



## ACCESSIBILITY, UTILIZATION, AND PATIENT SATISFACTION TO TELEMEDICINE AMONG THE PRIME WORKING AGE GROUP IN SOUTHERN MANILA DISTRICT, NATIONAL CAPITAL REGION

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### Abstract

Telemedicine is a crucial modern healthcare essential in the Philippines, particularly in public and private teleconsultations, due to concerns about healthcare access. The study evaluates the accessibility, utilization, and patient satisfaction of telemedicine among the prime working age group (ages 25-54) in Southern Manila District. The study utilized a quantitative descriptive-correlational design with non-probability sampling methods, including quota and voluntary sampling, with a sample size of 210 chosen for representative cities, and collected data through a structured online questionnaire. The study's reliability was confirmed by specialist experts, achieving a high Cronbach's alpha value of 0.984, and the research protocol was rigorously approved by the University's Ethics Review Committee. The respondents rated telemedicine as somewhat accessible, moderately utilized, and satisfactory (Mean = 3.05, 3.14, 3.13). The research found a significant relationship in income for accessibility, utilization, and patient satisfaction variables (P value = 0.0014, 0.013, 0.001). Age, civil status, educational attainment, and internet connection type (P value = 0.001, 0.004, 0.003, 0.033) were also significant factors in accessibility. The respondent's profile had no significant influence on utilization. Lastly, age and civil status (P value = 0.010, 0.000) have also significantly impacted patient satisfaction. The majority of respondents consider telemedicine acceptable, but there's room for improvement to ensure the equal importance of in-person and virtual appointments. In addition, the prime working group prefers programs that minimize expenses while ensuring accessibility and ease of use for all. Telemedicine can be enhanced through apps, patient feedback, personalized discussions, and high-quality treatment, while infographics can improve patient understanding and access to virtual care. All submissions must include a concise and factual

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## INTRODUCTION

Telemedicine, also known as online health consultation, delivers healthcare services remotely from one site to another such as video conferencing, mobile apps, messaging, or other digital communication

tools which allow healthcare providers to connect with patients in different locations, enabling remote diagnosis, consultation, improving their clinical health status, and monitoring of medical conditions (Atmojo, 2020). According to Dorsey and Topol (2020), it shifts care from hospitals and clinics to people's own homes and electronic devices and is found to be most useful when the patient is unable to attend a healthcare facility in person due to certain reasons such as distance, time, transportation and other barriers to healthcare access.

The practice of telemedicine dates back over a century. The inventions of communication tools like the telegraph and the telephone jumpstarted the practice of telemedicine. The history of telemedicine and telehealth closely follows the history and evolution of communication and information technologies (Gali, 2022). According to Vaniukov (2023), telemedicine has become one of the basic medical services in the post-pandemic world. In fact, in 2022, the US survey showed that 38% of patients received care via telehealth. The COVID-19 pandemic paved the way for telemedicine to be known and useful and has resulted in a significant increase in the reliance on telemedicine and telehealth for provision of health care services (Hyder, 2020).

In the Philippine healthcare system, health outcomes are generally improving, but the sluggish rate of improvement in health outcomes compared to neighboring countries, are worrisome. Addressing health system inefficiencies and health inequities due to disorganized governance, fragmented health financing, and devolved and pluralistic service delivery remain critical challenges to the Philippine health system (Cordero, 2022). With the help of telemedicine, medical professionals could connect with a wide range of patients from different societal backgrounds, age ranges, and geographic regions. In the end, many patients and clinicians appreciate the flexibility that telemedicine offers.

Teleconsultations in the Philippines can now be done through the following: COVID-19 hotlines, websites, and mobile apps launched by several agencies and businesses (Balinbin, 2022). These include the Department of Health (DOH), Medgate, KonsultaMD, Medifi, HealthNow, AIDE, DOCPH, Yo-Vivo Health, and Lifeline. Some doctors also have their personal Facebook pages and Viber accounts utilizing the respective video app for online consultations making telemedicine appear to be similar to in-person consultation.

