validity test was conducted on 30 respondents with characteristics similar to the study population. Questionnaire reliability was evaluated using Cronbach's alpha coefficient, with a minimum value of 0.6 indicating acceptable internal consistency.

### 2.5. Statistical methods

The sample size was determined *via* power analysis with a 95% confidence level and 80% statistical power to ensure methodological validity[10]. The independent variables included HCT knowledge, HCT-related perception, information media exposure, health service access, and healthcare worker encouragement, with HCT service utilization as the dependent variable. Data were analyzed using IBM SPSS Statistics version 18.0, employing univariate analysis, bivariate analysis (Pearson's *Chi*-square test), and multivariate analysis (binary logistic regression analysis).

### 2.6. Ethical approval and informed consent

This study followed ethical standards from the Committee on Publication Ethics (COPE) and obtained approval from the Health Research Ethics Commission of the University of Sumatera Utara (approval number 1156/KEPK/USU/2024; dated on September 17th, 2024) before data collection. Informed consent forms were obtained from all participants to ensure voluntary participation and confidentiality.

## 3. Results

### 3.1. Overview of respondent characteristics

Table 1 presents the demographic characteristics of the respondents by group. In the case group, the majority of respondents were female (53.3%) and classified as female sex workers (FSWs) (53.3%). Most were aged <37 years (50.7%), had completed senior high school education (77.3%), and were housewives by occupation (48.0%). In the control group, females also predominated (57.3%), with the majority being FSWs (57.3%). Most were aged ⩾37 years (53.3%), most had completed senior high school education (62.7%), and the largest occupational group was housewives (49.4%).

**Table 1.** Characteristics of respondents.

| Characteristics | Case (*N*=75) | Control (*N*=75) |
|---|---|---|
| Risk group | | |
| FSW | 40 (53.3) | 43 (57.3) |
| MSM | 35 (46.7) | 32 (42.7) |
| Sex | | |
| Male | 35 (46.7) | 32 (42.7) |
| Female | 40 (53.3) | 43 (57.3) |
| Age, years, median (Q1, Q3) | 37 (28-47) | |
| <37 | 38 (50.7) | 35 (46.7) |
| ⩾37 | 37 (49.3) | 40 (53.3) |
| Education | | |
| Elementary school | 12 (16.0) | 16 (21.3) |
| Junior high school | 5 (6.7) | 12 (16.0) |
| High school | 58 (77.3) | 47 (62.7) |
| Occupation | | |
| Not working | 3 (4.0) | 7 (9.3) |
| Housewives | 36 (48.0) | 37 (49.4) |
| Self employed | 11 (14.7) | 15 (20.0) |
| Farmer | 13 (17.3) | 7 (9.3) |
| Fisherman | 12 (16.0) | 9 (12.0) |

FSW: Female sex worker; MSM: Men who have sex with men. Data are expressed as *n* (%) unless otherwise indicated.

### 3.2. Bivariate analysis

Table 2 presents the distribution of respondents' HCT knowledge, HCT-related perception, HCT information media exposure, health service access, and healthcare worker encouragement across the two groups. In the case group, most respondents had good HCT knowledge (68.0%), whereas the majority of the control group had limited knowledge (60.0%). Positive perceptions of HCT services were also more prevalent in the case group (77.3%), while negative perceptions predominated in the control group (60.0%).

HCT information media exposure was additionally higher in the case group, with 60.0% reporting good exposure, compared with 61.3% of the control group reporting low exposure. Health service access exhibited a similar trend: 76.0% of case group respondents reported easy access, compared with 56.0% of those in the control group. Furthermore, healthcare worker encouragement was associated with HCT service utilization, as 86.7% of case group respondents received such encouragement, *vs.* 62.7% of the control group respondents.

Group differences were assessed using the Pearson's *Chi*-square test (two-tailed), with the resulting *P*-values as follows: 0.001 for HCT knowledge, <0.001 for HCT-related perception, 0.01 for HCT information media exposure, 0.02 for health service access, and 0.001 for healthcare worker encouragement. These *P*-values confirm a statistically significant association between each factor and HCT service utilization.

### 3.3. Multivariate analysis

Independent variables (HCT knowledge, HCT-related perception, HCT information media exposure, health service access, and healthcare worker encouragement) were included in the multivariate binary logistic regression model, as all had a *P*-value<0.25 (a priori inclusion criterion). The Nagelkerke $R^2$ value from the coefficient of determination test was 0.373, indicating moderate explanatory power of the model. This means that the included independent variables explain 37.3% of the variation in HCT service utilization. The Hosmer-Lemeshow test yielded a *P*-value of 0.829 (>0.05), demonstrating that the logistic regression model fits well with the observed data.

