



“I'm not very skilled in using gadgets:” A qualitative exploration of the facilitators and barriers to using telepharmacy services among Filipino senior citizens

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ABSTRACT

Background: Telepharmacy provides remote care by pharmacists to distant patients via telecommunications. It is a new service used in the Philippines during the COVID-19 pandemic. However, its utilization among vulnerable populations, notably senior citizens, remains relatively unexplored.

Objective: This study explored the facilitators and barriers to telepharmacy use among senior citizens in Pasig City, Philippines. Pasig City, a highly urbanized area in Metro Manila, is known for its quality and accessible healthcare services and has a high population of senior citizens.

Methods: Six focus groups were conducted: three with telepharmacy users and three with non-users, each with 3–5 participants. Focus groups were concluded upon reaching data saturation, where no new insights emerged. Verbatim transcripts were analyzed using deductive and inductive content analysis, guided by the Health Belief Model. Coding and data management were facilitated by MAXQDA software.

Results: Filipino senior citizens recognize the convenience and reliability of telepharmacy services for healthcare advice. Their use is influenced by social factors (friends, family, social media) and personal relevance, especially for those with chronic conditions. Positive experiences increase their likelihood of continued use and recommendations to peers. However, barriers such as poor service knowledge, low self-efficacy, and limited access (lack of smartphones, unreliable internet) hinder broader adoption.

Conclusions: Telepharmacy enhances the health and well-being of Filipino senior citizens by offering convenient and effective pharmaceutical care. However, barriers exist that need to be addressed through a multifaceted approach, including education and training for seniors, improved internet infrastructure, and the design of user-friendly platforms.

1. Introduction

Pharmacies serve as traditional venues where the public can obtain medications and receive health and medication information from pharmacists without needing an appointment.¹ A cross-sectional study in the United States (US) found that patients visited community-based pharmacies 35 times per year, compared to only 4 visits to primary care physicians.² This high frequency of visits underscores that community pharmacists are accessible healthcare professionals who frequently engage with patients.³ A systematic review indicated that

effective interactions between community pharmacists and patients enhance medication adherence and improve the quality of treatment, resulting in better health outcomes.⁴ Pharmacies indeed play a crucial societal role by providing convenient healthcare access, particularly for the general population, in addition to their essential role in maintaining medicine supplies.

With the increasing demand in the pharmacy profession, a shortage of pharmacists is inevitable.^{5,6} Consequently, telepharmacy emerged as a solution to mitigate this shortage, particularly in geographically remote areas. Telepharmacy operations and services encompass a range

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of activities such as drug review and monitoring, dispensing, medication therapy management, patient assessment, patient counseling, clinical consultation, outcomes assessment, decision support, and drug information.⁷ This approach allows pharmacists to deliver pharmaceutical care through information and communication technology facilities, such as video conferencing, telephone calls, and secure messaging platforms, facilitating patient interactions in diverse locations.⁸

The 2019 pandemic has heavily pressured the healthcare system. Patients are expected to stay home to contain the virus's spread but still have numerous health questions and concerns. Due to the importance of physical distancing, much of healthcare has moved online or to the telephone.⁹ Consequently, telepharmacy use has increased to provide remote pharmaceutical care and counseling. In Canada, virtual healthcare through video calls, email, and telephone significantly enhanced access to care.⁹ In the US, relaxed Health Insurance Portability and Accountability regulations allowed pharmacies to use affordable teleconferencing platforms like Zoom and Skype, which would typically not comply with privacy standards.¹⁰ Remote healthcare services during the pandemic have benefited the healthcare system and improved public health.¹¹ Access to telepharmacy services has promoted social distancing, reduced potential exposures, and eased the strain on healthcare facilities, including pharmacies, by minimizing the need for in-person visits.¹²

The first telepharmacy in the Philippines emerged during the COVID-19 pandemic.¹³ The Philippine Pharmacist Association launched this initiative to respond to the need for continued patient counseling amidst limited access and reduced mobility resulting from the virus.¹³ Telepharmacy subsequently expanded nationwide, supported by healthcare institutions and several universities in the country.^{14,15} Even well-known drug stores in the Philippines have begun offering delivery services through online orders and calls. To date, only one study has explored the development of an online telepharmacy service in the Philippines.¹³ The results showed that the majority of telepharmacy users were from the general public (93.8%) and preferred to receive responses through text (61.2%). Most users were 15 to 25 years old (41.1%) and sought information for themselves, with most submissions mentioning COVID-related topics.¹³

