Willingness to Offer HIV Self-testing Among Health Care Providers From Specialized HIV Care Services in the Northeast of Brazil

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Abstract

Background: The lack of knowledge of the serological status of people living with HIV is still a concern in Brazil. HIV self-testing (HIVST) has proved to have great potential for expanding testing, especially among more vulnerable populations. The large-scale distribution of HIVST by the Brazilian public health system has been ramped up in recent years.

Methods: This study investigates the awareness, acceptability, and factors associated with willingness to offer HIV self-testing (HIVST) among health care providers (HCP) in northeastern Brazil. Cross-sectional study with HCP in 29 specialized care services (SCS) from 21 cities from state of Bahia. The inclusion criterion was that HCP had been working at least six months in the service. Sociodemographic, occupational, and behavioral data were collected using a questionnaire. Descriptive, bivariate and multivariate analysis, estimating the respective adjusted odds ratios (aOR) and 95% confidence intervals (95%CI) by logistic regression, were performed.

Results: The awareness and acceptability of HIVST, and willingness to offer it were 79.8%, 55.2%, and 47.1%, respectively. Few of the professionals reported that the SCS where they worked dispensed HIVST (3.6%), and 13.5% said they had received some kind of information or training on HIVST. Factors associated with willingness to offer HIVST were: HIVST acceptability (aOR = 9.45; 95% CI: 4.53 – 19.71), agreement to use it oneself (aOR = 4.45; 95% CI: 1.62 – 12.24), confidence in offering HIVST to service users (aOR = 5.73; 95% CI: 2.26 – 12.72), and considering the general public eligible for HIVST (aOR = 2.88; 95% CI: 1.25–6.59).

Conclusions: Although HIVST awareness among the HCP was high, its acceptability and their willingness to offer it was moderate. More training in HIVST is needed among HCP in Brazil.

Background

Early HIV detection and treatment are important not only for enhancing the quality of life of people living with HIV/AIDS (PLHIV) [1], but also for reducing transmission [2–4]. Since UNAIDS set its 90-90-90 target in 2014, early HIV detection among PLHIV has become a priority for the signatory nations [5].

One way to help reach the first target could be to introduce new strategies to spread rapid HIV testing, including self-testing [6, 7], especially given that late diagnosis continues to be a significant barrier to achieving this target in Latin America [8]. For example, although Brazil has made some recent progress in its diagnostic coverage, it recorded 89% for the first of the 90-90-90 targets by 2019 [9].

In 2014, Brazil introduced its “test, treat” initiative, which boosted early treatment, with the AIDS detection rate and AIDS mortality rate in 2015 falling by around 60% and 73%, respectively, compared to the 2007–2014 rates [10]. However, there is still a need for testing to be offered to populations at increased risk for HIV and that fall outside the reach of health policies, such as sex workers, drug users, gay men and men who have sex with men (MSM), transgender people, and the prison population and their partners [11].

In this context, HIV self-testing (HIVST) has proved to have great potential for expanding testing, especially among more vulnerable populations, since they tend to be less able to access existing testing services, mainly because of HIV-related stigma and fear of discrimination should the result be positive [12, 13].

The large-scale distribution of HIVST by the Brazilian public health system (in Portuguese: *Sistema Único de Saúde – SUS*), has been ramped up in recent years. HIVST started being provided by SUS in 2018, but only in special cases, such as in Brazilian Ministry of Health (MoH) pilot projects [14]. However, since the onset of the Covid-19 pandemic, these restrictions have been eased and HIVST has started to be made a priority for key populations across the whole of SUS, wherever it is actually available at local health facilities [15]. The MoH regards key populations to be the gay public and other MSM, transgender people, alcohol and other drug users, prison inmates, and sex workers [16].

HIVST has been well received and its acceptability among users is high, especially among people from different subgroups of key populations in different countries [17–19]. The benefits reported by health workers and HIVST users in studies run in low- and middle-income countries from Africa include the safety of the home environment, avoiding discrimination at healthcare facilities, confidentiality, time saved from not having to travel, having to wait less for the result, lower cost, increased coverage via peer-distribution when compared with other testing initiatives, user emancipation, serosorting, adoption of safe sexual practices, and secondary peer distribution [20–22]. Furthermore, users have reported HIVST to be easy to use and its results easy to understand [23, 24].