Table 3 shows the overall predictive accuracy of the model, which was 73.3% for identifying risk groups regarding HCT service utilization (utilizers *vs.* non-utilizers).

The analysis using logistic regression reveals that respondents with good knowledge of HCT services were 3.2 times more likely to utilize these services compared to those with limited understanding (*OR* 3.2, 95% *CI* 1.5-7.0, *P*=0.003). Similarly, respondents with positive perceptions of HCT services were 5.6 times more likely to participate in them (*OR* 5.6, 95% *CI* 2.5-12.5, *P*<0.001).

Respondents with strong information media exposure were 3.1 times more likely to utilize HCT services compared to those with limited exposure (*OR* 3.1, 95% *CI* 1.4-6.8, *P*=0.005). In contrast, access to health services did not seem to significantly affect HCT use in this study.

Furthermore, the encouragement provided by health workers

**Table 2.** Respondent characteristics based on measured variables [*n* (%)].

| Characteristics | Utilization of HCT | | *P* value* | *OR* (95% *CI*) |
|---|---|---|---|---|
| | Case (*n*=75) | Control (*n*=75) | | |
| Knowledge | | | | |
| Good | 51 (68.0) | 30 (40.0) | 0.001 | 3.2 (1.6-6.2) |
| Less | 24 (32.0) | 45 (60.0) | | |
| Perception | | | | |
| Good | 58 (77.3) | 30 (40.0) | <0.001 | 5.1 (2.5-10.4) |
| Less | 17 (22.7) | 45 (60.0) | | |
| Information media | | | | |
| Good | 45 (60.0) | 29 (38.7) | 0.01 | 2.4 (1.2-4.6) |
| Less | 30 (40.0) | 46 (61.3) | | |
| Access to healthcare services | | | | |
| Good | 57 (76.0) | 42 (56.0) | 0.02 | 2.5 (1.2-5.0) |
| Less | 18 (24.0) | 33 (44.0) | | |
| Health workers encouragement | | | | |
| Good | 65 (86.7) | 47 (62.7) | 0.001 | 3.9 (1.7-8.7) |
| Less | 10 (13.3) | 28 (37.3) | | |

**Chi*-square test (two-tailed). HCT: Human immunodeficiency virus counseling and testing.

**Table 3.** Classification matrix results.

| Observed | | Predicted Utilization of HCT | | Percentage correct |
|---|---|---|---|---|
| | | Utilizing | Not utilizing | |
| Utilization of HCT services | Utilizing | 55 | 20 | 73.3 |
| | Not utilizing | 20 | 55 | 69.3 |
| Overall percentage | | - | - | 73.3 |

HCT: Human immunodeficiency virus counseling and testing; -: not applicable.

**Table 4.** Logistics regression test results.

| | Variables | B | Sig. | Exp (B) | 95% *CI* for EXP (B) | |
|---|---|---|---|---|---|---|
| | | | | | Lower | Upper |
| Step 1 | Knowledge | 1.2 | 0.004 | 3.2 | 1.5 | 6.9 |
| | Perception | 1.7 | <0.001 | 5.3 | 2.4 | 11.9 |
| | Information media | 1.1 | 0.005 | 3.4 | 1.4 | 6.8 |
| | Health service access | 0.4 | 0.34 | 1.5 | 0.7 | 3.5 |
| | Encouragement of health workers | 1.3 | 0.01 | 3.6 | 1.4 | 9.6 |
| | Constant | -7.8 | <0.001 | <0.001 | - | - |
| Step 2 | Knowledge | 1.2 | 0.003 | 3.2 | 1.5 | 7.0 |
| | Perception | 1.7 | <0.001 | 5.6 | 2.5 | 12.5 |
| | Information media | 1.1 | 0.005 | 3.1 | 1.4 | 6.8 |
| | Encouragement of health workers | 1.4 | 0.005 | 4.0 | 1.5 | 10.4 |
| | Constant | -7.5 | <0.001 | 0.001 | - | - |

-: not applicable.

showed a positive association with service utilization. Respondents who received strong encouragement were nearly four times more likely to seek HCT services than those who did not (*OR* 4.0, 95% *CI* 1.5-10.4, *P*=0.005). The detailed results of these analyses are presented in Table 4.

