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Level of knowledge and intention to use oral fluid HIV self-testing and associated factors among Ethiopian health care workers in southern Ethiopia

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Abstract

Background The World Health Organization has recommended a new method for HIV self-testing (HIVST) using oral fluid, intending to increase HIV testing rates, and linking individuals to medical care. Healthcare workers are chief health advocates in the community who need adequate knowledge and intention to use the newly recommended HIVST approach. However, studies on awareness and the intention to use oral fluid for HIV self-testing among Ethiopian healthcare workers are limited. Therefore, this study aimed to assess healthcare workers' knowledge of and intentions to use oral fluid for HIV self-testing in Hadiya Zone public hospitals in southern Ethiopia in 2022.

Methods We conducted a facility-based cross-sectional study among a sample of 352 healthcare workers from 1 to 30 June 2022. The data were entered into Epidata version 4.2 and exported to SPSS version 23 for analysis. We used a logistic regression model with a 95% confidence interval for the interpretation of adjusted odds ratios (AORs) with $P < 0.05$.

Results Of the total participants, 40.3% had good knowledge, and 63.1% intended to use oral fluid (HIVST). Approximately 92% of healthcare workers had not received training, and 48.3% had heard about HIVST. Only 12.3% knew about the availability of the kit in hospitals, and 19.9% had ever used HIVST. Being male (AOR = 2.28; 95% CI 1.33–3.95), receiving support for the implementation of HIVST (AOR = 2.07; 95% CI 1.21–3.56), hearing about HIVST (AOR = 5.05; 95% CI 2.89–8.81), having prior experience using HIVST (AOR = 2.94; 95% CI 1.71–5.05), having a spouse or partner (AOR = 2.78; 95% CI 1.14–6.82), and having multiple sexual partners (AOR = 2.76; 95% CI 1.13–6.78) were associated with good knowledge of oral HIVST. Being aged 25–29 years (AOR = 2.54; 95% CI 1.18, 5.41), perceiving the high cost of the HIVST kit (AOR = 0.37; 95% CI 0.16–0.84), and having poor knowledge (AOR = 1.91; 95% CI 1.13–3.23) were significantly associated with the intention to use the oral fluid for HIVST.

Conclusion This study highlights the need for technical updating training for healthcare workers to increase their knowledge of and intention to use oral fluid for HIVST. Promoting oral fluid HIVST through targeted education, supporting initiatives, and addressing cost concerns related to the testing kit may increase the uptake of oral fluid HIVST among healthcare workers.

Keywords Oral fluid HIV self-test, Healthcare worker, Ethiopia

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Background

An estimated 37.9 million people worldwide are living with HIV, and in Sub-Saharan Africa, more than 40% of adults are unaware of their HIV status [1, 2]. In Ethiopia, more than 610,000 Ethiopians live with HIV, 27% of whom do not know whether they have an infection [1].

Globally, there are 2 million needle stick injuries (NSIs) among health care workers each year, and due to workplace exposure, healthcare workers in sub-Saharan Africa frequently face a significant risk [3, 4].

Various global initiatives have been taken to stop the AIDS epidemic by 2030. The Joint United Nations Programme on HIV/AIDS designed a 95–95–95 triple-intervention strategy, which ensures that 95% of people know their HIV status, enrolling 95% of HIV-positive adults in ART programs and achieving viral suppression in 95% of those receiving treatment [5]. However, existing conventional HIV testing services have limited widespread access to HIV testing, treatment, and care, particularly for those who fear being tested due to stigmatization in conventional services [6]. Hence, since 2016, the World Health Organization (WHO) has suggested an innovative method for HIV self-testing (HIVST) to increase the use of HIV testing, link people who test positive for HIV to care, and supplement conventional facility-based HIV testing programs [7].

Globally, the application of HIVST guidelines in countries has various implementation statuses: some have achieved better results, and others have achieved low results. With respect to the implementation time frame of HIVST, Ethiopia is one of the countries that lags in the adoption of HIVST guidelines [7].

To date, different HIV testing strategies have been implemented in Ethiopia, such as HIV counseling and testing, which are initiated by the provider, voluntary counseling and testing (VCT), and provider initiative counseling and testing (PICT) [8]. However, the WHO's new initiative, HIVST, has not reached the expected level of implementation, probably due to low knowledge and intention to use the test among healthcare workers.