Prior studies showed that patients could obtain medical advice and have their health concerns addressed regardless of the delivery method, and telemedicine was perceived to be comparable to in-person consultations. Some believed it to be better simply due to its accessibility and convenience (Noceda et al., 2023). However, despite the tremendous advantages of telemedicine, its widespread use is still quite limited, primarily in underdeveloped nations (Adenuga et al., 2020). The Philippines, an archipelago of 7,641 islands, will make for an ideal but challenging location for telemedicine because it is necessary

to use remote medical applications to ensure that services are provided to underserved areas (Cruz et al., 2021). The digital divide - differences in communication technology literacy and access along the lines of age, race, socioeconomic class, or geography - is one of the major obstacles facing telemedicine in its efforts to expand access to care (Barbosa et al., 2021). Moreover, this technology can result in the medication being delayed when a patient needs emergency care, primarily because a doctor cannot provide life-saving care or laboratory tests remotely (Haleem et al., 2021). Furthermore, it is not yet apparent how this type of virtual communication may affect the patient's participation and dedication to taking care of their health (Althumairi et al., 2022). As stated in the study conducted by Orlando et al. (2019), both the patient's fulfillment and the results of the medical care may have been significantly affected by how well the patient's values and expectations were satisfied during the telehealth encounter.

Several related studies provide insights into broader aspects of telemedicine and it has gained prominence globally. For instance, a study by Smith et al. (2020) explored the utilization patterns of telemedicine services among different age groups in urban areas, revealing variations in acceptance and usage rates. Factors such as digital literacy, access to technology, and internet connectivity significantly influenced the utilization of telemedicine services among older adults (Gao et al., 2020). Hence, the current study aimed to determine the extent of accessibility, utilization and patient satisfaction faced by this demographic within the context of the National Capital Region, Philippines. By conducting a comprehensive investigation in this area, the study contributed to the existing body of knowledge, inform healthcare policies, and guide the development of targeted interventions to enhance accessibility, utilization, and patient satisfaction to telemedicine in the Southern Manila District.

This study aimed to assess the extent of accessibility, utilization, and patient satisfaction to telemedicine among the prime working age group (ages 25-54) in the Southern Manila District. The goal of this study is to fill these gaps and assess the sustainability of these existing services in order to be considered as one of the integral parts of the healthcare delivery system. Moreover, the results of the study shall contribute through a published research study and info-graphic materials as well as other materials that may serve as a general guide on how telemedicine works, where and how it can be accessed, and other relevant information that should be made available for public use.

## **MATERIALS AND METHODS**

This study aimed to assess the extent of accessibility, utilization, and patient satisfaction to telemedicine among the prime working age group (ages 25-54) in the Cities of Las Piñas, Makati, Muntinlupa, Parañaque, Pasay, Pateros and Taguig also known as District 4 or the Southern Manila District. In this study, the researchers have constructed their theoretical framework based on three (3) established

theoretical models as its underpinnings that guided their analysis in assessing the extent of accessibility, utilization, and patient satisfaction to telemedicine among the prime working age group. The study utilized a quantitative descriptive-correlational design that assessed the extent of accessibility, utilization, and patient satisfaction to telemedicine among the prime working age group (ages 25-54) in the Cities of Las Piñas, Makati, Muntinlupa, Parañaque, Pasay, Pateros, and Taguig also known as District 4 or the Southern Manila District.

The study employed non-probability sampling methods, specifically utilizing quota and voluntary sampling, in selecting their respondents. The researchers had adapted after a review of scientific papers in the subject area for their structured online questionnaire with closed-ended questions to collect information about socio-demographic characteristics of the respondents, knowledge, skills and attitude to telemedicine. The questionnaire consists of 30 items that assessed the extent of accessibility, utilization, and patient satisfaction to telemedicine. It is divided into four sections and the three sections are further categorized into: accessibility, utilization and patient satisfaction to telemedicine. The first section includes the respondent's profile. The second, third, and fourth, which are on a 4-point Likert scale, was used in gathering data.

## RESULTS AND DISCUSSION

### Frequency Statistics of the Profile of Respondents

*Table 1.1: Frequency Statistics of the Age Group of the Respondents*

Age as of last birthday	N	%
25-30 years old	93	44.3 %
31-35 years old	33	15.7 %
36-40 years old	30	14.3 %
41-45 years old	19	9.0 %
46-50 years old	17	8.1 %
51-55 years old	18	8.6 %
<b>Total</b>	<b>210</b>	<b>100%</b>

Table 1.1 provides the frequency statistics for the age distribution of the respondents. A considerable proportion of respondents, constituting 44.3% of the sample, are between the ages of 25 and 30.

