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Factors Associated with Informal Telemedicine Use Among Residents of Two Rural Communes in The Red River Delta, Vietnam

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ABSTRACT: Drawing on survey data from 400 residents aged 18 years and older in O Dien commune (Hanoi) and Hop Thinh commune (Bac Ninh province) in the Red River Delta, this article describes informal telemedicine use and examines its associated factors. Residents mainly connected with health workers through everyday communication channels: among the 134 respondents who had used telemedicine, 59.0% had made phone calls, 33.6% video calls, and 23.9% had exchanged text messages with doctors, whereas only 17.9% had booked appointments or received consultations through a health application. The most common purposes were consultations for common illnesses (55.2%) and for chronic conditions (32.1%). The main reasons for non-use were unawareness of the service (44.0%) and a preference for seeing a doctor in person (19.5%), while health insurance coverage (78.0%) and lower costs per consultation (59.5%) were the most frequently selected factors that would encourage use. Binary logistic regression showed that older age was associated with lower odds of telemedicine use and regular Internet use with higher odds, whereas living standard, commune of residence, and health-related factors were not statistically significant. The findings suggest that formal telemedicine models should build on communication channels already familiar to residents and be linked to health insurance reimbursement and quality assurance mechanisms.

KEYWORDS: informal telemedicine, health-seeking behavior, rural areas, Red River Delta, Vietnam

INTRODUCTION

Telemedicine is a key pillar of the digital transformation of Vietnam's health sector. Following the Telemedicine Scheme for 2020–2025 (Ministry of Health, 2020), telemedicine was codified in Article 80 of the 2023 Law on Medical Examination and Treatment (National Assembly, 2023), brought within the scope of health insurance reimbursement from 1 July 2025 (National Assembly, 2024), and further emphasized in Resolution No. 72-NQ/TW of 9 September 2025 (Politburo, 2025). However, formal platforms such as VTelehealth mainly serve professional consultations between health facilities. Clinical guidelines for telemedicine between practitioners and patients were introduced on a pilot basis by the Ministry of Health only in October 2026 (Ministry of Health, 2026a), and changing people's habits has been identified as one of the greatest obstacles (UNDP & Ministry of Health, 2023). Meanwhile, in many rural areas, residents have already been connecting with health workers remotely through phone calls, text messages, and the Zalo application, relying mainly on personal acquaintance and operating outside the professional procedures of health facilities.

This phenomenon has been documented in several low- and middle-income countries. Hampshire et al. (2015) proposed the concept of informal telemedicine (informal mHealth) to describe people's self-initiated use of mobile phones to access health care outside programs implemented by the state or other organizations. Their study of more than 4,500 young people in Ghana, Malawi, and South Africa showed that young people use mobile phones creatively to fill gaps in health systems, but that the effectiveness of these practices depends on each individual's "digital capital" (digital capital), comprising material resources, social networks, and skills, and is constrained by weaknesses in service provision and carries potential risks for users. At a larger scale, a survey of 2,197 community health workers in Ghana, Ethiopia, and Malawi found that only about 15% used formal mHealth applications, whereas more than 97% regularly used their personal phones for work. Health workers bore the costs and risks themselves, and low-income rural groups were the most disadvantaged (Hampshire et al., 2021). The authors recommended that policy acknowledge informal telemedicine as a reality already occurring at scale and intervene proactively to reduce inequalities without undermining practices that are working well. Telemedicine in low- and middle-income countries therefore cannot be examined solely through formal platforms.

In Vietnam, studies have likewise shown a preference for simple modes of connection. Personal health consultation by phone was the form most commonly used by patients (82%), ahead of consultation via health facility platforms (68%) (D. Q. A. Nguyen, 2023). Patients at hospitals that had implemented telemedicine preferred synchronous modes, particularly phone calls (57.8%) (Ta et al., 2025). Levels of use varied markedly across samples: 58.7% of patients at these hospitals had used at least one form of telemedicine (Ta et al., 2025), compared with only 6.3% of community residents in Central Vietnam who used telemedicine for cardiovascular care (D. Q. A. Nguyen & M. T. Nguyen, 2021). Use was also

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strongly shaped by context: demand rose sharply during the COVID-19 pandemic but declined quickly once travel restrictions were lifted, with only 17.8% of clients returning to the service (T. M. T. Nguyen et al., 2023).

