Acceptability of teleconsultation in a public service specialized in the prevention and care of HIV infection and other sexually transmitted infections

Aceitabilidade da teleconsulta em um serviço público especializado na prevenção e cuidado da infecção pelo HIV e outras infecções sexualmente transmissíveis

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ABSTRACT

Introduction: Telemedicine was leveraged for its contribution to mitigate the impact of COVID-19 in Brazil and worldwide. **Objective:** We aim to evaluate the acceptability of incorporating teleconsultation through synchronized videoconference by users and professionals in a service specialized in the prevention and treatment of the human immunodeficiency virus and other sexually transmitted infections, and to identify associated factors. **Methods:** This is a cross-sectional study with 410 users and 57 professionals who answered a category-standardized questionnaire. Predictors of acceptability were assessed using logistic regression model. **Results:** A total of 364 (88.8%) users said they would accept the modality. The factors positively associated with the odds of acceptance were the self-assessment of having favorable conditions to participate in a teleconsultation (aOR 54.8; 95%CI 12.4–242.1; p<0.001), the perception of saving money (aOR 5.2; 95%CI 1.9–14.0; p=0.001), and perceived convenience of the modality (aOR 6.7; 95%CI 2.9–15.9; p<0.001). Factors associated with reduced odds of acceptance were the fear of not being evaluated well (aOR 0.2; 95%CI 0.1–0.4; p<0.001), or remaining long without seeing the professional (aOR 0.2; 95%CI 0.1–0.5; p<0.001). The acceptance of the modality among professionals was 75.4% and the perception of its convenience (aOR 16.8; 95%CI 2.6–108.4; p=0.003) and that the institution has appropriated conditions (aOR 7.7; 95%CI 1.5–40.6; p=0.016) were associated with increased odds of accepting its incorporation in their routine. **Conclusion**: Governance should invest in infrastructure and support, secure protocols, digital literacy, and training of its users and employees for video teleconsultation.

Keywords: Telehealth. Telemedicine. Synchronous teleconsultation. Remote consultation. Patient acceptance of health care. HIV. Sexually transmitted diseases.

RESUMO

Introdução: A telemedicina foi alavancada por sua contribuição para mitigar o impacto da COVID-19 no Brasil e no mundo. **Objetivo:** Pretendemos avaliar a aceitabilidade da incorporação da teleconsulta por videoconferência síncrona por usuários e profissionais de um serviço especializado na prevenção e tratamento da infecção pelo vírus da imunodeficiência humana (HIV) e outras infecções sexualmente transmissíveis, bem como identificar fatores associados. **Métodos:** Estudo transversal com 410 usuários e 57 profissionais, que responderam a um questionário padronizado por categoria. Os preditores de aceitabilidade foram avaliados utilizando-se um modelo de regressão logística. **Resultados:** O total de 364 (88,8%) usuários disseram que aceitariam a modalidade. Os fatores positivamente associados à probabilidade de aceitação foram a autoavaliação quanto a ter condições favoráveis para participar de uma teleconsulta (razão de chances ajustada — aOR 54,8; intervalo de confiança de 95% — IC95% 12,4–242,1; p<0,001), a percepção de poupar dinheiro (aOR 5,2; IC95% 1,9–14,0; p=0,001) e a percepção de conveniência da modalidade (aOR 6,7; IC95% 2,9–15,9; p<0,001). As menores probabilidades de aceitação foram o medo de não ser bem avaliado (aOR 0,2; IC95% 0,1–0,4; p<0,001) e de permanecer muito tempo sem ver o profissional (aOR 0,2; IC95% 0,1–0,5; p<0,001). A aceitação da modalidade pelos profissionais foi de 75,4% e a percepção de sua conveniência (aOR 16,8; IC95% 2,6–108,4; p=0,003) e a de que a instituição possui condições favoráveis (aOR 7,7; IC95% 1,5–40,6; p=0,016) foram associadas com a maior probabilidade de aceitar a incorporação da modalidade em sua rotina. **Conclusão:** A governança deve investir em infraestrutura e apoio, protocolos seguros, literacia digital e treinamento de seus usuários e funcionários para a videoconsulta.

Palavras-chave: Telessaúde. Telemedicina. Teleconsulta síncrona. Consulta remota. Aceitação pelo paciente de cuidados de saúde. HIV. Infecções sexualmente transmissíveis.

INTRODUCTION

The possibility of offering remote services mitigated the impact of the COVID-19 pandemic on the population's health, leveraging telehealth in Brazil[1] and in other countries worldwide[2]. The World Health Organization defines telehealth as "the provision of health services at a distance with communication conducted between healthcare providers seeking clinical guidance and support from other healthcare providers; or conducted between remote healthcare users seeking health services and healthcare providers"[3]. Teleconsultation by synchronous videoconferencing (TSV) between professionals and patients is one of the telehealth modalities currently facilitated by the wide use of smartphones and other devices with camera and internet access. The Survey on the Use of Information and Communication Technologies in Brazilian Households – ICT Households 2020 revealed that 89% of the population used a cell phone, and 81% had internet access in 2020, in Brazil[4].

The contribution of this modality to health education, engagement in care, and the rationalization of the use of health service

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facilities is notable, but countries faced different levels of challenge in delivering TSV during the pandemic. While some had already established and implemented a national telehealth policy or strategy, and had protocols and recommendations for its adoption, others had to search for a regulatory framework, guidelines, and infrastructure to enable its practice[5].

In Brazil, teleconsultation was provisionally allowed in 2020 due to the COVID-19 pandemic[6], and only in 2022 an ordinance was promulgated to regulate and operationalize definitely the use of telehealth, observing the principles and other force deontological standards[7].

