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Satisfaction with eHealth in Barcelona HIV clinics: a mixed methods study

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Abstract
Introduction: The COVID-19 pandemic disrupted global healthcare, including HIV care. eHealth emerged as an alternative to traditional in-person care. This study aimed to evaluate eHealth access among people living with HIV in Barcelona, Spain.
Methods: A sequential explanatory mixed methods approach was used. Data were gathered through surveys (n = 82), semi-structured interviews, and a focus group to understand eHealth usage and perceptions.
Results: 65% of survey respondents reported using eHealth services in their HIV unit at least once during the pandemic, while 52% reported never being offered these services, indicating a gap in availability and access. Participants identified convenience and timesaving as the main benefits of eHealth, particularly valuable during movement restrictions. Barriers such as perceived reduction in care quality, especially for those with language difficulties, were noted. While eHealth offers potential benefits, critical areas need addressing to ensure equitable access and high-quality care.
Conclusion: Promoting eHealth services requires targeted improvements and understanding user preferences and needs. Tailoring eHealth solutions to diverse patient populations is crucial for successful implementation. As healthcare evolves post-pandemic, integrating eHealth to complement traditional care and address challenges faced by vulnerable populations, such as those living with HIV, is essential.

Keywords: COVID-19; eHealth; HIV; Mixed methods; Telehealth

Introduction

In 2020, the rapid surge in COVID-19 cases globally prompted governments worldwide to introduce compulsory lockdowns (in Spain from March 14 to June 21, 2020) to restrict population movement, minimize viral transmission, and reduce health system overload (Ballivian et al., 2020). The COVID-19 pandemic had a detrimental effect on global healthcare, as it limited in-person access to health services and postponed non-urgent appointments, resulting in increased health disparities among vulnerable populations, including people living with HIV (PLWH) (Pérez Meliá and Piña, 2021).

PLWH require regular visits and systematic care, which includes conducting laboratory tests to monitor the progression of the infection. Clinical evaluations are also essential to detect complications and assess adherence to antiretroviral therapy (ART), as well as other factors related to quality of life, such as nutrition and emotional wellbeing (Tarín-Vicente et al., 2022). The frequency of follow-up visits depends on the individual's clinical status; they range from monthly to 6-monthly, or even annually in exceptional cases. Due to the partial or complete redeployment of healthcare staff to COVID-19 care, there was a considerable reduction in access to specialized sexual health services, delays in starting or continuing ART, fewer serological examinations, and a lack of access to preventive methods (Barberá, 2021; Soto-Silva, 2022). Consequently, during the COVID-19 pandemic, to reduce the risk of SARS-CoV2 infection, many follow-up visits for PLWH were postponed or cancelled to prioritize the immediate healthcare needs of people with COVID-19. Given the initial challenges in access and utilization of healthcare services, many of these services began to be offered as eHealth.

The World Health Organization defines eHealth as the use of information and communication technologies for health (WHO, 2016), even though there is a lack of clear expert consensus on which to base this definition. The specific challenges faced by PLWH in the use of and access to eHealth, their degree of satisfaction, and the potential social and health effects of these challenges are not well understood. Moreover, eHealth utilization by PLWH has not been evaluated in several countries, and consequently interventions may not meet their

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real needs, potentially affecting their health and overall quality of life. Therefore, this study aimed to assess the satisfaction of PLWH in Barcelona in terms of their access to and use of eHealth services during the COVID-19 pandemic.

Materials and methods

A sequential explanatory mixed methods approach was used, combining both quantitative and qualitative data (Creswell and Plano Clark, 2017). This approach aims to provide a comprehensive, multifaceted understanding of a research problem while maintaining precision and coherence. Stage 1 consisted of a cross-sectional study using an electronic questionnaire to collect quantitative data, while stage 2 used a descriptive qualitative design. Semi-structured interviews and a focus group were performed until information saturation was reached.