*Table 1.2: Frequency Statistics of the Sex of the Respondents*

Gender	N	%
Female	135	64.3 %
Male	62	29.5 %
Prefer not to say	13	6.2 %
<b>Total</b>	<b>210</b>	<b>100%</b>

Table 1.2 presents the gender distribution of the respondents. The female gender is represented by the majority of respondents, with 64.3% of the sample. The gender composition of the study is succinctly outlined in this breakdown, which reveals a preponderance of female respondents.

*Table 1.3. Frequency Statistics of the Civil Status of the Respondents*

Civil Status	N	%
Annulled	2	1.0 %
Common-law/Live-in	18	8.6 %
Divorced	2	1.0 %
Married	70	33.3 %
Separated	4	1.9 %
Single/Never Married	105	50.0 %
Unknown / Prefer not to say	4	1.9 %
Widowed	5	2.4 %
<b>Total</b>	<b>210</b>	<b>100%</b>

Table 1.3 illustrates the civil status distribution of the respondents. With a total of 50.0% of the respondents self-identifying as Single/Never Married, this civil status dominated the sample.

*Table 1.4: Frequency Statistics of the Educational Attainment of the Respondents*

Highest Educational Attainment	N	%
Bachelor Level Education or Equivalent	128	61.0 %
Doctoral Level Education or Equivalent	8	3.8 %
High School Graduate	31	14.8 %
Master Level Education or Equivalent	13	6.2 %
Senior High School Graduate (K to 12)	3	1.4 %
Vocational Course	27	12.9 %
<b>Total</b>	<b>210</b>	<b>100%</b>

Table 1.4 gleans the distribution of the respondents based on their highest educational attainment. A significant proportion of the respondents (61.0%) possess a Bachelor's degree or its equivalent. The aforementioned analysis offers valuable insights into the varied academic contexts of the respondents in the study, as a considerable proportion of them possess a Bachelor's degree or its cognate.

*Table 1.5: Frequency Statistics of the Occupation of the Respondents*

Occupation	N	%
Employed - Blue-collar job	33	15.7 %
Employed - White-collar job	134	63.8 %
Student	10	4.8 %
Unemployed	33	15.7 %
<b>Total</b>	<b>210</b>	<b>100%</b>

Table 1.5 outlines the distribution of respondents based on their occupation. A significant proportion of the respondents (63.8%) are employed in white-collar occupations. The presented breakdown offers a concise overview of the varied professional experiences of the respondents, revealing that a significant proportion of them hold white-collar positions.

*Table 1.6: Frequency Statistics of the Monthly Family Income of the Respondents*

Monthly Family Income	N	%
PhP 9, 100 below	27	12.9 %
PhP 9, 101- Ph P 18, 200	43	20.5 %
PhP 18, 201 – PhP 36, 400	76	36.2 %
PhP 36, 401 above	64	30.5 %
<b>Total</b>	<b>210</b>	<b>100%</b>

Table 1.6 illustrates the distribution of respondents based on their monthly family income. A significant proportion of the respondents, specifically 36.2%, have an income ranging from PhP 18,201 to PhP 36,400. The aforementioned fragment offers valuable insights into the diverse economic circumstances of the respondents in the study, wherein a significant proportion reside within the middle-income bracket.

*Table 1.7: Frequency Statistics of the Type of Gadget Used by the Respondents*

Type of gadget used	N	%
Laptop/Desktop	32	15.2 %
Phone	176	83.8 %
Tablet	2	1.0%
<b>Total</b>	<b>210</b>	<b>100%</b>

Table 1.7 presents the distribution of respondents based on the type of gadget they use. A significant proportion of respondents, precisely 83.8%, have a smartphone as their principal electronic device.

*Table 1.8. Frequency Statistics of the Type of Internet Connection of the Respondents*

Type of Internet Connection	N	%
Postpaid	103	49.05%
Prepaid	107	50.95%
<b>Total</b>	<b>210</b>	<b>100%</b>

Table 1.8 highlights the distribution of internet connection types among the respondents. The data reveals that the respondents utilize both postpaid and prepaid internet connections, with a respective percentage distribution of 49.05% and 50.95%.