Different studies have been conducted in Africa to assess the level of awareness and readiness to utilize oral-fluid HIVST in various contexts and different target groups [9–12]. Nearly all the research results indicated a low level of knowledge of HIVST among different populations. Previous studies revealed that different factors, such as the cost of the test, lack of knowledge of the existence of self-testing options and unfavorable attitudes toward the test, could determine the knowledge level and intention to utilize HIVST [13–15].

However, most previous studies have focused on high-risk group populations other than healthcare

workers, while healthcare workers constitute an equally important population at risk due to occupational exposure. In addition to the high risk of needle sticky injury, healthcare workers are expected to be chief advocates of health service initiatives for their community [9]. However, there is limited data concerning knowledge about the intention to use oral fluid for HIVST in Ethiopia in general and the study area, particularly among healthcare workers. We also hypothesized that different sociodemographic, behavioral, enabling, and practice-related factors operate differently to influence awareness of and intent to use oral fluid for HIV self-testing in healthcare workers serving in public health facilities in southern Ethiopia.

Therefore, the aim of this study was to assess the level of knowledge and intention to use HIV self-testing and the associated factors among healthcare workers serving in public hospitals in the Hadiya Zone, southern Ethiopia.

Methods

Study setting, design, and period

We conducted a hospital-based cross-sectional study among HCWs at Hadiya Zone hospitals in southern Ethiopia. The Hadiya Zone is one of the 14 Zones found in the former southern multicultural and lingual administrative region, the South Nations Nationalities and Peoples Region (SNNPR). The Hosanna city administration is a capital city of the Zone located 232 km from the capital city of the country, Addis Ababa. The town is located 194 km northwest of the former SNNPR city administration Hawassa. It has an average elevation of 2276 m above sea level and a total area of 23 square kilometers. The total population of the zone is 1,415,717, 707,358 of which 707,358 are females. The total number of healthcare workers (HCWs) in Hadiya Zone hospitals was 1275. The Hadiya Zone has one comprehensive specialized hospital, 3 district hospitals, 61 health centers, and 305 health posts. The study was conducted in four selected hospitals found in the Zone from 1–30 June 2022.

Source and study population

The source populations were all healthcare workers serving in public hospitals in the Hadiya Zone and randomly selected healthcare workers composed the study population. All healthcare workers working in public hospitals in the Hadiya zone were included in the study. Those who were severely ill; on annual, maternity, and study leave; or were known HIV-positive HCWs were excluded.

Sample size and sampling procedures

To calculate the sample size, we used two population proportion formulas using Epi-Info version 7, with a 95% confidence level, a 5% margin of error, 80% power, a 10% non-response rate, and an exposed group to non-exposed group ratio of 1:1 ($r=1$). The prevalence of HIV self-testing practices among healthcare professionals in Ethiopia was 70.5% in a study conducted in Ethiopia [16]. A final sample size of 352 was obtained.

Multistage stratified sampling was used to collect data from health care workers (HCWs) across hospitals and stratified by professional specialty. In the first stage, a sampling frame was prepared from the payroll of the human resources department in each of the four public health hospitals in the Hadiya zone to determine the total number of healthcare workers.

In the second stage, all healthcare workers were stratified based on the working units (specialty, nursing, medical, surgical, and other units) in each hospital, and the study participants were proportionally distributed based on the size of the selected hospitals. Finally, the required number of sample healthcare workers from each working unit was randomly selected from the frames of each stratum via simple random sampling techniques. Accordingly, 53 of the 192 healthcare workers at Shone Primary Hospital, 47 of the 170 healthcare workers at Homecho Primary Hospital, 32 of the 116 healthcare workers at Gimbichu Primary Hospital, and 220 of the 797 health care workers at Wachemo University Nigist Elleni Mohammed Memorial Specialized Comprehensive Hospital (WUNEMMSCH) were sampled (Fig. 1).