For the quantitative stage 1, an electronic questionnaire was designed to collect a comprehensive set of data, including sociodemographic information, clinical details such as date of HIV diagnosis, viral load, treatment adherence, and ART use, as well as insights into healthcare access, healthcare utilization, satisfaction, incidents, challenges, and perceptions of the usefulness of eHealth. The semi-structured interview script used in stage 2 was designed to elicit participants' experiences when accessing and using HIV eHealth services and their perceptions of the advantages and disadvantages of these services. Both the questionnaire and the interview script were carefully designed by a collaborative team composed of nursing faculty from the Autonomous University of Barcelona (UAB), community agents affiliated with the organization Working Group on HIV Treatments [in Spanish: *Grupo Trabajo sobre Tratamientos del VIH* (gTt-VIH)], social workers, physicians, psychologists, advanced HIV nurse practitioners, and PLWH users from gTt-VIH services. A series of face-to-face and virtual meetings were convened to reach consensus and rigorously verify the content and structure of these data collection methods.

PLWH, aged 18 years and older, whether using or not using eHealth services and living in Barcelona were invited to participate. An eHealth user was defined as a person who reported using at least one of the following services: telephone, video call, chat/messaging, email, the 'La Meva Salut' (My Health) app, and apps from the hospital centers. La Meva Salut is a free personal digital health app that allows citizens to access their health information, consult health professionals, and perform procedures in a simple, secure, and confidential manner. Using non-probabilistic and consecutive sampling, the survey was distributed through social media and gTt-VIH community users. In addition, participants were encouraged to send the questionnaire to their personal contacts who met the inclusion criteria. A sample of 95 participants was calculated with a heterogeneity of 50%, a margin of error of 10%, and a confidence level of 95% for an estimated population of 12,000 PLWH in the province of Barcelona (Spain). All survey respondents were invited to participate in the interviews, as well as users of two community facilities specialized in HIV in Barcelona.

Quantitative data were collected from May 2021 to October 2021, and qualitative data were collected from April 2022 to October 2022. Quantitative data were electronically collected using the Surveymonkey® tool; for participants with no access to internet services, hard copies printed on paper were distributed through non-governmental organizations. Upon completion of the data collection, the data were reviewed and cleaned to eliminate potential errors in the responses. If inconsistencies were identified, the responses were considered missing.

For data analysis, sociodemographic and health information was first analyzed using descriptive statistics (frequency tables for categorical variables and use of mean and standard deviation (SD) for quantitative variables). Bivariate statistical techniques were used to assess possible differences between users and non-users of eHealth services. Numerical variables were analyzed with the Student *t*-test or its nonparametric alternative, the Mann–Whitney *U*-test. Categorical variables were analyzed using the chi-square test or its alternative, the Fisher exact test, when the assumptions of the chi-square test were not met. Statistical calculations and graphs were performed using the R Commander 4.0.2 statistical software package (RCore Team, 2021).

In the qualitative stage, qualitative descriptive methods were employed (Kim et al., 2017). This approach is designed to provide a comprehensive summary of phenomena in everyday language, without the necessity for highly abstract rendering or theory development. The primary benefit of this method is that it facilitates the capture of rich, detailed descriptions of participants' experiences and perspectives, allowing researchers to remain in close proximity to the dataset and the surface of words and events. Furthermore, qualitative descriptive research is particularly useful for exploring topics about which little knowledge is available. This makes it an invaluable tool for generating hypotheses and for informing the development of interventions (Doyle et al., 2020).

In the second stage of the study, individual semi-structured interviews were conducted to allow participants to express their thoughts and feelings freely regarding their experiences of using and accessing eHealth services. Additionally, a one-hour focus group session was conducted in October 2022 with the objective of complementing and confirming the data obtained from the individual interviews. Four new participants consented to participate in the focus group, which was moderated by the principal investigator. Participants were selected by a social worker in charge of a government-run residence for homeless people and people at high risk of exclusion. The study was presented to all residents, and only four agreed to participate. Oral and written information was provided before the focus group commenced, and all participants were given the opportunity to ask questions before signing written informed consent.

The individual interviews were conducted by two experienced researchers in rooms that ensured privacy and security. Data collection continued until data saturation was reached (Saunders et al., 2018). Discussions were held between the two interviewers to assess the dynamics of the interviews, the quality of the data obtained, and whether there was a need to reformulate the questions. The interviews lasted approximately 45 minutes and were audio-recorded for immediate transcription after their completion. The data were analyzed concurrently by two researchers, JLM and KSM, employing Braun and Clarke's (2012) thematic analysis technique. Direct quotes were incorporated to clarify the results.