However, health worker concerns could hamper the distribution of and expanded access to HIVST. These concerns include the potential for users to not use the test or read the result correctly, psychosocial risks arising from a positive result, and the absence of counselling [25, 26]. Overcoming such concerns is key to enabling the greater availability of HIVST via health systems, but to our knowledge no studies have been conducted with health workers in Latin America to understand their conduct and attitudes vis-a-vis HIVST. Accordingly, this study aimed to find out from health workers from specialized HIV/AIDS care services in the state of Bahia, Brazil, how knowledgeable they were about HIVST, what its acceptability was among them, how willing they were to recommend its use, and what factors were associated with their willingness to offer HIVST.

Methods

Study sites, design, and population

A cross-sectional study was conducted with health workers from specialized HIV/AIDS care services in Bahia, Brazil. The inclusion criterion was that they had been working at least six months with the service. Specialized care services (SCS) were selected after a single-stage cluster sampling, by selecting 25 SCS, in the municipalities of Alagoinhas, Barreiras, Bom Jesus da Lapa, Camaçari, Eunápolis, Feira de Santana, Guanambi, Ilhéus, Irecê, Itabuna, Itamaraju, Jequié, Juazeiro, Lauro de Freitas, Paulo Afonso,

Porto Seguro, Salvador (with five services), Senhor do Bonfim, Simões Filho, Teixeira de Freitas, and Vitória da Conquista. All the health workers who were available at the services during the data collection period were invited to take part in the study and selected by convenience sampling. Two hundred and fifty-two health workers at the aforementioned services were recruited from the 490 registered in the National Register of Health Establishments (*Cadastro Nacional de Estabelecimentos de Saúde*) in March 2020, representing 51.4% of the total population.

The project was assessed and approved by the Research Ethics Committee of the Multidisciplinary Health Institute of the Federal University of Bahia (#3,523,832/2019). Signed informed consent was sought and obtained from all the participants.

Data collection and instruments

Data were collected between October 2019 and March 2020. A structured questionnaire was developed for this study and administered using in private rooms by interviewers who had been trained in how to conduct the interview. The questionnaire was piloted in one of the cities.

Study variables

The study's outcome variable was willingness to offer HIVST, which was structured according to the following question on the questionnaire: "Would you offer self-testing for the service users?" (no, yes).

Exposure variables that could explain willingness to offer HIVST were selected on the basis of a literature review. The *sociodemographic* variables were: sex (male, female), age (≤ 35 , 35 to 50, ≥ 50), and education (high school graduate, college graduate, graduate diploma or higher). The *training and occupation* variables were: job (nurse, nursing assistant, physician, etc.), specialized in HIV/AIDS (no, yes), years of training (≤ 5 , 5 to 10, > 10), length of time working at SCS (1 to 7 years, 8 to 13 years, 14 to 40 years), and type of employment contract (temporary, permanent). The *HIVST-related* variables were: prior knowledge of HIVST (no, yes), acceptability of HIVST (no, yes), willing to offer HIVST (no, yes), gives service users information on HIVST (no, yes), sources of information (training, media, coworkers, etc.), reasons for not offering HIVST (suicide risk, self-harm, incorrect use, etc.), prior training in HIVST (no, yes), HIVST is dispensed at the service where they work (no, yes), knows that HIVST is available via SUS (no, yes), knows HIVST is available at pharmacies (no, yes), trusts the HIVST diagnosis (no, yes), would use HIVST him/herself (no, yes), populations they believe HIVST should be distributed to (general public, key populations, etc.), sure about offering HIVST to the service users (unsure, quite sure, sure/very sure), believes HIVST results in risk compensation (no, yes), believes HIVST causes a reduction in high-risk sexual behaviors (no, yes), preferred form of dispensing HIVST (assisted testing, self-testing, as the user wishes), and other resources that should be offered together with HIVST (counselling, prevention materials, etc.).

Data analysis

A descriptive analysis was conducted of the knowledge, acceptability, and willingness to offer HIVST on the part of the health workers, and the supply of HIVST information to service users, as well as the other

study variables, estimating the proportions with 95% confidence interval (95%CI). Next, the potential factors associated with willingness to offer HIVST were investigated using bivariate and multivariate analysis, estimating the respective odds ratios and 95%CI by logistic regression. The variables with $p < 0.20$ in the bivariate analysis, using the chi-squared test, were selected to include in the multivariate analysis. The Hosmer-Lemeshow test ($p > 0.16$) was used to assess the models' goodness of fit, and the ROC curve estimation (0,88) was used to choose the final model and the theoretical relevance of the variables. All data were analyzed using STATA, version 14.0.