Compared to younger patients, senior citizens are more prone to chronic diseases and daily polypharmacy, necessitating consistent access to medications.¹⁶ Cognitive impairments prevalent among seniors also complicate medication adherence.¹⁷ Furthermore, the functional decline of senior citizens often limits their ability to access traditional pharmacy services.¹⁸ Telepharmacy, a technology-driven solution, can help overcome these access barriers and enhance medication adherence. A scoping review indicates that providing patients with user manuals to guide them in using telepharmacy services improved medication adherence.¹⁹ Additionally, telepharmacy reduces the need for seniors to queue at pharmacies or clinics, allowing them to schedule consultations from home and saving time and travel costs—a significant benefit for rural elderly and disabled veterans.^{20,21} For instance, a telepharmacy program focusing on medication therapy management saved USD 300,000 in Connecticut, USA, for 96 elderly patients.²² Avoiding travel also minimizes exposure to contagious diseases, crucial for vulnerable seniors.¹⁹ Despite these advantages, adoption among senior citizens is hindered by technology proficiency requirements.²³

Individuals 60 years and older in the Philippines are considered senior citizens.²⁴ Projections indicate a significant increase in the senior citizen population in the 2020 household census, with seniors comprising 8.50% compared to 5.97% in the 2000 Census of Population and Housing.²⁵ Despite this demographic shift, the proportion of senior citizens using online health services such as telepharmacy remains disproportionately low. Examining the facilitators and barriers to telepharmacy usage among senior citizens can provide insights into their perspectives, revealing factors contributing to their limited health-seeking behavior and identifying features hindering the full utilization of telepharmacy services. Given the proliferation of telehealth services

like telepharmacy, efforts should be made to ensure these services adequately accommodate senior citizens. To address this issue, the Health Belief Model was employed to explore the factors influencing senior citizens' utilization of telepharmacy.

1.1. Theoretical framework

The Health Belief Model (HBM) was developed by social psychologists from the United States Public Health Service in the early 1950s to understand why individuals fail to participate in disease prevention and detection programs. Over time, the HBM expanded to incorporate patients' responses to symptoms and behaviors toward diagnosed illnesses, especially regarding medical treatment compliance.²⁶ In health-related behaviors, the HBM posits that individuals value avoiding illness and, conversely, seek to recover if they are already ill.²⁷ Additionally, it suggests that individuals expect that taking a specific health action will prevent, alleviate, or cure the illness.

The Health Belief Model (HBM) encompasses six primary constructs that predict patients' likelihood of participating in programs to prevent, screen, or control diseases.²⁸ These constructs include perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy (Supplementary Fig. 1). The HBM has several limitations. For instance, it does not account for people's attitudes, beliefs, or other determinants influencing their acceptance of health behavior. It also does not consider environmental and economic factors that may prohibit or promote the recommended action (e.g., telepharmacy adoption).²⁸ To address these limitations, we have modified the HBM for our study by including senior citizens' demographics, knowledge about telepharmacy, and access to telepharmacy (Supplementary Fig. 2).

We hypothesized that senior citizens' adoption of telepharmacy is influenced by individual factors such as socioeconomic status and knowledge of the service, as well as environmental factors like technology access and social influence. Therefore, this study aimed to explore the various facilitators and barriers to telepharmacy utilization among senior citizens in an urban area in the Philippines using the modified HBM.

2. Materials and methods

2.1. Design

This qualitative study utilized focus group discussions (FGDs) to explore the facilitators and barriers of using telepharmacy services among senior citizens, guided by the interpretive paradigm. FGDs were conducted to gather insights into shared experiences, attitudes, and perceptions.²⁹ The interpretive paradigm prioritizes understanding subjective experiences and meanings in social contexts.³⁰ HBM was adapted for this study, suggesting that senior citizens' inclination to use telepharmacy could be predicted by their beliefs regarding its value and perceived benefits, influenced by socioeconomic and environmental factors. In our methodological process and reporting of results, we conformed to the Consolidated Criteria for Reporting Qualitative Studies (COREQ) guidelines (Supplementary Table 1).³¹

2.2. Participants

The participants were 24 senior citizens aged 60 years and above, which is the legal definition of seniors in the Philippines.²⁴ They are divided into telepharmacy users ($n = 11$) and non-users ($n = 13$). Inclusion criteria were that they are members of the Office of Senior Citizens' Affairs (OSCA) and that they are residents of Barangay Manggahan, Pasig City. We confirmed the utilization of telepharmacy services by asking users to provide timestamps and session lengths. Senior citizens provided this information by showing text messages and emails. Exclusion criteria were less than 60 years and have used other

telehealth services aside from telepharmacy (e.g., telemedicine) (Fig. 1). The senior citizens utilized various telepharmacy services, including online consultation, medication therapy management, and online order review and dispensing.