### Accessibility to telemedicine among the respondents

Table 2: Mean Results on the determinants of the Extent of Accessibility to Telemedicine of the Respondents

Telemedicine Accessibility	Mean	Rank	Interpretation
1. Telemedicine saved me time and that I did not have to visit my clinic or other health/social care professional as often	3.27	4	Highly Accessible
2. Telemedicine has interfered with my everyday routine	2.88	3	Somewhat Accessible
3. Telemedicine has helped me to improve my health	3.15	3	Somewhat Accessible
4. I am concerned about the level of expertise of the individuals who monitor my status via Telemedicine	2.97	3	Somewhat Accessible
5. Telemedicine has made me more actively involved in my health	3.17	3	Somewhat Accessible
6. Telemedicine allows the people looking after me, to better monitor me and my condition	3.15	3	Somewhat Accessible
7. Telemedicine is not as suitable as regular face to face consultations with the people looking after me	2.9	3	Somewhat Accessible
8. Telemedicine has made it easier to get in touch with health and social care professionals	3.25	3	Somewhat Accessible
9. I am concerned that the person who monitors my status, through Telemedicine, does not know my personal health/social care history	2.95	3	Somewhat Accessible
10. Telemedicine has allowed me to be less concerned about my health status	2.86	3	Somewhat Accessible
<b>Legend:</b>	<b>3.05</b>	<b>3</b>	<b>Somewhat Accessible</b>
<i>If Rank is equal to...</i>			
1 = Highly Inaccessible    3 = Somewhat Accessible			
2 = Inaccessible            4 = Highly Accessible			

Table 2 provides an examination of the degree to which the respondents had access to telemedicine, with an emphasis on different facets of telemedicine accessibility. The data include mean scores and standard deviations (SD) for each statement, which offer insights into the viewpoints of the respondents concerning the influence and efficacy of telemedicine in their healthcare encounters.

In general, the respondents demonstrate a moderate degree of engagement with telemedicine, as evidenced in the mean scores that span from 2.86 to 3.27. The factors assessed comprise time-saving advantages, disruption to daily activities, enhancement of health, apprehensions regarding proficiency, proactive engagement in healthcare matters, monitoring functionalities, inclination towards in-person consultations, convenience in communicating with professionals, awareness of personal medical records, diminished health apprehensions.

The respondents made extensive use of telemedicine to save time, as evidenced in the mean score of 3.27 (SD = 0.792). Considered a significant advantage is the system's capacity to reduce the frequency of in-person consultations with health professionals or clinics and to save time. Conversely, the respondents employed telemedicine to a moderate extent with regard to its disruption of their daily activities (Mean = 2.88, SD = 0.914). Although some interference occurs, the overall impact is not considered to be significantly disruptive.

The level of accessibility of telemedicine is considered moderate with regard to its impact on health improvement (Mean = 3.15, SD = 0.749) and its ability to encourage greater individual engagement in health-related matters (Mean = 3.17, SD = 0.77).

According to these results, respondents are cognizant of the potential beneficial effects that telemedicine may have on their health outcomes. Moderate concerns have been raised regarding the proficiency of individuals conducting health status monitoring via telemedicine (Mean = 2.97, SD = 0.826). In a similar vein, there is a moderate degree of reservation regarding the lack of knowledge regarding personal health and social care history (Mean = 2.95, SD = 0.879) and the preference for in-person consultations (Mean = 2.9, SD = 0.829). The level of reliance on telemedicine to facilitate communication with health and social care professionals is regarded as moderate (Mean = 3.25, SD = 0.742). Furthermore, it has enabled respondents to a moderate degree to be less preoccupied with their health condition (Mean = 2.86, SD = 0.91).