Results

Two hundred and fifty-two health workers from SCS were interviewed, 78.2% of whom were female, 18.3% were up to 35 years old, 54.4% were 35–50 years old, and 27.4% were over 50 years old. Most (84.5%) of them had a college degree, around half (51%) had a graduate level diploma, 7.2% had a master's degree, and 2.4% had a doctorate. As for their professions, 25.8% were nurses, 12.3% were pharmacists, 11.9% were nursing assistants, 11.9% were physicians, and 9.5% were social workers. Overall, 23.4% said they had specialized training in HIV/AIDS and over half had trained in the area over ten years previously (74.2%). As for their experience, 78,6% stated they had been working at the SCS less than 14 years, and 66.3% had a permanent employment contract (Table 1).

Table 1

Sociodemographic characteristics, education, occupation, and knowledge and acceptability of HIVST of health workers from specialized HIV/AIDS and STI care services in Bahia, Brazil, 2019–2020.

Variables	n/N	%	IC95%
Sociodemographic			
Sex			
Male	55/252	21.8	17.12–27.39
Female	197/252	78.2	72.60–82.87
Age			
≤ 35 y.o.	46/252	18.3	13.93–23.55
35–50 y.o.	137/252	54.4	48.13–60.45
> 50 y.o.	69/252	27.4	22.19–33.25
Education			
High school graduate	39/251	15.5	11.53–20.60
University graduate	50/251	19.9	15.40–25.36
Graduate diploma	128/251	51	44.78–57.17
Residency	10/251	4	2.14–7.27
Master's	18/251	7.2	4.55–11.12
Doctorate	6/251	2.4	1.07–5.24
Training and Occupation			
Job			
Nurse	65/252	25.8	20.73–31.59
Nursing assistant	30/252	11.9	8.42–16.55
Physician	30/252	11.9	8.42–16.55
Psychologist	15/252	6	3.60–9.66
Pharmacist	31/252	12.3	8.76–16.99
Occupational therapist	2/252	0.8	0.19–3.14
Physiotherapist	2/252	0.8	0.19–3.14
Nutritionist	2/252	0.8	0.19–3.14
Dentist	7/252	2.8	1.32–5.73

Variables	n/N	%	IC95%
Social Worker	24/252	9.5	6.44–13.84
Other	44/252	17.5	13.22–22.69
Specialized in HIV/AIDS			
Yes	59/252	23.4	18.56–29.07
No	193/252	76.6	70.92–81.43
Years of training as a health professional			
≤ 5 years	23/252	9.1	6.12–13.39
5 to 10 years	42/252	16.7	12.53–21.82
> 10 years	187/252	74.2	68.40–79.26
Length of time working at HIV/AIDS specialized care service			
1 to 7 years	124/252	49.2	43.03–55.40
8 to 13 years	75/252	29.8	24.40–35.73
14 to 40 years	53/252	21	16.40–26.54
Type of employment contract			
Temporary	85/252	33.7	28.12–39.83
Permanent	167/252	66.3	60.16–71.87

Figure 1 shows that 79.8% (95%CI: 74.30–84.30) of the professionals said they had prior knowledge of HIVST, 55.2% (95%CI: 48.92–61.23) agreed with dispensing HIVST at the SCS where they worked, 47.1% (95%CI: 40.90–53.45) said they were willing to offer HIVST, and 17.1% (95%CI: 12.88–22.25) told the service users about HIVST. If we compare the results among the nursing professions, medical professions, and other professions, the values were, respectively, 87.7%, 70.0%, and 78.3% for knowledge ($p = 0.10$), 60.0%, 76.7%, and 49.0% for acceptability ($p = 0.01$), and 45.3%, 59.3%, and 45.7% for willingness to offer HIVST ($p = 0.40$) (Fig. 2).

The main sources of prior knowledge were continuing education or training at the place of work (34.5%) and media (TV, radio, etc.) (28.4%). The reasons for not offering HIVST were: suicide risk in case of a positive result (75.4%), failure to use the test or read the result correctly (68.4%), self-harm or harm to others after getting a positive result (61.5%), need for post-test counselling, even in the case of a negative test (55%), not knowing where to get help in the case of a positive test (50.4%), high risk of test results being found out (30.5%), and being forced to do a test before sex and show the result (25.2%) (Table 2).

Table 2

Sources of information and reasons for not offering HIVST among health workers from health care services specialized in HIV/AIDS and other STIs in Bahia, Brazil, 2019–2020.

