

## Obstacles and enablers for using telehealth services online in nursing practice: A systematic review

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### Abstract

**Background:** Comprehensive reporting on the barriers and enablers to telehealth adoption in industrialized nations has identified a wide range of significant factors. We aimed to get the important research information on the elements that nurses found most beneficial and hindering when using online telehealth services for nursing practice, we conducted a systematic review study.

**Method:** This systematic review study was conducted in accordance with PRISMA principles. We searched for articles that discussed the aspects of using telehealth services for nursing practicum that nurse practitioners found most helpful and inconvenient. The international electronic databases that were used were Web of Science, Scopus CINAHL, and PubMed. The search was conducted for articles published in the period from 2011 and 2023. Only research that were written in English and published were considered.

**Results:** We considered 7 articles in our systematic review analysis, totaling 3729 participants. Inadequate resources (time, money) were mentioned as barriers relevant to both organizational and patient issues. Negative attitudes, a lack of telehealth experience, and inadequate training and support were considered to be impediments to the use of telehealth (3). According to the findings of the Kleib et al., 2018 study, the following variables affect user competency and proficiency: age; Prerequisites for qualifying include prior knowledge of information technology and a sufficient, early, and continual informatics education.

**Conclusion:** Numerous facilitators and obstacles were identified. In addition to administrative support, health professionals and information technology specialists must come to local agreements when transitioning from traditional face-to-face nursing practice to telehealth utilization.

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**Keywords:** Nurse; Telemedicine; Telehealth; Barriers; Obstacles; Enablers

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## 1. Introduction

Tele health is defined as “the use of a technology-based virtual platform to deliver various aspects of health information, prevention, monitoring, and medical care. The fastest growing sector of health care, telehealth's largest segment is telemedicine” (1). A wide range of contributing factors have been discovered by more comprehensive reporting on the obstacles and facilitators to the implementation of telehealth in developed countries (2). These include the significance of close collaboration among clinicians, managers, and technical staff in multidisciplinary teams; the impact of staff reluctance to change and the value of staff training; the necessity of strong leadership and project management; the need for committed funding and strategic planning; the identification of patients who may benefit the most and the reduction of obstacles to their uptake (3).

Brewster et al.'s (2013) (4) systematic analysis of the variables influencing frontline worker acceptability of telehealth provides more precise insight into the discussion by highlighting several recurring themes in the literature. This narrative analysis demonstrated how staff acceptance of telehealth pilots was negatively impacted for some time by subpar implementation procedures and unsolved. The evaluation also revealed nurses' worries about how the shift in their role from caregiver to patient might affect their interactions with patients. This, in turn, affected clinical autonomy and credibility, particularly in situations where staff did not think telehealth was essential or sufficiently advantageous.

Information technology is widely used in developed nations' healthcare operations and services. Information technology offers a vast array of opportunities in the healthcare industry (5). Applications that are used most frequently are electronic patient record systems. On the other hand, only limited use is made of Internet-based technologies, health informatics networks, decision support systems, and telemedicine and telecare services (6,7). Despite significant distances separating patients and caregivers, a prior study by Gibson et al. suggests that nurses may not always use telehealth programs (8).

Recent research indicates that the provision of nursing care is gradually shifting from institutions like hospitals to homes (9,10). Regarding the uptake of telehealth, there are high expectations. According to certain reports, telemedicine solutions can help patients become more empowered and capable of managing their own care (7). A key component of patient care is good communication between the nurse and the patient. Regardless of their condition, nurses support patients in claiming their agency and participating actively in decision-making (7). The quality of communication and nursing practices may be greatly altered by the usage of telehealth applications (11). Telehealth is viewed as a way to strengthen patient-centered care and facilitate communication (12).

In this study we aimed to get the research information on the elements that nurse practitioners found most beneficial and hindering when using online telehealth services for nursing practice.

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## 2. Method

PRISMA guidelines were followed in the conduct of this systematic review investigation. We looked for papers that addressed the factors that nurse practitioners found most beneficial and inconvenient when using online telehealth services for their nursing practicum. The electronic databases that were employed were the international ones PubMed, Scopus CINAHL, and Web of Science, each was conducted using the following terms: nursing, nursing staff, nursing professional, nursing personnel, nurse, midwife, experience, opinion, perception, attitude, telemedicine, telehealth, telenursing, ehealth, telecare, e-health, online communication, telecommunication, real-time communication, communication technology, information technology, web-based technology, World Wide Web and Internet. Furthermore, a manual search was conducted via the publications' reference lists. The time frame for the search was 2011–2023. Only the studies published in English language were included.