In the state of São Paulo, the specialized services play a fundamental role in controlling the human immunodeficiency virus / acquired immunodeficiency syndrome (HIV/AIDS) epidemic, viral hepatitis and other sexually transmitted infections (STIs). A wide diversity of clinical profiles is currently observed in these services. Young, asymptomatic, regular in follow-up, and adherent to medications people coexist with impaired patients. Such differences and complexities are not always absorbed by protocols and routines of care, so that people with opposing needs and expectations more often compete for the same space on agendas and use the same model for their monitoring.

Although TSV can contribute to realign users' expectations and service offerings, some concerns that challenge the success of its implementation emerge: professionals and users' acceptability to this modality, and clinical outcomes that should be minimally equivalent to those achieved by face-to-face practices which provide a close connection with the health service and medication adherence.

OBJECTIVE

The present study is part of a research project which general objective is to systematize the implementation of TSV in a public reference service specialized in prevention and care of HIV/AIDS, viral hepatitis and other STIs in the city of São Paulo, and focuses on the evaluation of acceptability of incorporating TSV by professionals and users as an alternative method for fulfilling their outpatient routine.

METHODS

Study design

This is a cross-sectional study to assess the acceptability of TSV implementation by users and professionals as an alternative modality for outpatient care, and associated factors. It was written following the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement for cross-section studies.

Research Setting

The research was conducted in the *Centro de Referência e Treinamento DST/Aids* (CRT-DST/AIDS) – STI/AIDS Reference and Training Center, in São Paulo, Brazil. Its mission is to provide comprehensive care and to test technologies that can be incorporated into public policies for the prevention and treatment of HIV, viral hepatitis, and other STIs, and to offer comprehensive care for the transgender population. The CRT-DST/AIDS has a favorable environment for performing TSV. It has invested in technological infrastructure, and has a work process that regulates the use of TSV according to established criteria and current legislation. Furthermore, it aims at user satisfaction and to guarantee continuous care without iatrogenic events.

Recruitment of participants

The study used a convenience sample recruited from December 2021 to January 2022. We approached users aged 18 years and older enrolled for follow-up in the service who were in the waiting rooms of the CRT-DST/AIDS outpatient clinics and professionals assigned to these clinics, and invited them to participate in the survey by filling out a printed questionnaire, which was the only source of data for the study.

Questionnaire and predictor variables

Contributors were designated by the main researcher to assist users in filling out the questionnaire without interfering with the answers. Professionals themselves filled out a different questionnaire, having the area directors as references for understanding questions if necessary. This differentiation intended to help the users who were less literate to contribute to the research and to avoid that the professionals' answers were determined by the presence of a hierarchically superior person in the institution.

Both questionnaires evaluated the following characteristics:

1. sociodemographic aspects (age, sex/gender, race/skin color, users' educational level, workers' professional category and outpatient services they were linked to);
2. data regarding infrastructure (access to equipment with camera and internet connection);
3. skills to participate in a videoconference;
4. previous experiences and perception as the adequacy of conditions for their participation in a TSV;
5. perception of benefits and concerns regarding the modality;
6. aspects aimed at operationalizing the process of implementing TSV in the service, and
7. the acceptability of TSV into their outpatient routine.

Two perception scores were created regarding TSV. One crude score, which is the result of the sum of the perceived benefits (each one received a positive point), and concerns (each one received a negative point) marked. The other, the qualified score, meaning the reclassification of the crude score according to the predominance of perceptions regarding teleconsultation, being positive (for sum above zero), negative (for sum below zero), or neutral.

The dependent variable acceptability was transformed into binary data and evaluated according to each one of the other attributes of interest, searching for possible associations. We considered that those who claimed they would never or would be unlikely to incorporate this modality in their outpatient routine would not accept TSV. Those who would accept TSV were the ones who reported that they might most likely, or certainly would incorporate it.

Statistical analysis

The study data were collected in writing form and later entered by the main researcher for storage and management using the Research Electronic Data Capture (REDCap) tools hosted at CRT-DST/AIDS. Questionnaires referring to participants who did not meet the inclusion criteria, who did not sign the informed consent form of the study or who did not position themselves regarding the acceptability of the TSV were excluded from the analysis. We also chose to exclude directors of outpatient areas, due to possible conflict of interest regarding the theme.

We calculated simple and relative frequencies of the data collected in the questionnaires to describe the study population. Afterwards, factors associated with positivity for acceptance of teleconsultation were analyzed, using the odds ratio (OR) as a measure of effect. The associated factors were analyzed using the multiple logistic regression model, and all variables with significance level $p<0.15$ were considered eligible for inclusion in the model. At each inclusion of a new variable, the likelihood ratio test was used and if the significance of the new model was greater than 0.05, the variable was excluded.

The level of the users' satisfaction with previous teleconsultation experiences as well the crude and qualified scores were not included in the model, since they are related to multiple factors that on their own could be associated with acceptability. The variables that had the sole objective of helping in the process of implementing teleconsultation were also excluded from the analysis.

Ethical aspects

The project was submitted and approved by the CRT-DST/AIDS Research Ethics Committee (Opinion nº 5.076.035), and all participants included in the analysis signed the study informed consent form.

RESULTS

Users

From a total of 520 users approached, 429 agreed to participate in the survey, and 410 were included in this analysis since they met all the selection criteria for the study. Among them, 364 (88.8%) said they would accept the incorporation of TSV as a modality for their follow-up, while 46 rejected this possibility. The distribution of sociodemographic characteristics and outpatient clinic use is compatible with the profile of the institution. They had a median age of 41 years and were predominantly male (76.1%), cisgender (87.8%), white skin color (54.4%), with a high level of education (60.7%) with 12 years or more of study, and 64.1% were linked to the people living with HIV/AIDS (PLWHA) outpatient clinic (Table 1).

Most of the users (96.5%) reported having favorable conditions to participate in TSV and 85.1% of those who had already participated said they were satisfied or very satisfied with the experience (Table 2). The most commonly cited benefits about TSV were saving time (82%), convenience to follow-up (77.8%), and saving money (52.7%); while the main concerns were problems with infrastructure (35.9%), fear of not being well evaluated (34.6%) or of not meeting the professional for a long time (26.8%) (Table 3).