Data collection tools and procedures

A pretested self-administered questionnaire that was developed from several studies was used to collect the data. [4, 9, 10, 12, 17]. The dependent variables in this study were knowledge of HIVST and intention to use oral fluid for HIVST. The level of knowledge of oral fluid HIVST was assessed by ten knowledge-related questions. "Yes" or "No" was the response to each question. Each correct response/yes received a score of 1, whereas an incorrect response/no received a score of 0. A composite knowledge score ranging from 0 to 10 was determined. The mean sums of the total scores were determined after adding the scores from each of the ten items. HCWs with scores a mean or above the mean were classified as having good knowledge, whereas those with scores below the mean were classified as having poor knowledge [9, 17].

Intention to use oral fluid for HIVST was assessed based on participants' willingness to utilize an oral fluid self-test kit if it was offered at the medical institution or

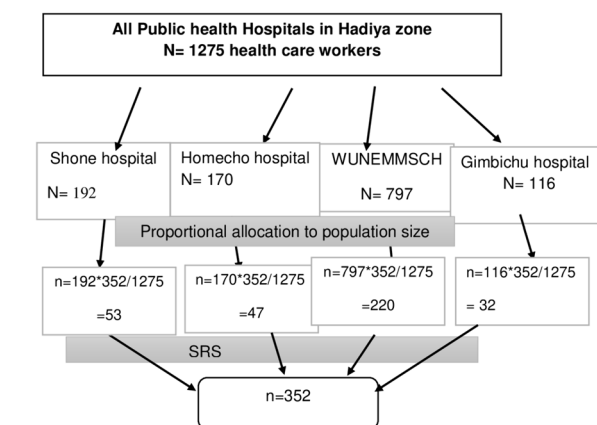


Fig. 1 Schematic presentation of the sampling procedure of this study

drugstore. The response options were 1=yes or 0=no willingness to use [17].

Data management and analysis

The data were cleaned using simple frequency, cross-tabulations, and sorting to check for inconsistencies, completeness, and outliers. Epidata software version 4.2 was used to enter the data, which were then transferred to SPSS software version 23 for analysis. Descriptive statistics such as frequencies, percentages, and cross-tabulations were obtained.

Binary logistic regression analysis was used to assess the associations between the dependent and independent variables. Variables with P values < 0.25 in the binary analysis were entered into a multivariable logistic regression model. Multicollinearity among independent variables was checked by standard error at the cutoff value of -2 to +2, and none of the independent variables exhibited multicollinearity. The interactions among variables were assessed using the Wald test or the likelihood ratio test, and a significant interaction term ($p < 0.05$) indicates that there is an interaction effect. Statistical significance was defined as a p-value < 0.05. Model fitness was checked using the Homer–Lemeshow test of goodness of fit.

Data quality assurance

To ensure the accuracy of the data, the questionnaires were first translated into Amharic and then back into English. The training was given to ten data collectors and two supervisors. A pretest was conducted on 10% of the sample size at Durame General Hospital. Internal consistency was evaluated using Cronbach's alpha (alpha coefficient for knowledge of HIVST (10 items) = 0.82).

Data collection was supervised by a master's degree in health sciences.

Results

Basic characteristics

The participants' average age (\pm SD) was 29.2 (\pm 4.5) years. More than half (52.6%) of the study participants were male. Approximately 68.2% of the participants were married, and 196 (55.7%) were protestant religious followers. With respect to educational level, more than three-fourths (78.1%) had degrees. Two hundred twenty-nine (65.1%) of the study participants had working experience of one to five years. Regarding profession, 169

(48.0%) of the participants were nurses, and 11.6% were midwives (Table 1).

Behavioral and testing practices of health care professionals

Two hundred forty-seven (70.2%) study participants had a sexual partner or spouse. More than two-thirds of the participants were currently living with their partners or spouses. Among the healthcare workers, 38 (10.3%) had multiple sexual partners, and 10 (2.8%) had a history of sexually transmitted diseases (STDs). Two hundred forty-three (69.0%) respondents had previous experience with HIV testing. Among those who had previous experience with HIV testing, 70 (28.8%) had ever used oral fluid for HIVST.

Regarding behavioral factors, 101 (28.7%) participants consumed alcohol, 84 (23.9%) chewed khat, and 38 (10.8%) smoked cigarettes (Table 2).