2.3. Setting

Pasig City was chosen as the study setting because it is a highly urbanized area in Metro Manila. It is known for its quality and accessible healthcare services and its high population of senior citizens.^{32,33} The city is diverse and has well-established programs and benefits for senior citizens, including free hospitalization and prescription medicines at the Pasig City General Hospital, free pneumococcal and flu vaccines, a monthly pension, financial incentives, cash assistance, and burial assistance.³² With their mission to provide efficient, accessible, and easy access to quality healthcare and other basic social services to senior citizens, and with the doubling population of seniors in the country from 4.6 million in 2000 to 9.2 million in 2020, Pasig City accounts for approximately 73,000 senior citizens.³³ According to the 2020 Census, barangay Manggahan is the second most populated barangay [community] in Pasig City but has the highest senior citizens, accounting for 3.96% of the city's population.³³ Therefore, we have chosen to conduct the FGDs at Manggahan's Barangay Hall.

2.4. Sampling

Senior citizens in the FGDs were selected by snowball sampling.³⁴ The inclusion criteria were discussed with the barangay captain and barangay health workers, so they could identify and refer potential senior citizens. The first few senior citizens were then asked to refer individuals who shared the same characteristics relevant to the study.³⁴

2.5. Data collection

Six FGDs (three for telepharmacy users and three for non-users, with 3–5 members each) were conducted primarily in Filipino from March 11 to April 11, 2023. Before commencing the FGD, ground rules were established to ensure everyone understood the importance of confidentiality. Participation was encouraged by ensuring everyone had an opportunity to speak and that no one dominated the conversation. Open-ended questions were asked to promote discussion and exploration of ideas. The FGDs lasted 60–90 min and were based on a semi-structured topic guide, following the theoretical framework and the study objectives (Supplementary Table 2).

The topic guides were validated by consulting with three pharmacy

professors who specialize in qualitative studies and have experience in research on information technology applied to health management. Pretesting was conducted before the FGDs to evaluate the reliability of the topic guides. Two researchers (YMA, GB) conducted the interviews, while two others observed and took field notes (AMG, NIL). The FGDs were audio recorded and transcribed verbatim. FGDs ended when data saturation was reached, meaning gathering more information ceased to yield new insights.³⁵

2.6. Data analysis

The transcripts were analyzed using Braun & Clarke's Thematic analysis,³⁶ and MAXQDA software was used to code and manage the data. Our analysis involved a deductive approach with predetermined codes (facilitator/barrier) and an inductive approach through constant comparative analysis.³⁷ Two researchers independently coded phrases as facilitators or barriers, assigning codes to similar meanings and creating new codes when necessary. The entire transcript was re-coded using the theoretical framework. Codes were grouped into sub-themes, and main themes were identified. Validation was done through continuous dialogue with co-researchers and peer debriefing. Before finalizing the findings, member checking was conducted by sharing the identified themes and sub-themes with senior citizens. Transcripts were analyzed in Filipino, with themes and quotations translated into English after consensus was reached. Pseudonyms were used for quotations to support themes.

2.7. Trustworthiness and rigor

To demonstrate its trustworthiness, the study followed the guidelines of basic qualitative research.^{38,39} The credibility of the results was ensured by providing detailed transcriptions from the participants. The senior citizens were provided with the study's initial findings, and they were given the opportunity to provide feedback and critique through member checking. A topic guide was used to achieve dependability, and discussions among the researchers were held to confirm the study's logical and well-documented nature.⁴⁰ An audit trail was used to achieve conformability by documenting the coding process and transcribing and recording all the administered focus groups. Transferability was ensured through detailed contextualization and rich data, enabling other researchers to replicate the study in diverse settings.

2.8. Ethical considerations

Ethical approval (2022–02-PHA-07) was obtained from the University Ethics Review Committee of Adamson University. All senior citizens understood and signed the consent form. Personal information and study results were kept confidential by using pseudonyms in analyses and written reports.

3. Results

3.1. General characteristics of participants

Table 1 presents the sociodemographic characteristics of senior citizens. The majority were females, accounting for 87.5% of the total. The average age of senior citizens is approximately 66 years. When seeking health-related assistance, a significant majority (91.7%) primarily rely on pharmacies. However, more than half of the senior citizens (54.2%) have not utilized telepharmacy services, while the remaining (45.8%) have availed themselves of telepharmacy services.