Previous studies have identified several factors associated with the demand for and use of telemedicine. These include age (people under 60 had about three times the demand of those aged 60 and older), education, and health status (people with cardiovascular disease had 2.34 times the demand) (D. Q. A. Nguyen & M. T. Nguyen, 2021). Other factors include access to information and familiarity with the service, with recommendations from doctors and health workers being the most trusted source of influence (H. L. Nguyen et al., 2022). Economic conditions, health insurance, and difficulty traveling to health facilities also affect telemedicine use (Ta et al., 2025). However, these studies were conducted mainly among hospital patients or urban residents, focused on services provided by health facilities, and largely measured demand, intention, or willingness to pay rather than actual behavior. Informal modes of connection, although widely used, have not been examined as a distinct behavior, and rural residents have received insufficient attention.

To address these gaps, this article uses survey data from 400 residents aged 18 years and older in O Dien commune (Hanoi) and Hop Thinh commune (Bac Ninh province) in the Red River Delta (conducted in the fourth quarter of 2025) to describe informal telemedicine use and to examine its associations with sociodemographic characteristics, health status, and technological conditions. The findings provide evidence for designing formal telemedicine models that fit the existing practices of rural residents.

1. CONCEPTS AND METHODS

The World Health Organization characterizes telemedicine as health care provided across distance by health professionals of all disciplines, who rely on information and communication technologies to exchange reliable information for the diagnosis, treatment, and prevention of diseases and injuries, with the overarching aim of improving the health of individuals and communities (WHO, 2022, p. 2). In this framing, physical separation between provider and patient is the defining condition, and digital technology is the enabling means. Although new terms and operational models continue to emerge as technologies evolve, the essence of telemedicine remains the provision of care to people who are not physically co-located with their providers (WHO, 2022).

In Vietnam, formal telemedicine is defined in the guidelines attached to Official Letter No. 7780/BYT-KCB of 14 October 2026 issued by the Ministry of Health (currently being piloted) as medical examination and treatment "without direct contact between the practitioner and the patient", delivered through devices and information technology (Ministry of Health, 2026a). Formal telemedicine is thus a service designed as an official system, usually involving or connected to a health facility and operating on a standardized platform or procedure, rather than spontaneous contact between two individuals.

In this article, informal telemedicine refers to the ways in which people at a distance (not in the same location) connect with health workers to exchange information on disease prevention and treatment, schedule medical appointments, and receive prescriptions using information technology and telecommunication devices. This working definition retains the core element of the formal definition, namely the spatial separation between residents and health workers who are connected through technological and telecommunication devices. However, health workers in this definition are not limited to those affiliated with a formal health facility or a platform licensed to provide telemedicine; they also include acquainted doctors and relatives working in the health sector.

Methods

The study was conducted in O Dien commune (Hanoi) and Hop Thinh commune (Bac Ninh province) in the Red River Delta, Vietnam, in the fourth quarter of 2025. The quantitative sample comprised 400 respondents across the two communes, of whom 266 (66.5%) had never used telemedicine and 134 (33.5%) had used it. Because the study was exploratory, aiming to generate initial findings on residents' behavior regarding telemedicine, a service not yet widely implemented in health facilities or rural communities, purposive sampling was used to ensure that a sufficient number of telemedicine users participated in the survey for comparative statistical analyses. Data were analyzed using descriptive statistics and binary logistic regression.

2. RESULTS

2.1. Telemedicine use

2.1.1. Modes of telemedicine use of the 400 respondents, 266 had never used telemedicine and 134 had used it. The modes of telemedicine use were analyzed among the 134 users.

Table 1. Modes of telemedicine use

Mode of telemedicine	N	%
1. Phone call with a doctor	79	59.0
2. Video call with a doctor (via Zalo, Zoom, etc.)	45	33.6
3. Text messaging/chat with a doctor for advice	32	23.9
4. Booking and consultation via a health app	24	17.9

Note: Multiple-response question (n = 134). Source: Project survey data.