Table 1 Basic characteristics of health care workers in Hadiya Zone public hospitals, southern Ethiopia, 2022 (N = 352)

Variables	Frequency (%)
Sex	
Male	185 (52.6)
Female	167 (47.4)
Age in year	
< 25	42 (11.9)
25–29	159 (45.2)
30–34	97 (27.6)
35–39	39 (11.1)
40	15 (4.3)
Marital status	
Married, divorced, widowed	240 (68.2)
Single	112 (31.8)
Educational level	
Diploma	67 (19.0)
Degree	275 (78.1)
Above degree	10 (2.8)
Working experiences (years)	
1–5 years	229 (65.1)
6–10 years	104 (29.5)
\geq 11 years	19 (5.4)
Religion	
Protestant	196 (55.7)
Orthodox	99 (28.1)
Muslim	33 (9.4)
Catholic	24 (6.8)
Profession	
Nurses	169 (48.0)
Health officers	39 (11.1)
Doctors	28 (8.0)
Pharmacy	31 (8.8)
Laboratory profession	40 (11.4)
Midwifery	41 (11.6)
Others	4 (1.1)

Others: radiologists, ophthalmologists, and physiotherapists

Table 2 Behavioral and testing practices of health care workers in public hospitals in the Hadiya Zone, southern Ethiopia, 2022 (N = 352)

Variables	Frequency (%)
Having partners/spouse	
Yes	247 (70.2)
No	105 (29.8)
Currently living with your spouse/partners	
Yes	242 (68.8)
No	110 (31.3)
Having multiple sexual partners	
Yes	38 (10.3)
No	314 (89.7)
Having a history of STDs	
Yes	10 (2.8)
No	342 (97.2)
Smoking cigarette	
Yes	38 (10.8)
No	314 (89.2)
Taking alcohol	
Yes	101 (28.7)
No	251 (71.3)
Chewing khat	
Yes	84 (23.9)
No	268 (76.1)
Previous experience with HIV testing	
Yes	243 (69.0)
No	109 (31.0)
Have you ever used oral fluid HIVST	
Yes	70 (19.9)
No	282 (80.1)

Knowledge and intention to use oral fluid in HIVST

One hundred forty-two participants (40.3%) had a good level of knowledge of oral fluid HIVST, and 222 (63.1%) of them said that they would use HIVST if kits were accessible. Approximately 170 (48.3%) of the participants had heard about oral fluid HIVST, and only 44 (12.3%) healthcare workers reported that HIVST kits were available in the hospital. Forty-eight (13.6%) participants perceived that HIVST kits were expensive, and 68.3% of participants would recommend the use of HIVST kits to others. The majority (92%) did not receive training, and 65.9% of the participants did not receive support for the implementation of HIVST (Table 3).

Factors associated with the level of knowledge of HIVST

The first main outcome of this study was healthcare professionals' knowledge of HIVST. Six variables were significantly associated with the level of knowledge of oral fluid HIVST according to multivariable logistic regression analysis: sex, hearing about oral fluid HIVST, support for the implementation of HIVST, prior use of oral

fluid HIVST, having a spouse/partner, and having multiple sexual partners (Table 4).

Compared with female health professionals, male health professionals were approximately 2 times more likely to have good knowledge levels (AOR=2.28; 95% CI 1.33–3.95). Similarly, study participants receiving support from nongovernmental organizations for the implementation of oral fluid HIVST were twofold more likely to have (good) knowledge than their counterparts were (AOR=2.07; 95% CI 1.21–3.56).

Compared with those who did not have good knowledge, study participants who heard about oral HIVST were approximately 5 times more likely to have good knowledge (AOR=5.05; 95% CI 2.89–8.81). Furthermore, study participants who had prior experience in the use of HIVST were approximately threefold more likely to have good knowledge than those who did not (AOR=2.94; 95% CI 1.71; 5.05).

The results of our study revealed that study participants with a spouse/partner were nearly threefold more likely to have (good) knowledge of oral fluid HIVST than participants who had poor knowledge (AOR=2.78; 95% CI 1.14–6.82). Similarly, study participants with multiple sexual partners were approximately 3 times more likely to have good knowledge of oral fluid HIVST than participants with low knowledge (AOR=2.76; 95% CI 1.13–6.78).