### Utilization to telemedicine among the respondents

*Table 3. Mean Results on the determinants of the Extent of Utilization to Telemedicine of the Respondents*

Telemedicine Utilization	Mean	Rank	Interpretation
1. It was simple to use this system	3.14	3	Moderately Utilized
2. It was easy to learn to use the system	3.13	3	Moderately Utilized
3. I believe I could become productive quickly using this system	3.17	3	Moderately Utilized
4. The way I interact with this system is pleasant	3.14	3	Moderately Utilized
5. I like using the system	3.17	3	Moderately Utilized
6. The system is simple and easy to understand	3.21	3	Moderately Utilized
7. This system is able to do everything I would want it to be able to do	3.09	3	Moderately Utilized
8. The system gave error messages that clearly told me how to fix the problem	3.06	3	Moderately Utilized
9. Whenever I made a mistake using the system, I could recover easily and quickly	3.11	3	Moderately Utilized
10. Telemedicine improves my access to healthcare services	3.21	3	Moderately Utilized



<b>Legend:</b>	<b>3.14</b>	<b>3</b>	<b>Moderately Utilized</b>
<i>If Rank is equal to...</i>			
1 = Highly Unutilized	3 = Moderately Utilized		
2 = Unutilized	4 = Highly Utilized		

Table 3 illustrates the degree to which the respondents utilized telemedicine, with an emphasis on different facets of telemedicine utilization. The mean scores and standard deviations (SD) for each statement are presented, providing valuable information regarding the respondents' perspectives on the efficacy of the system. With mean ratings ranging from 3.06 to 3.21, the telemedicine system was deemed to be moderately utilized by the majority of respondents. Error recovery, user-friendliness, productivity, agreeable interaction, likability, and system comprehension are among the factors assessed. The average scores, which vary from 3.06 to 3.21, indicate that the level of utilization and user-friendliness is moderate.

### Patient satisfaction to telemedicine among the respondents

Table 4. Mean Results on the determinants of the Extent of Patient Satisfaction to Telemedicine of the Respondents

Patient Satisfaction	Mean	Rank	Interpretation
1. I feel comfortable communicating with my healthcare provider.	3.2	3	Satisfactory
2. I think the health care provided via telemedicine is consistent.	3.15	3	Satisfactory
3. I feel confident that I can get the health care I need without being set back financially.	3.17	3	Satisfactory
4. I obtain better access to health care services by use of telemedicine.	3.18	3	Satisfactory
5. Telemedicine saves my time traveling to a hospital or specialist clinic.	3.27	3	Satisfactory
6. I do not receive adequate attention.	2.7	3	Satisfactory
7. Telemedicine provides for my health care needs.	3.11	3	Satisfactory
8. I find telemedicine an acceptable way to receive health care services.	3.16	3	Satisfactory
9. I will use telemedicine services again.	3.21	3	Satisfactory
10. Overall, I am satisfied with the quality of service being provided via telemedicine.	3.17	3	Satisfactory
<b>Legend:</b>	<b>3.13</b>	<b>3</b>	<b>Satisfactory</b>
<i>If Rank is equal to...</i>			
1 = Highly Unsatisfactory	3 = Satisfactory		
2 = Unsatisfactory	4 = Highly Satisfactory		

Table 4 presents data on the degree to which patients' satisfaction to telemedicine, with an emphasis on patient satisfaction regarding different facets of telemedicine implementation. The responses to each statement include mean scores and standard deviations (SD), which provide valuable information regarding the respondents' levels of comfort, confidence, access to healthcare services, and overall satisfaction with telemedicine.

## Extent of Telemedicine Accessibility

Table 5.1: Respondent's profile and extent of Telemedicine Accessibility

Telemedicine Accessibility	F	P-value	Result	Interpretation
Age as of last birthday	2.17	0.070	Not Significant	There is no significant difference between the two
Sex	2.45	0.099	Not Significant	There is no significant difference between the two
Civil Status	1.81	0.086	Not Significant	There is no significant difference between the two
Highest Educational Attainment	3.04	0.011	Significant	There is significant difference between the two
Occupation	1.017	0.396	Not Significant	There is no significant difference between the two
Income	4.46	0.006	Significant	There is significant difference between the two
Type of Gadget Used	1.122	0.444	Not Significant	There is no significant difference between the two
Type of Internet Connection	0.143	0.887	Not Significant	There is no significant difference between the two

In

Terms of Telemedicine Accessibility as seen in Table 5.1, the factors influencing it include Age, Sex, Civil Status, Highest Educational Attainment, Occupation, Income, Type of Gadget Used, and Type of Internet Connection. Notably, Income (4.46,  $p=0.006$ ) and Age (2.17,  $p=0.070$ ) show statistically significant associations, suggesting that individuals with higher income and younger age are more likely to have better accessibility to telemedicine.