3.2. Facilitators of telepharmacy

Table 2 outlines the analytical framework for the facilitators of telepharmacy among senior citizens, categorizing them into three main

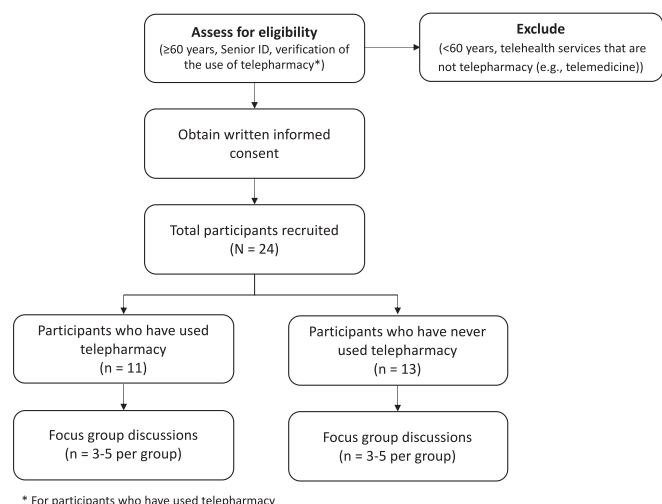


Fig. 1. The recruitment process.

Table 1
Sociodemographic characteristics of senior citizens (n = 24).

Characteristics	n	%
Age, mean (SD)	66 (5.7)	
Sex		
Male	3	12.5
Female	21	87.5
Marital Status		
Married	13	54.2
Never Married	2	8.3
Separated	1	4.2
Widowed	8	33.3
Educational Attainment		
Elementary	3	12.5
High School	11	45.8
Vocational	1	4.2
College	9	37.5
Pension*		
No Pension	7	29.2
Government Pension	9	37.5
Social Pension	9	37.5
Primarily accessed healthcare service*		
Hospital	9	37.5
Clinic	19	79.2
Pharmacy	22	91.7
Ease of getting healthcare service		
Yes	19	79.2
No	5	20.8
Have used telepharmacy		
Yes	11	45.8
No	13	54.2

* Participants selected multiple answers in this category.

Table 2
Facilitators of telepharmacy use among Filipino senior citizens.

Main Themes	Sub-themes	Description
Perceived benefits	Source of Information	Senior citizens perceive advantages in using telepharmacy to access healthcare information.
	Convenience	Senior citizens appreciate the convenience provided by telepharmacy services.
Cues to action	Social Influence	Senior citizens' decisions to use telepharmacy are influenced by their social relationships and social media exposure, which shape their behavior and healthcare preferences.
	Personal Relevance	Senior citizens' use of telepharmacy is influenced by conditions that are personally meaningful, important, or significant to them.
User engagement	Experience	Senior citizens with positive telepharmacy experiences will likely continue using the service.
	Input	Senior citizens who feel their feedback on improving telepharmacy is valued are more likely to engage with the service and use it regularly.

themes: (1) perceived benefits, including sub-themes such as a source of information and convenience; (2) cues to action, encompassing sub-themes like social influence and personal relevance; and (3) user engagement, focusing on sub-themes such as user experience and input.

3.2.1. Perceived benefits

Senior citizens acknowledge the potential benefits of telepharmacy services, viewing it as a reliable source of information. Pharmacists can provide counseling on their current medications and offer recommendations for other symptoms. As one senior expressed:

To know which medicine, we should take or what we should be treated with, we can at least describe our symptoms even if we don't visit the doctor. Then, they [pharmacists] will suggest medications for me to try. We discussed the medications I am currently taking,

and if there are additional symptoms, they will recommend additional over-the-counter medications to take.

(Teodora, female, 71 years, telepharmacy user)

Moreover, senior citizens find telepharmacy beneficial for its convenience. Those facing mobility or transportation challenges particularly appreciate the service, as it allows them to avoid long lines and save time.

If time is a concern, online consultations and purchasing are the way to go. They save you the time and effort of visiting a physical doctor or pharmacy. Plus, you can do it at your own convenience and schedule.

(Trinidad, female, 61 years, telepharmacy user)

It's better to use telepharmacy because you can go online. If you go to the pharmacy, you'll have to wait in long lines for a considerable amount of time. With telepharmacy, you can get your questions and needs answered quickly.