According to Table 4, the logistic regression model indicated that when all variables were classified as good, the probability of risk groups utilizing HCT services reached 89.2%. This means that risk groups with good knowledge, perceptions, information media exposure, and health worker encouragement have an 89.2% probability of utilizing HCT services. This probability was derived from the logistic regression model and is independent of the Hosmer-Lemeshow test (*P*=0.829), which assessed model fit.

Overall, the most dominant factor affecting the utilization of HCT services at Hessa Air Genting Health Center is perception, as it had a statistically significant *P*-value (<0.05) and the highest odds ratio compared with other factors. From a public health perspective, this finding highlights the importance of targeted interventions to improve community perceptions of HCT services.

## 4. Discussion

At the time of the study, the FSW group tended to be easier to meet and more open to participating as respondents in the research. They were familiar with handling various individuals involved in their work. Effective interpersonal communication between researchers and commercial sex workers can build trust, so that they are willing to answer personal questions[11]. Persuasive messages conveyed by friends or communities as participant communicators play a role in decision-making for MSM[12]. The majority of the risk groups in this study were in the productive age[13]. In fact, men and women can also still be sexually active in old age[14]. Meanwhile, men and women who were not sexually active still had sexual desires, although these were limited by illnesses and other factors[15]. Based on research in the field, FSW in the productive age tended to have a high frequency of sexual activity because it was part of their job.

Most of the respondents' last education was senior high school, but that level of education did not guarantee a good understanding of sexual and reproductive health. Social environments such as peer influence played a role in men's decision to become MSM. This process began with an invitation to try MSM behaviors that

eventually made them feel comfortable with the behavior[16]. Housewives who became FSWs were often motivated by economic pressures, including the need to cover daily expenses, children's education, and other costs. The lack of financial support from spouses or families pushed them to seek quick income alternatives, especially for single mothers or widows who carried greater household responsibilities[17]. As in this study, it showed that the majority of the risk group were housewives. They were forced to choose this work due to economic limitations and a lack of formal job opportunities.

Knowledge of HIV risk groups significantly affects the utilization of HCT services at Hessa Air Genting Health Center. This aligns with previous findings showing that FSW with good knowledge were 4.444 times more likely to participate in HCT compared to those with poor knowledge[19]. Increased awareness motivated risk groups to voluntarily undergo HIV screening[20]. A better understanding of HIV services strengthened MSM's intention to access available care[21]. Field research revealed that those who did not utilize HCT services were often unaware that these services were accessible to at-risk populations, not only to confirmed HIV-positive patients. Conversely, most who utilized HCT recognized its benefits, such as early detection and timely treatment. Knowledge is disseminated through health workers at the health center, non-govern-mental organizations like the Galatea Foundation and Simalungun Peer Support Group, as well as peer networks including friends and cafe owners offering "special services." Mobile outreach activities frequently target hotspots with high-risk behaviors to maximize service reach. Mobile HCT proved to be one of the most effective strategies for reaching target populations in sub-Saharan Africa, as community-based approaches, particularly mobile outreach, were often used to serve high-risk groups with limited access to formal healthcare services[22].

In this study, perceptions of HIV risk groups affect the utilization of HCT services. Consistent with prior research, poor perception among FSW could hinder participation in HCT if not supported by adequate knowledge[7]. Similarly, in Brazil, a key reason at-risk populations avoided services was the perceived lack of need[23]. Field findings revealed that most who utilized HCT services trusted the safety of testing conducted by health workers. However, some respondents doubted the reliability of rapid diagnostic test results. Those who did not utilize HCT often feared that accessing services might lead others to suspect they had HIV, and they felt healthy, perceiving no need for testing.

This study found a significant effect of information media on the utilization of HCT services, which aligns with previous research showing that various media including print, electronic, social media, and interpersonal sources strongly impacted FSW participation in HCT services in West Java, Indonesia[7]. Conversely, the lack of engaging and easily understandable HIV information contributed to low service utilization among some risk groups. Therefore, interventions focusing on HIV-related communication, information, and education were crucial to fostering behavioral change, especially within high-risk populations[24]. Field data revealed that the availability of information, particularly through social media and regular updates *via* phone or WhatsApp every three months, motivated risk groups to undergo HIV screening, especially through mobile services.