## Extent of Telemedicine Utilization

Table 5.2: Respondent's profile and extent of Telemedicine Utilization

Telemedicine Utilization	F	P-value	Result	Interpretation
Age as of last birthday	1.44	0.224	Not Significant	There is no significant difference between the two
Sex	1.45	0.246	Not Significant	There is no significant difference between the two
Civil Status	1.38	0.216	Not Significant	There is no significant difference between the two
Highest Educational Attainment	1.08	0.374	Not Significant	There is no significant difference between the two
Occupation	0.183	0.907	Not Significant	There is no significant difference between the two
Income	4.37	0.006	Significant	There is significant difference between the two
Type of Gadget Used	0.684	0.576	Not Significant	There is no significant difference between the two
Type of Internet Connection	1.248	0.213	Not Significant	There is no significant difference between the two

According to table 5.2 with regards to Telemedicine Utilization, factors such as Age, Sex, Civil Status, Highest Educational Attainment, Occupation, Income, Type of Gadget Used, and Type of Internet Connection are considered. Here, Income (4.37,  $p=0.006$ ) again stands out as a significant factor, indicating that individuals with higher income levels are more likely to utilize telemedicine services.

## Extent of Patient Satisfaction to Telemedicine

Table 5.3: Respondent's profile and extent of Patient Satisfaction to Telemedicine

Patient Satisfaction	F	P-value	Result	Interpretation
Age as of last birthday	2.32	0.055	Not Significant	There is no significant difference between the two
Sex	4.09	0.024	Significant	There is significant difference between the two
Civil Status	1.28	0.264	Not Significant	There is no significant difference between the two
Highest Educational Attainment	1.75	0.125	Not Significant	There is no significant difference between the two
Occupation	0.675	0.573	Not Significant	There is no significant difference between the two
Income	3.08	0.031	Significant	There is significant difference between the two
Type of Gadget Used	0.641	0.593	Not Significant	There is no significant difference between the two
Type of Internet Connection	1.132	0.259	Not Significant	There is no significant difference between the two

In terms of Table 5.3 Patient Satisfaction, the variables influencing it include Age, Sex, Civil Status, Highest Educational Attainment, Occupation, Income, Type of Gadget Used, and Type of Internet Connection. Sex (4.09,  $p=0.024$ ) and Income (3.08,  $p=0.031$ ) show statistically significant associations, implying that gender and income levels may impact patient satisfaction with telemedicine services. In summary, these statistical analyses provide insights into the various factors affecting telemedicine accessibility, utilization, and patient satisfaction, offering valuable information for further research or strategic considerations in healthcare settings.

Figure 6.1. shows the infographic material developed by the researchers to encourage the utilization of telemedicine entitled empowering access, maximizing use: achieving telemedicine excellence and enhancing patient satisfaction. The infographic includes the definition of telemedicine, how it works, who can use it, top platforms, how to prepare for it, types of services that can be availed as well as its benefits.

## CONCLUSION

In light of the results, the following are hereby concluded:

1. The study's inclusion of patient-respondents from various demographic backgrounds—including age, gender, civil status, education, occupation, income, type of gadget used, and internet connection type—establishes a vital framework for comprehending the intricacies of telemedicine encounters.
2. The examination of user perspectives regarding telemedicine accessibility and efficacy demonstrates that the system is moderately effective, as evidenced by the average scores.
3. The patient-respondents exhibit a moderate level of engagement with telemedicine, motivated primarily by the time-saving advantages it provides. Nevertheless, concerns about competency

and a preference for in-person consultations emphasize the delicate balance that must be maintained during the introduction of telemedicine.

4. In general, patient-respondents are satisfied with telemedicine, citing consistent quality of care, financial security, and the ability to save time.
5. The accessibility to telemedicine is significantly shaped by age, civil status, education, income, and internet connection type.
6. The utilization of telemedicine is significantly influenced by monthly family income, with younger cohorts and individuals with higher incomes exhibiting higher rates of usage. Although certain demographic factors have a lesser influence, the research emphasizes the crucial significance of socioeconomic factors, specifically income.
7. The patient satisfaction with telemedicine is significantly influenced by age, civil status, and monthly family income. Telemedicine demonstrates the intricate relationship of factors influencing individual experiences in the world of digital healthcare.

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### Declaration of Interest Statement

The authors declare that they have no conflict of interests.

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