The attributes that showed statistically significant association with the acceptability of the TSV in the bivariate analysis and the multiple models are presented in Table 4. Self-assessment of having favorable conditions to participate in teleconsultation (aOR 54.8; 95%CI 12.4–242.1; p-value<0.001), perception of saving money (aOR 5.2; 95%CI 1.9–14.0; p=0.001) and that teleconsultation confers convenience to follow-up (aOR 6.7; 95%CI 2.9–15.9; p<0.001) were associated with higher probability of accepting TSV; while the fear of not being well evaluated (aOR 0.2; 95%CI 0.1–0.4; p<0.001) or of not meeting the health professional for a long time (aOR 0.2; 95%CI 0.1–0.5; p<0.001) were associated with reduced probability of accepting the modality incorporation (Table 4).

Professionals

The survey had 60 health professionals who answered the questionnaire. Three were excluded from the sample, leaving 57 to compose the study analysis. Among these, 43 (75.4%) said they accepted the incorporation of TSV. Of the 21 professionals who had already tried the modality, 16 (76.2%) were satisfied with the experience. The median age was 49 years (86.3% aged 40 years or older), and they were mostly female (68.5%), white skin color (75.4%), infectious disease specialists (49.1%), and PLWHA outpatient workers (64.9%). Slightly more than half of the professionals (52.7%) considered themselves sufficient or totally able to conduct a TSV and 45.6% considered the technological infrastructure of the institution adequate to perform it. From the professionals' point of view, the median percentage of patients who would benefit and those who would be able to participate in a TSV was only 30% in both cases. Reducing exposure to coronavirus (71.9%), contributing to clinical follow-up (56.1%) and convenience (52.6%) were the main benefits perceived by professionals; while failing clinical assessment (57.9%) and users avoiding face-to-face routine (40,4%), the main concerns about TSV. The perception of the convenience of the modality (aOR 16.8; 95%CI 2.6–108.4; p=0.003) and that the institution has favorable conditions for its implementation (aOR 7.7; 95%CI 1.5–40.6; p=0.016) were associated with higher probability of acceptance of TSV (Table 4).

The tables regarding the distribution of sociodemographic characteristics, infrastructure and skills, perception of benefits and concerns related to teleconsultation among professionals can be accessed in the supplementary files of the study upon request to the corresponding author.

Qualified and crude acceptability scores

Most users who said they accepted the incorporation of TSV (78.3%) had a positive qualified score, i.e., predominant perception of the benefits of this modality, while 56.5% of those who said they did not accept had a negative qualified score. Among the health professionals, 69.8% of those who said they accepted the TSV had a positive qualified score, and 64.3% of those who said they did not accept it had a negative qualified score. Figure 1 presents the distribution of users and health professionals according to the acceptability of teleconsultation by synchronous teleconferencing.

DISCUSSION

The various literature reviews point to high rates of TSV acceptance, satisfaction with the modality, and recognition of its suitability for health care delivery by both users and health professionals[8-11].

In our study, users were more willing to incorporate TSV in their outpatient routine when compared to professionals (88.8% vs 75.4%), which can be an impediment to the success of the TSV implementation project and cause disagreements and schedule evasions caused by divergent expectations. The greater acceptance of users, when compared to health professionals, was also observed in a study that evaluated PLWHA and their physicians[12]. In this study, 60% of the service users were receptive to participating in teleconsultation while 61% of the physicians were uncomfortable with this possibility, claiming that, besides the lack of economic benefit or reduction in the number of consultations performed, they had concerns about the safety, quality and confidentiality of the data[12]. The context for TSV offered by the institution where our study was conducted replicates the conditions associated with face-to-face care both in terms of remuneration and the need for professionals to work on-site, so the perceived benefits are in fact more related to users. It is also possible that the acceptability of TSV by both groups was compromised by the impossibility of guaranteeing delivery of medications at home as a routine, eliminating the need to go to the service between in-person appointments, an issue already considered relevant in a study on telepharmacy[13].

Table 1. Sociodemographic characteristics of users according to acceptability of teleconsultation by synchronous videoconferencing, from the *Centro de Referência e Treinamento DST/Aids*, 2021–2022.

Attributes	Acceptability				Total (n=410)		p-value
	Yes (n=364)		No (n=46)				
	n	%	n	%	n	%	
Age group (years)							**0.027**
18–39	167	45.9	20	43.5	187	45.6	
40–59	169	46.4	17	37.0	186	45.4	
60 +	28	7.7	9	19.6	37	9.0	
Sex/ Gender*[1]							0.071
Cisgender man	241	66.4	38	82.6	279	68.2	0
Cisgender woman	75	20.7	6	13.0	81	19.8	
Transgender	47	12.9	2	4,3	49	12.0	
Education level*[2] (years)							0.378
Less than 12	135	38.6	20	45.5	155	39.3	
12 or more	215	61.4	24	54.5	239	60.7	
Race/ Skin color*[3] (self-reported)							0.351
Non-White	168	46.4	18	39.1	186	45.6	
White	194	53.6	28	60.9	222	54.4	
Outpatient Clinic							
PLWHA							0.626
No	132	36.3	15	32.6	147	35.9	
Yes	232	63.7	31	67.4	263	64.1	
Other specialties							0.502
No	255	70.1	30	65.2	285	69.5	
Yes	109	29.9	16	34.8	125	30.5	
STI/Testing							0.938
No	291	79.9	37	80.4	328	80.0	
Yes	73	20.1	9	19.6	82	20.0	
PrEP							0.319
No	313	86.0	42	91.3	355	86.6	
Yes	51	14.0	4	8.7	55	13.4	
Transvestite /Transgender							0.479
No	338	92.9	44	95.7	382	93.2	
Yes	26	7.1	2	4.3	28	6.8	
Viral Hepatitis							0.908
No	357	98.1	45	97.8	402	98.0	
Yes	7	1.9	1	2.2	8	2.0	
Clinical trials							
No	357	98.1	46	100.0	403	98.3	0.343
Yes	7	1.9	0	0.0	7	1.7	

PrEP: HIV pre-exposure prophylaxis; PLWHA: people living with HIV/AIDS; HIV/AIDS: human immunodeficiency virus/acquired immunodeficiency syndrome. Comparisons performed using χ^2 tests. Bold indicates statistically significant difference (p<0.05).
*[1]Ignored for 1 user; *[2]Ignored for 16 users; *[3]Ignored for 2 users.