Variables	n/N	%	IC95%
Source of information on HIVST			
In-house training	68/197	34.5	28.15–41.48
Media (TV, radio, other)	56/197	28.4	22.51–35.18
Internet or social media	26/197	13.2	9.11–18.73
Coworkers	23/197	11.7	7.84–17.01
Other	24/197	12.2	8.27–17.58
Reasons for not offering HIVST			
Suicide risk in case of positive result	101/129	75.4	67.27–82.00
Risk of self-harm or harm to others in case of positive result	80/129	61.5	52.79–69.59
Failure to use the test or read the result correctly	91/129	68.4	59.93–75.83
Not knowing where to get care in case of a positive result	66/129	50.4	41.78–58.95
High risk of test result being found out	40/129	30.5	23.17–39.04
Being forced to do a test before sex and show the result	33/129	25.2	18.41–33.43
Post-testing counselling is indispensable, even when the test result is negative	71/129	55	46.27–63.50
Other	21/129	16.3	10.79–23.79
General aspects of HIVST			
Service where he/she works dispenses HIVST			
Yes	9/252	3.6	1.86–6.74
No	243/252	96.4	93.25–98.13

Variables	n/N	%	IC95%
Received training on HIVST			
Yes	34/252	13.5	9.77–18.32
No	218/252	86.5	81.67–90.22
Knows that HIVST is available via SUS			
Yes	58/252	23	18.20–28.65
No	194/252	77	71.34–81.79
Knows that HIVST is available at pharmacies			
Yes	156/252	61.9	55.71–67.73
No	96/252	38.1	32.26–44.28
Trusts the HIVST diagnosis			
Yes	140/252	55.6	49.32–61.61
No	112/252	44.4	38.38–50.67
Would use HIVST him/herself			
Yes	184/244	75.4	69.57–80.44
No	60/244	24.6	19.55–30.42
Confidence in offering HIVST to service users			
Unconfident	96/252	38.1	32.26–44.28
Quite confident	72/252	28.6	23.29–34.49
Confident / very confident	84/252	33.3	27.75–39.42
Believes HIVST causes risk compensation			
Yes	108/252	42.9	36.84–49.08

Variables	n/N	%	IC95%
No	144/252	57.1	50.91–63.15
Believes that access to HIVST reduces high-risk sexual behavior			
Yes	70/252	28.7	23.32–34.72
No	174/252	71.3	65.27–76.67
Preferred means of dispensing HIVST			
Assisted testing at health facility	143/252	56.8	50.51–62.77
Self-testing at venue chosen by user	90/252	35.7	30.00–41.86
As the user wishes	19/252	7.5	4.84–11.54
Populations to whom HIVST should be distributed			
Just the general public	144/252	57.1	50.91–63.15
Just key populations	40/252	15.9	11.83–20.95
Both the general public and key populations	68/252	27.0	21.83–32.84
Other resources that should be provided together with HIVST			
Counselling with a focus on HIV/STIs	172/207	83.1	77.30–87.63
Prevention materials	129/206	62.6	55.75–69.01
Linkage to other strategies	107/203	52.7	45.77–59.54
As the user wishes	50/202	24.8	19.24–31.22
Just registration information	21/199	10.6	6.95–15.69

Few of the professionals reported that the SCS where they worked dispensed HIVST (3.6%), and 13.5% said they had received some kind of information or training on HIVST. Just 23% of the professionals were aware that HIVST was available via SUS, but 61.9% knew it could be purchased at a pharmacy. Just over

half (55.6%) of the respondents expressed confidence in the diagnosis given by the HIVST, and 75.4% would use it themselves. As for how confident they felt about offering HIVST, 38.1% said they felt unconfident, 28.6% felt quite confident, and 33.3% felt unconfident or very unconfident. Almost half (42.9%) believed that HIVST could result in risk compensation, while 28.7% said they believed access to it could reduce high-risk sexual behaviors. Over half (56.8%) felt that assisted testing at the health facility was the best option (Table 2).

As for the populations eligible for receiving HIVST, 51.1% of the respondents answered that it should be available to the general public, 15.9% felt it should only be made available to key populations, and 27.0% felt that both groups should receive it. As for the other resources or materials that should be used or dispensed together with HIVST, these were: counselling, with a focus on HIV/STIs (83.1%), prevention materials (62.6%), linkage to other services, like PEP and PrEP (52.7%), whatever the user wishes (24.8%), and just registration information (10.6%) (Table 2).