Table 3 Knowledge of and intentions to use oral fluid for HIVST among healthcare workers in public hospitals in the Hadiya Zone, southern Ethiopia, 2022 (N = 352)

Variables	Frequency (%)
Heard about oral fluid HIVST	
Yes	170 (48.3)
No	182 (51.7)
Availability of oral fluid tests in the hospital	
Yes	44 (12.3)
No	308 (87.7)
HIVST kit is expensive	
Yes	48 (13.6)
No	304 (86.4)
Getting support on the implementation of HIVST	
Yes	120 (34.1)
No	232 (65.9)
Getting training on HIVST	
Yes	28 (8.0)
No	324 (92.0)
Willing to use an oral fluid HIVST	
Yes	222 (63.1)
No	130 (36.9)
Will you recommend using HIVST to others	
Yes	241 (68.3)
No	111 (31.7)
Knowledge on HIVST	
Good	142 (40.3)
Poor	210 (59.7)

Factors associated with intention to use fluid HIV self-test

After performing multivariable logistic regression analysis, three factors, namely, the age of the participants, the perceived cost of HIVST kits, and knowledge of HIVST oral fluid were found to be predictors of the intention to use HIVST.

Study participants aged 25–29 years were approximately 3 times more likely to intend to use HIVST via oral fluid than younger participants were. Compared with participants who did not perceive a high cost of the oral fluid HIVST kit, those who perceived a high-cost oral fluid HIVST kit had 63% less intention to use HIVST (AOR=0.37; 95% CI 0.16–0.84). Similarly, study participants with good knowledge about oral fluid HIVST were 1.91 times more likely to intend to use oral fluid HIVST than participants with poor knowledge (AOR=1.91; 95% CI 1.13–3.23) (Table 5).

Discussion

When oral fluid HIVST is regarded as a novel strategy to prevent the occurrence of HIV, its implementation could be highly affected by knowledge and the intention to use the test. Similarly, healthcare workers' knowledge of and intentions to use HIV self-tests may also be affected by various contextual, demographic, socioeconomic,

Table 4 Factors associated with knowledge of HIVST among healthcare workers in public hospitals in the Hadiya Zone, southern Ethiopia, 2022 (N = 352)

Variables	Knowledge of HIVST		COR (95%CI)	AOR (95%CI)
	Good n (%)	Poor n (%)		
Sex				
Male	89 (48.1)	96 (51.9)	1.99 (1.29,3.08)	2.28 (1.33,3.95)**
Female	53 (31.7)	114 (68.3)	1	1
Educational level				
Diploma	21 (31.3)	46 (68.7)	1	1
Degree	115 (41.8)	160 (58.2)	1.57 (0.89,2.78)	0.70 (0.13,3.86)
Above degree	6 (60.0)	4 (40.0)	3.28 (0.84,12.88)	0.68 (0.16,2.94)
Working experience				
1–5 years	100 (43.7)	129 (56.3)	1	1
6–10 years	37 (35.6)	67 (64.4)	0.71 (0.44,1.15)	2.64 (0.74,9.45)
≥ 11 years	5 (26.3)	14 (73.7)	0.46 (0.16,1.32)	2.08 (0.57,7.58)
Having spouse/partner				
Yes	109 (44.1)	138 (55.9)	1.72 (1.06,2.79)	2.78 (1.14,6.82)**
No	33 (31.4)	72 (68.6)	1	1
Have multiple sexual partners				
Yes	22 (61.1)	14 (38.9)	2.54 (1.25,5.16)	2.76 (1.13,6.78)**
No	120 (38.2)	194 (61.8)	1	1
Heard about HIVST				
Yes	106 (62.4)	64 (37.6)	6.72 (4.16,10.84)	5.05 (2.89,8.81)**
No	36 (19.8)	146 (80.2)	1	1
Ever use of HIV ST				
Yes	43 (61.4)	27 (38.6)	2.94 (1.71,5.05)	2.16 (1.09,4.26)**
No	99 (35.1)	183 (64.9)	1	1
Taking training HIVST				
Yes	15 (53.6)	13 (46.4)	1.79 (0.82,3.88)	1.16 (0.46,2.96)
No	127 (39.2)	197 (60.8)	1	1
Get support on HIVST				
Yes	69 (57.5)	51 (42.5)	2.94 (1.86,4.64)	2.07 (1.21,3.56)**
No	73 (31.5)	159 (68.5)	1	1
Taking alcohol				
Yes	56 (55.4)	45 (44.6)	1	1
No	86 (34.3)	165 (65.7)	0.42 (0.26,0.67)	0.65 (0.25,1.64)