Ethical concerns are frequently cited in literature as barriers to teleconsultation implementation[10,14-16]. They were pointed out by 29.8% of professionals and were not shown to be associated with TSV acceptability by users and professionals in our study, even though the participants mostly belonged to the PLWHA outpatient clinic, a context that requires special attention in this regard. Study conducted in Spain also found no association when evaluating healthcare professionals[9]. The precocity and scarcity of discussions about TSV in our country at the time the study was conducted, and the confidence in the service in relation to ethical issues – given its role in combating discrimination and preserving the secrecy and confidentiality of the diagnosis –, may have interfered with this finding.

A meta-analysis found overall satisfaction with teleconsultation, around 80%[10]. In our study, satisfaction was high among users who had already participated in a TSV (85.1% reported being satisfied or very satisfied), and even higher than the satisfaction cited by health professionals (76.2%). Those findings are similar to a French study that compared PLWHA to their physicians[12]. A study identified very high satisfaction (97%) among American war veterans living with HIV/AIDS or patients with hepatitis C living in rural areas and undergoing teleconsultation with a physician from urban centers in Los Angeles[17]. The very high level of satisfaction found in this study mentioned can be explained by the infrastructure available in rural clinics for patients to perform the TSV, which provides similar conditions of care to face-to-face consultations, and the large amount of time saved by avoiding travel to urban centers for appointments fulfillment.

Our study found no relationship between acceptability and the sociodemographic characteristics inquired. Younger age has been related to a higher probability of using teleconsultation[18,19], and older age has been cited as an obstacle to its implementation, even though older people recognize the potential of remote assistance[19]. Such a phenomenon may be related to lower digital literacy or computer proficiency commonly observed among those over 60 years old[18].

Table 2. Distribution of attributes related to infrastructure, experience and skills of users according to acceptability of teleconsultation by synchronous videoconference, from the *Centro de Referência e Treinamento DST/Aids*, 2021–2022.

	Acceptability				Total (n=410)		p-value
	Yes (n=364)		No (n=46)				
	n	%	n	%	n	%	
Device with camera available							
Notebook							**0.002**
No	157	43.1	31	67.4	188	45.9	
Yes	207	56.9	15	32.6	222	54.1	
Mobile phone							0.629
No	11	3.0	2	4.3	13	3.2	
Yes	353	97.0	44	95.7	397	96.8	
Tablet							0.227
No	308	84.6	42	91.3	350	85.4	
Yes	56	15.4	4	8.7	60	14.6	
Desktop							0.351
No	324	89.0	43	93.5	367	89.5	
Yes	40	11.0	3	6.5	43	10.5	
Private e-mail account[*1]							**0.021**
No	9	2.5	4	8.9	13	3.2	
Yes	354	97.5	41	91.1	395	96.8	
Internet Access							**<0.001**
No	2	0.5	4	8.7	6	1.5	
Yes	362	99.5	42	91.3	404	98.5	
Internet connection quality[*2]							**0.023**
Poor	24	6.7	7	16.7	31	7.8	
Good	332	93.3	35	83.3	367	92.2	
Whatsapp user[3*]							**0.003**
No	6	1.7	4	8.9	10	2.5	
Yes	357	98.3	41	91.1	398	97.5	
Satisfaction with previous TSV							**<0.001**
Not satisfied	6	5.3	7	63.6	13	9.7	
Neutral	5	4.4	2	18.2	7	5.2	
Satisfied	102	90.3	2	18.2	114	85.1	
Conditions for TSV participation (self-reported)[*5]							**<0.001**
Not favorable	5	1.4	9	22.0	14	3.5	
Favorable	354	98.6	32	78.0	386	96.5	

TSV: teleconsultation by synchronous videoconferencing.
Comparisons performed using χ^2 tests. Bold indicates statistically significant difference (p<0.05).
[*1]Ignored for 2 users; [*2]Evaluated among 362 users, ignored for 6 users; [*3]Ignored for 2 users; [*4]Ignored for 8 users; [*5]Ignored for 10 users.

Table 3. Distribution of the perception of benefits and concerns cited by users according to acceptability of teleconsultation by synchronous videoconference, from the *Centro de Referência e Treinamento DST/Aids*, 2021–2022.