(Francisco, male, 72 years, telepharmacy user)

Senior citizens highlighted the value of telepharmacy as a reliable source of healthcare advice, particularly regarding medication information, treatment options, and symptom management. Additionally, they emphasized the convenience aspect of telepharmacy, enabling seniors to bypass physical visits, save time, and access services according to their own schedules.

3.2.2. Cues to action

Senior citizens' motivation to use telepharmacy can be influenced by both social influences and the personal relevance of telepharmacy. Social circles, including family and friends, significantly shape their attitudes toward telepharmacy. Additionally, senior citizens on social media often learn about this service and become intrigued by the potential benefits, such as free consultations. Recommendations and positive experiences shared by these close contacts can encourage seniors to try telepharmacy services.

I heard my family and friends talking about telepharmacy. At that time, I didn't understand what it was. Then, one day, while scrolling on Facebook, I saw a post from a friend about a free consultation available. I became intrigued and checked it out.

(Trinidad, female, 61 years, telepharmacy user)

The first time I saw telepharmacy was on social media, and then I read about telepharmacists. I read the comments and reviews, and they were all positive. It is nice to talk to pharmacists online about my medications.

(Teodora, female, 71 years, telepharmacy user)

Additionally, telepharmacy usage can be influenced by personal relevance. Senior citizens with health conditions find it challenging to leave their homes, especially during the COVID-19 pandemic when strict lockdowns were imposed, preventing them from going out. These circumstances further underscore the importance of telepharmacy in meeting their healthcare needs, particularly during crises.

I have difficulty accessing traditional pharmacy services in person due to serious health conditions that weaken my immunity, making it risky for me to go outside. Telepharmacy is extremely relevant as it allows me to order my medicines and consult pharmacists by phone or online.

(Saturnina, female, 70 years, telepharmacy user)

Seniors like us are especially not allowed to go out during the pandemic. Our local community strictly prohibits seniors from doing so during lockdowns. Telepharmacy should have been available before the pandemic, as seniors greatly need this service. (Leonor, female, 73 years, telepharmacy user).

These factors underscore the complex interplay between social influences and personal relevance in influencing senior citizens' adoption of telepharmacy services.

3.2.3. User engagement

Senior citizens who have positive experiences using telepharmacy and feel that their input is valued are more likely to engage with the service regularly. A courteous pharmacist who clearly explains and addresses their concerns contributes significantly to a positive user experience.

And you know, the first person I talked to was very accommodating and respectful to seniors. They used 'po' and 'opo' [terms of respect]. I appreciate that, especially from the youth—they need to use 'po' and 'opo.' That's what I really liked about them. They listened attentively to my symptoms and allowed me to speak without interruption.

(Teodora, female, 71 years, telepharmacy user)

Yes, you'll be pleased with their service because it's like having a check-up with a doctor. With just one phone call, it saves you time and effort, and you can feel their concern for you.

(Jose, male, 61 years, telepharmacy user)

Furthermore, user input, particularly feedback from senior citizens using telepharmacy services, is valuable for improving service quality and effectiveness. They have suggested promoting the service through social media and infographics and recommended detailed instructions on contacting pharmacists quickly. Incorporating user feedback enhances user experience and satisfaction, as they often suggest more effective ways to promote the service.

If more people knew about their online service, it could enhance their service quality and attract more patrons. Yes, they should promote their online service to gain greater recognition, utilizing social media and infographics.

(Concepcion, female, 60 years, telepharmacy user)

Perhaps there should be detailed instructions on how seniors can easily contact pharmacists online through telepharmacy. This would be very helpful. (Teodora, female, 71 years, telepharmacy user)

These insights underscore the importance of positive user experiences, valuing user input, and utilizing feedback to optimize telepharmacy services. This approach benefits senior citizens and promotes the service's growth and effectiveness.

Table 3
Barriers to telepharmacy use among Filipino senior citizens.

Main Themes	Sub-themes	Description
Limited knowledge	Unfamiliarity	Senior citizens have limited awareness and understanding of telepharmacy services.
Low self - efficacy	Technical Support	Senior citizens often need assistance and guidance in using the latest technology to utilize telepharmacy services effectively.
	Technical Skills	Senior citizens often lack proficiency in using the technical tools or platforms required for telepharmacy, which impacts their willingness to use the service.
Limited accessibility	Physical Access	Senior citizens prefer accessing physical community pharmacies for convenience and healthcare centers for free medicines rather than telepharmacy.
	Digital Access	Senior citizens have limited digital access, including a lack of smartphones and unreliable internet connections, which poses a challenge for utilizing telepharmacy.