In the bivariate analysis, the factors found to associate positively with willingness to offer HIVST were: acceptability of HIVST (OR = 17.2; 95%CI: 8.9–33.5), knowing that HIVST is available via SUS (OR = 2.3; 95%CI: 1.3–4.3), confidence in the HIVST diagnosis (OR = 4.1; 95%CI: 2.4–7.2), notifying service users about HIVST (OR = 6.6; 95%CI: 2.9–15), willingness to use HIVST oneself (OR = 10.7; 95%CI: 4.6–24.9), confidence in offering HIVST to service users (confident or very confident; OR = 12.8; 95%CI: 6.2–6.2), believing access to HIVST diminishes high-risk sexual behavior (OR = 2.4; 95%CI: 1.4–4.3), working at a service where HIVST is dispensed (OR = 9.5; 95%CI: 1.2–77.7), preferring the test to be used wherever the user prefers (OR = 2.8; 95%CI: 1.6–4.9), believing HIVST should be dispensed to the public in general rather than all populations (OR = 5.3; 95%CI: 2.8–10.4), and believing that HIVST should be dispensed to the general public rather than key populations (OR = 2.59; 95%CI: 1.21–5.53). As for the resources that should be dispensed together with HIVST, a positive association was found with whatever materials the user prefers (OR = 3.5; 95%CI: 1.71–7.2) (Table 3).

Table 3

Bivariate analysis of willingness to offer HIVST and sociodemographic characteristics, training, occupation, and general aspects related to HIVST among health workers at health care centers specialized in HIV/AIDS and other STIs in Bahia, Brazil, 2019–2020.

Variables	Willingness to offer HIVST		OR	95%CI	p-value
	No	Yes			
Sociodemographic					
Sex					0.27
Male	46.2	53.9	1		
Female	54.7	45.3	0.71	0.38–1.31	
Age					0.91
≤ 35 y.o.	51.2	48.8	1		
35–50 y.o.	54.1	45.9	0.88	0.44–1.76	
> 50 y.o.	51.5	48.5	0.98	0.46–2.12	
Education					0.75
High school graduate	55.3	44.7	1		
University graduate	44.0	56.0	1.57	0.67–3.67	
Graduate diploma	55.1	44.9	1.00	0.49–2.05	
Training and Occupation					
Specialized in HIV/AIDS					0.16
No	55.3	44.7	1		
Yes	44.6	55.4	1.53	0.84–2.79	
Years of training					0.10
≤ 5 years	36.4	63.6	1		
> 5 years	54.5	45.5	0.47	0.19–1.18	
Length of time working at specialized care service					0.27

Variables	Willingness to offer HIVST		OR	95%CI	p-value
	No	Yes			
1 to 14 years	51	49	1		
Over 14 years	59.6	40.4	0.70	0.37–1.31	
Type of employment contract					0.15
Temporary	46.3	53.7	1		
Permanent	56.2	43.8	0.67	0.39–1.14	
Knowledge of HIVST					0.71
No	55.3	44.7	1		
Yes	52.3	47.7	1.12	0.59–2.14	
Acceptability of HIVST					< 0.001
No	86.1	13.9	1		
Yes	26.5	73.5	17.22	8.85–33.49	
General aspects of HIVST					
HIVST dispensed at service					0.01
No	54.5	45.5	1		
Yes	11.1	88.9	9.57	1.17–77.73	
Received training on HIVST					0.06
No	55.2	44.8	1		
Yes	38.2	61.8	1.99	0.94–4.19	
Knows that HIVST is available via SUS					< 0.01
No	57.8	42.2	1		
Yes	36.8	63.2	2.34	1.27–4.31	
Knows that HIVST is available at pharmacies					0.34

Variables	Willingness to offer HIVST		OR	95%CI	p-value
	No	Yes			
No	48.9	51.1	1		
Yes	55.2	44.8	0.77	0.46–1.30	
Trusts the HIVST diagnosis					< 0.001
No	72	28	1		
Yes	38	62	4.19	2.43–7.23	
Provides service users with information about HIVST					< 0.001
No	60.2	39.8	1		
Yes	18.6	81.4	6.61	2.91–14.99	
Would use HIVST him/herself					< 0.001
No	88.3	11.7	1		
Yes	41.3	58.7	10.75	4.64–24.94	
Confidence in offering HIVST to service users					< 0.001
Unconfident	80.2	19.8	1		
Quite confident	51.4	48.6	3.83	1.90–7.78	
Confident / very confident	24.1	75.9	12.87	6.21–6.25	
Believes HIVST causes risk compensation					< 0.001
No	39.7	60.3	1		
Yes	70.9	29.1	0.27	0.15–0.46	
Believes that access to HIVST reduces high-risk sexual behavior					< 0.01
No	59.2	40.8	1		