Participation in both the questionnaire and the interviews was voluntary, and each participant was free to withdraw from the study at any time. Before the study began, all participants signed an informed consent form with detailed information about the study. No data were collected that could reveal participants' identities; only the research team had access to the participants' personal data. Those interviewed for the qualitative phase received a €25 food voucher. Ethics approval was obtained from the institutional review board of the Universitat Universitat Autònoma de Barcelona (reference CEEAH 5774).

Results

For the quantitative phase, a total of 93 PLWH accessed the questionnaire and 82 completed the survey, yielding a response rate of 88%. Based on the use of eHealth services, 65% (*n* = 53) of the participants had used at least one of the services, while 35% (*n* = 29) had not used any type of service. The sociodemographic and health characteristics of the participants in the quantitative phase are described in Table 1. For the qualitative stage, 16 participants were interviewed (12 individually and 4 in a group). The mean age was 43.8 (SD ± 11.9) years, the mean length of time living with HIV was 16.5 (SD ± 10.1) years, 68% were male, 43.8% were born in Spain, 37.5% had higher education, and 43.8% were working full time. Of the participants in the qualitative phase, 100% were on ART and their viral load was undetectable.

Table 1. Sociodemographic characteristics, health characteristics, and impact of COVID-19 among study participant

	Total		eHealth user		eHealth non-user		*p*-value [a]
	N	% (*n*) / Mean (SD)	*N*	% (*n*) / Mean (SD)	*N*	% (*n*) / Mean (SD)	
Sociodemographic characteristics	82		53		29		
Age (years)		48.8 (12.5)		48.4 (12.2)		49.4 (13.2)	0.835
Gender (women)	81	12.4% (10)	52	15.4% (8)		6.9% (2)	0.318
Birthplace (Spain)		63.4% (52)		64.2% (34)		62.1% (18)	0.852
Years in Spain [b]	29	16.0 (14.4)	19	13.9 (12.2)	10	20.1 (17.9)	0.475
Administrative status (regular) [b]	30	76.7% (23)	19	80.0% (15)	11	72.7% (8)	1.000
Degree in education (university)		53.7% (44)		56.6% (30)		48.3% (14)	0.470
Marital status (single)		39.0% (32)		41.5% (22)		34.5% (10)	0.533
Working situation (worker) [c]		58.5% (48)		62.3% (33)		51.7% (15)	0.354
Monthly income (<1.000€)	81	35.8% (29)		35.9% (19)	28	35.7% (10)	0.990
Health characteristics	82		53		29		
Years since HIV diagnosis	81	15.4 (11.0)		16.1 (10.9)	28	14.0 (11.1)	0.350
Recent diagnosis (since March 2020)		8.5% (7)		9.4% (5)		6.9% (2)	1.000
Viral load (undetectable)		97.6% (80)		98.1% (52)		96.6% (28)	0.661
Antiretroviral therapy		100% (82)		100% (53)		100% (29)	–
Drugs consumption [d]	80	51.3% (41)	51	49.0% (25)		55.2% (16)	0.597
Increase in frequency since COVID-19	41	43.9% (18)	25	32.0% (8)	16	62.5% (10)	0.055
COVID-19 impact	45		40		5		
Physical health		20.0% (9)		17.5% (7)		40.0% (2)	–
Psychological health		46.7% (21)		47.5% (19)		40.0% (2)	–
Social health		33.3% (15)		35.0% (14)		20.0% (1)	–

Notes: SD: standard deviation. [a] *P*-values calculated using the chi-square test, Fisher's exact test, and Mann–Whitney test. Because of the low response rate, no statistical analysis was conducted to assess the impact of COVID-19. [b] Only applies to participants not born in Spain. [c] It includes both self-employed and employed individuals. [d] It includes tobacco and alcohol.

Frequency and reasons for using eHealth services

Participants confirmed they had used eHealth services at least once (65%) during the COVID-19 pandemic. The most widely accessed services were those of the "La Meva Salut" app (82%), followed by telephone (68%) and email (53%). For telephone and email services, the main frequency reported was either infrequent use or use similar to pre-COVID-19 times. For the remaining eHealth services, a significant proportion of participants reported no prior usage, namely video calls (80%), chat/messaging (72%), and hospital-specific applications/websites (63%). The reported usage frequencies of 'quite often' and 'very often' were less than 20% for each of these services.