** = significant variables at p-value < 0.05 1 = reference group

behavioral, and accessibility factors. Therefore, our study evaluated healthcare workers' knowledge of and intention to use oral fluid for HIV self-testing (HIVST) and associated factors with their knowledge of and intention to use the test. Assessing these predisposing domains and their corresponding factors has dual implications for healthcare workers: the knowledge and intention to use HIVST for themselves and the knowledge and intention to use HIVST for the clients they serve. Our study focuses on the former perspective, which could also address the latter perspective by increasing the proportion of people who know their own HIV status, enrolling in HIV ART

programs if they are positive, and suppressing viral loads if they are under treatment to achieve the goals of the Joint United Nations Programme on HIV/AIDS [5].

Accordingly, our study revealed that only approximately four in ten healthcare workers had good knowledge scores on HIVST. Although some healthcare workers may have previous experiences from working in ART units or other related programs in their professional lives, the vast majority of healthcare workers may not have specific access to information about HIVST. This finding implies the need to develop effective HIVST training for healthcare workers. Our findings

Table 5 Factors associated with the intention to use HIVST among health care workers in public hospitals in the Hadiya Zone, southern Ethiopia, 2022 (N = 352)

Variables	Intention to use HIVST		COR (95%CI)	AOR (95%CI)
	Yes n (%)	No n (%)		
Sex				
Male	122 (65.9)	63 (34.1)	1.29 (0.84,2.00)	1.19 (0.74,1.95)
Female	100 (59.9)	67 (40.1)	1	1
Age in year				
< 25	23 (54.8)	19 (45.2)	1	1
25–29	113 (71.1)	46 (28.9)	2.03 (1.01,4.07)	2.54 (1.18,5.41)*
30–34	55 (56.7)	42 (43.3)	1.08 (0.52,2.24)	1.44 (0.63,3.31)
35–39	23 (59.0)	16 (41.0)	1.18 (0.49,2.86)	1.45 (0.50,4.15)
≥ 40	8 (53.3)	7 (46.7)	0.94 (0.28,3.08)	1.30 (0.36,4.70)
Marital status				
Married	76 (67.9)	36 (32.1)	1	1
Single	146 (60.8)	94 (39.2)	1.36 (0.85,2.18)	1.10 (0.54,2.25)
Having a spouse/partner				
Yes	149 (60.3)	98 (39.7)	0.66 (0.41,1.08)	0.66 (0.33,1.34)
No	73 (69.5)	32 (30.5)	1	1
Perceived high HIVST kit cost				
Yes	35 (72.9)	13 (27.1)	0.59 (0.30,1.16)	0.37 (0.16,0.84)*
No	187 (61.5)	117 (38.5)	1	1
Ever use of HIVST				
Yes	50 (71.4)	20 (28.6)	1.59 (0.90,2.83)	1.92 (1.02,3.64)
No	172 (61.0)	110 (39.0)	1	1
Smoking cigarettes				
Yes	18 (47.4)	20 (52.6)	1	1
No	204 (65.0)	110 (35.0)	2.06 (1.05, 4.06)	1.92 (0.83,4.43)
Knowledge about HIVST				
Good	100 (70.4)	42 (29.6)	1.72 (1.09, 2.70)	1.91 (1.13,3.23)*
Poor	122 (58.1)	88 (41.9)	1	1

* = variables significant at the p-value level < 0.05 1 = reference group

are comparable with those of studies conducted in South Africa and Australia [9, 18].

Our findings proportion were greater than those of a study conducted in Rwanda with male clinic attendees, which reported that 21% of the participants scored good knowledge of HIV self-testing [19]. The variations might be due to contextual differences in the study population, study setting, and sociodemographic characteristics. Our study focused on health professionals who were already more likely to be familiar with the new update of any strategy, whereas other studies were not health professionals. However, the findings of our study were lower than those of studies performed in Lithuania and Italy, where 75% and 55% of the study participants were aware of oral fluid HIVST, respectively [20, 21]. This discrepancy may arise from the fact that Lithuania and Italy are high-income countries with increased healthcare

utilization. Moreover, the study participants from Lithuania and Italy were social media users who might have prior exposure and who could easily access innovative practices. The fact that our research was conducted in Ethiopia, a low-income country, could explain the lack of HIVST promotion, inadequate training on HIVST updates, and limited access to HIVST among healthcare workers in our study.