Table 1 shows that phone calls with doctors were the most common mode (59.0%; 79/134). Voice calls are a familiar technology that requires no digital skills or special devices and therefore suits people of different ages and educational levels.

Video calls with doctors (via Zalo or Zoom) ranked second (33.6%; 45/134). Zalo is a popular and easily accessible messaging and calling platform in Vietnam, so video calls with doctors through such applications are also widely used.

Text messaging/chatting with doctors to ask about illnesses and receive advice accounted for 23.9% (32/134), whereas booking and consultation through a health application was the least common mode (17.9%; 24/134). Thus, the three most common modes are all everyday communication channels rather than dedicated telemedicine platforms.

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2.1.2. Purposes of telemedicine use

Table 2. Purposes of telemedicine use

Purpose	N	%
1. Common illnesses (colds, fever, etc.)	74	55.2
2. Chronic disease consultation (hypertension, diabetes, etc.)	43	32.1
3. Follow-up after hospital treatment	35	26.1
4. Quick questions about minor health issues	30	22.4
5. Nutrition counseling	18	13.4
6. Mental health counseling	7	5.2
7. Other	7	5.2

Note: Multiple-response question (n = 134). Source: Project survey data.

Most common purposes

Table 2 shows that the most common purpose was consultation for common illnesses such as colds and fever (55.2%; 74 respondents). Residents primarily regard telemedicine as a quick means of obtaining initial medical advice for mild acute conditions that do not require a hospital visit. This is consistent with the list of mild acute conditions eligible for telemedicine, such as acute nasopharyngitis, chronic nasopharyngitis, fever, and influenza, set out in the Ministry of Health's list of 50 diseases and health conditions eligible for telemedicine (Ministry of Health, 2023). Providing telemedicine for such common conditions helps reduce unnecessary in-person visits and thus hospital overcrowding.

The second most common purpose was consultation and care for chronic diseases such as diabetes and hypertension (32.1%). Vietnam faces a growing burden of noncommunicable diseases, which require regular monitoring and long-term medication combined with dietary management and self-monitoring. Telemedicine is therefore well suited to monitoring chronic conditions: through telemedicine, patients can interact with doctors periodically and obtain medication without traveling to hospitals and waiting for appointments. The inclusion of many chronic diseases in the Ministry of Health's telemedicine list indicates that this service is increasingly prioritized and may become one of the most important remote health-monitoring services in the future, particularly given the rising burden of noncommunicable diseases in Vietnam.

Relatively common purposes

Follow-up after hospital treatment was the third most common purpose (26.1%). The Ministry of Health includes post-procedure and post-surgical monitoring, follow-up after cancer treatment, palliative care, and tuberculosis follow-up among the conditions eligible for telemedicine. This finding reflects residents' need for follow-up and monitoring after discharge without returning to the hospital in person, and shows that telemedicine helps ensure continuity of care by enabling patients to stay connected with doctors without repeated trips to health facilities.

Quick questions about minor health issues were also relatively common (22.4%). This may reflect a trend toward more proactive health care: rather than visiting health facilities only when ill, residents seek information and advice as soon as initial symptoms appear. This trend aligns with the shift from a curative mindset toward proactive prevention and comprehensive life-course health care advocated in Resolution No. 72-NQ/TW (Politburo, 2025), and suggests the potential of telemedicine as a tool for strengthening preventive medicine and primary health care.

Less common purposes

Less common purposes included nutrition counseling (13.4%), mental health counseling (5.2%), and other purposes (5.2%). Although telemedicine services cover nutrition counseling (e.g., obesity) and mental health counseling (e.g., mental disorders, anxiety disorders, depression, and dementia), relatively few residents used telemedicine for these conditions. This may stem from a lack of information about local online mental health services, personal reluctance, or social stigma surrounding mental health problems. Nevertheless, these areas offer considerable potential for the future development of online health care as mental health issues receive increasing public attention.

3.1.3. Reasons for non-use and factors encouraging telemedicine use

Reasons for non-use

Table 3 presents the main reasons for non-use among the 266 respondents who had never used telemedicine, by commune.