When participants were asked why they did not use any eHealth services, they commonly cited not knowing how to (36.7%), personal choice (33.3%), and a lack of information (23.3%). Similarly, when we evaluated the frequency at which participants were offered eHealth services, 52% of participants stated they had never been offered these services, 17% had been offered them infrequently, and 17% very frequently. When the data were stratified between eHealth users and non-users, all non-eHealth users reported they had never been offered such services. (Table 2). Bivariate analysis showed no statistically significant association.

Table 2. Reasons associated with the non-use and provision of eHealth

	Total		eHealth user		eHealth non-user	
	N	% (*n*)	*N*	% (*n*)	*N*	% (*n*)
Reasons for not using eHealth	30		25		5	
Personal decision		33.3% (10)		32.0% (8)		40.0% (2)
Professional decision		3.3% (1)		4.0% (1)		0.0% (0)
Limited knowledge		36.7% (11)		44.0% (11)		0.0% (0)
No information provided		23.3% (7)		16.0% (4)		60.0% (3)
Procedural delays		3.3% (1)		4.0% (1)		0.0% (0)
eHealth services provided	54		48		6	
Never		51.9% (28)		45.8% (22)		100.0% (6)
Low frequency		16.7% (9)		18.8% (9)		0.0% (0)
Same as before COVID-19		11.1% (6)		12.5% (6)		0.0% (0)
Often		3.7% (2)		4.2% (2)		0.0% (0)
Continuously		16.7% (9)		18.8% (9)		0.0% (0)

After the lockdown, face-to-face care gradually resumed; however, some interviewed participants expressed a desire to retain certain eHealth resources that proved beneficial to them, such as those for making medical appointments and performing bureaucratic procedures. Consequently, the participants recommended implementing a mixed model of care that would combine both face-to-face and telematics care.

"It's a time of technological change. Everything that can be substituted, like doing admin stuff electronically, I think is great. It's quick, efficient and solves things fast, like booking appointments and getting meds sorted, everything really. That's why I think eHealth systems are great at doing admin stuff, it works without a glitch" (P10).

"I'd be in favor of a hybrid model that uses eHealth systems for admin work and the real healthcare, like consultations, I'd keep that face-to-face consultations" (P9).

Ease of access to eHealth Services

Perceived ease of access to different eHealth services according to whether the request was made by patients or by professionals is shown in Chart 1. Participants reported that access to eHealth services was more difficult when they were contacted by health professionals than when they themselves requested the contact. The only service where neither patients nor professionals reported difficulties in accessing eHealth resources was outpatient nursing consultations.