3.3. Barriers to telepharmacy

Table 3 presents the analytical framework of the barriers to telepharmacy among senior citizens, identifying three main themes: (1) poor knowledge, related to senior citizens' unfamiliarity with telepharmacy; (2) low self-efficacy, encompassing the need for technical support and skills; and (3) limited accessibility, including physical and digital access.

3.3.1. Poor knowledge

Senior citizens' familiarity with telepharmacy is crucial for successful implementation. Insufficient awareness and understanding of the service can lead to hesitancy in adoption. While some senior citizens have little understanding about the service, others may have encountered it for the first time. They often wonder if they are eligible to use it or how to get started.

As far as I know, telepharmacy involves seeking consultations or advice for specific illnesses through remote means like phone calls without needing a face-to-face visit. I do not know how to access the service or if all community pharmacies offer it.

(Elena, female, 63 years, telepharmacy non-user)

I just heard about telepharmacy. Before, I knew only about traditional pharmacies. This is an entirely new service to me, and I don't know if I can use it or how to get started.

(O Sei San, female, 63 years, telepharmacy non-user)

The varying levels of knowledge among senior citizens regarding telepharmacy emphasize the importance of promoting the service to facilitate its adoption.

3.3.2. Low self-efficacy

Senior citizens often require technical support when using telepharmacy due to limited familiarity with smart devices. They emphasize the need for assistance from family members or younger colleagues. One non-user suggested creating a senior-friendly interface with large, clear buttons and step-by-step instructions and tutorials in plain language.

I am not tech-savvy, but I am fortunate to have someone in the family who knows how to use a mobile phone. They teach me which buttons to press. Calling is okay but using apps or other online platforms is difficult. I always need assistance from younger people when accessing telepharmacy.

(Trinidad, female, 61 years, telepharmacy user)

Oh, maybe I'll just ask for help at the office since my children, who could assist me, are no longer here. As a senior citizen, I find it challenging to use gadgets. Many of us seniors struggle with the latest technologies. I hope they create senior-friendly technologies with large, clear buttons, and provide step-by-step instructions and tutorials in plain language.

(Elena, female, 63 years, telepharmacy non-user)

Lacking sufficient technical skills, senior citizens face challenges in navigating the technology necessary for accessing telepharmacy services. One non-user mentioned that she cannot use this service because of lack of skills in using gadgets. She suggested to have outreach programs and personalized assistance to help bridge the technology knowledge gap.

I'm not very skilled in using gadgets. I wish there were outreach programs and personalized assistance to teach us how to use the latest gadgets to take advantage of telepharmacy, as it is an innovative solution.

(Josephine, female, 68 years, telepharmacy non-user)

Senior citizens highlighted the need for additional support and guidance to help overcome technological barriers and successfully

engage with telepharmacy services.

3.3.3. Limited accessibility

Physical and digital factors limit access to telepharmacy services. Some seniors prefer visiting nearby community pharmacies in person rather than virtual meetings for patient counseling. This preference for physical access may impact telepharmacy utilization in two ways: it could decrease usage among seniors who find in-person visits more convenient or provide an opportunity to promote telepharmacy by teaching seniors how to access services digitally. However, despite the limited supply, low-income senior citizens often prefer going directly to health centers for free medicines rather than using a local pharmacy or telepharmacy.

For people like us who aren't familiar with online transactions, it's easier to take a tricycle [public transportation] to the pharmacy, even though it's difficult, and buy what we need. This option feels better for receiving pharmaceutical care because I have direct contact with the pharmacist.

(Paciano, male, 67 years, telepharmacy non-user)

But we rely on our health center. It's more convenient than going to pharmacies. Besides, we get free consultations and medicine here. If you use a community pharmacy or telepharmacy, you must pay. At least here at the center, we can get free medicines for our maintenance. However, sometimes the supply is limited, so I must return when new stock arrives.

(Seiko, female, 84 years, telepharmacy non-user)

Furthermore, limited digital access, such as the lack of smartphones or unreliable internet connections, can hinder senior citizens' access to telepharmacy services. Some low-income seniors have pointed out that unstable internet access limits their ability to use telepharmacy, relying solely on mobile data without access to Wi-Fi or direct internet connections. In addition, not all seniors have mobile phones, which limits their access to telepharmacy services.

Using the internet can be challenging, especially without a signal. Without phone credit, accessing their services, particularly for online orders, may not be possible. Additionally, some seniors do not have cellphones, which prevents them from accessing telepharmacy services even if they desire to.

(Lucia, female, 68 years, telepharmacy user)

Digital and physical factors can constrain senior citizens' access to telepharmacy. While some seniors value the convenience of in-person visits to pharmacies or local health centers, limited digital access presents significant challenges.