Table 3. Main reasons for not using telemedicine (%)

	O Dien	Hop Thinh	Total %	N (total)
1. I am not aware of this service	51.1	36.0	44.0	117
2. I prefer to see a doctor in person	10.6	29.6	19.5	52
3. I have not been referred by a doctor	12.1	8.8	10.5	28
4. I do not trust the quality of telemedicine	7.1	10.4	8.6	23
5. I do not know how to use the technology	11.3	4.0	7.9	21
6. I am concerned about the cost of the service	5.7	8.0	6.8	18
7. I do not have the necessary devices	2.1	3.2	2.6	7
Total			**100.0**	**266**

Note: $p < 0.001$ (chi-square test comparing the distribution of reasons between the two communes). Source: Project survey data.

Table 3 shows that nearly half of non-users (44.0%) reported that they were unaware of the service. This finding has important policy implications: the main barrier lies not in technology, cost, or trust, but in a lack of basic information about the service.

The second most common reason was a preference for seeing a doctor in person (19.5%), suggesting that the barrier stems more from residents' habits and attitudes than from technical issues.

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The distribution of reasons differed significantly between the two communes ($p < 0.001$). In O Dien, the proportions of respondents who were unaware of the service (51.1% vs. 36.0%) and who did not know how to use the technology (11.3% vs. 4.0%) were higher than in Hop Thinh. Conversely, the proportion preferring in-person consultations in Hop Thinh was nearly three times that in O Dien (29.6% vs. 10.6%). Thus, the main barriers in O Dien were a lack of information and skills, whereas in Hop Thinh it was the habit of in-person care.

The seven reasons can be grouped into four categories:

Awareness-related reasons: unaware of the service (44.0%) and not referred by a doctor (10.5%);

Cultural and psychological reasons: preferring to see a doctor in person (19.5%) and distrusting the quality of telemedicine (8.6%);

Technical reasons: not knowing how to use the technology (7.9%) and lacking the necessary devices (2.6%);

Affordability-related reasons: concern about the cost of the service (6.8%).

Awareness-related reasons accounted for the largest share (54.5%), followed by cultural and psychological reasons (28.1%), whereas technical reasons (10.5%) and affordability (6.8%) accounted for small shares. Thus, for non-users, communication that makes residents aware of the service is the most important requirement; technology and affordability are not the main barriers.

Factors encouraging telemedicine use

All 400 respondents were asked which factors would most encourage them to use telemedicine more (multiple responses allowed). Table 4 shows a clear order of priority among three groups of factors, with decreasing selection rates: economic factors (health insurance coverage, lower costs); trust and quality factors (diagnostic quality, data confidentiality, and the role of the state and public hospitals); and information and technical support factors (technical support, simpler procedures, and promotional information).

Table 4. Factors that would most encourage residents to use telemedicine

Factor	n	%
1. Economic factors		
Covered by health insurance	312	78.0
Lower cost per remote consultation	238	59.5
2. Trust and service quality factors		
Assured and reputable diagnostic quality	167	41.8
Confidentiality of personal information and medical records	144	36.0
Wide implementation by the state and major public hospitals	100	25.0
3. Information and technical support factors		
Guidance and technical support available when needed	66	16.5
Simpler procedures (app installation, booking, payment)	63	15.8
More promotional information and clear guidance from hospitals and health authorities	34	8.5

Note: Multiple-response question (n = 400). Source: Project survey data.

Economic factors, particularly health insurance, were selected most often. Overall, 78.0% of respondents selected health insurance coverage and 59.5% selected lower costs per remote consultation. For many residents, whether health insurance pays determines which mode of care they choose. Law No. 51/2024/QH15 amending and supplementing a number of articles of the Law on Health Insurance brought telemedicine within the scope of reimbursement from 1 July 2025 (National Assembly, 2024), but the circular on health insurance payment for telemedicine remains in draft form and is expected to take effect on 1 January 2027 (Ministry of Health, 2026b). Residents' greatest expectation therefore remains unmet.

The second priority was quality assurance and state endorsement. A total of 41.8% of respondents selected assured and reputable diagnostic quality, and 36.0% selected the confidentiality of personal information and medical records. This indicates that residents remain concerned about diagnostic quality and data security in the absence of face-to-face examination.