Access to health services showed no significant effect in the utilization of HCT services. It contrasted with previous findings that indicated health facility availability accounted for 21.9% of FSW participation in HCT services in West Java, Indonesia[7]. In New Delhi, some MSM refrained from testing due to the time required for standard HIV testing procedures[25]. Although HCT services were accessible at all health centers and public hospitals in West Sumatera Indonesia, respondents felt embarrassed and worried that acquaintances might recognize them, so they chose to seek services farther from their homes[26]. The majority of respondents reside within 3 kilometers of Hessa Air Genting Health Center, which is strategically situated along the Lintas Sumatra Highway and easily accessible by both private and public transportation. However, they preferred mobile HCT services to avoid stigma and long queues. Several clients of health facilities complained about waiting lines and shared waiting areas. Despite having good access, some at-risk individuals still did not utilize HCT services, indicating that factors beyond distance influenced service utilization.

Encouragement from health workers had a crucial role in the utilization of HCT. In line with previous findings, positive engagement by health workers increased FSW participation in HCT services[19]. However, experiences of stigma from health workers, as seen among sex workers in Kenya, hindered service utilization[27]. Field observations revealed that health workers motivated testing and provided consultation time. Even those not utilizing HCT services reported receiving encouragement. Regular updates *via* phone or WhatsApp helped key populations access mobile HIV screening every three months. Health workers used a respectful, non-coercive approach, creating opportunities for future engagement.

This study is subject to several limitations. The respondents were

limited to those residing in the working area of Hessa Air Genting Health Center, potentially reducing generalizability. Further research in diverse regions is needed to validate these results. The study focused solely on FSW and MSM, so the findings cannot represent the broader population or other HIV at-risk groups. A case-control design without matching poses a risk of selection bias, particularly in the control group. However, we minimized this limitation by selecting control respondents from the population similar to the case group, based on the same inclusion and exclusion criteria. Data collection relied on a questionnaire, which may introduce response bias as respondents could provide socially desirable answers rather than reflecting actual behavior. As a response to this concern, the researcher assessed the content validity of the questionnaire with experts to ensure the quality of the research instrument. Researcher assisted participants when clarification was needed, and data collection was conducted in a private setting to maintain confidentiality. The use of closed-ended questions also limited deeper exploration of respondent's reasons and experiences. Additionally, the study investigated only selected factors. The Nagelkerke *R*-Square value of 0.373 indicates that other important factors remain unmeasured. Future studies should include variables like stigma and social support to better explain the outcomes. Five independent variables were tested without adjustment for multiple comparisons. Therefore, the results should be interpreted conservatively due to the potential risk of Type Ⅰ error (false positive).

To bridge the gap in perception and improve the utilization of HCT services, healthcare workers should receive comprehensive training that emphasizes strategies to correct false beliefs about HIV transmission and enhance communication skills. Peer educators play a crucial role as community change agents in strengthening this approach. Local non-govern-mental organizations should strengthen collaborations to harness the power of social media platforms such as TikTok and Instagram, which effectively engage the youth population in Indonesia. Future research should use mixed-method approaches, with qualitative data supporting and enriching quantitative findings to explore the underlying "trust deficit" surrounding rapid HIV tests and how it impacts service utilization. Additionally, researchers must conduct comparative analyses of cost effectiveness between mobile HCT services and testing conducted at health facilities, especially in remote areas, to inform scalable and sustainable interventions.

In conclusion, this study aimed to analyze the factors affecting the utilization of HCT services. The findings demonstrate that perception, knowledge, information media, and encouragement from health workers are key factors, with perception having the strongest effect on service utilization. These results are particularly relevant in areas still facing public health challenges, especially those related to infectious diseases, where community decisions to access services are often shaped by beliefs, social norms, and the availability of information. A study in Europe showed that raising awareness and implementing targeted outreach programs could enhance HIV healthcare access[28]. Therefore, efforts to improve the utilization of HCT services should focus on strengthening positive community perceptions, enhancing the capacity of health workers through appropriate training, and strategically and contextually using digital media. The capacity of service providers must be strengthened through systematic training and mentoring, enabling them to acquire the competencies necessary to monitor, enhance, and evaluate service quality through a collaborative, team-based approach[29]. Although this study is limited to specific regions and respondent groups, its findings still offer a valuable basis for the development of intervention strategies. Further research is needed to assess the effectiveness of these approaches and identify remaining barriers to HCT utilization.

## Conflict of interest statement

The authors report no conflicts of interest related to this study.

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## Authors' contributions

RPH, ASW, and DM were involved in the study design. ASW verified the data and validated the concept. RPH conducted the survey, data collection and analysis, and manuscript drafting. ASW, DM, RHS, and JH supervised the research through to manuscript preparation. All authors have read and approved the final manuscript.

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