A theme qualitative framework was used for abstraction and synthesis in this work. Initially, the corresponding author went over the results and highlighted words that related to the hurdles or facilitators that nursing professionals encountered when using telehealth programs. Subcategories were then created by grouping together related terms. Following a study of subcategories, primary categories were established.

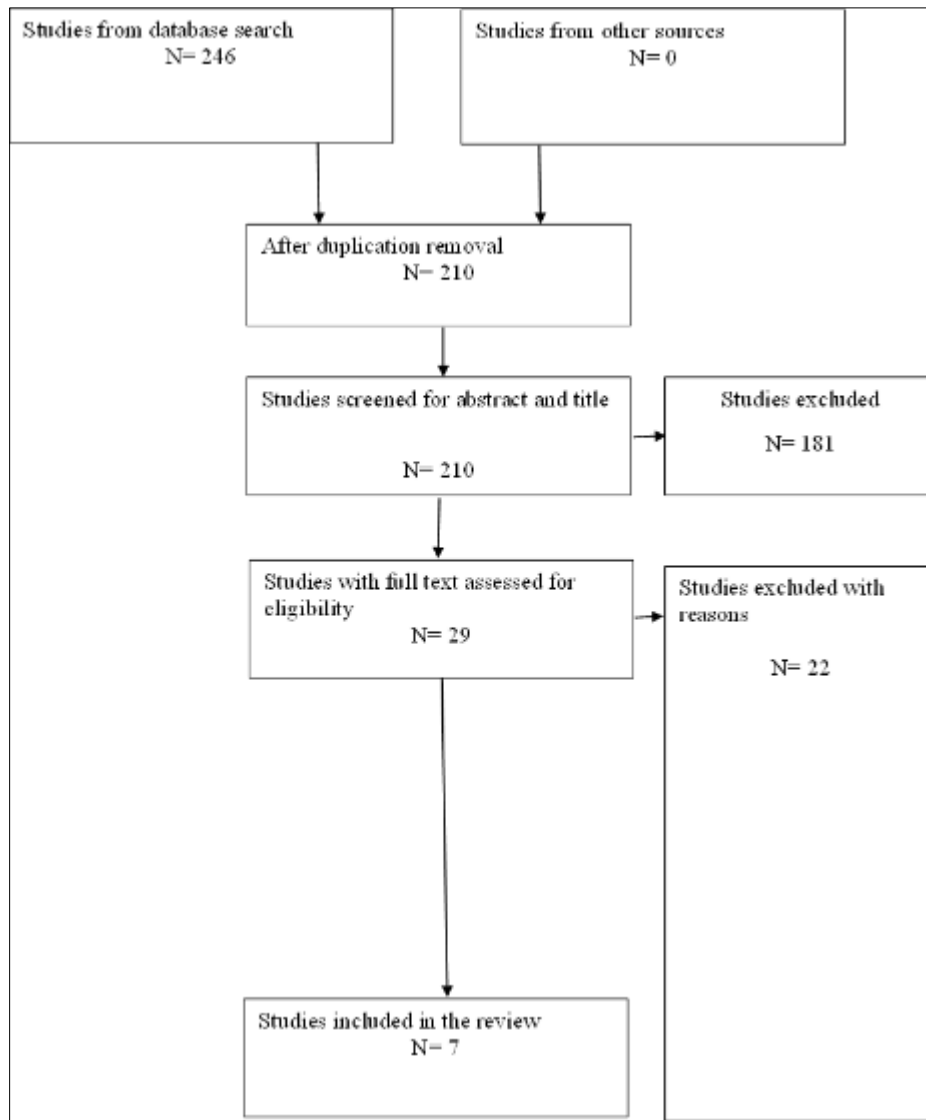
### 3. Result

In this systematic review study we included 7 articles (Fig 1), with a total of 3729 participants (Table 1). The usage of telehealth was found to be hampered by negative attitudes, insufficient training and support, and a lack of telehealth experience, inadequate resources (time, money) were cited as obstacles pertaining to both organizational and patient problems (3). According to a 2015 study by Solli et al., both patients and healthcare providers need to have the necessary knowledge and abilities in order for online communication to be productive (13). The research participants in Honey et al.'s 2018 study gave standards and norms around telehealth practice top priority, with many of them feeling that these should have a national reach. To ensure competent treatment, a common certification procedure has been proposed. The goal of incorporating telehealth principles into undergraduate and graduate nursing education is to increase public knowledge of the possible advantages that information and communication technology, and telehealth in particular, may bring to the provision of healthcare (14).