	Acceptability				Total (n=410)		p-value
	Yes (n=364)		No (n=46)				
	n	%	n	%	n	%	
Benefits							
Saving time							**<0.001**
No	50	13.7	24	52.2	74	18.0	
Yes	314	86.3	22	47.8	336	82.0	
Saving Money							**<0.001**
No	157	43.1	37	80.4	194	47.3	
Yes	207	56.9	9	19.6	216	52.7	
Convenience							**<0.001**
No	61	16.8	30	65.2	91	22.2	
Yes	303	83.2	16	34.8	319	77.8	
Contributing to the follow-up							**<0.001**
No	219	60.2	38	82.6	257	62.7	
Yes	145	39.8	8	17.4	153	37.3	
Acquiring a new skill							**0.003**
No	288	79.1	44	95.7	332	81.0	
Yes	76	20.9	2	4.3	78	19.0	
Decreasing exposure to coronavirus							**0.007**
No	161	44.2	39	84.8	200	48.8	
Yes	203	55.8	7	15.2	210	51.2	
No benefit recognized							**<0.001**
No	363	99.7	32	69.6	395	96,3	
Yes	1	0.3	14	30.4	15	3,7	
Concerns							
Not knowing how to use the platform							0.974
No	325	89.3	41	89.1	366	89.3	
Yes	39	10.7	5	10.9	44	10.7	
Not being properly evaluated							**<0.001**
No	250	68.7	18	39.1	268	65.4	
Yes	114	31.3	28	60.9	142	34.6	
Not meeting professionals for long time							**0.001**
No	276	75.8	24	52.2	300	73.2	
Yes	88	24.2	22	47.8	110	26.8	
Data security & confidentiality							0.957
No	294	80.8	37	80.4	331	80.7	
Yes	70	19.2	9	19.6	79	19.3	
Not knowing how to benefit from the consultation							0.343
No	312	85.7	37	80.4	349	85.1	
Yes	52	14.3	9	19.6	61	14.9	
Problems with the infrastructure							0.416
No	231	63.5	32	69.6	263	64.1	
Yes	133	36.5	14	30.4	147	35.9	
No concern recognized							
No	262	72.0	45	97.8	307	74.9	**<0.001**
Yes	102	28.0	1	2.2	103	25.1	
Qualified score							
Negative	26	7.1	26	56.5	52	12.7	**<0.001**
Neutral	53	14.6	13	28.3	66	16.1	
Positive	285	78.3	7	15.2	292	71.2	

Comparisons performed using χ^2 tests. Bold indicates statistically significant difference ($p<0.05$).

Table 4. Bivariate and multiple analysis of factors associated with the acceptability of users and professionals to incorporate teleconsultations by synchronous videoconferencing, from the *Centro de Referência e Treinamento DST/Aids*, 2021–2022.

	Acceptability (Yes)		cOR	95%CI	p-value	aOR	95%CI	p-value
	n	%						
Users								
Conditions for TSV								
Unfavorable	5	35.7	1	–	–	1	–	–
Favorable	354	91.7	19.9	6.3–63.0	<0.001	54.8	12.4–242.1	<0.001
Saving Money								
No	207	95.8	1	-	-	1	-	-
Yes	157	80.9	5.4	2.5–11.6	<0.001	5.2	1.9– 14.0	0.001
Convenience								
No	303	95.0	1	–	–	1	–	–
Yes	61	67.0	9.3	4.8–18.1	<0.001	6.7	2.9–15.9	<0.001
Not being properly evaluated								
No	255	93.4	1	–	–	1	–	–
Yes	109	79.6	0.3	0.1–0.5	<0.001	0.2	0.1–0.4	<0.001
Staying without seeing the professional								
No	276	92.0	1	–	–	1	–	–
Yes	88	80.0	0.3	0.2 - 0.6	0.001	0.2	0.1–0.5	<0.001
Professionals								
Judgment of institutional conditions								
Inappropriate	12	54.5	1	–	–	1	–	–
Neither good, nor bad	9	100.0	–	–	–	–	–	–
Appropriate	22	84.6	4.6	1.2–17.8	0.028	7.7	1.5–40.6	0.016
Convenience								
No	15	55.6	1	–	–	1	–	–
Yes	28	93.3	11.2	2.2–56.8	0.004	16.8	2.6–108.4	0.003

TSV: teleconsultation by synchronous videoconferencing; cOR: crude odds ratio; aOR: adjusted odds ratio; 95%CI: 95% confidence interval.