Variables	Willingness to offer HIVST		OR	95%CI	p-value
	No	Yes			
Yes	37.1	62.9	2.45	1.38–4.34	
Preferred means of dispensing HIVST					0.001
Assisted testing at health facility	62.6	37.4	1		
Self-testing at venue chosen by user	37.1	62.9	2.83	1.63–4.92	
As the user wishes	56.3	43.8	1.30	0.45–3.70	
Populations to whom HIVST should be distributed					0.03
Just the general public	46.4	53.6	1		
Just key populations	69.2	30.8	0.38	0.18–0.82	
Both the general public and key populations	56.9	43.1	0.65	0.36–1.18	
Resources that should be provided together with HIVST					
Counselling					0.08
No	37.1	62.9	1		
Yes	53.1	47	0.52	0.24–1.10	
Prevention materials					0.84
No	49.4	50.7	1		
Yes	50.8	49.2	0.94	0.53–1.66	
Other strategies (PEP, PrEP, etc.)					0.06
No	57.3	42.7	1		
Yes	43.7	56.3	1.70	0.96–3.03	
Just registration information					< 0.01
No	53.9	46.1	1		

Variables	Willingness to offer HIVST		OR	95%CI	p-value
	No	Yes			
Yes	19.1	80.9	4.97	1.60-15.37	

In the multivariate analysis, a positive association was found between willingness to offer HIVST and the following factors: acceptability (aOR = 9.45; 95%CI: 4.53–19.71); willingness to use HIVST oneself (aOR = 4.45; 95%CI: 1.62–12.24); being quite confident about offering HIVST (aOR = 3.09; 95%CI: 1.30–7.31) and being confident or very confident about offering it (aOR = 5.73; 95%CI: 2.26–12.72), compared with not being confident about offering it; and considering the general public the right target population for dispensing HIVST (aOR = 2.88; 95%CI: 1.25–6.59) (Table 4).

Table 4
Multivariate analysis of factors associated with willingness to offer HIVST among health workers from a health care service specialized in HIV/AIDS and other STIs in Bahia, Brazil, 2019–2020.

Variables	OR	95%CI	p-value
Acceptability of HIVST			
No	1		< 0.001
Yes	9.45	4.53–19.71	
General aspects of HIVST			
Would use HIVST him/herself			
No	1		< 0.01
Yes	4.45	1.62–12.24	
Confidence in offering HIVST to service users			
Unconfident	1		
Quite confident	3.09	1.30–7.31	0.01
Confident /very confident	5.73	2.26–12.72	< 0.001
Populations to whom HIVST should be distributed			
General public			
No	1		0.01
Yes	2.88	1.25–6.59	

Discussion

This is the first study to have been undertaken with health workers from SCS in northeastern Brazil about their knowledge, acceptability, and willingness to offer HIVST. Although most of the participants enrolled for the study reported knowing about HIVST (79.8%), the levels of acceptability (55.2%) and willingness to offer it (47.1%) were moderate.

In a systematic review among key populations, eight of the fourteen studies found high acceptability ($\geq 67\%$), five found moderate acceptability (34–66%), and one found low acceptability ($\leq 33\%$) of HIVST [17]. In our study, we found the acceptability of HIVST among the health workers to be moderate, which differs from the reports of high acceptability found in systematic reviews of specific populations and age groups in different parts of the world [17, 21, 27]. Also in Brazil, a study carried out in 2016 with MSM in 12 cities found a similar level of acceptability of HIVST (47.3%), which was even lower among the MSM who had never done an HIV test (42.7%) [28]. Although this study did not involve health workers, the coincidence of the levels may be indicative of the incipient nature of self-testing in the country.

In our study, assisted testing at the health facility was the preferred means of administering HIVST, which could indicate the health workers interviewed could still be operating from the traditional perspective of voluntary counselling and testing (VCT), which assumes users voluntarily seek out services. This approach is different from provider-initiated counselling and testing (PITC), which is marked by the routine proactive offer of testing by health providers at all consultations. Both assume a particular posture on the part of the health worker in presenting the user the opportunity to get an HIV test [29, 30]. Considering the Brazilian MoH current proposal to expand HIV testing using HIVST and promote user autonomy, the traditional approach of VCT could constitute an obstacle to the test kit's distribution, while approaches more akin to PITC could help generate demand for testing.