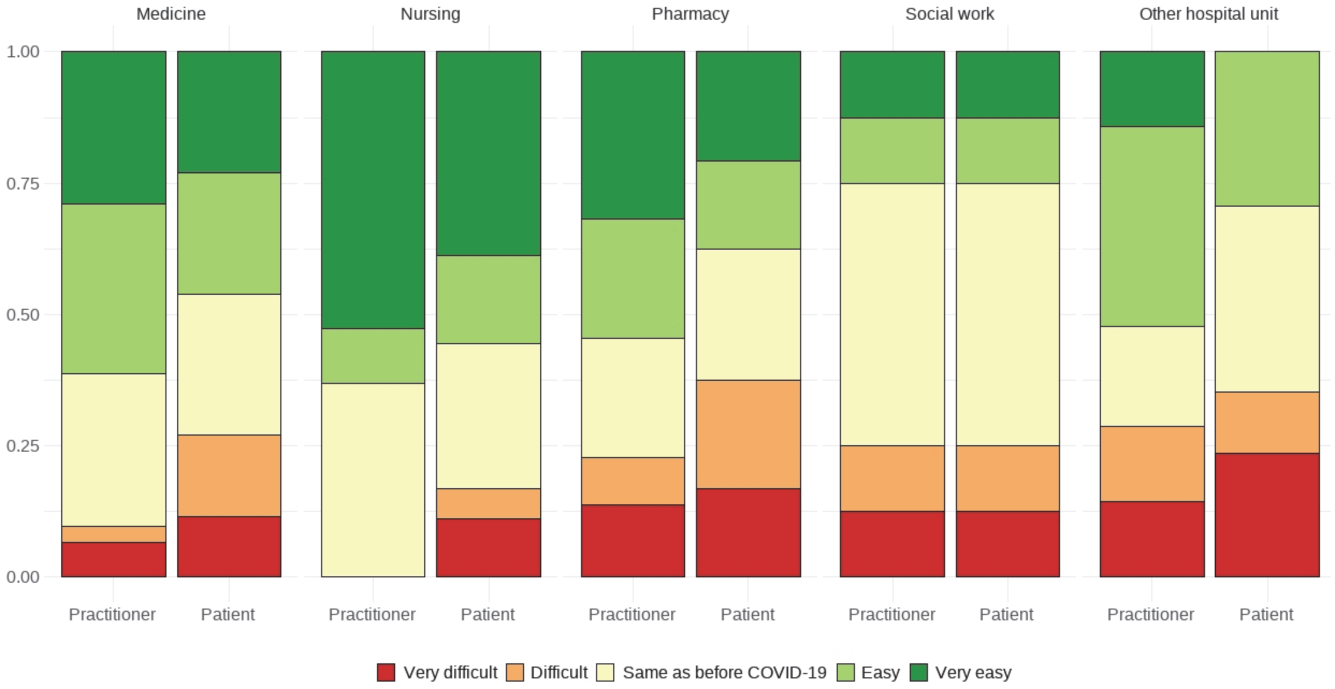

Chart 1. Evaluation of ease of access to eHealth services depending on whether the contact was initiated by participants or health practitioners

The interviews revealed that several participants had no difficulty accessing eHealth and valued the convenience of the service, saving time by not having to physically travel to the health center, especially for administrative procedures not requiring direct medical attention.

"Being able to email from home to ask for an appointment – whether for the HIV unit, primary care physician, or medication pickup – is obviously more convenient than visiting the hospital, queuing up, and so on. The whole system was set up to allow things to be done this way, and it´s made things easier for me" (P10).

In contrast, some respondents found it difficult to access eHealth systems, either because of problems with the use of digital platforms (such as connectivity problems or malfunctioning), or because they lacked knowledge of how to use them; this was especially true among respondents not used to modern technology. In addition, some participants stated that they were not informed about the eHealth resources offered during the lockdown, either by healthcare professionals or by the centers themselves, leading to difficulties in contacting the healthcare team. Despite reporting minor difficulties, participants expressed an understanding of the challenges faced at the time, albeit with a hint of frustration and sadness due to urgent queries going unanswered.

"So, with all the stress and anxiety going on, it's no surprise that things can go wrong. But once we get used to the new normal, things will probably work better. Sometimes the system doesn't work the way you want it to and I really hate that, it can make you feel so helpless" (P5).

"Systems acting up is pretty normal, and trying to get into some of them can be a real pain. When different systems overlap, it's recipe for trouble. I've found that asking for an e-consultation or appointment can be pretty difficult" (P11).

Satisfaction with eHealth services

The level of satisfaction with eHealth services offered by various professional units based on specific attributes is shown in Chart 2. The data show that nursing and pharmacy units received the highest ratings. However, it is noteworthy that each evaluated unit received a high percentage of neutral or dissatisfied ratings. In terms of the features of the evaluated services, the highest ratings were given to the information provided and patient compliance. Conversely, the lowest-scoring feature was the consultation length. Assessment of the units elicited high percentages of neutrality and dissatisfaction. Bivariate analysis showed no statistically significant association.