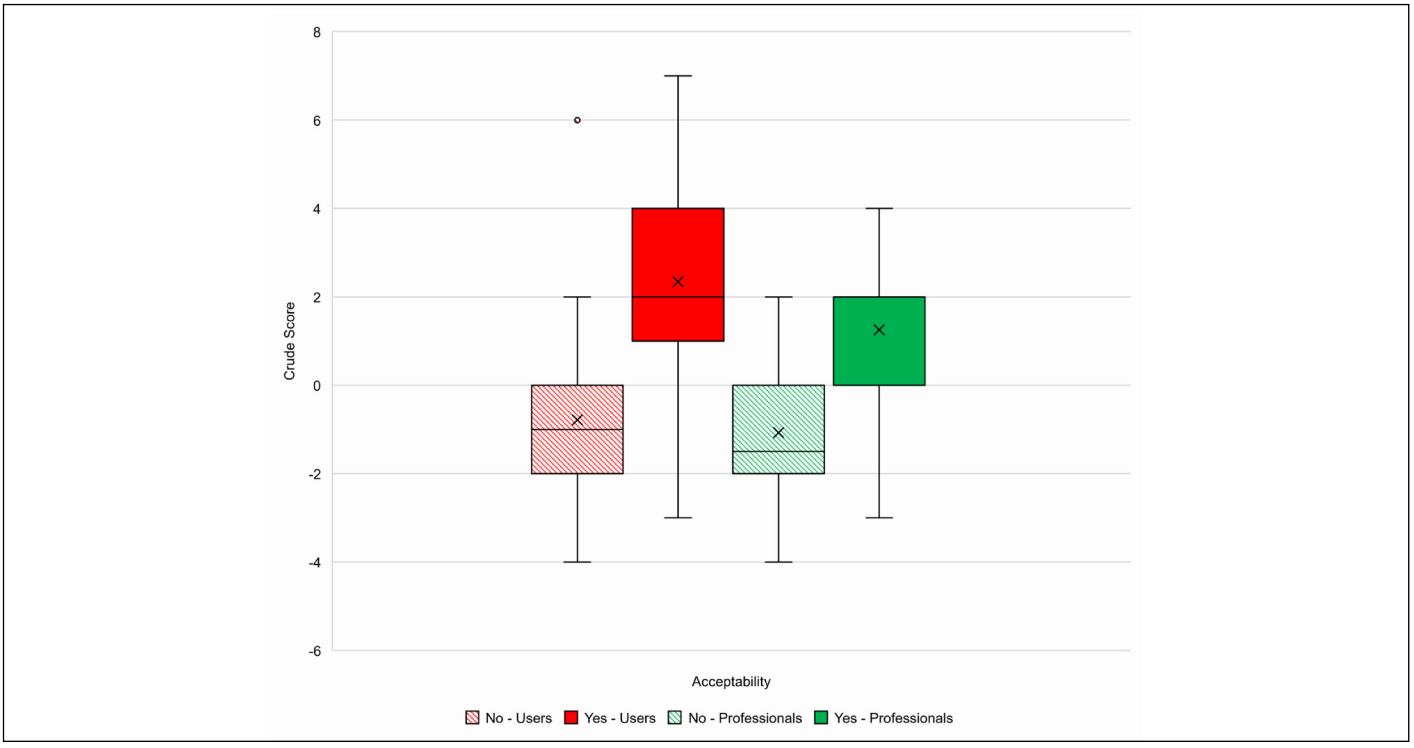

Figure 1. Crude score distribution according to acceptability of teleconsultation by synchronous teleconferencing among users (red) and professionals (green), from the *Centro de Referência e Treinamento DST/Aids*, 2021–2022. Hatched boxes represent people who said they would not accept and solid boxes represent those who would accept the incorporation of Teleconsultation by synchronous videoconferencing in their outpatient routine.

We found no association between age and acceptability, however the median age range of users in our study was almost eight years younger than that of professionals, which may have contributed to the higher overall rates of acceptance and satisfaction with TSV among users. Regarding schooling, a study found high acceptability of teleconsultation among HIV Pre-Exposure Prophylaxis (PrEP) users in Brazil during the COVID-19 pandemic, being higher among people with 12 years or more of education[20], however this study used phone calls for teleconsultation. Clinical aspects that do not exist among PrEP users and were not assessed in our study, such as comorbidities, polypharmacy, longer time of follow-up, and therapeutic rather than preventive treatment, are more likely to be present in the predominant population of our study (PLWHA), and may have interacted with schooling modifying its effect on acceptability.

According to behavioral theoretical models, experiences, perceptions and outcomes should influence the utilization of TSV within health services[21]. Thus, the predominantly positive perceptions should be associated with greater acceptance of this modality compared to predominantly negative perceptions. We chose not to use any aggregate parameters of perceived benefits and concerns in the model, but to assess the relationship of each of the positive and negative perceptions individually with acceptability. However, the findings related to the qualified and crude scores support this theory.

Several factors have been commonly mentioned in literature as aspects that may influence TSV implementation, acceptance, spread, and sustainability. In our study, the perception of saving money led to a five-fold higher probability of TSV acceptance by users. The socioeconomic impact of the COVID-19 pandemic in Brazil[22] and the possibility of reduced transport costs during a TSV, and minor or no impairment to work may have contributed to this finding. In fact, the implementation of routines that incorporate such services is associated with reduced direct and indirect costs for patients[23], and this benefit is pointed out in other studies as well[19]. Such a finding justifies the higher acceptance of teleconsultation among people with social/material deprivation found in other paper[12] and this aspect was the most valued by patients in a study that evaluated TSV in an expanded context of telepharmacy for PLWHA, which included home delivery of medications[13].

The perceived convenience of TSV was associated with almost seven time more likelihood of accepting its incorporation as an alternative to face-to-face outpatient consultation among users and almost seventeen times more likelihood among health professionals in our study. In a review[24], convenience was the main reason reported for choosing a virtual consultation. Users cited, for instance, the possibility of being close to someone in their social support network, the fact of not having to cancel appointments close to where they live and work, sparing the trip to the consultation, and feeling more comfortable in their own environment or exchanging information in a format they feel is more informal[8,13,19].

Saving time, although recognized as a benefit by most users, was not associated with TSV acceptability in our study. This phenomenon can be explained by the easy access to the service through underground public transportation and by the large number of specialized reference services for STI/AIDS in the city where the study was carried out. Besides, the regionalization provided in the organizational principles of the Brazilian public health system allows the follow-up to take place in facilities closer to the user's routine.

Self-efficacy to participate in a teleconsultation depends on the digital literacy and infrastructure available. These factors were not independently associated with users' acceptability in our study but were jointly evaluated in the questioning about their perception of the conditions for participation in a teleconsultation. The probability of acceptance was almost 55 times greater among those who considered them favorable, when compared to those who had the opposite perception. Among professionals, the perception that the conditions of the service were adequate for TSV led to an almost eight times greater probability of adherence to the method. Issues related to technology are frequently cited as barriers or concerns regarding the implementation of TSV by both users and professionals[8,19]. Although the facility has no control over the provision of equipment and internet access for its users, it can invest in friendly platforms as well as in digital literacy for both users and professionals through training and support by experts in the modality, so that they would feel more comfortable for its adoption. In Spain, the study on the perception of professionals towards the implementation of TSV identified that 96.2% considered it as an option for their practice, but 90.6% reported that training and education in the modality were needed[9]. Researches mention the importance of using telehealth platforms integrated with electronic health records[16]. Also, the expansion of access to fast internet can contribute to the increase of teleconsultation in the countries. This issue is especially important due to the potential, already addressed in the literature, of the TSV to unintentionally generate or reinforce inequities[11,16,24,25], which would be negatively impactful, especially in Brazil and other countries where social determinants of health already significantly influence health outcomes.