One quarter of respondents (25.0%) selected wide implementation by the state and major public hospitals. In current informal practice, residents' trust in telemedicine is built mainly on personal acquaintance with doctors; without such relationships, they worry about the authenticity of the person giving advice. Taken together, the quality, confidentiality, and state-role factors indicate that residents need institutional assurance, such as licensing and public lists of doctors and service providers, so that trust no longer depends on personal relationships.

Technical support and information factors were selected least often. Only 16.5% selected technical support and 15.8% selected simpler procedures. This is consistent with the small proportions of non-users who cited not knowing how to use the technology (7.9%) or lacking devices (2.6%). For most residents, phones and Zalo are already familiar, so technology is not a major obstacle. For older adults, however, technology may still be a barrier: the regression results in Table 5 show that older age is associated with lower odds of having used telemedicine. Formal services should therefore accept voice calls, provide support at commune health stations, and allow relatives to assist older adults.

Extensive promotional information and clear guidance were selected by only 8.5% of respondents, the lowest of all factors. This appears paradoxical, given that unawareness of the service was the most common reason for non-use (44.0%). One explanation is that people find it difficult to recognize a lack of information about a service they do not know exists. In addition, they may regard information as a necessary condition, while cost and trust determine whether they actually use the service. Communication is therefore necessary but not sufficient; it is effective only when it conveys content that matters to residents, such as health insurance entitlements, costs, lists of licensed doctors, and how to recognize official channels.

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2.2. Factors associated with telemedicine use

The dependent variable was having ever used telemedicine (1 = used; 0 = never used), analyzed using binary logistic regression.

Independent variables were grouped according to the analytical framework and entered into the models in blocks.

Model 1 included individual characteristics: gender (male = 0), age, education (lower secondary or below = 0), and occupation (other occupations = 0; retired, not working, or agriculture, forestry, and fisheries = 1).

Model 2 added household and community characteristics: living standard (above average = 0) and commune of residence (Hop Thinh = 0).

Model 3 added health status and health care access (self-rated health, a medical visit in the past 12 months, monthly medical check-ups, chronic disease requiring regular monitoring, and a travel time of 30 minutes or more to a health facility) together with technology ownership and use (regular Internet use, owning a computer/laptop/tablet, owning an Internet-connected smartphone, and having Internet/Wi-Fi at home). Model 3 is the full model.

Results are presented as odds ratios, Exp(B). An Exp(B) greater than 1 indicates that the group coded 1 has higher odds of having used telemedicine than the reference group (coded 0); an Exp(B) less than 1 indicates lower odds. For age, Exp(B) represents the change in the odds of having used telemedicine for each additional year of age.

Table 5. Binary logistic regression models of factors associated with telemedicine use

Independent variables	Model 1 Exp(B)	Model 2 Exp(B)	Model 3 Exp(B)
Individual characteristics			
Gender (male = 0)	0.556**	0.561*	0.625
Age (years)	0.977**	0.978*	0.975*
Education (lower secondary or below = 0)	1.276	1.357	1.127
Retired/not working/agriculture, forestry, fisheries (other = 0)	1.161	1.172	1.109
Household and community characteristics			
Living standard (above average = 0)		1.110	1.078
Commune (Hop Thinh = 0)		0.760	1.037
Health status and health care access			
Self-rated health (poor = 0)			2.161
Medical visit in the past 12 months (no = 0)			1.275
Monthly medical check-ups (no = 0)			0.998
Chronic disease requiring regular monitoring (no = 0)			1.385
Travel time to health facility ≥ 30 minutes (< 30 minutes = 0)			1.142
Technology ownership and use			
Regular Internet use (no = 0)			2.514*
Owns a computer/laptop/tablet (no = 0)			0.836
Owns an Internet-connected smartphone (no = 0)			0.438*
Internet/Wi-Fi at home (no = 0)			0.483*
Constant	1.691	1.604	1.220
Nagelkerke R^2	0.088	0.093	0.170

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Source: Project survey data.

Age: Age was the only individual characteristic that was statistically significant in all three models (Table 5). The odds of having used telemedicine decreased with age: each additional year reduced the odds by approximately 2.2%–2.5% (Exp(B) = 0.975–0.978; $p < 0.05$ or $p < 0.01$). The effect of age persisted after controlling for technology ownership and use in Model 3, suggesting that the barriers facing older adults lie not only in owning devices or using the Internet but possibly also in skills, habits, and confidence in communicating with health workers remotely.