While a greater proportion of healthcare workers are expected to intend to use HIVST, fewer than a quarter have low scores on the intention to use HIVST. This finding is also lower than the finding from the United Kingdom [21]. This difference could be due to the variation in the availability and accessibility of HIV self-testing kits in the two countries, in which study participants from the UK might obtain HIVST kits easily. Furthermore, differences in income levels, educational levels, and access to

healthcare services can potentially influence the intention to use HIVST.

Moreover, our results were lower than those of a prior Ethiopian study, where 80% of healthcare workers were interested in being tested for conventional HIV by themselves [16], and in Zimbabwe, with 73.1% HIVST acceptability [22]. However, our study is different from the previous Ethiopian study [16], which focused on the intention to use oral fluid for HIV self-testing, whereas the Ethiopian study [16] focused on the intention to use conventional HIV testing. This is because we did not find similar studies that intended to use oral fluid for HIV self-testing for comparison. Similarly, our study population differs from the study population of Zimbabwe [22], which differed in terms of adolescents and adults and differences in the implementation and scaling of these new initiatives.

Our study revealed that being male is significantly associated with having a good level of knowledge of HIVST compared with being female. A systematic review of sub-Saharan Africa indicated that men had higher acceptance of HIVST than women did [11]. This could be due to men engage in more sexual activity than females do; thus, they may search for different options for testing, including HIVST. However, studies from Kenya and Tanzania reported that females were more likely to use the HIVST kit compared to males were [13, 17]. This inconsistency could be due to the small sample size and different study population (medical students) with variations in the inclusion criteria in the study of Tanzania. Moreover, differences in sociodemographic and cultural background and the sample size in the case of the Kenya study contributed to the inconsistency with our findings.

This contradiction needs further study. Compared with their counterparts, participants who had prior experience in the use of oral fluid for HIVST and who received support for the implementation of HIVST had increased knowledge. Studies from Spain and Malawi [23, 24] support our findings. This might be explained by the fact that those who previously used HIVST were more likely to know more about the importance of HIVST compared to those who had no experience with tests that may have feared side effects and were unfamiliar with the HIVST kit.

Having experience with multiple sexual partners is also an important factor in a good level of knowledge about oral fluid HIVST. Compared with those who did not have multiple sexual partners, study participants who had multiple sexual partners were more likely to have good knowledge of HIVST. Our findings are consistent with those of studies conducted in China, the United Kingdom, and Thailand [15, 21, 25]. A possible explanation could be that as participants have more sexual partners,

the risk of becoming infected with the human immunodeficient virus and other sexually transmitted diseases may increase. Therefore, the likelihood of exploring more testing methods would increase because of the risk.

Study participants who had spouses/partners were more likely to have good knowledge of HIVST oral fluid than those who had no spouse. Corroborating these findings, a study from China, the United Kingdom, and Thailand reported that having sexual partners was associated with knowledge of oral fluid HIVST [15, 21, 25]. Our findings revealed that study participants who had heard of oral fluid via HIVST were more likely to have good knowledge than those with lower knowledge levels. This could be because nearly half of the study participants in this study heard about oral fluid HIVST, and participants could trust HIVST rather than HIV testing from health facilities.

Being 25–29 years old was significantly associated with the intention to use HIVST. Being in this age group could increase the likelihood of experiencing sexual behaviors. Therefore, they may seek testing to determine their status due to exposure to sexual activities. Hospital authorities should take note of this and develop expanded HIV testing options targeting healthcare workers to increase their level of knowledge of HIV status. Likewise, good knowledge about oral fluid HIVST was associated with increased intention to use HIVST. Our findings were consistent with those of a Brazilian study [26]. A possible explanation for this is that to have a solid understanding of HIVST, it is important to clarify misconception and fears about HIVST. In addition, the findings indicate that the underlying low level of knowledge of HIVST indirectly contributes to low intention to use it.