The fear of not being well evaluated reduced by 80% the probability of acceptance of teleconsultation by users, as well as the fear of not meeting the professional for an extended period of time. Teleconsultation by videoconference was not allowed in Brazil until 2020, and long-term users of the service were used to face-to-face consultations at regular intervals and established a close relationship with the clinical team, fearing detachment and impairment of their health due to failures in the evaluation performed remotely. Although unrelated to the acceptability of TSV, 57.9% of the professionals mentioned fear of failing in the clinical evaluation of users. We understand that once clinical safety criteria for the adoption of teleconsultation in the service are established and disseminated, and users and clinical staff are trained to make the best use of this moment, it is essential to overcome the resistance of both to teleconsultation. It is also important to clarify that this is an alternative modality, not obligatory, and is only complementary to face-to-face appointments.

Strengths

This study gathered information from an expressive sample of users and professionals. In addition, it was conducted at a very appropriate time, when the TSV had been officially authorized in the country, enabling to know its acceptability and general impressions about the modality, which may enhance the management of the implementation process.

Limitations

The main limitation of this study is that it was not performed using a pre-validated questionnaire for the acceptability evaluation, on the contrary, we built a questionnaire based on the compilation of existing information in the literature regarding the acceptability of teleconsultation by users and professionals. We assessed a convenience sample belonging to different outpatient clinics, and the choice for this methodological approach and the data collection tool did not allow us to identify the interference of clinical factors and behavioral aspects specifically related to each of the outpatient clinics on the acceptability of teleconsultation. As a consequence, we may have concealed the need for different approaches in the implementation of teleconsultation in the various areas of the institution. Another issue is that a number of benefits and concerns were previously presented as possibilities in the structured questionnaire and may have impaired the perception of other equally important characteristics. Furthermore, the perceptions of benefits and concerns of people who had never participated in a teleconsultation may not be substantiated, but rather projected, and in this study they were evaluated together with those of people certainly influenced by their experiences in the modality. Finally, the study was conducted in a specialized service that includes users, human resources and infrastructure support that may differ from other services in Brazil and other countries, so the results found cannot necessarily be reproduced in other contexts.

CONCLUSION

The implementation of the TSV in specific settings and conditions aims to increase access and improve the efficiency of the health system, and it must remain focused on the users and, therefore, meet their expectations. Our study assumes that acceptability is important for predicting the success of the TSV implementation process, and that it can be influenced by the understanding of its potential, by the skills for its use, and by the infrastructure. We identified high acceptability of the TSV implementation and common points among users and health professionals associated with the probability of acceptance. The auto-perception of personal conditions of users to participate in a TSV is higher than that of professionals, who have a less optimistic impression regarding the users' capacity and the institution's conditions for teleconsultation. Still, some points must be explored by local governance to offer predominantly positive experiences favoring the implementation and capillarization of the TSV at local level. The adoption of a friendly platform, the establishment and dissemination of TSV recommendation protocols that value the safety of users, the training of users and professionals for the best indication and use of teleconsultation, are some of them. Besides, along with other essential aspects, ensuring security and confidentiality of data, autonomy, clinical safety and compliance with the professional-user relationship must also be considered. In parallel, we believe it is of utmost importance to monitor compliance with the criteria and principles determined for its implementation and to evaluate the impact of teleconsultation on the clinical outcomes of the target population of this modality, which is planned in the second stage of this project.

Approval by the Human Research Ethics Committee

The project was submitted and approved by the *Centro de Referência e Treinamento DST/AIDS* Research Ethics Committee (Opinion nº 5.076.035)

Participation of each author

SQR: Conceptualization, Design, Methodology, Data collection and curation, Formal analysis, Writing – original draft, Writing – review & editing. MVT: Data curation, Software, Formal analysis, Writing – original draft. MF: Formal analysis, Writing – original draft, Writing – review & editing. DLE: Data collection, Formal analysis, Writing – original draft. RSA: Conceptualization, Formal analysis, Writing – review & editing. SBT: Data collection, Formal analysis, Writing – original draft. RSA: Conceptualization, Formal analysis, Writing – review & editing. RCDA: Data collection, Formal analysis, Writing – original draft. RSA: Conceptualization, Formal analysis, Writing – review & editing. RR: Data collection, Formal analysis, Writing – original draft. RSA: Conceptualization, Formal analysis, Writing – review & editing.

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Conflict of interest

The authors declare no conflicts of interest.

REFERENCES

1. Caetano R, Silva AB, Guedes ACCM, Paiva CCN, Ribeiro GR, Santos DL, et al. Desafios e oportunidades para telessaúde em tempos da pandemia pela COVID-19: uma reflexão sobre os espaços e iniciativas no contexto brasileiro. Cad Saúde Pública. 2020;36(5):e00088920. https://doi.org/10.1590/0102-311X00088920
2. Mann DM, Chen J, Chunara R, Testa PA, Nov O. COVID-19 transforms health care through telemedicine: Evidence from the field. J Am Med Inform Assoc. 2020;27(7):1132-5. https://doi.org/10.1093/jamia/ocaa072
3. World Health Organization. WHO guideline: recommendations on digital interventions for health system strengthening. Geneva: World Health Organization; 2019.
4. Comitê Gestor da Internet no Brasil. Pesquisa sobre o uso das tecnologias de informação e comunicação nos domicílios brasileiros. São Paulo: Núcleo de Informação e Coordenação do Ponto BR; 2021.
5. Ohannessian R, Duong TA, Odone A. Global Telemedicine Implementation and Integration Within Health Systems to Fight the COVID-19 Pandemic: A Call to Action. JMIR Public Health Surveill. 2020;6(2):e18810. https://doi.org/10.2196/18810
6. Brasil. Dispõe, em caráter excepcional e temporário, sobre as ações de Telemedicina, com o objetivo de regulamentar e operacionalizar as medidas de enfrentamento da emergência de saúde pública de importância internacional previstas no art. 3º da Lei nº 13.979, de 6 de fevereiro de 2020, decorrente da epidemia de COVID-19 [Internet]. Sect. 56-B, Portaria Nº 467, de 20 de março de 2020. [cited on Aug 22, 2022]. Brasília, DF; 2020. Available from: https://www.in.gov.br/en/web/dou/-/portaria-n-467-de-20-de-marco-de-2020-249312996.
7. Brasil. Dispõe sobre as ações e serviços de Telessaúde no âmbito do Sistema Único de Saúde (SUS) [Internet]. Sect. Edição: 105 Página: 76, Portaria GM/MS Nº 1.348, de 2 de junho de 2022. [cited on Aug 22, 2022]. Brasília, DF; 2022. Available from: https://www.in.gov.br/en/web/dou/-/portaria-gm/ms-n-1.348-de-2-de-junho-de-2022-405224759