Gender: Gender was statistically significant in Models 1 and 2 but not after the health and technology variables were added in Model 3. In Models 1 and 2, women had only about 0.56 times the odds of having used telemedicine compared with men (Exp(B) = 0.556, $p < 0.01$; and 0.561, $p < 0.05$). In Model 3, this gap narrowed and was no longer significant (Exp(B) = 0.625), suggesting that the gender difference may partly reflect differences in health status and technology use between men and women.

Living standard and commune of residence: Neither living standard nor commune of residence was significant in Model 2 or Model 3, and Nagelkerke R^2 increased only from 0.088 to 0.093 when these two variables were added. Residents of O Dien and Hop Thinh, and of better-off and poorer households, thus had similar odds of having used telemedicine. This may be because most residents in the two communes use telemedicine through informal contacts with acquainted doctors, which usually involve no fees, so economic conditions make little difference.

Health status and health care access: None of the health and health care access variables was significant in Model 3 (Table 5). Respondents who rated their health as good had higher odds of having used telemedicine than those who rated it as poor (Exp(B) = 2.161), but this difference was not statistically significant. Having a chronic disease requiring regular monitoring, a medical visit in the past 12 months, monthly check-ups,

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and travel time to a health facility were also not significant. This is consistent with the purposes reported in Table 2: residents mostly use telemedicine to ask about common illnesses and seek initial advice rather than to manage chronic diseases.

Technology ownership and use: Adding the health and technology groups in Model 3 increased Nagelkerke R^2 from 0.093 to 0.170, with only the technology variables being significant. Regular Internet users had approximately 2.5 times the odds of having used telemedicine compared with non-regular users (Exp(B) = 2.514; $p < 0.05$). This suggests that practical experience with technology matters more than device ownership.

By contrast, respondents with an Internet-connected smartphone had only about 0.44 times the odds of having used telemedicine compared with those without one (Exp(B) = 0.438; $p < 0.05$), and those with Internet/Wi-Fi at home had about 0.48 times the odds (Exp(B) = 0.483; $p < 0.05$). Computer ownership was not significant. Because the technology variables are closely interrelated, the negative associations of smartphone and Wi-Fi ownership were estimated while controlling for regular Internet use. Moreover, residents perceive telemedicine as including ordinary phone calls, so people without smartphones can still consult remotely in their own understanding.

3. DISCUSSION

The results show that telemedicine among residents of the two rural communes occurs mainly through everyday communication channels rather than dedicated platforms: phone calls (59.0%), video calls (33.6%), and text messages with doctors (23.9%) were all more common than booking and consultation through health applications (17.9%). This finding is consistent with domestic studies showing that personal health consultation by phone was the mode most often used by chronic disease patients in Central Vietnam (D. Q. A. Nguyen, 2023) and that patients at hospitals implementing telemedicine preferred synchronous modes, particularly phone calls (Ta et al., 2025). It also supports the argument of Hampshire et al. (2015, 2021) that, in low- and middle-income countries, residents and health workers proactively use mobile phones to fill gaps in health systems, and that informal telemedicine already operates at scale, far outstripping formal programs. The contribution of this study is to document a similar phenomenon among rural communities in Vietnam, which earlier studies have rarely addressed because they focused mainly on hospital patients.

Regarding purposes, residents used telemedicine most often for common illnesses (55.2%), followed by chronic disease consultations (32.1%). Consistent with this, self-rated health and chronic disease were not significantly associated with use. This result differs from a study in Central Vietnam, in which people with cardiovascular disease had 2.34 times the demand for telemedicine (D. Q. A. Nguyen & M. T. Nguyen, 2021). The difference may arise because the earlier study measured demand, whereas this study measured actual behavior. Moreover, informal telemedicine mainly meets the need for initial advice on minor illnesses, whereas chronic disease management requires continuous monitoring, testing, and dispensing of medication, which personal communication channels can hardly provide. This is a gap that formal telemedicine models, which prioritize follow-up and the monitoring of stable chronic conditions, could fill.