4. Discussion

This study explored the facilitators and barriers to telepharmacy among senior citizens in Pasig City, Philippines. Filipino senior citizens recognize the benefits of telepharmacy as an innovative approach to healthcare, particularly for medication information, treatment options, and medication management. Telepharmacy users appreciate the convenience of bypassing physical visits to community pharmacies, especially during the pandemic. Social factors and personal relevance influence their use. Family, friends, and social media recommendations encourage more senior citizens to use the service. Those with chronic conditions and mobility issues find telepharmacy particularly useful. Positive interactions with pharmacists and having their feedback considered for service improvement increase the likelihood of continued use and peer recommendations. However, barriers such as poor service knowledge, low self-efficacy requiring technical support and proficiency in digital technologies, and limited access (lack of smartphones, unreliable internet) hinder the broader adoption of telepharmacy.

The potential benefits of telepharmacy services were emphasized for

senior citizens, who may find it convenient and a reliable source of information on medications, illnesses, and treatments. Filipino senior citizens particularly valued the time-saving aspects and flexibility of virtual consultations. They appreciated the ability to access healthcare information and professional advice without needing to leave their homes, which was especially beneficial during periods of limited mobility or during the pandemic when physical visits were more challenging. This service was seen as a valuable supplement to traditional health information sources, enhancing their ability to manage their health independently. This finding contrasts with a study conducted in the US, where senior citizens were less likely to be interested in telemedicine services due to a lack of belief in the effectiveness of remote healthcare.⁴¹ The Filipino experience highlights how cultural and contextual differences can influence the adoption and perception of telehealth services among senior populations.

While there is broad interest in using telepharmacy among Filipino senior citizens, they often need more familiarity and knowledge about its services. An examination of telepharmacy use in the Philippines revealed that most (49%) users were aged 19 to 32, indicating reduced online consultation among older age groups.¹³ This finding is supported by an Indonesian study that observed that age is significantly associated with knowledge about telepharmacy services.⁴² The younger age groups tend to be more familiar with newer technology, making them more aware of the newer services offered.⁴² The attitudes of Filipino senior citizens toward telehealth highlighted significant concerns in a previous study, such as a lack of interest and motivation.⁴³ This age-attitude relationship toward technology can potentially hinder the adoption of telepharmacy among older clients. Overcoming these barriers requires targeted education and support to increase awareness and comfort with telepharmacy among senior citizens, ensuring they can fully benefit from these innovative healthcare solutions.

Filipino senior citizens learned about telepharmacy through social media and word of mouth, underscoring the significance of effective advertising. This result aligns with a cross-sectional study in Ethiopia, which found that social influence directly affects users' attitudes toward telemedicine.⁴⁴ However, pharmacies face challenges in promoting telepharmacy services in various Asian countries.⁴⁵ These challenges include persuading clients to adopt online services and competing with other providers offering more practical and time-saving alternatives.⁴⁵ Thus, effective advertising and leveraging social influence are crucial for promoting telepharmacy among senior citizens despite the challenges in adoption and competition. To overcome these obstacles, pharmacies must create targeted marketing strategies highlighting the benefits and ease of use of telepharmacy services, ensuring they resonate with the senior population.

Filipino senior citizens are more likely to utilize telepharmacy services when these services are personally relevant to them, especially if they are unwilling or unable to leave their homes due to health concerns or other reasons. The ability of telepharmacy to provide healthcare to individuals in remote or rural locations, as well as those unable to reach a physical pharmacy, serves as a prominent driver.⁴⁶ This makes telehealth valuable for homebound seniors facing barriers such as disability, transportation issues, or isolation.⁴⁷ Additionally, Filipino senior citizens are more likely to increase their use of telepharmacy services if they have positive experiences with them. This finding is backed by a mixed-method study conducted during the COVID-19 pandemic, which showed high patient satisfaction with telemedicine in the Philippines.⁴⁸ Participants reported that they could obtain medical advice and have their health concerns addressed regardless of the delivery method. Hence, ensuring positive experiences and addressing specific needs can significantly boost telepharmacy adoption among senior citizens.