8. Almathami HKY, Win KT, Vlahu-Gjorgievska E. Barriers and Facilitators That Influence Telemedicine-Based, Real-Time, Online Consultation at Patients' Homes: Systematic Literature Review. J Med Internet Res. 2020 Feb 20;22(2):e16407. https://doi.org/10.2196/16407
9. Jiménez-Rodríguez D, Santillán García A, Montoro Robles J, Rodríguez Salvador MDM, Muñoz Ronda FJ, Arrogante O. Increase in video consultations during the COVID-19 pandemic: healthcare professionals' perceptions about their implementation and adequate management. Int J Environ Res Public Health. 2020;17(14):5112. https://doi.org/10.3390/ijerph17145112
10. Orlando JF, Beard M, Kumar S. Systematic review of patient and caregivers' satisfaction with telehealth videoconferencing as a mode of service delivery in managing patients' health. PLoS One. 2019;14(8):e0221848. https://doi.org/10.1371/journal.pone.0221848
11. Thiyagarajan A, Grant C, Griffiths F, Atherton H. Exploring patients' and clinicians' experiences of video consultations in primary care: a systematic scoping review. BJGP Open. 2020;4(1):bjgpopen20X101020. https://doi.org/10.3399/bjgpopen20X101020
12. Jacomet C, Linard F, Prouteau J, Lambert C, Ologeanu-Taddei R, Bastiani P, et al. E-health. Patterns of use and perceived benefits and barriers among people living with HIV (PLHIV) and their physicians - Part 3: Telemedicine and collection of computerized personal information. Med Mal Infect. 2020;50(7):590-6. https://doi.org/10.1016/j.medmal.2020.04.009
13. Margusino-Framiñán L, Cid-Silva P, Castro-Iglesias Á, Mena-de-Cea Á, Rodríguez-Osorio I, Pernas-Souto B, et al. Teleconsultation for the Pharmaceutical Care of HIV Outpatients in Receipt of Home Antiretrovirals Delivery: Clinical, Economic, and Patient-Perceived Quality Analysis. Telemed J E Health. 2019;25(5):399-406. https://doi.org/10.1089/tmj.2018.0041
14. Hall JL, McGraw D. For telehealth to succeed, privacy and security risks must be identified and addressed. Health Aff (Millwood). 2014;33(2):216-21. https://doi.org/10.1377/hlthaff.2013.0997
15. Hardcastle L, Ogbogu U. Virtual care: Enhancing access or harming care? Healthc Manage Forum. 2020;33(6):288-92. https://doi.org/10.1177/0840470420938818
16. Salgado S, Felzien G, Brumbeloe J. Georgia Leverages Telehealth to Expand HIV Care Management in Underserved Areas. Am J Prev Med. 2021;61(5 Suppl 1):S55-9. https://doi.org/10.1016/j.amepre.2021.07.001
17. Saifu HN, Asch SM, Goetz MB, Smith JP, Graber CJ, Schaberg D, et al. Evaluation of human immunodeficiency virus and hepatitis C telemedicine clinics. Am J Manag Care. 2012;18(4):207-12. PMID: 22554009
18. Leng S, MacDougall M, McKinstry B. The acceptability to patients of video-consulting in general practice: semi-structured interviews in three diverse general practices. J Innov Health Inform. 2016;23(2):141. https://doi.org/10.14236/jhi.v23i2.141
19. LeBlanc M, Petrie S, Paskaran S, Carson DB, Peters PA. Patient and provider perspectives on eHealth interventions in Canada and Australia: a scoping review. Rural Remote Health. 2020;20(3):5754. https://doi.org/10.22605/RRH5754
20. Hoagland B, Torres TS, Bezerra DRB, Benedetti M, Pimenta C, Veloso VG, et al. High acceptability of PrEP teleconsultation and HIV self-testing among PrEP users during the COVID-19 pandemic in Brazil. Braz J Infect Dis. 2021;25(1):101037. https://doi.org/10.1016/j.bjid.2020.11.002
21. Andersen RM. National health surveys and the behavioral model of health services use. Med Care. 2008;46(7):647-53. https://doi.org/10.1097/MLR.0b013e31817a835d
22. Lima PCGC, Durán PRF. Work, inequalities, and precarization: impacts on Brazil in times of COVID-19 pandemic. 2021;66. https://doi.org/10.4000/interventionseconomiques.14459
23. León A, Cáceres C, Fernández E, Chausa P, Martin M, Codina C, et al. A new multidisciplinary home care telemedicine system to monitor stable chronic human immunodeficiency virus-infected patients: a randomized study. PLoS One. 2011;6(1):e14515. https://doi.org/10.1371/journal.pone.0014515
24. Mold F, Hendy J, Lai YL, de Lusignan S. Electronic consultation in primary care between providers and patients: systematic review. JMIR Med Inform. 2019;7(4):e13042. https://doi.org/10.2196/13042
25. Silva AB, Sindico SRF, Carneiro AC, Henrique SM, Fernandes AG, Gomes JP, et al. COVID-19 remote consultation services and population in health inequity-concentrating territories: a scoping review. Telemed J E Health. 2021;27(8):881-97. https://doi.org/10.1089/tmj.2021.0145

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