Among individual factors, age was the only variable significant in all three models. This is consistent with the finding that people under 60 had about three times the demand for telemedicine of those aged 60 and older (D. Q. A. Nguyen & M. T. Nguyen, 2021), and shows that the age gap exists in actual behavior as well, even for simple modes such as phone calls. In contrast, education, previously reported to be associated with telemedicine demand, was not significant in any model. This may be because informal modes such as phone calls and text messages do not require a high level of education. Among technology factors, regular Internet use increased the odds of telemedicine use, whereas smartphone and Wi-Fi ownership showed negative associations after controlling for Internet use. This is in line with the argument of Hampshire et al. (2015) that the effectiveness of informal practices depends on individuals' "digital capital", in which skills and usage habits matter as much as material resources.

Regarding economic factors and distance, Ta et al. (2025) showed that economic conditions, health insurance, and travel difficulties were associated with hospital patients' use of and willingness to pay for telehealth services. In this study, living standard and travel time to a health facility were not significant. This may be because informal connections usually involve no direct costs and because both communes are located near urban areas, where distance to health facilities is not a major obstacle. Nevertheless, when asked what would encourage greater use, residents most often selected health insurance coverage (78.0%) and lower costs (59.5%). Thus, although economic factors do not currently differentiate behavior, they are likely to become barriers when residents shift to fee-based formal services.

Regarding information and trust, unawareness of the service was the most common reason for non-use (44.0%), and 10.5% had not been referred by a doctor. These results reinforce the view that familiarity with the service and recommendations from doctors and health workers have an important influence on telemedicine use (H. L. Nguyen et al., 2022). At the same time, diagnostic quality (41.8%), data confidentiality (36.0%), and implementation by the state and public hospitals (25.0%) were selected more often than technical factors, indicating that residents need institutional assurance. In informal practice, trust rests mainly on personal acquaintance. Hampshire et al. (2021) likewise showed that informal telemedicine responds flexibly to local needs but carries hidden costs and risks that are unequally distributed. Policy should therefore acknowledge this reality and build formal models on familiar communication channels rather than seek to replace them.

This study has several limitations. First, the sample was purposively selected in two communes to ensure a sufficient number of users; the usage rate of 33.5% therefore does not reflect the general level in the community and cannot be compared directly with the 58.7% among hospital patients (Ta et al., 2025) or the 6.3% among residents of Central Vietnam (D. Q. A. Nguyen & M. T. Nguyen, 2021). Second, the behavior variable measured "ever use" and included booking and consultation through health applications; it therefore reflects telemedicine use in general, in which informal channels predominate. Third, the study did not measure the timing or frequency of use and thus could not assess the sustainability of this behavior relative to the post-pandemic decline in use reported elsewhere (T. M. T. Nguyen et al., 2023). Finally, the cross-sectional design does not allow causal inference, and the Nagelkerke R^2 of the full model (0.170) indicates that many relevant factors were not included in the analysis.

4. CONCLUSION

This study of two rural communes in the Red River Delta shows that informal telemedicine is already part of residents' everyday lives. Residents connect with health workers mainly through phone calls, video calls, and text messages, chiefly for advice on common illnesses and chronic

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conditions. The main barrier for non-users is a lack of information about the service, followed by the habit of in-person care, whereas technical and cost barriers are cited less often. Among the factors analyzed, age and frequency of Internet use were most clearly associated with telemedicine use, whereas living standard, commune of residence, and health status were not statistically significant.

Several policy implications follow. First, formal telemedicine models should be designed around communication channels that residents already use, such as phone calls and Zalo, with support from commune health stations and provisions for relatives to assist older adults. Second, regulations on health insurance payment for telemedicine should be finalized and issued promptly, as this is residents' greatest expectation. Third, quality assurance mechanisms such as licensing and public lists of doctors and service providers are needed so that residents' trust no longer depends on personal relationships. Fourth, communication about telemedicine should focus on content that matters to residents, such as health insurance entitlements, costs, and how to recognize official channels, while leveraging the referral role of health workers. Future research should use representative samples, measure the frequency and specific channels of use, and incorporate qualitative methods to clarify how informal telemedicine behavior develops.

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