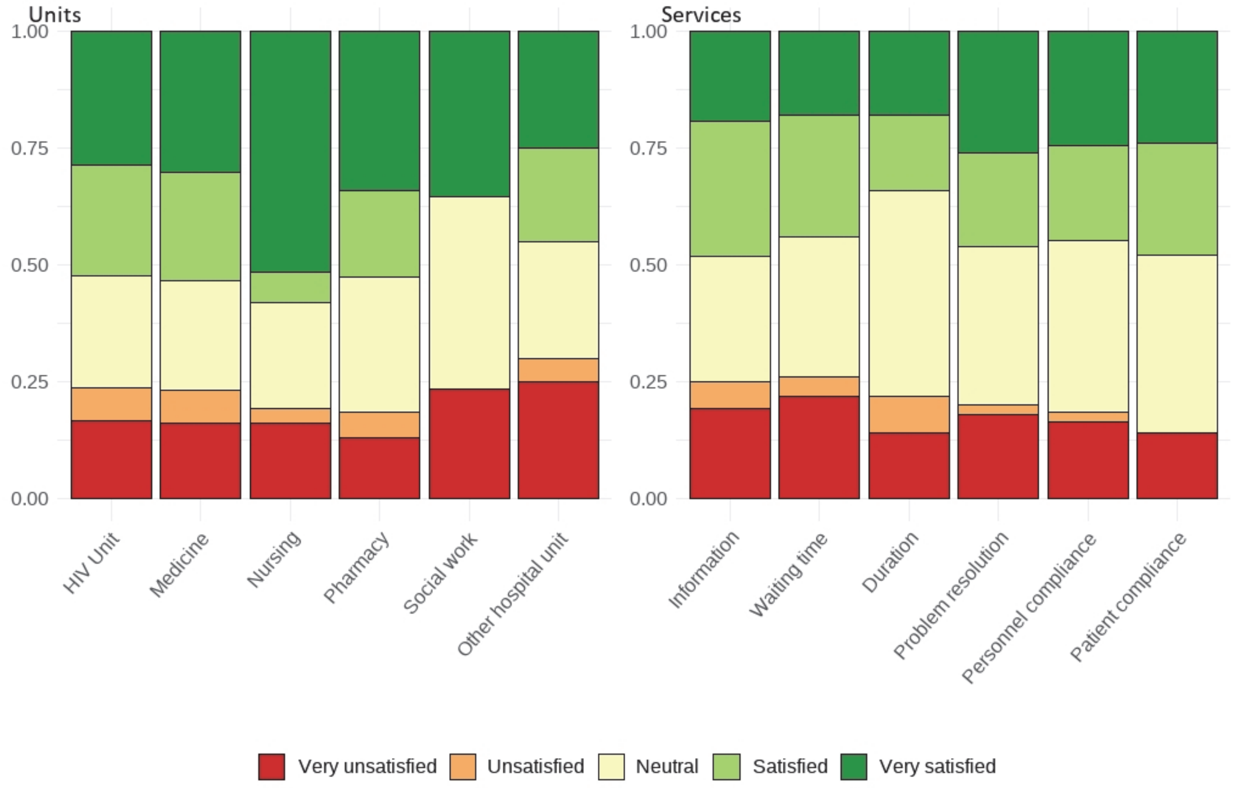

Chart 2. Degree of satisfaction with eHealth services promoted by units and services

The qualitative data showed that one of the main disadvantages of eHealth described by participants was the quality of care. Participants reported that substituting face-to-face visits with virtual ones, usually by telephone, made them feel frustrated and dissatisfied. Some participants even rejected this format because of the inability to detect some symptoms through auscultation or monitoring of vital signs, and the short length of the calls. Moreover, individuals who struggle with language found it difficult to communicate effectively in virtual settings. For them, it was easier to use non-verbal communication together with verbal communication, which is impossible during telephone calls.

"It's hard to measure exactly… Anything that speeds up the admin, well obviously that´s a plus for me. It makes my life easier and so it's good for my health and that's OK. It's useful in my life, and consequently, my health benefits. I wouldn't recommend trying to replace face-to-fact contact between patients and staff. I don't think that would do anything for my health" (P10).

"If I can see someone's face when I'm speaking, I understand better [...]. When you have a language problem, it's much more difficult on the phone" (P13).

Among those surveyed, 53.3% experienced no technical difficulties when using eHealth. Among the remaining participants (*n* = 14), the effect was either positive or neutral for 71% in the different areas explored. In the assessment of privacy and confidentiality during the eHealth sessions, nearly 85% reported that they were able to maintain privacy and confidentiality throughout all sessions, compared to only 8% who reported no privacy of confidentiality on any occasion. Participants were also asked to rate the extent to which eHealth services had helped to improve their health. In this regard, 37% of respondents reported no effect, while 40% stated that the effect was fairly significant or significant (Table 3). Bivariate analysis showed no statistically significant association.