In this study, fewer than half of the health workers demonstrated willingness to offer HIVST. The main reasons for this relate to potentially negative mental health outcomes, such as suicide risk, self-harm, and harm to others in response to a positive test result. Studies with key populations such as MSM, transgender people, and sex workers in different countries have found similar misgivings about HIVST use, but to date there is no evidence in the literature that HIV self-testing is associated with such outcomes [31, 32].

As for the practice of counselling, the traditional format still seems to prevail among health workers, since the absence of post-test counselling for negative test results was also considered a reason for not offering HIVST. In a systematic review of qualitative data collected between 1998 and 2018, Njau et al. [32] found a similar concern among health workers and administrators in five African countries. A qualitative study conducted in a STI/AIDS counselling and testing center in Maceió, Brazil, in 2017 found that some health workers felt HIVST could diminish their professional role and could threaten their work, potentially hampering the continuity of care dispensed to users [33]. The data about the lack of availability of counselling suggests both a concern on the part of health workers unwilling to offer HIVST

about users' care, while also reinforcing the space of power occupied by these health workers in the user-professional relationship, leaving little space for lay subjects to express their autonomy.

The denial of HIVST because of lack of counselling could also reduce the capacity to diagnose HIV infection among stigmatized key populations who face multiple barriers to accessing care. Previous experience shows that unconventional testing and counselling formats, such as approaches using online technologies, are related to enhanced HIVST acceptability or an enhanced experience of self-testing by users [34–36]. In a study in 2015–2016 in the Brazilian city of Curitiba, Boni et al. [37] demonstrated the feasibility of internet-based strategies for the free, anonymous provision of HIVST and information on its use. The repeated use of HIVST without the presence of a health worker but with the doors of health services open to users is deemed advantageous for users, because it gives them greater autonomy in choosing what testing method to use, increases confidentiality and privacy, and reduces the chance of their suffering some form of HIV-related stigma or discrimination [38–41].

However, HIVST use should not be turned into a free-for-all. It should be used according to the latest scientific evidence and the legal provisions of SUS, which include access to online post-testing guidance, a toll-free 24-hour telephone hotline for any HIVST registered in Brazil [42], and explicit user support guidelines provided by the MoH, such as confirmation of diagnosis and assurance of linkage to health services [14].

It is important to be aware that social changes should be taken into account and novel ways of providing information and counselling could be needed, which are still a challenge to the widespread introduction of self-testing [32, 43, 44]. Quicker approaches mediated by easy-to-access digital technologies, or options that may not even require real-time user-professional interaction are potential routes forward, provided user access is enabled in such a way as to prevent the risk of excluding precisely those key populations among whom the epidemic is disproportionately high [40, 45].

Prior knowledge of HIVST on the part of health workers was not associated to increased willingness to offer it, which could suggest that such willingness may be influenced by other concerns vis-a-vis this testing option. Conversely, indicators that suggest greater familiarity with HIVST, such as working at a service where HIVST is already on offer, having received training in HIVST, and knowing about its distribution by SUS seem to be important in increasing the willingness to offer it, indicating the need for a broader repertoire of awareness-raising options.

Our study also found that willingness to offer HIVST was strongly associated with acceptability of HIVST. In a systematic review, Sekhon et al. [46] propose a definition of acceptability that involves a subjective evaluation of a health intervention by both the individual who delivers the intervention and the individual who experiences it. These aspects are based not only on prior knowledge, but also on prior practical experience of the intervention. As such, the level of specific training in a new health technology could be a critical factor influencing its uptake [47, 48]. It is therefore important for continuing education and training to be provided on HIVST at SCS.

In our study, the health workers who reported they would use HIVST themselves were four times more likely to offer it than those who said they would not use it. This could be a good indicator of confidence in the test and its use. Multi-center studies in Kenya in 2009 and 2010 [49] and in Ethiopia in 2012 [50] with health workers found HIVST training and experience using HIVST, respectively, to be associated with willingness to offer it.

Willingness to offer HIVST was also higher among those who felt very or quite confident about offering HIVST than those who did not feel confident about doing so. Around 68% of the health workers reported the potential failure of users to use the test or read the result correctly as a reason for not offering HIVST, which shows their concern at having laypersons perform a medical test. The same concerns have also been reported elsewhere [24, 51, 52]. Although errors in conducting the finger-prick test are among the concerns relating to HIVST [53], recent tests indicate that users and health workers may have the same performance when doing this kind of HIVST [54], and that the finger-prick test is more precise than a saliva test, insofar as it involves analyzing a blood sample [45].