The perception of the high cost of an oral fluid HIVST kit has been identified as an obstacle to intention to use, and participants who perceived a high-cost oral fluid HIVST kit were less likely to use oral fluid HIVST. According to Tanzanian studies, two-thirds of participants expressed a willingness to purchase a publicly accessible self-test kit [17]. This suggests that if the perceived fear of the cost of the HIVST kit is resolved, the uptake and intention of HIVST might increase.

Strengths and limitations of the study

To our knowledge, this study is the first to assess health care workers' knowledge of and intentions to use oral fluid for HIVST. This could imply dual purposes for self-testing practices involving the use of HIVST oral fluid and the ability to determine whether individuals can advocate and practice with their clients. Because this was a cross-sectional study, a limitation of this study is that causation was not established. Additionally, the study was a facility-based study in which only healthcare workers

from public hospitals, which do not represent healthcare workers in private hospitals, were included.

In addition, data were collected from HCWs working in the same zonal hospitals within a specific geographical area (the Hadiya zone only); thus, the views of such study participants may not necessarily represent the views of other HCWs in Ethiopia. As the study's participants provided their own information, recall bias and social desirability bias may have had an impact on the findings.

This research provides essential insights for service providers, scholars, decision-makers, and policymakers from the perspective of HCWs. The study also highlights the level of knowledge and intention to use HIVST, which requires more work and collaboration from the health sector and nongovernmental organizations to achieve the 95–95–95% goal by 2030. The knowledge and intention to use HIVST among healthcare workers (HCWs) has practical implications for expanding testing to partners, families, and patients. This is because HCWs typically have larger social networks than the general population does to use opportunities to share new testing modalities for HIV. These implications increase access to HIVST beyond routine health services in hospitals.

Conclusion

The study revealed that healthcare practitioners had a limited understanding of oral fluid HIVST. The lack of HIVST awareness among healthcare professionals calls for the extensive involvement of concerned bodies in the health sector to design strategic efforts aimed at improving health work knowledge on HIVST for the scaling up of HIVST beyond its availability in pharmacies. Male sex, hearing about oral fluid HIVST, receiving support for the implementation of oral fluid HIVST, prior use of oral fluid HIVST, having a spouse/partner, and having multiple sexual partners increased the odds of having good knowledge of HIVST.

Moreover, nearly two-thirds of healthcare workers intended to use HIVST. Factors such as age, knowledge of HIVST, and the perceived cost of the HIVST kit were predictors associated with the intention to use oral fluid during HIVST. HIVST interventionists are adopting HIVST as a complementary HIV testing service, with a special focus on individuals who have multiple sexual partners, are within an active age group, have a spouse, and perceive the cost of the testing kit to be high. These interventionists are networking with nongovernmental organizations to increase the knowledge of healthcare workers. Furthermore, contextualized health discussions and promotions should focus on the availability of kits and the use of research evidence to direct the development of educational materials. Future research should focus on providing a more complete

understanding of HIVST knowledge and intention to use across various demographic and risk categories, with the inclusion of other geographical areas of Ethiopia.

Abbreviations

AOR	Adjusted odds ratio
CI	Confidence interval
HCW	Health care worker
HIVST	HIV self-test
PPS	Probability to proportion size
STI	Sexually transmitted infection
SD	Standard deviation
SRS	Simple random sampling
WUNEMMCSH	Wachamo University Nigist Eleni Mohammed Memorial Comprehensive Specialized Hospital

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12981-024-00642-3>.

Supplementary Material 1.

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Author contributions

DD, HH and YS: conceived, planned the study, wrote the proposal, participated in data collection, supervision, analyzed the data, drafted and revised the paper. MM, ZJ, MA, YH and TB participated in supervision, analyzed the data, drafted and revised the paper edited, commented and approved the proposal, participated in data analysis and revised subsequent draft of the paper. All contributed significantly and gave the final approval for the paper to be published; agreed to be accountable for all impacts of the work.

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Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author based on reasonable request.

Declarations

Ethics approval and consent to participate

The Institutional Review Committee of Hossana College of Health Sciences approved the study with reference numbers (reference no. HoHSC/202/14). Prior to the interview, each study participant and health facility provided written and informed consent. To protect the confidentiality of any information provided by the study participants, the data gathering process was conducted anonymously. The study followed the principles of the Declaration of Helsinki.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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