The interviewees emphasized that direct and immediate access to laboratory reports and scheduling of diagnostic tests gave them greater control over their health, which had a positive impact on empowerment and self-management of health.

"I don't need to ask my doctor for my blood test results, for example, because I can download them from the app. That way, I can check how I'm doing after each test and know whether I'm better or worse, things like that" (P12).

Table 3. Impact of eHealth

	N	% (*n*)
Technical incidences	30	
In all cases		13.3% (4)
In half of the cases		10.0% (3)
On rare occasions		23.3% (7)
No incidences		53.3% (16)
Impact of incidences on HIV control	14	
Negative		28.6% (4)
Neutral		35.7% (5)
Positive		35.7% (5)
Privacy and confidentiality	26	
In all cases		7.7% (2)
In half of the cases		3.9% (1)
On rare occasions		3.9% (1)
Always		84.6% (22)
Improvements in health (self-reported) due to eHealth	30	
Never		36.7% (11)
Rarely		6.7% (2)
Moderately		16.7% (5)
Often		20.0% (6)
Always		20.0% (6)

Discussion

In general, the COVID-19 pandemic did not adversely affect the uninterrupted provision of care for PLWH in the healthcare system of our study population. For the most part, the health service continued to provide crucial appointments, and rescheduled only those that could be postponed, such as consecutive check-ups and follow-up analyses. To deliver first-rate healthcare to this susceptible group throughout the lockdown period, a plethora of alternatives were provided to avoid in-person contact within healthcare facilities. These alternatives included using eHealth services to conduct teleconsultations, out-of-hospital dispensing of ART, and home delivery of antiretroviral medication. These measures are in line with those cited in the global literature (Budak et al., 2021; Harsono et al., 2022; Labisi et al., 2022, Yelverton et al., 2021).

Almost two-thirds of our sample utilized some type of eHealth service in their HIV unit after the declaration of the COVID-19 pandemic. The La Meva Salut app was first implemented in 2019. After the outbreak of the pandemic, its use expanded hugely, due to its promotion by the Catalan health system. This digital tool allows patients to quickly access their health information and receive direct care from health providers. The objective was to prevent hospitals and primary care centers from being overwhelmed with telephone inquiries (Vidal-Alaball et al., 2020). Telephone and email usage remained unchanged, while video call usage was reported as the least frequent modality among participants. No change was noted in the usage of messaging services. After the COVID-19 pandemic, international studies reported that telephone calls were the most frequently used type of telehealth, with no mention of eHealth beyond telephone and video calls (Harnoso et al., 2022; Walker et al., 2023).

In this study, the main reasons cited for not using eHealth were lack of understanding of how to use the service and personal choice. Other research has shown that another reason for not using eHealth services during the pandemic were the digital divide resulting from unequal access to digital devices. Limited internet connectivity has a disproportionate adverse effect on individuals residing in rural areas as well as on those with limited digital literacy, particularly low-income individuals and older adults (Dandachi et al., 2019; Yelverton et al., 2021).

Among individuals using eHealth, our results show that ease of access to these services was more difficult for participants than for health professionals. The barriers mentioned included technical difficulties with digital platforms and limited technical skills. The international scientific community has identified further disadvantages associated with the use of telematic healthcare services, with patients expressing concerns about the absence of physical examinations and difficulties in effective communication, as well as the need to disclose private information online. As a result, some patients have refused to use remote services and have demanded face-to-face care instead (Budak et al., 2021; Dandachi et al., 2020a; Smith and Badowski, 2021).

Although some PLWH encountered obstacles in their use and access to eHealth services, others found the switch beneficial. One of the key benefits cited by participants was saving travel time to the health center. This benefit has also been reported by several other studies, as well as the advantages of physical distancing, particularly for individuals at greater risk of contracting COVID-19, not having to worry about being seen entering an HIV clinic, and greater compatibility with work timetables (Barbera et al., 2021; Dandachi et al., 2020a, b; Mgbako et al., 2020). These advantages contributed to the high patient satisfaction rates among PLWH using eHealth. Consequently, participants requested regular eHealth visits as part of their standard healthcare (Labisi et al., 2022; Walker et al., 2023). In contrast, some participants criticized the quality of care provided by their health professionals, particularly the brevity of visits, a feature that received the lowest rating. Similarly, Harsono et al. (2022) conducted studies on health professionals' perceptions of the quality of care provided during the lockdown using eHealth systems. Most healthcare professionals concurred that the primary reasons for inadequate healthcare provision were the higher workload involved in conducting both virtual and in-person appointments, and the challenges of determining patients' emotional wellbeing (Doleman et al., 2023). Conducting telematic visits via video calls rather than by telephone could enhance non-verbal communication and ease the exchange of visual information, but this is disputed by some users, especially those experiencing language barriers (Gopal et al., 2021).