Despite the personal relevance of telepharmacy, some Filipino senior citizens still prefer traditional in-person visits to pharmacies or health centers. They find more comfort and trust in face-to-face interactions with pharmacists, allowing them to convey their concerns effectively. This finding is consistent with a cross-sectional study conducted in Iran,

which found that patients preferred in-person visits to reduce anxiety and increase peace of mind.⁴⁹ Additionally, visiting health centers provides them with free medicines, whereas telepharmacy may incur additional costs. Telepharmacy is free in the Philippines, but this may change as the technology becomes more widespread and regulations are established nationwide. Legislation and regulations for telepharmacy are still underdeveloped in the country. Since most senior citizens are no longer employed, have no pension, or rely on social pensions, future costs associated with using telepharmacy will be a significant challenge for them.

Furthermore, Filipino senior citizens may need help using technology as they often rely on younger family members for technical support. This aligns with a qualitative study in Japan, indicating that senior citizens express concerns about using smartphones and tablets and often require caregiver aid.⁵⁰ Consequently, their technological unfamiliarity poses challenges in accessing telepharmacy services, impeding their understanding of the associated benefits. A systematic review highlighted that during the COVID-19 pandemic, senior citizens faced increased difficulty accessing care through telemedicine.⁵¹ They struggled to acquire the digital literacy needed and had insufficient access to technological devices such as laptops and smartphones.^{52,53} This finding is consistent with our study and is exacerbated by limited access to stable internet. This limitation in communication systems impacts transmission capabilities and hinders patients' use of telepharmacy services. A cross-sectional study in Nigeria supported this finding, identifying inadequate internet connectivity as the primary barrier in telepharmacy practice.⁵⁴

Addressing the barriers to using telepharmacy services among Filipino senior citizens requires a multifaceted approach. For example, local governments can implement digital literacy classes at community centers, libraries, or senior centers to teach basic smartphone use, internet browsing, and email skills. Volunteers with tech expertise can offer personalized support to seniors, and families can play a crucial role by patiently teaching and supporting their senior members. Furthermore, developing accessible technology and user-friendly platforms, alongside improving broadband infrastructure in rural and underserved areas, is critical for ensuring reliable internet connectivity for telepharmacy services.

This study has several limitations. First, snowball sampling may introduce sampling bias, as senior citizens will likely refer others with similar characteristics, such as demographics, attitudes, and behaviors. This sampling technique was chosen due to the absence of a readily available list of telepharmacy users in the study setting. Second, the findings may only apply to senior citizens residing in urban areas. Results from a single geographic location may reflect the specific characteristics of that area, limiting generalizability to other regions. Conducting similar research in rural settings could yield additional insights. Third, the limited number of male participants may introduce gender bias. However, we found no differences in responses between male and female participants. Fourth, FGDs have inherent drawbacks, including social desirability bias and the potential for certain participants to dominate the conversation. To mitigate this, we individually engaged each senior citizen, ensuring equitable opportunities for all to express their viewpoints and emphasizing that there are no right or wrong answers. Finally, using the HBM may limit our understanding of the multidimensional factors influencing telepharmacy usage. Hence, we suggest employing the socio-ecological framework to offer additional insights that include organizational, community, and policy factors in future research. Despite these limitations, our study provides new insights into the factors that facilitate and hinder the use of telepharmacy services among senior citizens in Pasig City, Philippines. By considering a broader range of influences, future studies can develop more comprehensive strategies to enhance the adoption and effectiveness of telepharmacy for senior populations.

5. Conclusion

Telepharmacy enhances the health and well-being of Filipino senior citizens by providing convenient and effective pharmaceutical care. They appreciate the convenience and reliability of telepharmacy services for healthcare advice. Senior citizens' use of telepharmacy is influenced by social factors such as recommendations from friends and family, information from social media, and personal relevance, particularly among those with chronic conditions. Positive experiences increase their likelihood of continued use and recommending the service to others. However, several barriers, including limited knowledge about telepharmacy services, low self-efficacy in using technology, and challenges in access (such as lack of smartphones or unreliable internet), hinder broader adoption.

Future research should prioritize evaluating the effectiveness of telepharmacy interventions, exploring the experiences of specific subgroups, such as rural or low-income senior citizens, and conducting longitudinal studies to monitor changes in telepharmacy utilization over time. These efforts will help refine strategies to optimize telepharmacy services for senior citizens in the Philippines.

CRediT authorship contribution statement

Rogie Royce Carandang: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Funding acquisition, Formal analysis, Conceptualization. **Yedda Marie Ancheta:** Writing – review & editing, Visualization, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Geneveve Beleno:** Writing – review & editing, Visualization, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Ana Madith Gonzales:** Writing – review & editing, Visualization, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Nicole Isabelle Longaza:** Writing – review & editing, Visualization, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors declare no conflict of interest.

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Appendix A. Supplementary data

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