Being confident about HIVST could be impacted not just by the capacity of the test to give a reliable result, but also by concerns about the healthcare service being able to provide support for users who have a positive test result. For example, in a systematic review of factors that help and hamper the diffusion of HIVST, Musheke et al.[55] identified studies showing that lack of trust in health systems could be a barrier to HIV testing and treatment.

Additionally, our study results indicate that willingness to offer HIVST is higher among health workers who agree that the general public should be eligible to receive the test. This indicates that although the vulnerability of certain social groups and the importance of their having access to HIVST is recognized, the test could be well accepted among professionals for large-scale distribution in a comprehensive health system like the Brazilian one. However, the MoH [15] guidelines have focused on the provision of HIVST through strategies geared towards people using PrEP, people whose sexual partner is living with HIV, and key and priority populations for the HIV epidemic in Brazil [14].

The limitations of this study include its sampling process, which was not completely probabilistic, and the fact that willingness to offer HIVST was analyzed by health workers from SCS that both dispensed and did not dispense HIVST. As the outcome variable has to do with future willingness, those professionals who worked at services where HIVST was dispensed could have a higher proportion for this outcome. To overcome these limitations, the municipalities with SCS were put in a draw, considering the nine health districts in the state of Bahia, and just one of the centers at which HIVST was on offer was included in the study.

Conclusions

This study found a high proportion of prior knowledge of HIVST, but only a moderate proportion of acceptability and willingness to offer it. Furthermore, some information gaps about HIVST were identified, expressed as reasons for not offering it, which drew on distorted beliefs about what it is, including suicide

risk, self-harm, or harm to others after using it, and the idea that HIVST use could be related to high-risk sexual behaviors. There was also some lack of confidence in the capacity of the health system to provide treatment for PLHIV and a tendency to perpetuate health practices that reinforce the power of the professional and limit individuals' autonomy in their choice of testing.

The large-scale implementation and distribution of HIVST, as is intended for Brazil, will depend on investment in the training of the health workers who interact directly with the public to be benefitted by this strategy. In order to be effective, concerns about this testing strategy will have to be challenged. Qualitative studies could help develop a more in-depth understanding of the conceptions of professionals about HIVST and serve as a basis for interventions designed to adapt them in light of proven international experience.

Finally, it is believed that HIVST distribution should be accompanied by structural improvements designed to assure simple, clear information is available about how to use HIVST to ensure it is used correctly and the results are read and interpreted correctly, thereby facilitating access to treatment for PLHIV.

Abbreviations

aOR - adjusted odds ratios

HIVST - HIV self-testing

HCP - health care providers

SCS - specialized care services

95%CI - 95% confidence intervals

PLHIV - people living with HIV/AIDS

SUS - Brazilian public health system

MoH - Brazilian Ministry of Health

VCT - voluntary counselling and testing

PITC - provider-initiated counselling and testing

Declarations

Ethics approval and consent to participate

The project was assessed and approved by The Research Ethics Committee of the Multidisciplinary Health Institute of the Federal University of Bahia (#3,523,832/2019). Signed informed consent was sought and obtained from all the participants.

Consent for publication

“Not applicable”

Availability of data and materials

The data that support the findings of this study is available in “dataverse.harvard.edu”:
<https://dataverse.harvard.edu/privateurl.xhtml?token=bb9c73db-6801-41c1-965c-eb9621ce2daa>

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

Conceptualization: TJ, LM; Formal analysis: TJ, LM; Funding acquisition: AMS, LM, NMBLP; Investigation: LM, TJ, PAS, AMS, MP, NMBLP, TARR performed the research; Methodology: LM, TJ, CC; Writing – original draft: LM, TJ; Writing – review & editing: TJ, LM MP, TARR, PAS, MAF, NMBLP, AMS, CC, ID. All authors have read and approved the manuscript.

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Figures

Figure 1

Knowledge, acceptability, willingness to offer and supply information on HIVST for service users on the part of health workers at specialized HIV care services in Bahia, Brazil, 2019–2020.

Figure 2

Knowledge, acceptability, willingness to offer and supply of information on HIVST for service users on the part of health workers at specialized HIV care services per professional category, Bahia, Brazil, 2019–2020.

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