Van et al.'s 2019 study indicates that in order to support hospital nurses in developing confidence in the use of telemedicine, ongoing education in additional knowledge, skills, and attitudes is required. The convenience and speed of information availability at the time of care is one way that having access to data and evidence in electronic form facilitates clinical decision making, this is supported by the findings of Jensen et al. for nurse managers looking for information to help them make decisions at the organizational level.

The Kleib et al., 2018 study found that the following factors influence user proficiency and competence: age (younger people tend to be more adept and accepting/adaptable to new technologies); A sufficient, early, and continuous informatics education as well as prior information technology education are prerequisites for qualification (15).

The study conducted by Taylor et al. (2014) identified several challenges and facilitators that nurses face while using telemedicine. The barriers include: limited referral routes into telehealth, which often consider only patients with high-level needs, rather than all patients who are deemed fit for telehealth; ambiguities in determining patient appropriateness and challenges in forecasting how telemedicine will affect patients' anxiety and capacity to manage their own care; reluctance to use new technologies in patient care and concerns about staff members' technical proficiency. Facilitators include; A straightforward and uniform referral procedure that supports each clinician's unique clinical assessment of a patient's suitability; a specific position to oversee or organize the deployment of telehealth and advance service enhancements; a cooperative effort and an adaptable approach to service design that allows personnel to overcome newly discovered obstacles (3).



**Figure 1** PRISMA consort chart of selection process

**Table 1** Characteristics of the included studies

Citation	Study aim	Study setting and participants	Study design	Main findings
Taylor et al., 2015 (3)	To investigate front-line staff acceptability of telehealth and to pinpoint obstacles and facilitators of the effective implementation of remote patient monitoring for COPD and chronic heart failure patients.	Staff managers n = 21  Nurses and other front-line employees, n = 84	A qualitative study.	The report highlights the critical role played by frontline staff in recognizing and addressing the obstacles to the successful implementation of telehealth, as well as the time and effort expended by local advocates in obtaining funding for enhancements and promoting staff adoption.
Tuxbury et al., 2013 (16)	To learn more about the ways in which nurses use telehealth technology to feel present when interacting with patients	6 Telehealth nurses and three home care nurses	Interviews and a qualitative descriptive design	The results of the study indicate that nurses can feel present in their interactions with patients when they communicate with them through nonvideo phone and computer linkages alone. When telehealth technology is deployed, some nurses have expressed worries regarding the legitimacy of the nursing function. This material answers such issues.
Solli et al., 2015 (13)	To investigate the relationship between nurses and caregivers through online forums and web cameras	Caregivers, n= 8 Nurse, n= 9	A qualitative method in an exploratory design	The program's flexibility permits participants to have a close or somewhat more distant relationship, based on their opinions toward using this kind of service.
Van et al., 2019 (17)	To express the confidence that hospital nurses have in their ability to use these telehealth knowledge, skills, and attitudes. And to assess the barriers faced by nurses when using telehealth.	3,543 nurses	Cross-sectional study using an online questionnaire	Continuing education in additional knowledge, skills, and attitudes is needed to encourage hospital nurses in building confidence in using telemedicine, as they are only confident in nine of the 31 important telehealth knowledge, skills, and attitudes.
Honey et al., 2018 (14)	To investigate the factors that New Zealand nurses thought crucial for participating in telehealth with competence and confidence	9 nurses	qualitative design	The research participants prioritized the need for standards and norms around telehealth practice, with many believing that these should be national in scope. It has been suggested to use a common certification method to guarantee competent treatment. The integration of telehealth principles into nursing education, both undergraduate and graduate, aims to raise awareness of the potential benefits that information and communication technology, and particularly telehealth, might offer to healthcare delivery.

<p>Kleib et al., 2018 (15)</p>	<p>To ascertain the factors associated with competency and the self-perceived information competencies of Alberta's practicing nurses</p>	<p>17 registered nurses</p>	<p>Descriptive exploratory crosssectional survey</p>	<p>In the year prior to the poll, 21% of participants stated they had continued their professional education in informatics. The likelihood of continuing education in informatics declined for nurses working outside of hospitals or providing direct patient care and increased with Internet connectivity. The greatest disparity in the mean scores of the overall and subdomains of informatics competency was attributed to the caliber of the informatics training and support provided by employers. The variance in mean scores was also influenced to varying degrees by additional variables, including age, educational background, work environment, prior informatics education, internet access, use of health technology, access to resources, informatics training, an informatics role, and ongoing informatics education. The results of this study serve as a foundation for practical strategies that address the demands and requirements for informatics education among practicing nurses both today and in the future.</p>
<p>Jensen et al., 2016 (18)</p>	<p>To determine the informatics skills necessary for nurse management decision-making.</p>	<p>32 nurses</p>	<p>A quantitative survey study.</p>	<p>Eighteen skills were deemed necessary for information literacy competency, and sixteen skills for information management. The convenience and speed of information availability at the time of care is one way that having access to data and evidence in electronic form helps clinical decision making. This is valid for nurse managers who need information to make organizational decisions. The possibility of plagiarism and copyright violations when utilizing information is another issue. Authors identified skills beneficial for educating nurse managers and can help with evidence-based practice, information and communication technology integration in healthcare, and information management.</p>