A major concern for participants when using eHealth was privacy. For certain individuals, home eHealth visits provide more privacy and less risk of stigma than in-person visits to hospital-based HIV units. Nevertheless, eHealth appointments could violate the privacy of participants who have not divulged their HIV status to family members living in the same home (Wood et al., 2021; Yelverton et al., 2021). In this study, the overwhelming majority of participants reported successfully preserving their privacy and confidentiality in all eHealth consultations, although the underlying causes are unclear.

The impact of eHealth services, as described in the international literature, is mostly positive in terms of follow-up, which differs somewhat from the findings of this study. The findings of Dandachi et al. (2020b) and Walker et al. (2023) indicate that the use of eHealth enhances users' health, lowers the average cost of care, and offers participants the opportunity to increase engagement and decision-making, supporting a more person-centered approach to healthcare. However, comparisons and generalizations among studies are hampered by differences in study designs, varying patient access to eHealth, and differing health policies and eHealth implementation protocols. Optimal use of eHealth shows significant disparity and ultimately depends on individual experiences and users' personal decisions (Budak et al., 2021; Walker et al., 2023). Providing the option of in-person or remote visits based on individual needs could help to achieve more personalized and suitable HIV care for PLWH.

The current study has some limitations. Firstly, the number of participants completing the questionnaire was slightly lower than the predetermined sample size, giving rise to the possibility of a type 1 error. This drawback also precluded the possibility of identifying any statistically significant associations between the factors measured and the outcomes of interest in the bivariate analysis of the quantitative data. Nevertheless, the study presents credible and reliable results within a specific context.

Secondly, the type of sampling used may have resulted in a sample of participants who were motivated to report their experiences, and the data obtained may not reflect all the realities of PLWH. The sampling method could also have led to selection bias and may not accurately reflect the characteristics of the population of PLWH. Although homeless PLWH could not be accessed, a notable strength of this study is that it successfully engaged PLWH at high risk of social exclusion, thereby diversifying the participant profile and experiences. Consequently, although the findings cannot be generalized, they may shed light on areas with similar sociocultural contexts and healthcare policies, which is a feature of the methodology employed.

Thirdly, the questionnaires utilized were not validated but were verified by experts; therefore, the results should be interpreted with caution. While conducting the study, however, we held several specialist discussion sessions to review the questionnaires and to enhance the reflexivity of the investigation and lessen the possibility of any biases.

Conclusion

The findings of this study indicate that the COVID-19 pandemic did not adversely affect the provision of care for PLWH within their HIV clinics in Barcelona. Effective interventions continued to be delivered, and new strategies were swiftly implemented to replace those disrupted by the pandemic, such as the use of the La Meva Salut app to connect users directly with their healthcare providers.

This study identified significant barriers to utilizing eHealth resources, such as the perception of worse-quality care among PLWH, perceived challenges for individuals with language barriers, along with key facilitators clearly linked to the ease of receiving services remotely. Efforts to optimize the implementation of eHealth services should include strategies to provide PLWH with individualized, quality healthcare based on their specific preferences and needs. This approach could improve the acceptability and continuity of care. In addition, efforts should be made to tackle the digital divide among the most vulnerable subpopulations. This can be accomplished by evaluating users' digital competency and implementing educational programs to enhance their digital literacy.

Health institutions should promote the establishment of criteria to identify effective eHealth interventions for PLWH. This includes determining the specific services that should be provided and the most appropriate locations for their implementation. Objective evaluations are needed to ensure success. In parallel, objective criteria should be established to select PLWH who could benefit from eHealth, including factors such as their attitudes to eHealth, their access to and proficiency in the use of new technologies, their health status, and their prior experience with health providers.

Ethical aspects and conflict of interest

The authors have no conflict of interest to declare.

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