#### 4. Discussion

Our goal in conducting this systematic review study was to compile the best research data on the factors that nursing practitioners found most helpful and hindering when utilizing online telehealth services for nursing practice.

We discovered that negative attitudes, a lack of telehealth expertise, poor training and support, and a lack of resources (money and time) were highlighted as barriers relevant to both organizational and patient issues. It takes continual education in new information, abilities, and attitudes to help hospital nurses become confident in the use of telemedicine. The results of Jensen et al. for nurse managers looking for information to help them make decisions at the organizational level support the idea that having access to data and evidence in electronic form facilitates clinical decision making in part because of the ease and speed with which information is available at the time of care.

Our findings showed that compared to their younger counterparts, older, more seasoned nurses appear to be less tech-savvy. Encouraging older, more seasoned nurses to pursue post-registration degrees, where they have greater exposure to and chance to gain digital literacy abilities, may help bridge this generational divide in digital literacy (15). Alternatively, and acknowledging that more senior and experienced nurses might not be able to make it, obligatory continuous professional development as informal learning could fill in this knowledge gap (19). According to Kleib et al., (2018) study, nurses self-report as slightly above "competent" in informatics. But nurses tend to think they are more skilled the younger they are; Kleib et al., (2018) found a negative relationship between age and informatics expertise. Qualitative research by Holtz and Krein (2011) (20) and Shin et al., (2018) (21) also supported this conclusion.

The acceptability of telehealth by frontline personnel is fragile and unclear, according to a study by Taylor et al. (2015). It is hampered by a variety of organizational, professional, and technological challenges, some of which are easier to overcome than others. It was discovered that staff acceptance varied both within and between service settings, changing over time and occasionally in a non-linear way as staff experiences with telehealth supported or contradicted early beliefs about the benefits of utilizing telehealth to track patients' symptoms. The adoption of telehealth, like other new technologies, was found to be a process as opposed to an event, with various issues taking precedence at certain points (22). Despite this fragility, which meant that rising impediments to success might limit staff acceptance.

A major finding from this study is the significance of clinical learning and practice-based knowledge in promoting the acceptance of new innovations. This method allowed staff members to ascertain for themselves the potential advantages of utilizing what was still widely considered to be a novel idea. A technological breakthrough usually provides at least some benefit to individuals who could adopt it, although this benefit isn't necessarily obvious to those who are meant to embrace it (23). This was especially evident in the case of telehealth due to the paucity of data regarding the technology's successful implementation and efficacy (24). The growing understanding of telehealth not only promotes adoption through the exchange of success stories and knowledge, but it also highlights some of the persistent challenges in incorporating telehealth into current service delivery and the challenges in determining which patients will benefit the most from it.

Clinicians that adopt telehealth are ceding parts of their traditionally in-person roles to technology, as well as to their patients and other frontline personnel who assist in the triage and monitoring of remote care delivery (25). It was discovered that telehealth adoption required staff members to be instilled with a strong sense of trust and confidence. A recent survey of Dutch cardiac services also revealed the discrepancy between expectations and experiences with telehealth, and the negative impact this has on uptake (26). Clinicians can therefore get the confidence necessary to implement telehealth for patient care by witnessing the advantages for both their patients and their own practice. In order to potentially help reduce ongoing uncertainties about why to use telehealth and address staff acceptance barriers before they would normally occur in practice, it may be important to address barriers at the outset and give staff members time to experiment with telehealth and experience its benefits.

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#### 5. Conclusion

However, the variety of applications in use results in new learning requirements, and it appears that funding implementation is a persistent issue. Health professionals and information technology specialists must reach local agreements when switching from traditional face-to-face nursing practice to telehealth use, in addition to administrative support. Given that there seem to be more facilitating elements than obstacles in the way of patient care, it is obvious that patients must be included in the implementation.

## Compliance with ethical standards

### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

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